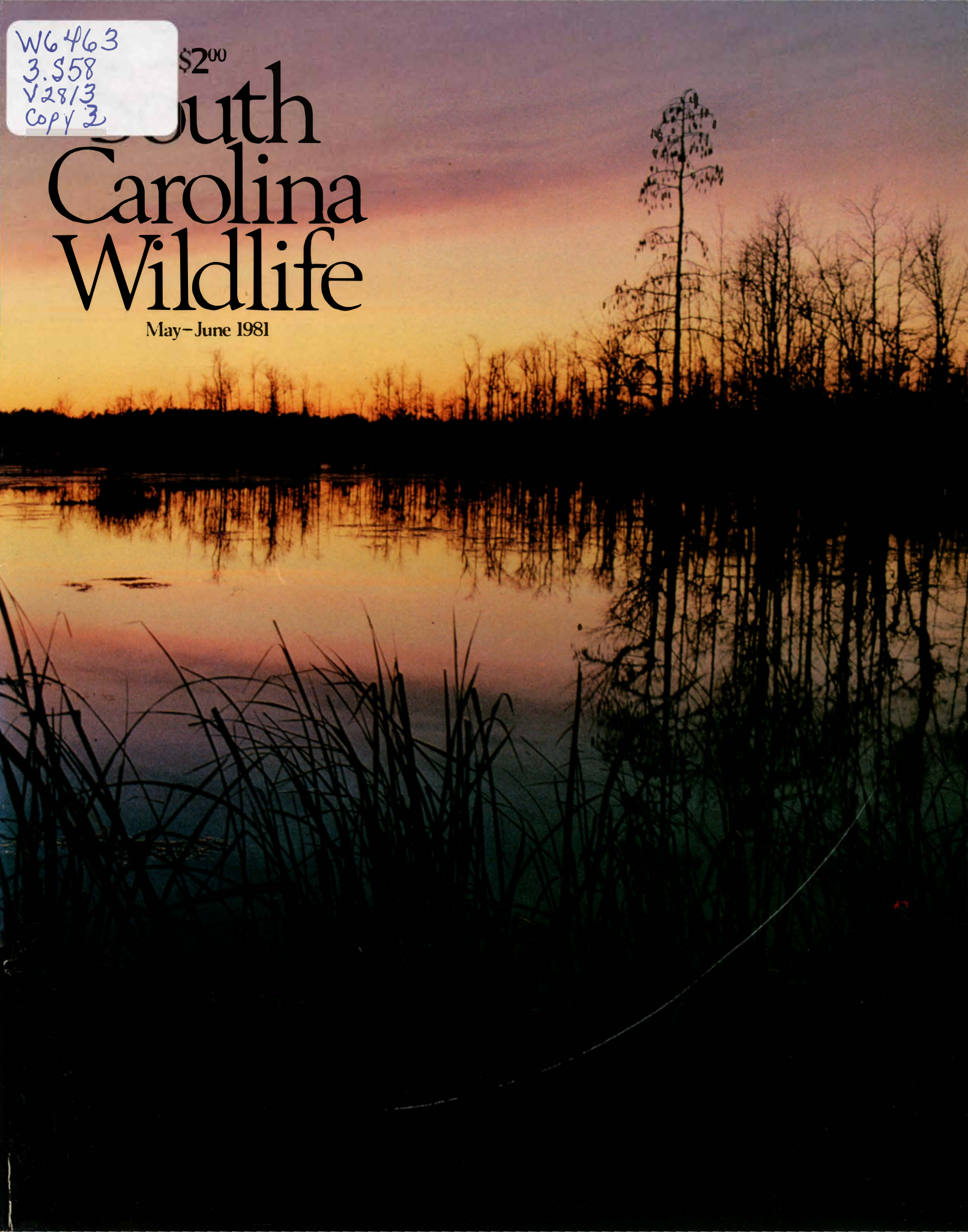


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South Carolina Wildlife

May-June 1981



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South Carolina Wildlife

May-June 1981

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VOLUME 28, NUMBER 3

Most folk don't think twice about tossing a scrap of trash. "Who's going to notice one little piece of litter?" they reason. But the trash and the debt add up.



Illustration by Beth Lambert

Immediately after tossing the empty Nehi can, C. W. Henry noticed the small cloud hovering above the road near the creek bottom. "What in tarnation? Never seen a fog patch like that." He spoke as though not alone in the truck cab.

"That's 'cause it ain't no fog patch, Dumbo. You better slow this thing down," he answered himself, in a slightly deeper voice.

C. W. always carried on conversations with himself. He'd once worried that the habit might mean his sanity was failing. But Merl at the Big Wheel Truck Stop near Westminster had assured him that talking to yourself didn't necessarily mean you were a half load shy on top. C. W. figured Merl should know as the cook had once taken a home study course in psychiatry.

C. W. downshifted and tapped the brake, but the fully loaded rig had picked up speed on the downgrade and hit at better than 50 mph. The windscreen was instantly splattered and the cloud poured in through the windows and vents.

"Bees? My Gawd, Dumbo, you've done kilt us for shore," the deeper voice trailed off into a shriek as the inside of the truck became busier than a fire ant mound with the top kicked off. The eighteen-wheeler roared off the shoulder, plowed through a stand of ten-year-old saplings, and slogged to a stop in the creek.

Most folks around Westminster agreed that C. W. Henry was as hard-working and honest as a man comes. They would tell you right quick that he paid all his bills on time, didn't cheat on his wife, always attended church when he wasn't on the road, and had never been known to skull rocks off stray dogs. But Westminster folks would occasionally admit that C. W. had two "peculiarities": he always dropped his cans, bottles, and food wrappers wherever he stood and he never could abide honeybees.

According to his Mama, C. W. had been an incorrigible trasher since the age of eight months when he had learned the baby's "Uh-Oh" game of dropping his spoon or cracker on the kitchen floor.

From childhood on, he left a trail of litter wherever he went.

Most of his former schoolmates agreed that his hatred of bees began at the first grade picnic when a bee attached itself to the jelly on C. W.'s sandwich just after he tossed the wax paper. He spent the remainder of that afternoon sitting in the bus with a hand that his best friend, Jimmy Logan, admiringly said looked just like Popeye's. C. W. never ate honey after that.

Then on the ninth grade hayride to Burrell's Ford, fate placed C. W. with his feminine idol, Thelma Ray Struddlemier. According to Bobby Jones's account, C. W. tossed his Dixie cup in true "devil may care" fashion over the wagon side and took Thelma Ray into his arms. But the honeybee on her neck turned his Valentino imitation into a Laurel and Hardy act. His swollen upper lip blocked both nasal passages for four days and earned him the nickname "Blubber Lip" for the rest of his high school career.

The feud between C. W. and the bees was set. C. W. carried a rolled-up newspaper or comic book wherever he went and the bees always seemed to go out of their way to end life stuck in his hide.

C.W. came to as something scratched and pulled at his clothing. He was being pulled through the truck's broken windshield and lifted into the air, much to his horror, by two man-sized bees. They carried him above the hemlocks and over the ridge, finally dropping into a long valley with a road that wound down into a distant black haze. The bees released him beside a square white building and lifted off toward the distant ridge.

"Well, hello there, Dumbo. See they finally got you from under the steering column," a familiar voice said.

C. W. looked up into his own face. "What in tarnation. This just ain't possible!"

"Which of you is C. W. Henry?" a droning metallic voice interrupted. One of the giant bees crawled from the opening across the base of the building.

"I am," C. W. and his twin announced in unison.

The bee's black tongue slid out as though testing the air. Its compound eyes scanned both men suspiciously.

"L-I-look," one C. W. stammered, "I don't know who this guy is, but I'm C. W. Henry."

"Don't know who I am?" the other fellow snarled. "Boy that's a good one, Dumbo. I'm your other self—the fellow you've been talking to in that truck these past twelve years. It took the impact and the sting to shake us apart, but I'm as much C. W. Henry as you."

The giant bee disappeared back into the building and returned. A pair of cloth sacks and spike-ended broom handles hung from its forelegs. It dropped a sack and stick at each man's feet.

"Follow!" the bee commanded and pivoted toward the road. A sword-sized barbed stinger pulsing from its abdomen convinced the two C. W.'s. The roadside was littered with cans, bottles, candy wrappers, and other trash for as far as one could see.

"Here is C. W. Henry's task. He spent a lifetime spreading trash, now he must pick it up. If both of you are him, then both must work," the metallic voice droned.

The two men began to work down the road, stabbing trash and placing it in their sacks. Their winged guard buzzed down upon them whenever they slowed or missed a piece of litter. Several hours and nearly two miles later, the noon sun still sat dead center in the sky.

"Hallelujah! Here comes a car," C. W. shouted. "This is our chance to get outta here." The two dropped their sacks and ran into the road waving. But the gleaming red convertible almost ran them down before it skidded to a halt. Coal-black eyes stared piercingly from a ruddy face. Before either could speak, the auto dug off as its driver roared with laughter and scattered litter over the road they had just cleaned.

"Lordy help us. I think that was The Man," C. W. moaned as the guard bee hovered over them. "We gon' be here forever!"

"What if one of us wasn't really C. W. Henry?! C. W.'s other self asked in sudden inspiration. "Let's flip for it. Heads you're Henry, tails I'm him. What about it, fuzball?" he looked toward the bee.

The giant insect raked its head as though in thought, then answered, "Proceed."

The other C. W. took a quarter from his pocket and tossed it high in the air. When the coin settled on the pavement, a picture of the U.S. eagle stared up at them.

Hey in there, you all right?"

C. W. shook his head and looked out the truck window. For an instant the Rayban sunglasses looked just like the guard bee's eyes.

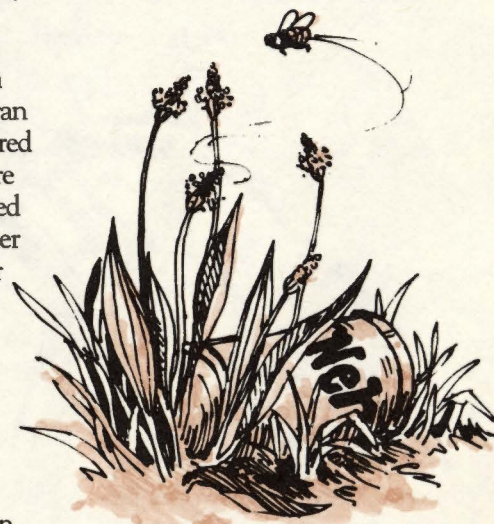
"Saw the trail your rig made when it plowed in here. What happened? You fall asleep?" C. W. couldn't answer as the patrolman pulled him from the cab and began to help him toward the road.

"Let me help you into the cruiser. We'd better get you to a doctor," the officer said, alarmed by C. W.'s vacant stare. "Looks like you've been through Hell."

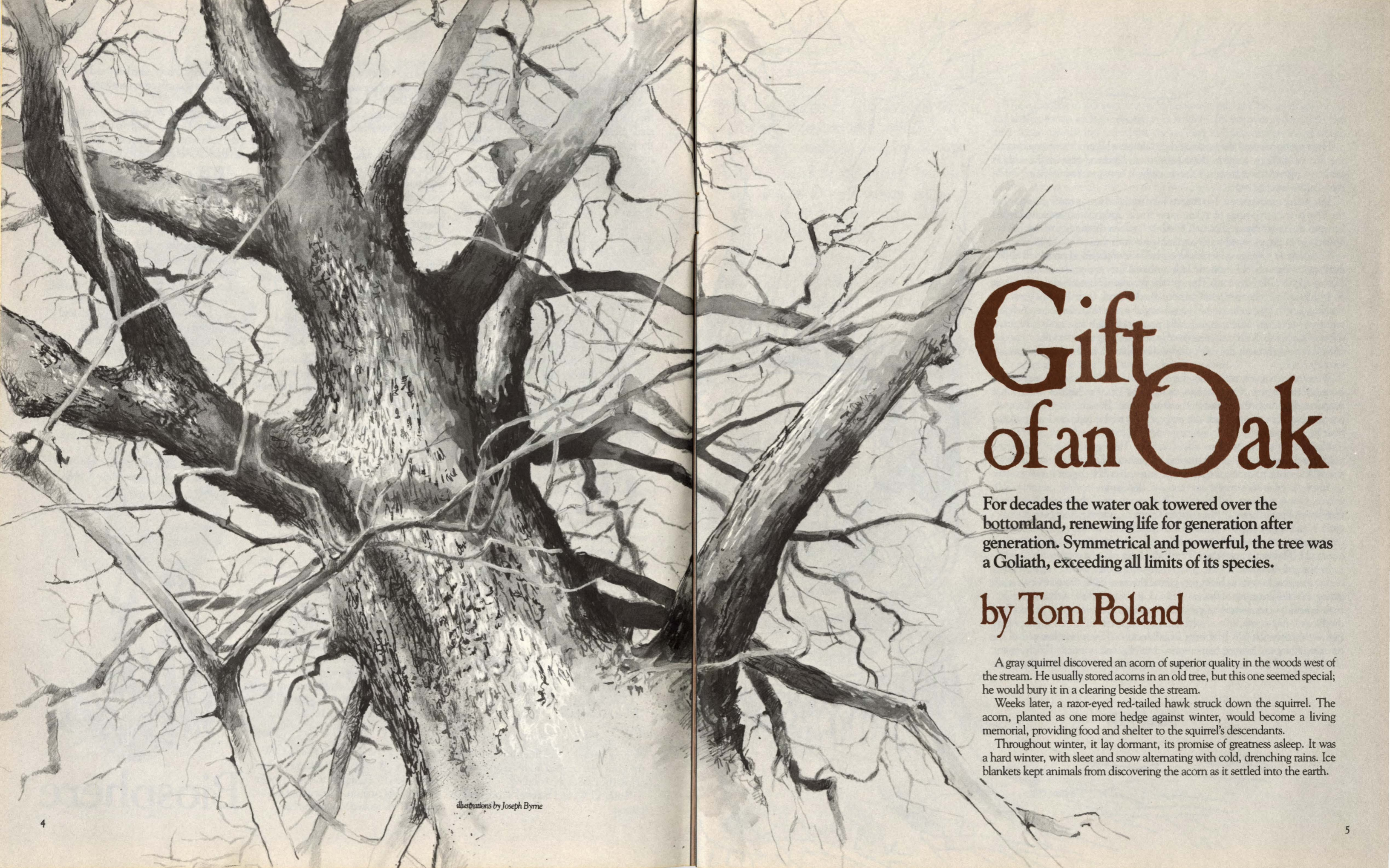
C. W. pulled away from the man and ran back up the grade, searching the roadside grass. He bent, then straightened, and faced the patrolman puffing up behind him.

"I'm all right now," he grinned, clutching the Nehi can tightly in both hands.

John Davis



Biosphere



Gift of an Oak

For decades the water oak towered over the bottomland, renewing life for generation after generation. Symmetrical and powerful, the tree was a Goliath, exceeding all limits of its species.

by Tom Poland

A gray squirrel discovered an acorn of superior quality in the woods west of the stream. He usually stored acorns in an old tree, but this one seemed special; he would bury it in a clearing beside the stream.

Weeks later, a razor-eyed red-tailed hawk struck down the squirrel. The acorn, planted as one more hedge against winter, would become a living memorial, providing food and shelter to the squirrel's descendants.

Throughout winter, it lay dormant, its promise of greatness asleep. It was a hard winter, with sleet and snow alternating with cold, drenching rains. Ice blankets kept animals from discovering the acorn as it settled into the earth.

illustrations by Joseph Byrne

Then spring warmed the earth, and germination began. Microscopic roots, the first of millions to grow during the tree's lifetime, gripped the soil. A seedling erupted toward the surface. Luckily, it emerged free from any shade that might retard growth.

The infant years passed. No threats hindered the young oak's growth, and the first twenty-five rings of xylem grew thick. Xylem was the actual wood beneath the outer layers. The oak lifted its limbs to the sunlight as its heavy-walled xylem tissues piped water and minerals from the soil to the leaves.

These leaves were green with chlorophyll—the chemical on which all life ultimately depends. Carbon dioxide entered the underside of the leaves through pores called stomata. Through the process of photosynthesis, sunlight and chlorophyll changed the carbon dioxide and water into sugars and starches, and a by-product—oxygen—surged into the atmosphere. A light-sensitive hormone, auxin, continually positioned each leaf to receive a full share of sunlight. With a minimum of leaves shaded, the maximum amount of food flowed through the oak's thin-walled phloem tissues directly beneath its outer bark.

Water was, in a very real sense, the oak's blood, but water vapor continually passed from the tree. On hot days, as many as 1,000 gallons of water vapor evaporated through the leaves to the atmosphere. But imbibition, the osmotic process that draws water from the deepest root to the topmost leaf, pulled a river back through the oak.

Most living things grow to a specific size. Trees grow to a characteristic height and stop, but continue to grow in girth until death. Pausing only for the passing of each winter, the water oak entered its fiftieth year in full growth.

Years passed with seasons arriving and departing—spring, summer, fall, winter; spring, summer, fall, winter. Oblivious to time, the tree's cambium, a thin layer of tissue beneath the bark and phloem, added full rings to the oak's girth. Inner rings of xylem matured into heartwood, and though the core had originated over seventy-five years earlier, the outer wood was never more than a year old. The water oak was, at one time, both old and young.

In the one-hundredth year, a softening of the heartwood began. Fungal decay, a cancer known as heart rot, gutted the tree. Still, the water oak stood strong. Unlike creatures of flesh and blood, it could endure without a heart.

Arboreal species found the giant tree's enlarging chambers to be excellent dwellings—first-come, first-served housing. Squirrels filled the higher openings with mast each fall. In spring, wood ducks laid their clutches within the trunk's embrace. Demure hens returned to the oak annually. Each spring, chicks dropped into the stream below, living gifts from the acorn of long ago.

A The large heartwood, oldest portion of the oak, filled with resin and waste products, and no longer functioned except as support.

B Water reached the oak's leaves by climbing up from its roots through xylem tissues of the sapwood, which later "died" to become heartwood.

C The one-cell-thick vascular cambium, an actively growing layer, produced xylem to the inside and phloem to the outside.

D Phloem tissues carried dissolved sugars to both ends of the tree and later aged to become part of the bark.

E The bark layer protected the oak from bad weather and animal intrusion.

The oak's gifts to life were many. Its acorns, trunk, and branches gave food and shelter for an endless procession of wildlife. Its vast root system held the earth when spring rains forced the stream over its banks and provided secure dens during drier times. It tempered the weather, giving cool shade during the summer and a wind-break against winter's frigid blasts.

The oak's rings contained a yearly weather record, a cross-cut of natural history. During summer the leaves filtered impurities and replenished the air with oxygen. In autumn they provided a spectacle of color before dropping to add rich humus to the earth.

The Indian summer weather of the 155th ring harmonized for a vivid autumn display. Summer days provided ample sunshine, and early autumn nights turned crisp. Sunlight and length of day, temperature, chemicals, pigments, hormones, moisture, heredity, and location—these factors were all perfect for a quintessential autumn metamorphosis.

The water oak had attained greatness. Fifteen feet in circumference, it reached one hundred feet toward the light. That autumn the earth's position changed again so its axis tilted away from the sun. The tree reacted to the shorter daylight hours and the changing angle of light against its leaves by slowing chlorophyll production. This fading of the green pigment allowed yellow pigments known as carotenoids to burst forth.

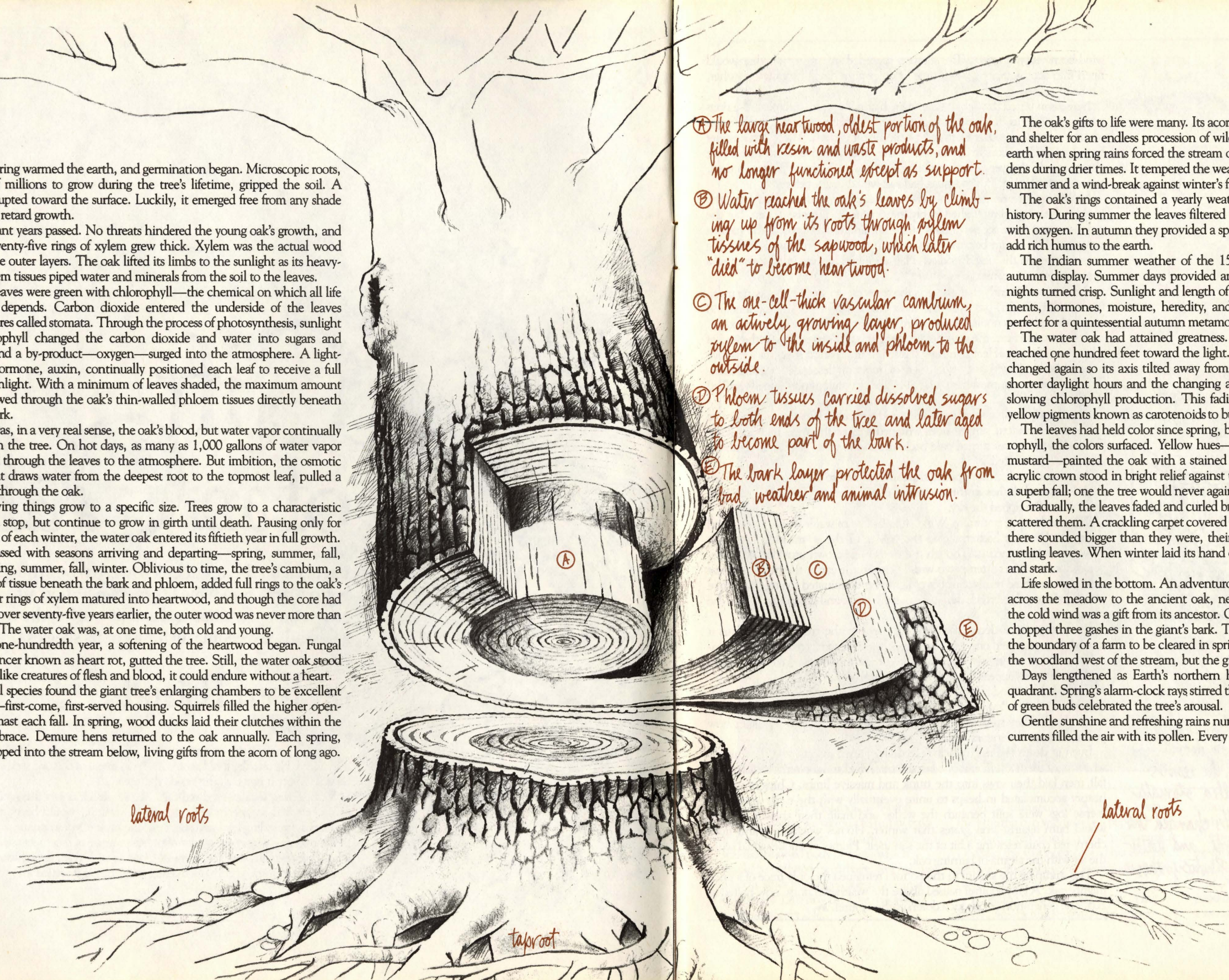
The leaves had held color since spring, but with the disappearance of chlorophyll, the colors surfaced. Yellow hues—maize, gold, lemon, saffron, and mustard—painted the oak with a stained glass effect. From a distance, the acrylic crown stood in bright relief against the dark woods to the west. It was a superb fall; one the tree would never again equal.

Gradually, the leaves faded and curled brown with death before chill winds scattered them. A crackling carpet covered the bottomland. Animals treading there sounded bigger than they were, their slightest sounds amplified by the rustling leaves. When winter laid its hand on the land, the tree stood leafless and stark.

Life slowed in the bottom. An adventurous squirrel occasionally scampered across the meadow to the ancient oak, never knowing that its shelter from the cold wind was a gift from its ancestor. One chill evening a man came and chopped three gashes in the giant's bark. The oak was now a corner mark on the boundary of a farm to be cleared in spring. Fields would be chopped from the woodland west of the stream, but the giant would not be touched.

Days lengthened as Earth's northern hemisphere approached its spring quadrant. Spring's alarm-clock rays stirred the slumbering giant. An explosion of green buds celebrated the tree's arousal.

Gentle sunshine and refreshing rains nurtured the old oak while soft, warm currents filled the air with its pollen. Every other year, the tree performed this



lateral roots

taproot

lateral roots

wind-borne reproduction. Tiny flowers preceded infant kernels that would ripen into acorns. Spring was a time of renewal, a time of pleasant weather, a time for growth.

No season tested the oak like summer. During hot, dry summers, the rings grew very little as dull heat baked the land—a sharp contrast to the years when temperate weather nurtured phenomenal growth. The 205th summer brought a killing drought. Heat seared the land, and the sky turned a pale ghost of itself. A layer of dust settled upon the leaves, giving the tree a tired, anemic complexion. But the giant had survived drought before.

Nights brought no relief. The air hung heavily over the land. Above the horizon, heat lightning flashed feebly, hinting at the promise of rain, but the promise was a lie. Successive days broke hot and dry. For weeks the pattern persisted. The stream became a dry gash in the land, and the river flowing upward through the oak dwindled. Half a million leaves curled inward in a desperate effort to conserve moisture.

A root system nearly as massive as the tree's crown sought life-giving moisture from the earth, but even the most efficient root network cannot find water when there is none. Drought girdled the tree as effectively as an ax.

A slight wind from the west heralded the drought's passing near the end of a hot August night. Heat lightning flashed in transparent sheets as a massive front pushed in. A gigantic bubble of cool, moist air descended, forcing thunderheads into the atmosphere. Anvil-headed cumulonimbus clouds stalked the heavens.

The skies became a seething ocean, and the oak a leviathan anchored to its depths. Turbulent surface tides whipped against the tree. Its huge limbs groaned as the leaves turned pale backsides to the wind. The skies rumbled, and then . . . rain fell.

A few marble-sized drops pelted the earth just before the deluge. Wind gusts ripped diagonal slashes in the curtain of rain as the storm smashed the land and forks of fire ripped the sky.

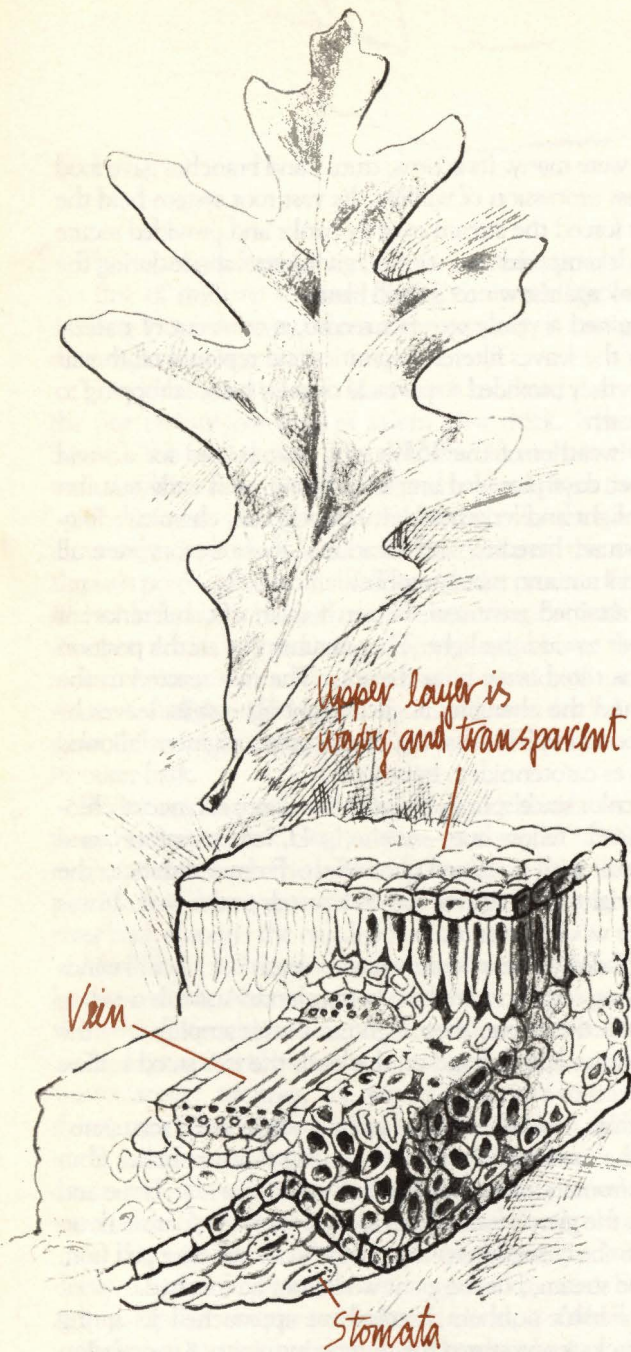
Trees seldom die naturally. Wind, fire, or loss of water supply usually end their life. Drought had strangled the oak until the storm brought water. Now wind threatened it. Though the tree's huge crown provided strong leverage for the wind's attempts to wrestle it from the earth, the tree would not yield. Its roots held firmly. Strobes of lightning illuminated the tree as a wave of wind slammed it broadside. A splintering crack and groan rose above the storm.

For years, fungal decay had prospered within the tree. Weaker than it looked, the oak could only endure so much. Separated from its jagged, splintered base, the cavernous upper trunk lay across the stream. Like trees before it, the tree would appear to have died from heart rot.

The tree had stood as a monument to the strength and durability of wood. Worthy of the title "oak," the veteran had dwarfed all the water oaks near the bottomland. They stood half as high and half as massive as the giant now prostrate across the stream.

Even in death the mighty oak served life. Fungi, insects, and the animals who sought them found in it one last source of food and shelter. The following fall, men laid their saws into the trunk and massive limbs. Chips of natural history accumulated in heaps to unite eventually with the earth again. Immense logs were split beneath the wedge and maul; their angular sections would burn against iron grates that winter. Homes would be warm from cherry-red coals releasing a bit of the sun itself. Plumes of smoke would scent the air with the aroma of burning oak.

The stump by the stream in the bottom remained the only trace of a once mighty oak. A gray squirrel paused above the weathered rings, now halted at 205, one generation of oak for a dozen of the squirrel. 🐿

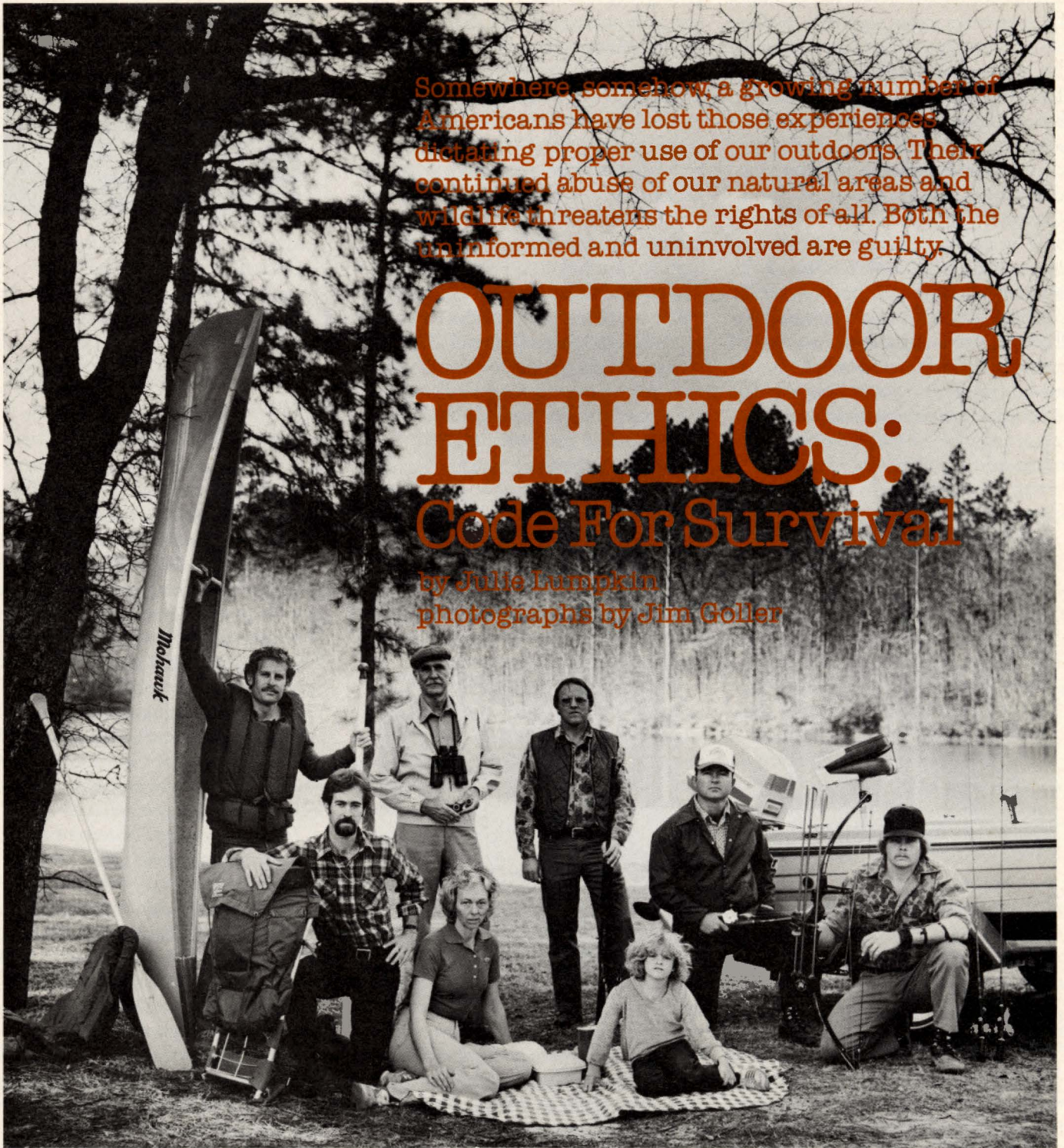


The oak depended on its leaves to make food (sugar). Carbon dioxide entered the underside of the leaves through tiny pores called stomata. Chlorophyll in these cells changed the sunshine, carbon dioxide, and water to sugar and oxygen. Photosynthesis was then complete.

Somewhere, somehow, a growing number of Americans have lost those experiences dictating proper use of our outdoors. Their continued abuse of our natural areas and wildlife threatens the rights of all. Both the uninformed and uninvolved are guilty.

OUTDOOR ETHICS: Code For Survival

by Julie Lumpkin
photographs by Jim Goller



Whenever my Dad took us fishing on Lake Wylie, we weren't to throw trash in the lake. The lake, my father explained, was a contained body of water which would be polluted by garbage. Just because a bottle sinks from sight doesn't mean it disappears. Littering the lake was absolutely unacceptable.

When fishing on the Atlantic Ocean, the littering ban was lifted on paper, although it remained on bottles and cans. Dad said the vast ocean could handle the garbage, since salt water eventually deteriorated paper.

I couldn't always remember all of my Dad's idiosyncrasies regarding outdoor

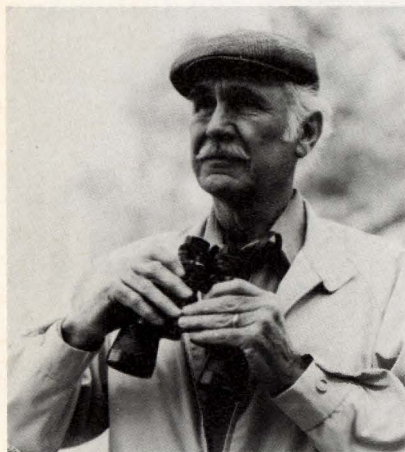
ethics. Sometimes I'd dump the Coke can in the ocean; sometimes I'd dutifully pack all garbage away while my brother tossed a sandwich bag overboard. Something didn't make sense.

If Dad's rules were inconsistent, he had good reason. Twenty years ago the ocean was accepted as an unlimited resource with

boundless shores that would remain unaffected by the minutiae of human activities. As mighty as our oceans are, we've discovered since then that the life they sustain is vulnerable and often quite fragile.

Litter is an eyesore, no matter where it falls. Litter abusing a natural setting is that much more offensive. When a plastic six-pack ring is found girdling a dead bass's mid-section, litter is a crime.

George Reiger, conservation editor of *Field & Stream*, has labeled our present outdoor situation "an unplanned society." The resource isn't what it once was, but we're living by the old rules. Some people still don't realize we have to manage nature, so it will continue to supply our wants and needs. As an increasing population consumes goods, the land not used for living or commerce is the land placed in production.



Poor standards of behavior in the field are not exclusive to one group of outdoor users or one class of people. All outdoor users are part of the problem.

Green spaces, wilderness areas, public hunting land, and natural habitats are bearing increasing use pressures as more people take to the outdoors in weekend campers, trail bikes, hiking boots, cabin cruisers, and four-wheel drives. What we have is more un-informed people enjoying better access to less land. And often the land isn't bearing up too well.

On top of this over-extended use is unforgiveable abuse. Many people who are

getting back to nature behave as if they're getting back at nature. When they're not wantonly hurting the resource, often they're hurting other people who use or own the land.

Recently, at the National Conference on Outdoor Ethics, Frank Gregg, Director of the Bureau of Land Management, bemoaned outdoor users' lapsing respect for the land and people: "The result is significant levels of litter, pollution, environmental damage, and, in some cases, outright desecration and vandalism. . . . The consequences of a self-indulgent public can be seen on virtually every outing to a public campground or park. They can be seen with increasing frequency in the more remote areas of our federal lands—in the desert, in fragile high mountain country, and at the seashore."

We can all think of examples: Vandals destroying facilities in public parks, hunters cutting live trees for duck blinds, ski boats buzzing bream fishermen, over-eager bird-watchers disturbing off-limit nesting areas, rural locals maliciously setting forest fires. Last year South Carolina conservation officers recorded twenty-seven accidents with firearms, resulting in seven deaths.

You may tell yourself that these are extreme examples, that such behavior would never be tolerated among your outdoor friends. If you're a backpacker, you can blame a dirty campsite on a fisherman. If you're a dove hunter, you can blame the recently closed road on those crazy dirt-bikers. If you're a birdwatcher, you can blame the posted woodland on those drunk deer hunters. And you'll probably all be right.

Poor standards of behavior in the field are not exclusive to one group of outdoor users or one class of people. All outdoor users are part of the problem. If you retain the highest ethical standards yourself, but aren't professing those standards to your peers, then you're certainly not part of the solution.

As more evidence indicates our declining values in the field, wildlife managers across the country have begun to grapple with the problem of waning outdoor ethics and how to improve them. And as Jim Mills, Hunter Education Coordinator for the Wildlife Department, acknowledges, "The problem with finding a solution to this ethics decline is that it's hard to get a handle on it. We're not



Often children can influence parents and other adults to change behavior because the adults not only want to set a good example, but also want to look good in the child's eyes.

certain what's causing it, and the answers for correcting the situation are not easy."

But professionals are recognizing with mounting alarm that a severe problem does exist. Such organizations as the Izaak Walton League of America, the National Rifle Association, the National Shooting Sports Foundation, and the National Wildlife Federation have joined with federal and state natural resource agencies to launch campaigns counterattacking the startling deterioration of ethical standards which they've observed in recent years.

These agencies have focused their campaigns on a code of conduct for a generation of largely un-informed and untrained outdoor users. Research shows that the majority of people who violate the law and behave irresponsibly in the field are those between the ages of seventeen and thirty-five. This is by no means to say that everyone older is guiltless.

Following the example of Pennsylvania's SPORT program and Virginia's Operation RESPECT, the South Carolina Wildlife and Marine Resources Department and the South Carolina Wildlife Federation initiated the state's RESPECT program in 1979. RESPECT is not a club you join by adding your name to a list and paying annual dues. It's simply a philosophy that the department and the federation are espousing as the standard for the public's conduct outdoors.

The slogans, "Respect for Nature, Respect for the Law, Respect for the Land-

owner, Respect for Fellow Sportsmen, and Respect for the Game Pursued," summarize the fundamentals of this campaign.

Although RESPECT's goals are aimed heavily at the hunter, the campaign was begun to encourage all outdoor users to improve their image with non-hunters, landowners, and the general public.

Ultimately, it's hoped that the ethical members of outdoor groups will use the RESPECT philosophy to model appropriate behavior among their peers and to admonish backsliders. "One outspoken advocate for ethical behavior can elevate the behavior of the entire group," explains Mills. "An important thing RESPECT can do is develop that one person who will say 'You did wrong.'"

"Attitudes are caught, not taught," Mills says, citing the following reasons for a changed attitude:

1. Threat of paying a fine. The embarrassment of being caught for breaking the law may be a deterrent, but some people say fines don't bother them as much as the possibility of their names being published as violators.

2. A child correcting the offender. Often children can influence parents and other adults to change behavior because the adults want not only to set a good example, but also to look good in the child's eyes.

3. Peer pressure. Generally, individuals perform to meet the expectations or accepted standards of the group, which may debase or improve a person's behavior.

4. A bad experience. The kind you can never completely shake—like when a shotgun accidentally slips from its prop and discharges shot into your hunting buddy's leg. Or the unthinkable—when a buck-fevered hunter mistakes your companion for a deer in the brush and kills him.

5. Education. A large amount of information given to the outdoor public, saying they are the people "messing things up" is effective. "Their initial reaction," says Mills, "is 'not me,' but the weight of proof eventually persuades them."

Although these influences may change a person's attitude temporarily, a permanent change is unlikely to occur except through education. Wildlife professionals increasingly emphasize the importance of teaching adults and children about conservation, natural history, and wildlife management, in addition to proper field

behavior, firearms safety, and outdoor skills.

Hunter safety courses began as long ago as the 1940s with Kentucky and New Hampshire's volunteer programs and New York's mandatory program in 1949. But conservation, ethics, and sportsmanship were not officially included in the course materials until the seventies when the National Rifle Association and the North American Association of Hunter Safety Coordinators realized the need to broaden their instruction.

Curiously, such instruction usually does not branch into formal school systems. In a 1977 study, "Young People's Attitudes

Through license fees, excise taxes on guns and ammunition, and federal duck stamp donations, hunters have contributed \$2.3 billion to conservation in less than fifty years.



Toward Wildlife," Gerri Ann Pomerantz questioned Michigan seventh through twelfth graders on a range of environmental topics. One questionnaire in the Environmental Science Category revealed that 93.2 percent of the answers about "Air pollution's effect on plants" was correct, but only 44.6 percent were correct on the topic "Hunting as a tool of wildlife management" and an even smaller 32.7 percent on "Wildlife as a renewable resource." Such results only confirm what educators in conservation agencies have suspected for a long time: reliable informa-

tion on the principles of wildlife management and conservation have not traditionally played a strong part in many schools' curriculums.

Recognizing the need for more environmental education in the late sixties, South Carolina's Department of Education developed new materials needed for teaching conservation and natural resources management. Then in 1971 the department hired an environmental education consultant to work with schools throughout the state. Currently, the wildlife department is seeking funds for a wildlife education program for kindergarten through the ninth grade. The K through 9 Program will be an excellent reference point for the department's Hunter Education courses aimed toward high school students as well as adults.

Because the hunter's impact on natural resources is so visible, it's natural that the outdoor ethics debate should focus particularly on hunting and hunter behavior. "The hunter and fisherman have always been more sensitive than most recreationists to the need for elbow room and abundant resources," observed Reiger at the Outdoor Ethics Conference, "for these ingredients are essential to a satisfying day afield or afloat. Phrases like 'getting back to nature' and 'off-the-beaten track' were invented by sportsmen more than a century ago, and these . . . expressions still summarize the essence of outdoor recreation—which is solitude."

Through license fees, excise taxes on guns and ammunition, and federal duck stamp donations, hunters have contributed \$2.3 billion to conservation in less than fifty years. This money has been used to improve and manage game and non-game habitat, to finance conservation education, to enforce conservation laws, and to maintain public recreation areas.

Granted, the individual hunter might not voluntarily donate that money if he wasn't forced. But many gladly pay the extra, because they know it's used to enhance wildlife populations. Basically, the wildlife management establishment has created a highly successful way to protect wildlife by guaranteeing consistent financial support.

In fact, non-game and endangered species management programs are also seeking ear-marked public funding methods. Colorado started a voluntary tax

check-off program, which allows state taxpayers to contribute part of their refund to non-game management and land acquisition. South Carolina is exploring a similar option.

Hunters were also among the first outdoor users to require high ethical standards of themselves. Recalling that his father was the most important influence in his training, Frank Gregg remembers how ethics were passed on to him by example: "I learned that you should leave at every campsite more firewood for the next user than you found when you arrived. You closed gates securely, you heeded signs restricting access to private property, you made sure the muzzle of your weapon was always pointing at the ground or the sky when not in actual use, and you tried to tread lightly on the land. In the process, you developed a real appreciation for nature and natural systems."

Hunters were also the first to demand an end to commercial market hunting. And they pushed for regulated hunting seasons and bag limits to insure healthy game populations. Today hunting is a vital part of scientific game management, for hunters participate in the cycle of life and death. By harvesting surplus game, they prevent cruel deaths from winter starvation and diseases that result from overcrowded game habitat.

For this reason wildlife managers and educators are concerned about the wave of anti-hunting sentiment. This phenomenon and the deterioration of outdoor ethics were the subjects of the first National Conference on Outdoor Ethics held last May in Des Moines, Iowa.

Three cultural factors that have affected outdoor users' attitudes were identified at the conference:

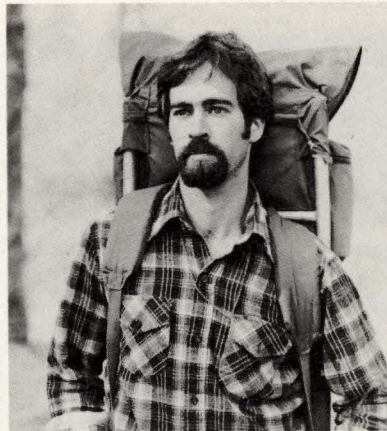
1. Pressures of population growth on a fixed or shrinking resource base. Essentially, more people—many of them untrained—are using natural resources. Already threatened or "consumed" by population growth, much of the natural resources that remain are abused further by the ignorant.

2. The urbanization of America. In 1970, eighty percent of the country's population lived in urban areas. This bodes poorly for outdoor skills traditionally learned in rural areas. As more people move to cities and as more land is

consumed by urban growth, outdoor traditions are no longer taught. The result, says Gregg, is the "interruption in the normal social process whereby we transmit values from one generation to the next."

3. Rapid advances in "outdoor technology." Modern equipment permits the urban dweller to attempt outdoor pursuits without committing the time once required for training in ethics and skills. At the conference Hobson Bryan, a U.S. Department of Agriculture project leader, cited one sociologist's theory of "cultural lag," which suggests that society's current problems have resulted from "rapid technological change without an associated change in guiding moral and ethical systems."

Conference participants also agreed that general disrespect for other people and the natural and physical environment was becoming more common, noting an increase in accidental violations and selfish behavior. An increase in willful violation of both laws and ethics, such as the inten-



...the public simply values the existence or beauty of wildlife, perceiving more wildlife populations to be in trouble than actually are.

tional disregard of game limits and private property laws, was also observed.

The same reasons for poor outdoor ethics apply to a declining interest in hunting. James R. Lyons of the U.S. Fish and Wildlife Service refers to a 1974 study which "suggested that the relative value of wildlife resources has been constantly

changing as human populations increased and wildlife supplies decrease."

Wildlife was once so abundant that people often saw it either as useful for food and clothing or as a nuisance. As a result of these attitudes, wildlife populations declined. Today, with the wilderness areas dwindling and some species extinct or endangered, the public simply values the existence or beauty of wildlife, perceiving more wildlife populations to be in trouble than actually are.

Phase One of Stephen Kellert's 1980 study, "Public Attitudes Toward Critical Wildlife and Natural Habitat Issues," reveals by implication a public who appreciates wildlife for its aesthetic value and accepts hunting only as a serious activity with a practical purpose. Trophy hunting was disapproved by 80 percent of respondents, but 85 percent approved of hunting for meat, while 64 percent approved of hunting for recreation and meat.

Another study by The Opinion Research Corporation shows that the sportsman's attitude generally parallels the public's. Love of nature emerged as the hunter's most important satisfaction. Game meat was mentioned more frequently by today's hunters than by hunters of fifteen years ago, indicating that hunters appreciate wild game taken directly from the natural setting, far more than meat processed, packaged, and bought from the supermarket. In general, the recreational aspects of hunting were emphasized more than the competitive aspects, such as skill, success, thrill, or using a gun.

These findings affirm that the majority of hunters are outdoorsmen who cultivate a personal relationship with the natural world through their sport. Some people object to hunting because they believe it is morally wrong to kill animals, so more ethical hunting won't change their view. But much opposition to hunting is based on the unethical or slob hunter, often perceived as typical, rather than one of a disreputable minority. For instance, one survey showed that the public saw the hunter "to be an ill-informed, unskilled, fellow who is dangerous to himself and his own kind, can't shoot, is deficient in woodcraft, and isn't a very good citizen with respect to the rights of others, particularly landowners."

“There is no such thing as a nonconsumptive user of wildlife. There are only consumers who care, and consumers who don’t care.”



Sportsmen should waste no time revamping their image, for the slob hunter makes all hunters look bad and provides perfect ammunition to anti-hunting organizations. Such groups as Friends of Animals and Fund for Animals, just a portion of the overall animal rights movement, must be recognized for the serious threat they pose to the sportsmen and wildlife management. These groups want the abolition of all hunting and have launched unbelievably effective campaigns, which could gradually undermine natural resources management.

The Wildlife Legislative Fund has documented cases of the Friends of Animals sabotaging hunts by destroying deer stands, lacing deer trails with animal repellent, and urging farmers to post their land. This same group is lobbying to repeal the Pittman-Robertson Act, the legislation that places a tax on all guns and ammunition sold, which last year alone provided \$82 million to state-level natural resource agencies.

Commenting on the animal rights movement in *Outdoor Life* magazine in January 1981, Richard Starnes observed that “it has attracted remarkably little notice for a development that may pose the greatest threat to hunting and fishing

in modern times.”

This movement is a revolutionary philosophy that intends to establish by law that all domestic and wild animals have certain inalienable ‘rights,’ including the right not to be hunted, Starnes explains. The head guru of the movement, veterinarian Dr. Michael W. Fox, believes that most wildlife management—hunting included—is “biologically unsound and ethically reprehensible.” On fishing, Fox is no more charitable, “I think anyone who fishes for pleasure needs to reexamine his values,” he pronounces.

Starnes concludes his article with a stern warning: “But don’t doubt for a moment that the problem is real, and tough, and bound to get tougher. The animal rights movement has intellectual rationale, it is taught in universities, it has adherents that probably number in the millions, according to the respected *Smithsonian* magazine—and it isn’t going away.”

While hunting, trapping, and fishing provide highly visible targets for assaults by anti-hunters, the movement’s true goals are aimed directly against the established principles of outdoor resource management. Thus, though both animal rights advocates and outdoor abusers constitute a minority, their actions threaten the outdoor futures of the majority.

Reacting to these converging trends, participants at the Ethics Conference left with goals to campaign for outdoor ethics through television, radio, print media, slide shows, classes, and workshops. For the willful violator, they suggested not only stricter law enforcement and more severe sentences, but penalties revised to require that violators attend ethics courses. The IWLA was appointed the national clearing house for outdoor ethics information and referral.

John Evans, RESPECT coordinator for the South Carolina Wildlife Department, observed that it takes a great trauma to change attitudes. “People won’t believe it. But if something doesn’t change, they’ll lose the land they now have access to. The trends show that.” That’s the kind of trauma—losing our game management area lands, for instance—that could change an attitude, but at that point it could be too late.

This past March, the Wildlife Federation and the wildlife department sponsored

South Carolina’s first RESPECT Conference. Over 1,000 representatives from such varied groups as hunting and fishing clubs to environmental organizations to anti-hunting advocates were invited. “If nothing else,” says Dr. Jackie Jacobs, executive director of the Federation, “we hope we made the public cognizant that our concern for the outdoor user’s future is growing, that we know we have an ethics problem, and we’re trying to do something about it.”

Perhaps one of the most sensible evaluations of the situation was offered recently by Robert Weeden of the University of Alaska who debunked the myth of the nonconsumptive user. Weeden noted that all outdoor users are natural resource consumers, from the hikers who wear down the shrub line along a trail, to scientists who collect animal specimens, to wildflower lovers who transplant their favorite woodland species, to sportsmen who take game and serve it for dinner.

“At a time when we are desperate for the strength of unity, we pick bitter fights with each other over what kind of wild things and what shades of green should get priority,” Weeden chides. “To continue to make false distinctions between consumptive and nonconsumptive users is to play into the hands of those who don’t give a damn about wildlife. There is no such thing as a nonconsumptive user of wildlife. There are only consumers who care, and consumers who don’t care.”

Outdoor ethics should be improved on principle, because sports should be equated with character and integrity in keeping with our country’s outdoor traditions. Of far greater import, improving outdoor ethics is absolutely critical to the survival of wildlife and the protection of natural areas—the systems that guarantee visual refreshment, healthy life cycles, and biological diversity.

But improving outdoor ethics is also imperative for the person who knows that the best human or creative moments emerge most easily and often in the outdoors. And some great human need—something instinctive, personal, and primordial—would be lost if we outdoor enthusiasts, naturalists, and sportsmen surrendered our interests in the natural world. Either counter the existing hostile trends, or do nothing and risk losing all. 🐾

Wild Plants: Ten for the Table

by Nancy Ann Coleman

Just because a plant isn't cultivated, waxed, and displayed on a grocery counter doesn't mean it can't be an excellent alternative to more common vegetables.

In fact, the following ten plants are delicious, nutritious, common, and you can't beat the price.



“**e**verything growing in the wild is edible—in the sense that you can put it in your mouth, chew it up, and swallow it. But a lot of those plants, once you eat them, will kill you.”

With these words, state parks naturalist John Reid Clonts made me promise to warn readers in my first paragraph *never to try any wild plant without positively identifying it first*. Then he led me to the following edible plants, all native to South Carolina, that can be eaten in spring or summer, prepared in varied ways for varying reasons.

If you're interested in these plants for your diet, the first step is to pick *one*. Read about it, talk about it, find it with a friend and a field guide, and study it. Wild food expert Euell Gibbons even meditated beside the plant when he finally found it. Make sure there are others of the same species growing nearby, then pick it, bring it home, and fix it according to directions. If you like it, keep an eye on where you found it, observing it through the seasons. New ones will usually spring up in the same spot next year.

For every reason people eat wild plants, there is some point to quibble before you nibble:

Economy. There are few cheap thrills anymore, especially edible ones, so this is a strong reason. Even if devouring wild plants is just a hobby, it's a lot cheaper than golf. But, like any hobby, it's time-consuming and often frustrating. (Have you ever ground greenbrier root to a powder?) And the plant isn't really free if it isn't yours to eat, so get the landowner's permission.

Nutrition. Many wild plants, particularly those listed here, contain more vitamins and minerals and less chemical contaminants than cultivated fruits and vegetables. But be sure your marsh hasn't recently been sprayed or your stream polluted. Roadside plants may contain high levels of lead and hydrocarbons, so get off the shoulders when collecting. Even if you're picking the dandelions on your front lawn, don't forget the dog next door.

Folk remedies. In parts of South Carolina, wild plants are popular as folk remedies, but anyone with a health problem more serious than a mild case of the post-winter blahs should consult a doctor rather than relying on a plant that might harm you or delay proper treatment. Some herbal medicine has been scorned only to be later proven scientifically sound, but physicians are trained to prescribe the quickest known route to recovery.

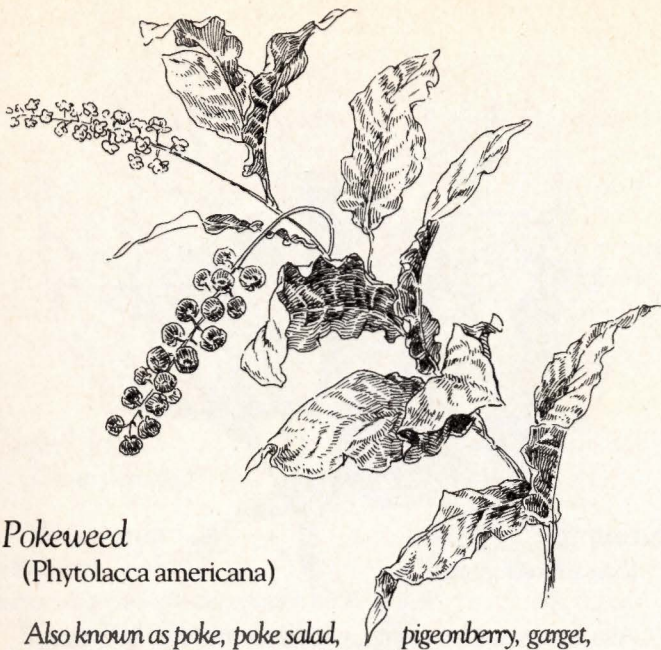
Variety. Restricting your diet to the same ten vegetables confines the body internally the way a cage confines it externally. Once again, however, a lifelong diet can't be revamped overnight, so go slowly, adding one plant at a time.

Simple enjoyment. This is the reason given by those who have permanently adopted wild plants in their kitchen, but remember one person's favorite dish may repulse another. You may need to boil the plant, throw off the water, and boil again. Or you may need to add cream. Feel free—these recipes are more flexible than Betty Crocker's.

Survival in an emergency situation. It's still possible to get lost in South Carolina, but one could easily live for about a week without food. If you're lost, spend your first two days trying to reach safety. When your choices come to starvation or eating wild plants, you're playing by new rules. This is the only reason a plant should ever be eaten *before* it's positively identified. In an emergency, if you haven't learned the poisonous plants, several rules will minimize the likelihood of poisoning. Specifically—avoid all mushrooms; don't eat any plant that looks like, but doesn't smell like, an onion; and don't eat any lacy-leaved plant like carrots or parsley. Remember that these rules apply only to survival situations. Otherwise—*identify the plant*.

Magic. Plants are used for love potions, jinxes, and as messages to both the Devil and the Lord. When I was at least twenty years younger, someone said I would become a boy if I ate a leaf. I ate six and I'm still a girl. So much for magic. Incidentally, be careful what you say about and do with wild plants in the presence of children. They're even less able to identify them than you are.

Primitive urges. Eating uncultivated, untreated vegetables around a campfire can speak to the caveman inside most of us, but don't go so wild that you forget to take a field guide. Highly recommended is Lee Peterson's "A Field Guide to Edible Wild Plants of Eastern and Central North America." Another excellent source of information, but without the helpful color photographs, is Fernald, Lyndon, and Kinsey's "Edible Wild Plants of Eastern North America." Dozens of alternatives are available at local booksellers and each has its own followers. The lack of description of the following plants is intentional; this article cannot be used to identify the ten plants. You still need *someone who knows the plant or a good field guide*.



Pokeweed
(*Phytolacca americana*)

Also known as poke, poke salad, pigeonberry, garget, skoke, ink berry, cancer root, wild spinach.

Indians and early settlers once treated countless ailments, from ulcers to hemorrhoids, with pokeweed or its parts, and even mixed it with gunpowder as a cancer remedy. In the Carolina Lowcountry, pokeweed root is still boiled and applied to the head for relief of high blood pressure.

These uses may be unusual and impractical, but pokeweed, prepared like a potherb or asparagus, is probably the most commonly eaten plant among these ten. Although most people boil it one or two times and throw off the water to get rid of its bitter taste, Euell Gibbons says poke still surpasses most vegetables in iron, vitamin C, and other nutrients. Like many country folk in the springtime, Roxie Oglesby of Walhalla gathers the young shoots when six to twelve inches high and fixes the now famous "poke sallet."

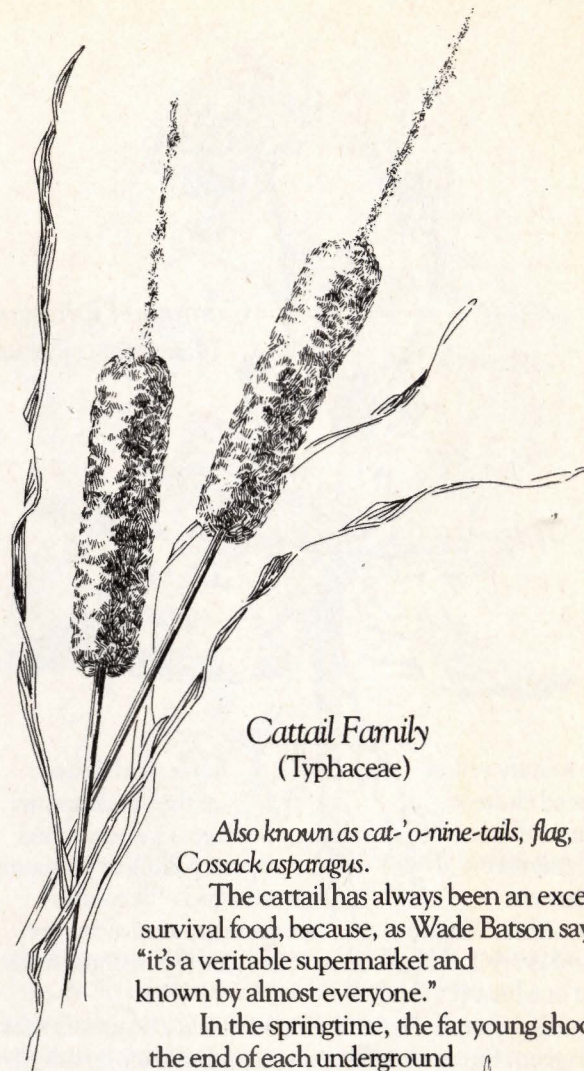
"I parboil the tender parts one time to get the bitter out," she says. "Then I fry some meat grease and put the poke in with fresh green onions. And I usually put turnip greens with it. My whole family loves it."

Dr. Wade Batson, USC professor of botany, says he has eaten poke every spring of his life. "I don't cultivate it. Like most people who eat it, I just know where it grows. You can dig up the roots in the fall and bed them down in the basement or some other dark spot. Put rich soil over them. When the shoots come up about six inches, just pull them off. Others grow back and you keep eating all winter."

The tender shoots can also be cooked like asparagus by immersing in or steaming over boiling water and adding salt, pepper, and butter or sauce. The whole leafy plant can be used to make pickles or sliced and fried like okra.

The scientific name of this plant, however extremely useful, warns us of the phytolaccin contained in its poisonous root. The stems, when purple, and the berries are also said to be poisonous. People have used the purple berries for food coloring, for ink, and Eileen Jacques of South Congaree says her brilliant red poke jelly is delicious and the prettiest jelly she's ever seen, "but people are scared to eat it."

Poke can be found in waste places and cultivated fields.



Cattail Family
(Typhaceae)

Also known as cat-'o-nine-tails, flag, Cossack asparagus.

The cattail has always been an excellent survival food, because, as Wade Batson says, "it's a veritable supermarket and known by almost everyone."

In the springtime, the fat young shoots at the end of each underground

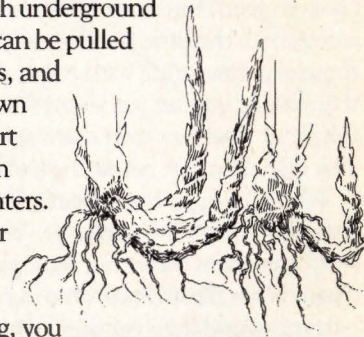
stem (rhizome) can be pulled up, cut off at about four inches, and peeled to reveal a heart. Known as Cossack asparagus, this heart is said to have kept the Russian soldiers alive through cold winters. These are good raw in salads or cooked like asparagus.

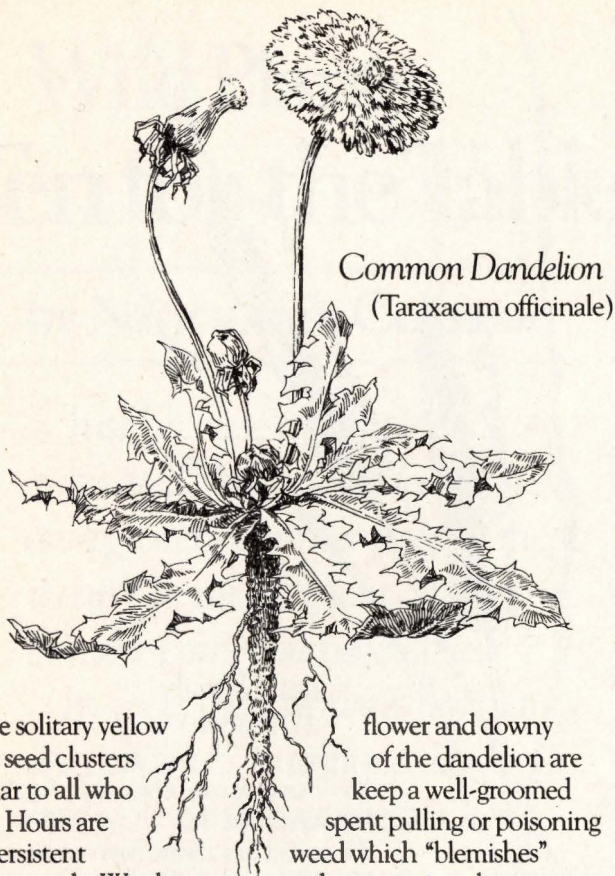
"When the pollen stalks are solid green and quite young, you can boil them in salted water till tender and eat it like corn-on-the-cob," says Michael Farmer of Taylors, a chemistry teacher and amateur naturalist. "Or wait until the heads are golden with pollen, cut them down, turn them upside down in a plastic bag, and shake the pollen off. It can be used as a stuffing or flour substitute."

Farmer sifts 3/4 cup pollen and 1 1/4 cup self-rising flour into a bowl and then adds an egg, a cup of milk, and a tablespoon of sugar, and beats this mixture into a smooth pancake batter.

Pah-Ute Indians supposedly made the young flowering spikes into a puree and ate the short, thickened shoots of the rootstock as a cooked vegetable. Cattails, like pokeweed, can be pickled.

Cattails grow in fresh or brackish marshes, ponds, and quiet streams.





The solitary yellow white seed clusters familiar to all who lawn. Hours are this persistent so many yards. We also

flower and downy of the dandelion are keep a well-groomed weed which "blemishes" see them growing along our

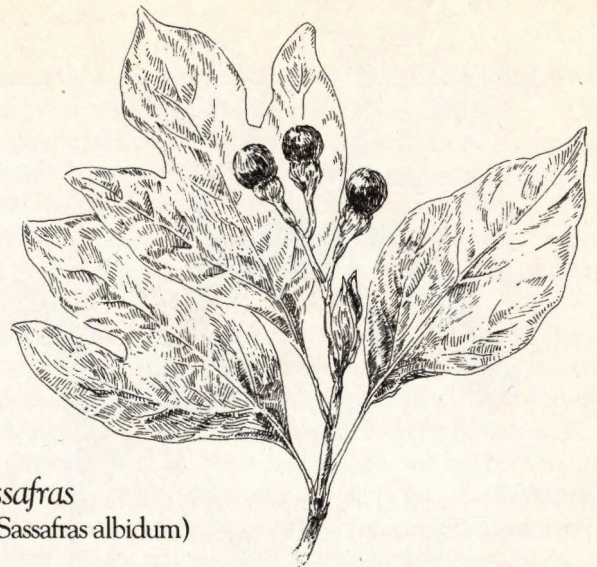
roads and every child has tried to blow all the parachute seeds away in one breath. Few realize that the dandelion can serve as a nutritious salad, cooked green, fritter, or coffee substitute. But once its value is recognized, the little weed usually becomes the first plant tried by those experimenting with edible plants. Novices must be sure, therefore, to gather the young leaves *before the flowers appear* or the bitter taste may turn them against wild foods permanently. The blanched part below the soil level is best.

While living in Long Island, Dr. Batson says he bought dandelions from the markets to cook as potherbs. "Nobody cultivates them there, but they do in the North," he says. "I boil them two or more times, pouring the water off to get rid of the bitterness, and then eat them with butter, salt, and pepper."

Batson also parches and grinds roots to make dandelion coffee. To do this, scrub the roots and place them on aluminum foil in a 100- to 150-degree oven for four or five hours or until dark. When the roots have cooled, grind it in a coffee grinder or blender. Boil one heaping teaspoon of this dried root with one cup of water for three minutes, strain, and serve with sugar or honey.

When still tucked down in the rosette of leaves, the flowerbuds can either be boiled or pickled. "When they blossom, dandelion flower heads can be pulled, dipped in light batter, and fried in a small amount of grease. They are quite good," Dr. Batson says.

Like poke, dandelions may be brought into the cellar, covered with leaf litter, and raised in winter for good salad greens without bitterness.

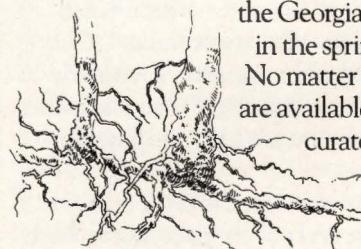


Sassafras
(*Sassafras albidum*)

Also known as white sassafras, root beer tree, ague tree, saloop.

A veteran brewer of sassafras tea, Mrs. R. B. Crosby of Ruffin says the roots are most flavorful when young and small. After gathering and washing thoroughly, she allows the roots to sun-dry for one week. Then she breaks up four or five small pieces in a teapot and adds one quart of boiling water. Steeping time and amounts of sugar added will vary according to taste, she says.

Dennis Gunter, state wildlife education director, says sassafras tea is probably better after a heavy frost and on into winter, when the sap's in the root. But according to "Foxfire 2," the second in the Georgia mountain folklore series, it is best in the spring, when the bark peels off easily.



No matter when they are best, the roots are available all year. Rudy Mancke, state curator of natural history, says he's seen the roots for sale, tied up like fat lightwood, at Dark Corner in Greenville County.

Actually, of the ten plants in this article, sassafras is the most likely to be sold in supermarkets, Dr. Batson says, but it's seldom recognized because it's sold as filet gumbo used to thicken soups. Carrying on a practice of the Choctaw Indians, Southerners cut and dry the young tender stems and leaves and grind them to a fine powder to make filet gumbo, which is especially popular in the Bayou country.

In her book, "Folk Remedies of the Lowcountry," Dr. Julia Morton says South Carolinians boil the young leaves with "wild okra" and "dog's tongue" (both of the genus *Viola*) to make soup.

In the past, sassafras was used as a remedy for countless ailments, and Dr. Morton, writing in 1974, said the tea is still used to bring out measles in children and the pith boiled to make a mucilaginous tea for application to baby's eyes. Eileen Jacques says friends in the mountains of Kentucky use sassafras twigs as substitutes for toothbrushes, which they consider nasty objects.

The safrole in sassafras reportedly causes cancer in rats, Dr. Morton says. Some people in the Lowcountry warn that the roots taken from a blooming tree will poison you. So, as with anything else, sassafras should be consumed with moderation.

Sassafras is found in old fields and borders of woods.



Curled dock
(*Rumex crispus*)

Also known as yellow dock, narrow-leaved dock, or common dock.

When Wade Batson was growing up in the South Carolina mountains around Marietta, his mother would fix the children a pot of greens and say, "Well, I have thirty-three different plants in there."

Usually one of those plants would be dock, which he says is called sour dock in the country. He still eats it almost every spring, mixing it with poke or whatever other vegetable he can collect from the fields.

Dock should be gathered in the early spring when nights are still nippy and the leaves still young and tender. They can be boiled ten or fifteen minutes or used fresh in salads. Later in the spring or summer it must be boiled two or three times to remove bitterness. Dock can be fried in hot grease or mixed hot with onions, horseradish, sour cream, and bacon and spread on toast.

As a folk remedy, dock was credited with purifying the blood, tightening loose teeth, and sharpening vision. According to Euell Gibbons, this was more than superstition. Dock contains more vitamin C than orange juice and four times as much vitamin A as the famous A source, the carrot. In the pre-refrigerator days, winter diets consisted almost entirely of dried and salted foods, causing a deficiency of vitamin C (ascorbic acid) which eliminates impurities (thus "purifying the blood") and combats scurvy. A symptom of scurvy is soft gums and loose teeth. Likewise, the body uses vitamin A to form an essential pigment in the retina of the eye. So the old "folks" were right, after all.

In late summer and fall, the flowering stalks of dock make lovely dried arrangements, but the seeds, as close relatives of buckwheat, can be used to make flour. Boiling water poured over the halved roots makes a medicinal tea, which acts as a gentle laxative.

Curled dock is just one of about fifteen edible docks found in South Carolina. "The genus of dock is *Rumex*," says Batson, "and small representatives of the genus are commonly called sorrels, sheep sorrels, and sourgrass. In early spring, an unplowed field may look red or blue. The red sorrels have small fleshy leaves and a pleasant taste. One family I know uses sorrel in pies as a substitute of rhubarb, a close relative."

Docks are found most commonly in fields and waste areas.



Greenbrier
(*Smilax*, various species)

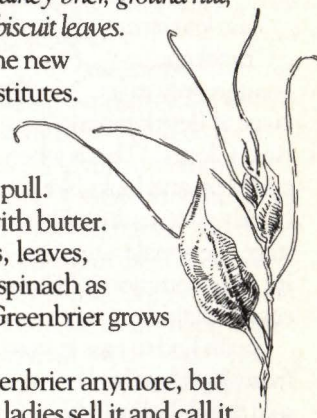
Also known as catbrier, bullbrier, chainey-brier, ground nut, saw brier, pickly bamboo, China brier, biscuit leaves.

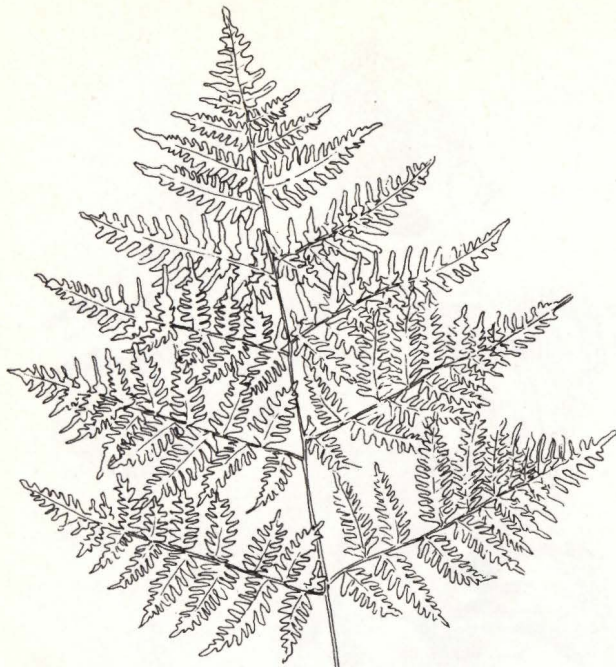
John Reid Clonts recommends the new shoots of greenbrier as asparagus substitutes. In late spring and early summer, when greenbrier is producing its longest shoots, grab the ends and pull. Cook them like asparagus and top with butter. They're delicious. The young shoots, leaves, and tendrils can also be cooked like spinach as a potherb or served fresh in salads. Greenbrier grows in thickets or open woods.

"Almost nobody knows about greenbrier anymore, but in the Charleston Market, the older ladies sell it and call it chainerberries," Dr. Batson says. "They'll have shoots bundled up like asparagus and that's the young shoots of greenbrier."

Batson says the roots are built up with fiber cells and people crush them in cold water to separate the starch from the fiber and make a powder to use as a gelatin substitute. Naturalist William Bartram, in his 1791 "Travels through North and South Carolina," watched the Indians in this process. After straining out the fibers and pouring off the water a couple times, the Indians had a fine red powder, used to thicken soup or make bread and jellies.

Making the powder is a lot of trouble when you can buy gumbo or gelatin, but the young shoots are highly recommended, and their price in an open field compares well with the grocery store charge for asparagus.





Bracken
(*Pteridium aquilinum*)

Also known as "Bracken," is eaten only in its stage of development," says John Reid Clonts. "This is when the plant is still curled up and looks like the head of a fiddle or an eagle claw. Nearly all ferns are edible, but most are bitter even in this early stage. Personal tastes vary, but I think bracken is very good. It's most common in the sand areas of South Carolina's coastal plain."

Japan had to pass laws to protect the bracken plant because so many Japanese had been eating it. Clonts says it is canned and sold as a delicacy in New England, but the demand isn't as great here in the South.

It is recommended that bracken be cooked before eating. The tender part of the stout stalks are picked when six to eight inches high. After the wooly covering is rubbed off, the stalks are washed, bunched like asparagus, and boiled or steamed in salty water until tender (thirty to sixty minutes). Then they are seasoned with salt, pepper, and butter or cream cheese. Serve it on toast. Bracken can also be broken into short pieces and cooked like string beans—alone or mixed.

"Bracken is reportedly poisonous to cattle when it gets old," Clonts says. "Humans probably wouldn't eat it in this stage anyway as it is dry and tough. Though not presumed to be poisonous to humans, excessive eating of bracken is thought to cause stomach cancer."



Violets
(*Viola*, various species)

Dr. Wade Batson takes his botany classes on field trips every Friday.

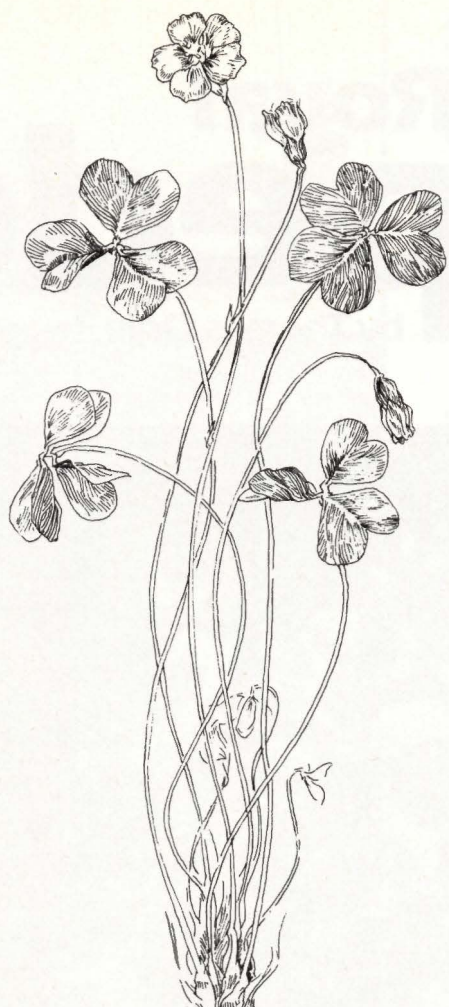
Each spring, when he sees his first violet, he surprises the class by eating it. "I tell them to put the tender young leaves and flowers in a salad," he says. "The leaves are good boiled for ten or fifteen minutes like greens. Since they are mucilaginous (slick like okra), they can also be used as a soup thickener." Like most dark greens, violet greens are said to be slightly laxative. The plant is very rich in vitamins A and C.

A wild violet might be too pretty to pick, particularly if it's not caught in a large crowd of violets. If you just pick the blossoms, however, the plant will produce more flowers, and you haven't harmed it. To make violet jelly, Eileen Jacques says you need a whole hillside of violets and a bunch of children to sit on the hill and pull petals off—that's what she had. She needs at least a quart of petals to make five or six pints of jelly. Though it's pretty and has a delicious, delicate taste, she says the petals are so small that making jelly isn't worth the work except for its novelty.

Mike Farmer uses the following recipe for violet jelly: Put one pint of violet blossoms in a large jar, cover with two to three cups boiling water, allow to stand twenty-four hours, strain, and discard blossoms. To two cups of this infusion, add the juice of one lemon and one package of powdered fruit pectin. Bring this just to a boil, then add three cups sugar. Bring back to a boil and boil for two minutes. Pour into jars and seal.

Pretty sugared violets (and also roses) can be made by cooking two cups sugar, one-half cup water, and a dash of cream of tartar until the sugar grains. Dip the fresh blossoms, without stems, into the sugar and place on waxed paper to dry. Farmer says these violet candies are served in fancy restaurants of New Orleans, as substitutes for after-dinner mints.

The marsh blue violet and the common blue violet are found in damp areas, the birdfoot violet in sandy fields and slopes.



Wood-sorrels
(*Oxalis, various species*)

Also known as *sour shamrock*. Mistakenly The sweet stems leaves of wood-sorrel long been popular with mountain climbers as a warm day.

Dennis Gunter says wood-sorrel has a delicious sour taste and loses a lot of flavor if you cook it. "Just wash it and eat it raw. A lot of people use it in a salad. Sour-grass is real common in hardwood forests around here and most common in the Piedmont."

When adding to a salad, it should be used in small quantities because of its oxalic acid content. Gunter says excessive consumption may inhibit the body's absorption of calcium. Biologist Doug Rayner, who began eating wood-sorrel in New Hampshire, says collecting it in the city is dangerous because of the accumulation of lead, pesticides, and animal wastes. It is found in dry, open, sunny places.

"Besides enhancing salads, wood-sorrels serve as a poor man's lemonade," Dr. Batson says. The leaves can be boiled for ten to fifteen minutes and the resulting beverage is cooled, strained, and flavored with honey or lemons.

grass, called *clover*. and sour have hikers and refresher on



Rose
(*Rosa, various species*)

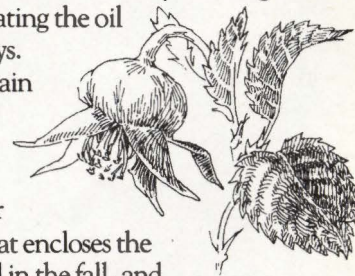
Also known as *sweetbrier* (*Rosa eglantheria*) and *pasture or Carolina rose* (*Rosa carolina*).

John Reid Clonts highly recommends adding rose petals to salad, if only for looks and vitamin C. These blossoms can also be picked in the summer and candied like violet petals. Dip each petal in a mixture of one egg white and one tablespoon water. Drain on a paper towel and, while still damp, sprinkle with sugar. Shake off excess sugar and dry on wax paper for twelve hours. These pretty candy petals covered in the refrigerator will keep for one month.

Magical and medicinal properties have been attributed to rose water for centuries. It was formerly used in baptisms and Persian women mixed rose water in their husbands' food to keep them faithful. Euell Gibbons says the Arabs could turn an ordinary chicken into a bird-of-paradise by glazing it with a mixture of one tablespoon rose water, two tablespoons melted butter, and three tablespoons honey. Pharmaceutical companies use rose water today to lend its fragrance to certain ointments, according to Pat Wooten, a pharmacist in Florence. It is made by distilling fresh roses with water and then separating the oil from the clear water, Wooten says.

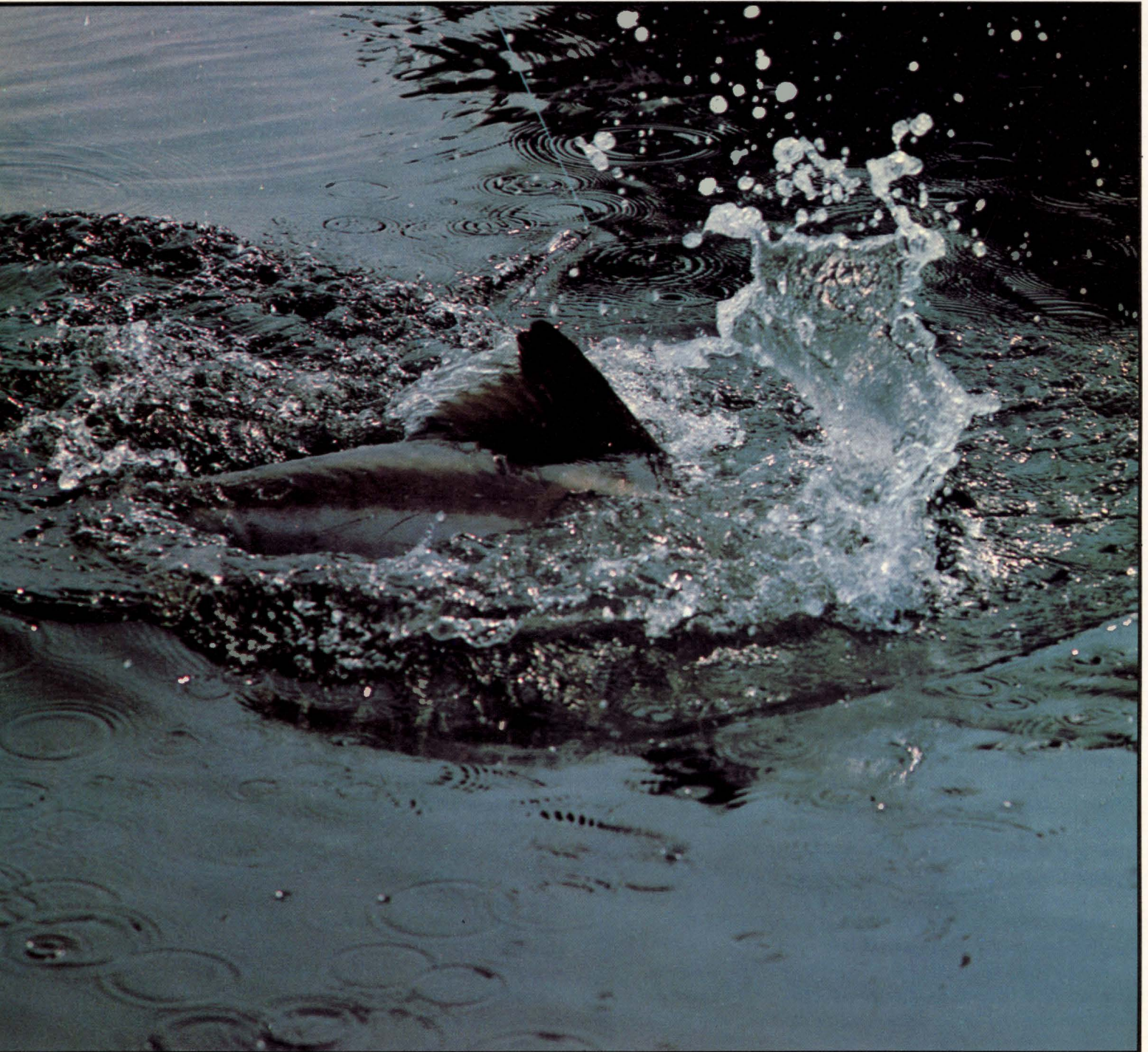
Many vitamin C tablets contain rose hips as their natural source of the vitamin. "The hip is the fruit of the rose," says Clonts, "which develops in later summer and fall as a swelling that encloses the seeds. They are usually gathered in the fall, and can be dried and saved. Simply crush the fruit, fresh or dry, and steep several minutes to make tea. A cup of rose hip tea has considerably more vitamin C than orange juice. Mixing rose hip with hibiscus flowers enhances the flower, making an excellent purple tea. Sweeten with honey or sugar."

Jelly, jam, or syrup can also be made from rose hips or petals. You can find them around old homes, in pastures and clearings, or in most gourmet shops.



The Port Royal **Torpedo**

by Thomas Ogle





**For the small boat angler,
the cobia's lightning attack
on the bait and streaking
run rival the deep-water
thrills of marlin fishing.
It's happening now
in Port Royal Sound.**

Surfacing fifty feet astern, the big fish swirled and charged the baited eel that dangled just beneath the float. The leading edge of dorsal fin caused a white froth as its body sliced through the slack tide of a stifling hot Port Royal afternoon.

Frozen with excitement, I could only watch as the seconds before his strike seemed to slow into minutes. Part of me wanted to yell, "Shark!" but experience told me it was a cobia.

The body was an almost perfect hydrodynamic shape. The tail was broad and handsome. Elongated pectoral fins cut the water like knife blades behind a flattened catfish-like head. In the micro instant of the strike a glimpse of chalk-white belly flashed beneath the dull reddish-brown back.

Quick as thought, the cobia smashed the bait and sounded. Driving deeper and deeper, it turned away from the boat in a roaring surge. The hook was already set when I jerked the rod from its holder. The drag's high-pitched squeal and the loud wail of line bracing the wind warned that this was just round one. The cobia remained strong as line stripped off the reel. For an instant, as I strained against the bucking rod, I feared that its run would never stop.

Round two began as the fish swung in a wide arc around the boat. Its circles became increasingly smaller as it grudgingly acknowledged the pressure of the rod. I had gained the upper hand. At last it passed under the gaff of my boat mate.

Cobia provide fast bruising action. One of these light-heavyweights can fight with the

spirit of majestic big game like marlin. The fish hits bait like a charging freight train and just doesn't stop. He is sought for his fight as well as his meat.

The salt marshes of Port Royal Sound between Beaufort and Hilton Head Island are one of our coast's most productive cobia areas. These marshes of spartina grass are cut by a labyrinth of unending tidal waterways and creeks. Broad River threads a lazy path through this fertile sanctuary, passing the Marine Corp training camp on Parris Island to join the Beaufort and Chesapeake River and spawn Port Royal Sound just four miles from open sea.

This region of South Carolina's Lowcountry is one of the richest unpolluted salt marsh estuarine systems left on the East Coast. The clean water supports an abundance of crustaceans and fish, which probably account for the high concentration of cobia congregating in the sound each spring. Cobia season begins in late April, with charters from Hilton Head Island often scoring first around the offshore buoys as surface waters approach 67 to 69 degrees Fahrenheit. Local cobia experts like Jack Skinner of Lady's Island have noted that as inshore waters approach 70 degrees Fahrenheit, the fish move into the sound in even larger numbers. Local fishermen believe cobia come in to spawn in the estuaries.

Solid scientific information on the life cycle of cobia is skimpy, however. Marine biologist Don Hammond of Charleston is studying the fish and is rapidly plugging up the gaps. Working for the Division of Marine Resources of the state wildlife department, Hammond has collected small cobia, one to two inches long, in estuaries and marshes. He has never found cobia eggs in these waters, however. Eggs and larval cobia are found out at sea, even in the Gulf Stream waters, which suggests that spawning takes

Broad River cobia, like the one at left and the other being brought to gaff above by Dan Upton (left) and Jerry Dyer, seem to prefer live eels as bait.

place well offshore. Hammond's studies indicate that the spawning grounds are near the edge of the continental shelf.

Spawning groups of twenty to over one hundred adult cobia depart the inshore areas around mid-May and throughout the summer. Spawning peaks in June and July. The eggs hatch in a day or two. As soon as the larvae can swim, they move inshore. The young grow rapidly on microscopic animal life (zooplankton) in the rich estuarian waters, graduating to shrimp and crabs. By the time declining temperatures of October and November prod them to leave the marshes, the young cobia have become eight to twelve inches long.

These juveniles migrate offshore by some yet-to-be-discovered mechanism of navigation and join the adults in the deep wintering grounds. They stay close to the bottom until pre-spawning urges bring them inshore again to visit surface waters on a regular basis. When they return is the time for some unforgettable angling.

Polled for their opinion of the best cobia bait, Lowcountry anglers would undoubtedly respond, "Live eels." Eels of eight to fourteen inches are used most extensively and probably most successfully. The lowly sea catfish, however, is also an effective live bait. The current South Carolina record of 82½ pounds was caught on a catfish in Port Royal Sound on May 23, 1975. Small bluefish, menhaden, and probably any other live baitfish will also work. Fresh cut herring are less appreciated, but I have seen them out-fish eels on occasion. Jigs, spoons, and swimming lures also take a few cobia when worked around offshore buoys. But if a single bait has to be chosen, make it live eel.

Try several baits at the beginning of each day, but never set up without at least one eel rig. Eels are relatively expensive at a buck or more apiece, but they are hardy and will usually live until a fish takes them. They even withstand some ferocious shark attacks. More than once I've returned two tides later to find baited eels swimming strongly in the live well.

I use tackle suitable for twenty-pound line. Large capacity bait-casting and saltwater spinning reels mounted on seven-foot boat rods of medium action provide good sport. Although cobia lack teeth, I prefer to rig a single-strand

wire leader at the end of my line. One end is attached to a three/aught black barrel swivel with a haywire twist and on the other end is wired a long-shanked seven/aught or eight/aught hook. A length of thirty to thirty-six inches makes the best trade-off between handling ease and protection from sharp gill plates and abrasive hide.

Bait the eel by driving the barb up through the lower jaw and out one eye. Hooked in this manner, the eel maintains a natural undulating swimming pattern which arouses the large predators to action. If hooked through the middle, the eel cannot swim properly and soon dies.

At least three rigs are set out. With one the eel is positioned by a float about two feet beneath the surface. The second rig is floated about six to ten feet deep. The third should try cut bait lowered to within one or two feet of the bottom.

Cobia often seek shelter from the sun. Check nearby buoys for lurking fish, but don't forget the shadow of your boat. Always use a live bait near the surface, especially in the shade of the boat's hull. The fish may move in, seeking shade under an anchored boat, and find the eel secondarily.

That was the situation, in fact, of my first cobia strike. I brought in a line to change the depth of the float. The eel dangled next to the gunwale with my rod draped across my lap as I worked. A cobia exploded from under the hull and took off with the eel, like a fox from a henhouse. I latched onto the rod just before it clattered overboard. This fish did not stop his initial charge until the hook ripped out of his mouth. Round one, fight over.

Keep the reel in free-spool or, in the case of a spinning reel, use a minimal drag setting. The idea is to let the fish take line without feeling resistance. Let it run. There is only one hook, so give it a chance to reach that hook. More cobia are lost by trying to slam the hook home too early than for any other reason. This type of effort usually succeeds only in yanking the eel away from the cobia or in tearing out the hook. Don't react too hastily, just let it go.

By letting it initially take the bait, you'll hook it deep in the throat and have it—unless the knot gives. It's hard to sit there watching the

Photography by Ted Borg

spool wobble precariously, threatening to spin off its shaft. But this is the most important aspect of cobia fishing.

After the initial run, the cobia will stop long enough to swallow the bait. As it takes off again, slam the reel in gear and strike. Cobia will put an awful strain on the line. I usually set the drag on ten to twelve pounds at this stage of battle and lessen it as the fish approaches boatside. If it decides on a last-effort roll, a snubbed-up drag might tear the hook out of its mouth or break the line. You can bet the fish will try at least one such maneuver.

A good way to catch cobia is to hunt it. This is an exciting sport in its own right. During a slack tide, cobia often swim just beneath the surface, with the water barely rippling over their backs. Occasionally the dorsal actually protrudes, but usually only a slight turbulence is visible. The wind must be down and the sea glassy smooth to hunt cobia. When you spot one, slip anchor, motor over cautiously, and cast an eel or live bait-fish ahead of the fish. The line should be weightless, without a float and drag off. If you're on target, the lithe raider will shift into a roaring surge, inhale the bait, and head out to sea.

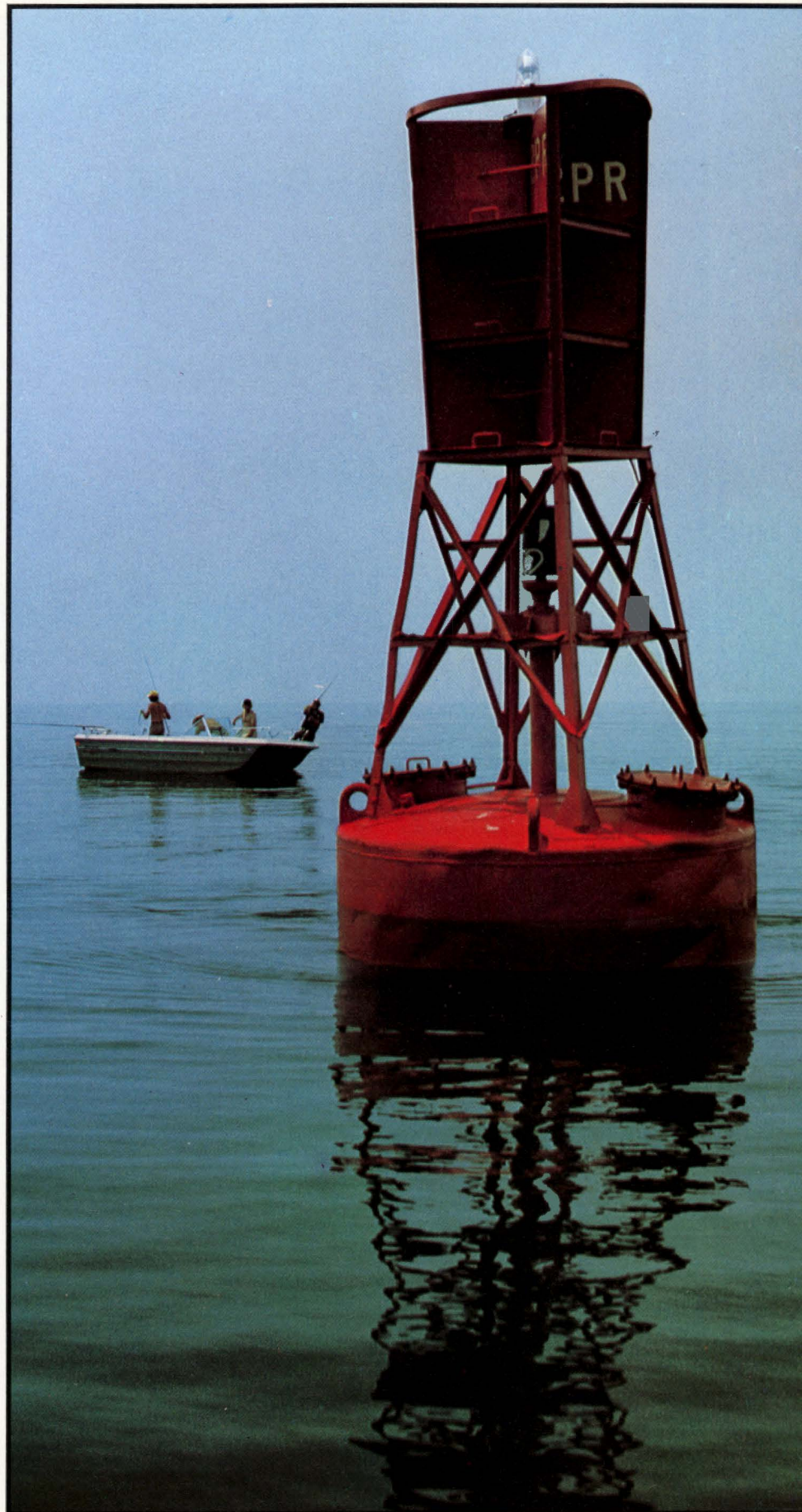
I once watched a cobia swim unnoticed just a few yards from the baited lines of a pod of anchored float fishermen. Jack Skinner, a local cobia expert, spotted the fish breaking water. Skinner motored over and interceded with well-placed cast. The neophytes scratched their sunburned heads as the old salt held fast to the forty-five pound torpedo.

"I anchor with a running tide but slack tide is when I start to move," says Skinner. This strategy has won him fame as a guide along the South Carolina coast.

Cobia are there for those who know how to look. Set out several types of bait and try various depths. Anchor with the running tide and fish at least one rig as near the boat as possible. At slack tide, as the surface becomes glassy smooth, slip anchor and drift or motor slowly, watching the surface for the slightest ripple. This is the method that distinguishes the ten percent of the anglers who consistently bring home ninety percent of the cobia. 🐟

Thomas F. Ogle is an associate professor of physiology at the Medical College of Georgia.

While most anglers fish one bait near the bottom and one just beneath the surface, many large cobia have been taken in the shade of buoys and the angler's boat.





Sun caresses the black, mirror-like water of Boykin Mill Pond, gradually dispersing the gloom of summer's night. Mists curl around the flooded remains of century-old cypress and black gum trees, standing forlornly in the pond, silhouettes against the reddening stain of morning.

Towering loblolly pines at the water's edge cast shimmering reflections disturbed only by the rippling swirl of a large bass or the winding trail of a water snake. A great horned owl glides silently above, yellow eyes searching for one last morsel before it returns to the swamp.

Just offshore amid a confusion of moss and lily pads, a twelve-foot bull gator floats lazily at the water's surface. A flick of powerful tail pushes it a few feet through the water toward a number of white ibises standing in the murky shadows. Hurriedly, greedily, their long, down-curved bills disappear into the water again and again as they drink. Sensing danger, they take wing and sail into the swamp.

They are the first in their colony, indeed in the awakening rookery, to begin the day's forage for food. Hundreds of short-legged, short-necked cattle egrets, all nesting in the same tree, explode into the pale sky. Gathering in flight, they wheel toward nearby open fields to feed on insects flushed from the grass by livestock. Their rough, bark-like calls fill the air. Downy nestlings,



the Birds of Boykin Mill

For well over a century, the pond served as a center for its community. The clatter of wagons bearing goods to the mill and gin and the singing of hymns at the church have given way to that of elegant wading birds and other wildlife rearing their young.

Wading birds like the little blue heron at left return spring after spring to nest in the sanctuary of Boykin Mill pond.

by Virginia L. Barnette

illustrations by Kay Jackson



LEONARD LEE RUE III

sensing temporary abandonment, peep and cackle forlornly from nests high above.

A score of aningas have already flown a quarter mile up the slow-moving creek that feeds into the pond. Hovering over a sheltered spot, several plunge into the sun-dappled water. Their slender necks undulate hypnotically as they swim, pausing only to flip a small fish into the air and gulp it down.

Picking his way daintily over the pond's marshy bank, a little blue heron snatches up a small twig. His mate will add this to the low pile of sticks and grass slowly becoming their nest. A flock of large great egrets flap skyward. With low-pitched croaks, they climb steadily as if trying to greet the flaming yellow orb now visible on the horizon.

Boykin Mill Pond is situated nine miles south of Camden in the heart of the small community of Boykin. The pond provides a natural sanctuary for thousands of gregarious migratory birds and many other species of wildlife. Each summer approximately three to five thou-

sand white ibises, cattle egrets, little blue herons, aningas, and many others flock noisily to the site to breed and raise their young.

"The pond provides ideal conditions for the rookery because it hasn't been spoiled or exploited," says Frank Hill, charter member of the Columbia Audubon Society. "It's a completely natural habitat. The birds are undisturbed here while nesting, which is essential. They sense no intrusion from man, no danger here, except, of course, from natural predators who are part of the balance of nature."

The birds also find the pond ideal because they prefer to nest in button-bushes, black gum trees, and bald cypress trees—all of which are found in abundance here. The coolness of the site, its clear black water, and proximity to their flyways along the Wateree and Santee rivers also attract the birds. Most live on small turtles, fish, baby alligators and snakes, crawfish, and other aquatic life found in the swampy area surrounding the pond. Some, however, such as ibis, will fly twenty miles or so for their food.

During the height of spring nesting the pond plays host to a wide variety of birds including: (above center) white ibis ; (above right) cattle egret: (right) American egrets and aninga—note aninga fledglings. Yet, even in the midst of new life, there is death. An alligator (above) waits patiently to fulfill his role as predator and scavenger.

The mill pond was not built to be a sanctuary. Millwright Israel Mathis obtained a state land grant for the original tract of 440 acres on November 26, 1784, and built the pond and original saw and grist mills between 1784 and 1786. Deteriorating remains of a gin house and grist mill, at the end of a short canal leading off the pond, remind visitors of days when the site was the center of bustling community activity.

The original dam across Swift Creek flooded some 200 to 300 acres. At the end of the canal, a rotary engine, actuated by the flow of water, provided hydraulic power to operate the saw and grist mills.



TED BORG



JIM GOLLER

The will of Israel Mathis, executed on October 4, 1788, ordered his Swift Creek property sold to pay his debts. The tract was sold to others and finally came into possession of the Boykin family on February 21, 1809, when Jacob Chambers sold it to Burwell Boykin, great-great-grandfather of the present owner, Lemuel Whitaker Boykin II.

The mill site was easily accessible to the Boykin community as it was located at the intersection of two well-traveled colonial roads: the King's or Charleston Highway and Spring Hill Road. From the late 1700s through the early 1900s, farmers and wealthy planters alike traveled to Boykin to have corn ground, lumber sawed, cotton ginned and baled, and sugar cane prepared to make into syrup. They brought their horses to be shod and their wagons to be repaired by the local blacksmith, whose shop was also located on the site.

Congregating in the old commissary, which still remains, the men stocked up on flour, sugar, and other provisions for their farms. Indulging in a cigar or a "chew," they gathered around the fiery, pot-bellied stove to swap stories and discuss crops, weather, or politics.

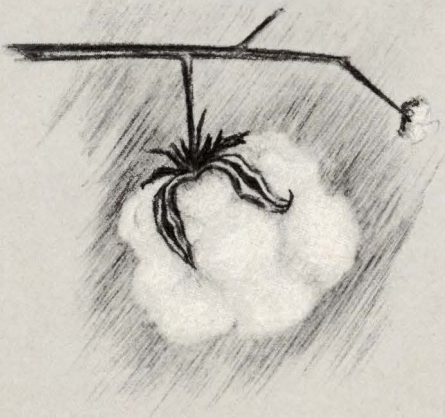
Boykin Mill was established as a mill seat in the late 1700s. Neighbors and friends met there for picnics, swimming parties, and political meetings. It was the social and religious center of the neighborhood.

Swift Creek Baptist Church, though in sad disrepair, still stands a short distance from the mill. Now used for storage, this clapboard structure of classical Greek temple



JIM COLLIER

(Left) The pond's remaining structures reflect its past as a center of commercial, social, and religious activity. The buildings now stand empty or, like the church (above), serve as storage structures.



form retains its original slave galleries.

The Reverend Lewis Collins was the church's first pastor. His tenure began in 1783 and lasted for approximately twenty years. Swift Creek originated as a branch of the High Hills of Santee Baptist Church and entered the Charleston Association of Churches in 1787. In 1803 the church organized a branch church, Mount Pisgah, about ten miles east of Camden near the Black River. As often happened, the branch became stronger than the mother church and the chief place of meeting shifted to Mount Pisgah.

Swift Creek Church minutes from 1827 to 1868 give a vivid account of how closely interwoven were community life and the church during those days. The church laid



Like many other areas in South Carolina, the tranquility of Boykin Mill remains virtually undisturbed due to its private ownership. Visitors are cautioned that access is by permission only.

down strict rules of conduct for its members. Those who did not adhere were subject to punishment ranging from a public reprimand to excommunication. Dancing and drinking were strictly forbidden. Missing church for three Sundays in succession without good cause was a serious crime. A slave who attempted freedom was liable to be excommunicated.

The minutes also paint a vivid picture of one of the most tragic disasters ever to befall the Boykin-Camden-Sumter area. May 5, 1860, dawned as a typically bright spring day. None could have foretold that a merry Saturday picnic in the grove beside the pond would end in disaster.:

“ . . . Next we record a memorable catastrophe which occurred on the Saturday before the first Lord’s day in May, 1860. A party of some 70 or 80 persons had devoted that day to recreation and amusement, meeting at the grove above alluded to. The most of them, crowding upon a flat which lay hand by, anticipating whatever enjoyment might be afforded them by an excursion upon the extensive body of water, which deep & clear as well as wide, deemed to promise them the desired gratification; and hastening to embark in the crazy craft, had not proceeded many rods from the shore when it was discovered that it was rapidly sinking. A number being able to swim, strove immediately to save the lives of others as well as of themselves. Yet notwithstanding all the efforts thus made, 25 persons, all of them in the vigor of growth or the prime of life, were thus, suddenly and unexpectedly precipitated into eternity!”

Apparently the flat boat hit a snag and began to leak. Wild panic seized the occupants, and most rushed to the other side of the craft, capsizing it. Twenty-five (some

accounts say twenty-four) people were drowned.

Five years later the tragedy at the pond was followed by an event of more national and historical significance. South Carolina’s last Civil War battle, the Battle of Boykin’s Mill, was fought on April 18, 1865, nine days after Lee surrendered at Appomattox Court House.

General Edward E. Potter left Georgetown on April 5, 1865, to destroy the railroad between Sumter and Camden. He was in command of 2,700 mostly black Union troops. He also had almost 6,000 contrabands or freed slaves traveling with the troops. “Potter’s Raid” consisted of two main battles—one at Dingle’s Mill below Sumter and the other at Boykin Mill.

The Union troops entered Camden the afternoon of April 17, 1865. Encountering no resistance, they vandalized some property but left early the next morning, marching grimly toward Boykin where the Rebels had moved all their railroad cars.

In Boykin, with equally grim determination, the Confederates were organizing their men for battle. Their militia consisted of a few soldiers home on furlough and the home guard—wide-eyed boys and grizzled old men not fit for regular duty. But the Southerners had a clever, if desperate, plan. Their right flank was shielded by the mill pond. Their center was only vulnerable in two places: the bridge along the dam and the Charleston Highway. Hurriedly, they tore all of the planks from the top of the bridge. Next they opened the dam’s floodgates as wide as possible, flooding the terrain below.





JIM COLLIER

Potter's troops charged along the dam first but found it impossible to balance their way across the bridge's trusses while under fire. Next Potter attacked along the railroad track but was soon forced to fall back again. The Union and Rebel forces skirmished the entire day, but Potter failed to carry through again and again. In late afternoon, Potter found a log about one half mile down Swift Creek over which his troops could cross. With their left flank now exposed and under heavy attack, the Rebels were forced to retreat. They disbanded four days later.

In his book, "A Compendium of the War of the Rebellion," Frederick H. Dyer lists the total casualties at the Battle of Boykin's Mill as follows: "Killed and mortally wounded, 9; wounded, 18; captured and missing, 1." Excluding rolling stock, three bags of corn fodder, fifty-four bales of cotton, one grist mill, and one saw mill were destroyed at Boykin Mill.

The grist mill was later rebuilt and stayed in operation with the gin house until 1945. The mill was then moved into the remaining gin house and operated until torn down in 1949 because of leaks seeping under the dam.

Colonel Cullen Capehart, great-great-grandson of Burwell Boykin, recalls that some of the most exciting times of his boyhood were

Spring will transform the stark silhouettes of tupelo gum and cypress into vibrant greens with puffs of white as hundreds of birds compete among the new foliage for prime nesting sites.

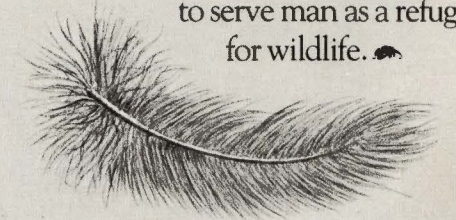
when such leaks occurred. "It was referred to as a 'boil,' because it would boil up out of the mud below the dam," says Colonel Capehart. "And apparently it was either caused by muskrats tunneling into the dam or by a tree root that had rotted and the water just followed where the old root had been."

Today the old church, gin house, and commissary, though dilapidated, remain a proud part of the Boykin heritage, a reminder of the antebellum days of our forefathers. The pond no longer supplies hydraulic power, but in today's increasingly urbanized society it serves a much more important function by providing a natural, unspoiled sanctuary for our wildlife.

Hérons and ibises framed against the blackness of the pond provides a spectacular picture as their clatter echoes through the soft stillness of a summer evening. As mist gathers over the water and crickets begin their trilling concerto, ghostly great egrets flap noiselessly overhead to settle with their young in a group of tall cypress.

In the bronze and gold of autumn, summer's nestlings will be strong enough to fly. The birds will leave for Florida, Mexico, and perhaps, South America, only to return again summer after summer. Boykin Mill Pond, once so vital to the life of its community, continues

to serve man as a refuge for wildlife. 🐾



A free-lance writer living in Columbia, Virginia L. Barnette is the daughter of Mr. and Mrs. Lemuel Whitaker Boykin II, owners of Boykin Mill Pond.



If you've always thought of the flyrod as a complex instrument designed solely for the trout fishing purist, think again. Fly-fishing equipment and techniques are fairly easy to master and the results can add bass and bream to your freezer.

Bugging for Bass & Bream

by Dick Lincoln

Lighting softly, the yellow and black bass bug settled on the dark water next to a lily pad. Jebbe Lewis, my high school companion in Carrabel, Florida, twitched it gently and there was a swirl. He set the hook and a Dog Island bass danced from the dark water. Jebbe scored a double that day seventeen years ago. He hooked a bass on feather and cork and hooked me on fly fishing.

Matching rod and line is the first step in successful flyrodding. Recommended line weights are listed on most rods. For casting air resistant poppers, a weight forward or double taper line is recommended.

Many writers complicate this oldest form of sport fishing so that only an aerospace engineer can understand it, but fly fishing can be enjoyed by anyone who can use a bait-casting or spinning outfit. Once the basics are learned, you can catch bass and bream when other methods fail.

Those who never bother with a flyrod are missing a lot of fish and a lot of fun. A flyrod holds advantages not available by any other method of fishing. Bass and bream sometimes want a lure worked delicately and slowly for the crawling appearance only a bug can give. A flyrod can also be fished in places no other topwater method can reach. You can cast it across tree limbs, into pot holes, and over lily pads without hanging up.

Most important when buying a balanced outfit is making sure the line is properly matched to the rod. Most modern

rods list their proper line weight right above the cork handle.

For bass fishing, an eight-foot six-inch rod that takes an eight- or nine-weight line works well. One that flexes almost to the handle is enjoyable, since it won't wear you out as a stiff-butted one will.

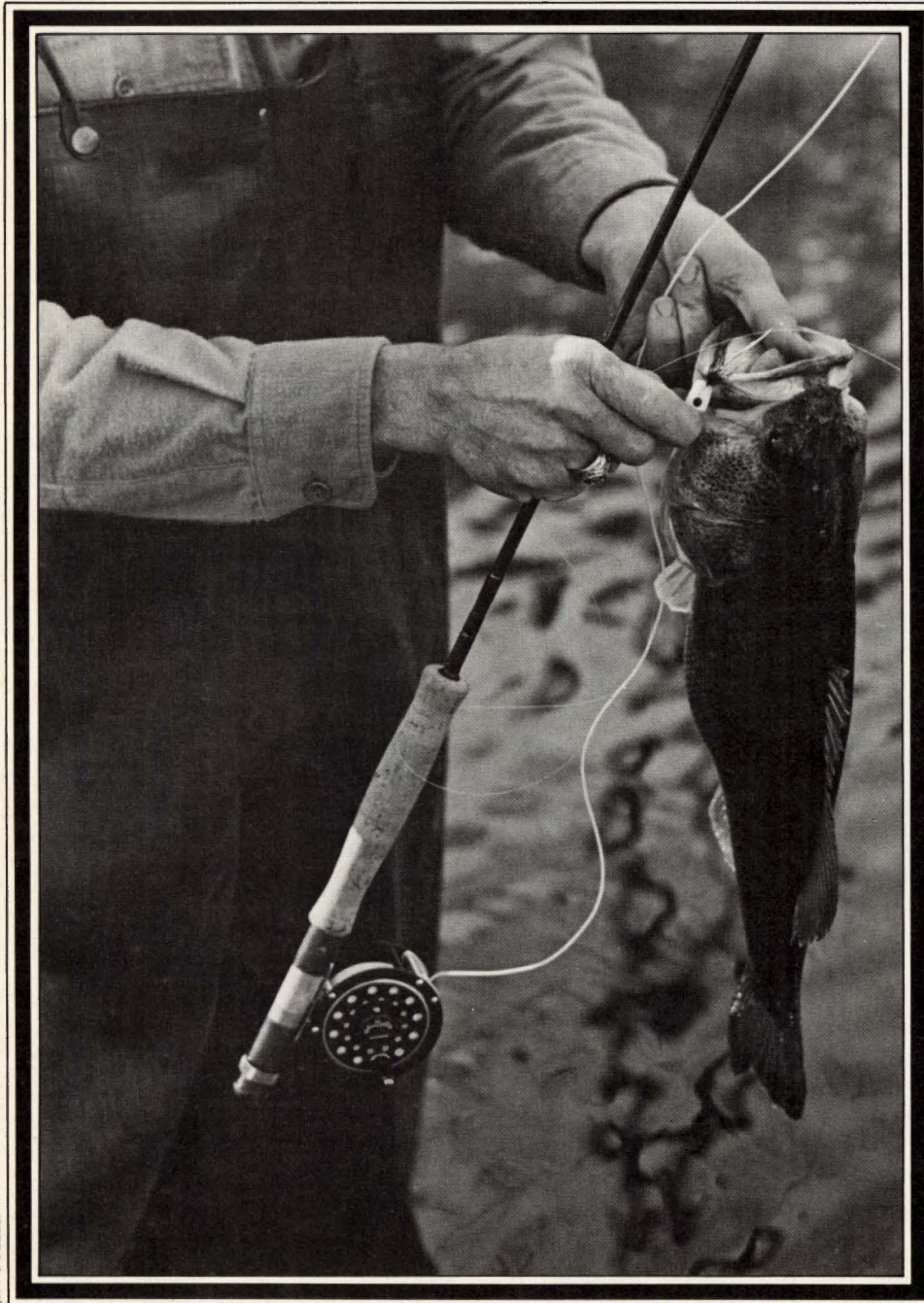
The least expensive fly line is a level one, with the same diameter and weight throughout, but it gives the poorest performance. A floating weight-forward line will be well worth the extra cost, as it makes casting poppers and flies much easier.

While some prefer automatic retrieve reels, an inexpensive single-action fly reel large enough to hold the fly line and about twenty to fifty yards of backing, such as twenty-pound-test braided Dacron line, works better. Backing isn't used by most bass fishermen, but it will increase the spool diameter, thereby cushioning the fly

line, and allow a big fish to run without the worry of taking all your line. The single-action reel is lighter than an automatic, and thus less tiring. Also, the automatic's retriever lever can be tripped accidentally, yanking in ten or twelve feet of line when you least want it to.

Backing goes on the reel first and is tied to the fly line with a nail knot. At the other end of the fly line, a monofilament leader is attached. While a five- to nine-foot piece of ten- to four-pound test is often used, a tapered leader that gets progressively smaller toward its tip is better. It will

For proper results in casting large bass poppers an eight- to nine-foot rod designed for seven- to nine-weight line is best.



turn over and straighten out at the end of the cast, placing your bug where you want it. You may tie your own beginning with a three-foot section of forty- to thirty-pound mono and working down to an eighteen-inch section of ten- to four-pound line or choose a commercially-made knotless tapering leader, such as that manufactured by Berkeley.

Tackle stores and catalogs selling bass bugs offer a tremendous selection of sizes and colors. A bug with a number two or four hook is a good beginner size, as larger sizes create more wind resistance when cast and require more casting skill. Two basic types of bug body materials are available—deer hair and cork. Cork is advised for those just starting; deer hair bugs are effective but seem to float best when you want them to sink and vice versa.

Buy your first bugs in three basic colors. Select one with a yellow body and tail, one with a white body and tail, and one with a white, yellow, or frog-spotted body and a yellow-barred tail. Red-head with white body and tail are also effective. Yellow seems to be the best color in dark water and white the best in clear. Rubber legs in the cork body can add a tantalizing wiggle.

Like other topwater lures, bass bugs work best in three- to six-feet of water. When working the bug, always use both hands—one for the rod and one for the line. Cast the bug to a likely spot and try the following basic retrieve: Hold the rod tip close to the water and let the bug sit still for twenty or thirty seconds. Barely twitch the bug with a short twitch of your line hand and let it sit still again for a few seconds. Then twitch it slightly and pause again. Next, wiggle the bug quietly for about a foot over the surface and pause again for a few seconds. If a bass hasn't taken it yet, give it a couple of hard twitches so that the bug makes a gurgling, popping noise.

If you still don't get a strike, cast to the next spot. If you catch several on one part of the above retrieve, begin emphasizing that movement in each cast.

Bass usually prefer a quiet, subtle retrieve, but there are times when the noisier a popper is worked, the better. I noticed one day that every bass I had taken had hit at the end of the retrieve when I popped the bug hard. I began casting next to the edge of the grass and working the

bug in a series of rapid, loud pops. I caught and released fourteen fish with this unusual retrieve and could not raise a strike any other way.

When a bass takes the bug, set the hook by lifting the rod sharply while pulling downward with the line hand. Catch the line under your rod hand's index finger so that the fish can't easily take it out again. Reach up near the first guide with your line hand and strip in more line, repeating the process until the fish is in. Don't worry about losing a big fish unless you're using an extremely fine leader. The rod's limber action will aid in playing the fish. When a lunker sucks down your bug, your first job is to keep him away from the brush. Get him into clear water and hold on until you can bring him in.

The flyrod bass fisherman also has the skills to fill a stringer with bream. This spring I was fishing the edge of a farm pond with a bass bug, when a bream big enough to get the number two hook in his mouth took the bug. The next cast brought another tremendous bream strike. I switched to bream bugs and put fifteen bream of almost a pound each on the string before going back to bass.

Bream bugs that work best are size six and eight versions of the bass bugs already described. If you fish mainly for bream, try a rod designed for six-weight line and use leader material in the four- and six-pound range. This lightweight equipment will let a scrappy pond bluegill put up quite a fight but is heavy enough to handle the occasional largemouth that may take your small bream poppers.

South Carolina is absolutely loaded with small ponds and streams, most of which contain bass and bream. These are the best places to learn to fish with a flyrod. The stumps, treetops, lily pads, sawgrass, and other cover give you the chance to fish many kinds of structure in a short time. Some can be waded, but most ponds are too deep and muddy-bottomed. A small lightweight johnboat or canoe that can be

pushed by an electric motor or paddled is ideal for flyrodding on ponds where a quiet approach is essential for success.

Work around the edge of the pond first. Cast your bug as close to the edge as possible and work it carefully. Pay particular attention to small coves in the bank or to corners. If you come to a fallen tree or log, work the bug along it carefully. Other particularly likely spots are under overhanging tree limbs. At the shallow end of the pond, brush stumps, logs, or weed beds should be tested, even if they are some distance from the bank. If you have no luck with one bug, try a different color. My favorite is the frog body with the yellow-barred tail and rubber legs.

Small streams also offer opportunities for the flyrod. While some stream anglers prefer a shorter seven- to seven-and-a-half-foot rod because of overhanging trees, these shorter rods are more difficult to cast than the eight- to nine-foot rods.

As in ponds, you can wade or fish from a boat, but again quiet is essential. Move upstream instead of down, as fish usually face upstream and any disturbance you make will be carried away from water you haven't yet fished, but either upstream or downstream fishing will work. Many of the stream structures you fish are similar to those in ponds. Fallen trees, stumps, undercut banks, overhanging limbs, places where feeder creeks enter the main stream, and quiet eddying pockets or sloughs are the most productive.

The current in a stream calls for a different method of working the bug. You don't have as much time as in a pond, because the current quickly carries your bug past a fishy spot. Cast above the place you think holds a fish and let the water carry your bug over him. Work the bug gently as it passes over the spot, then recast and work that spot again.

Largemouth bass and bream in streams tend to avoid the heavy current. They prefer a protected place on the edge of the current where they can watch for food without fighting the flow.

Stream fishing is generally less consistent than pond fishing because the fish are so particular about water conditions. High water will scatter them throughout the flooded bottom and low water may cause them to seek deep holes.

But if you catch a stream at the right time, you can have a ball with fish whose muscles are tempered by the moving water. Whether you choose stream, pond, or the shallows of our reservoirs, a flyrod will bring more strikes.

Fly fishing for bass and bream is also a beautiful, peaceful way to fish. A flyrod gives you more direct contact with the fish and his environment, and you'll probably find that the rhythmic act of casting a flyrod can add pleasure to even a relatively fishless day.

Dick Lincoln is the pastor of Shandon Baptist Church in Columbia. This is his first free-lance article.



Those who prefer bream fishing should consider a light rod designed for five- or six-weight line to get maximum casting ability and action from the feisty panfish.



The Adaptable Bandit

At first glance, he appears docile and cuddly, the perfect candidate for an impish, loving pet. In reality the raccoon is an intelligent, formidable predator ready to take on all comers.

by Marty Sorrow

Never pass a hollow log without looking inside. You may find yourself face-to-face with a sharp-nosed, burglar-masked raccoon with wide dark eyes and rounded upright ears. Maybe you've watched one innocently wandering along a creek poking here and there with its hand-like forepaws, picking up and puzzling over every item it finds.

Such experiences with the raccoon give an impression that it is an appealing, cuddly animal. Animated cartoons and anthropomorphic nature writings have depicted the raccoon as a lovable little rascal of the woodland. Nothing is further from the truth. Raccoons can be unbelievably vicious. Even if captured when young and full of mischief, with maturity they become so ornery and obnoxious

Marshes, swamps, and streams are among the raccoon's favored feeding habitats. Contrary to popular belief, they do not have to wash their food before eating.

they are usually released.

Those who have tried to keep the raccoon as a pet can tell accounts of broken china, glassware, ransacked cupboards, chewed and torn furniture, faces, fingers, and hands. The sharp teeth and claws, surprising quickness, and strength make it a formidable adversary for the unsuspecting owner. Another hazard, particularly with wild raccoons, is the possibility of rabies. (See page 61.) Any wild animal that appears sluggish or friendly should be avoided.

The first settlers were impressed by the raccoon's resourcefulness. One early colonist claimed to have seen a raccoon fishing for crabs with its tail. Not surprisingly, settlers soon became more interested in the raccoon for its thick warm fur. The pelts became so valuable they were used as currency and status symbols. Chief Powhatan is credited with owning the first "raccoon coat" as a mark of his power and authority. Davy Crockett's trademark has become his coonskin cap with the distinctive ringed tail dangling down the back.

This was not only decorative but practical, because the soft tail protected the neck from cold, bitter winds.

Many raccoons were caught by fur trappers during these early years as the fur was both durable and waterproof. Raccoon coats were popular on many a college campus in the 1920s where a large prime hide brought up to \$15. Once the coats were out of fashion, there was a sudden drop in prices and thus a decline in the number of raccoons trapped.

Fur trapping does not seem to have had a detrimental effect on the raccoon population. Naturalist Ernest Thompson Seton estimated that five million raccoons were present in North America when the settlers first arrived here. The best estimate is that about the same number exist now.

The hardy raccoon is found throughout America, Mexico, and parts of Canada. They are quite prevalent here in South Carolina, especially in the coastal plain. As raccoons have always used trees for sleeping quarters and to escape danger, they prefer forested areas.

Coons are excellent climbers using sharp, strong claws to help pull themselves up the tree. They can slide down either head or tail first by digging in with their claws to slow their descent.

Raccoons prefer areas close to bodies of water—from woodland streams to the oceans, because so many varieties of food can be found there, not because of legends that the raccoon always washes its food. The raccoon was even dubbed with the scientific name, *Procyon lotor*, because lotor means "washer." For many years it was thought that the raccoon had no salivary glands and must wash its food to soften it. However, wild raccoons were rarely seen running back and forth from a stream to daintily wash off every piece of food found. Instead, the raccoon quickly pops into its mouth whatever morsel it digs up—dirt and all. Although food washing does occur in some captive animals, it is because their food is "served" to them. Therefore, they go through the motions of foraging for food by dropping it in water and feeling for it.

This washing motion is understandable if you observe the raccoon's constant movement of its forepaws. A raccoon shows amazing dexterity and uses its forefeet as a blind person uses his hands—feeling and fondling everything with insatiable curiosity. Meanwhile, its eyes and ears are alert to the surrounding area.

Although the raccoon does not have a thumb, it can grasp using its two outside claws. Stories which give credit to the raccoon's intelligence and dexterity abound. There are accounts of raccoons unlatching the kitchen door, shuffling in, and opening the refrigerator door for a midnight snack. They have opened ice chests, turned on spigots (which they never turn off), and climbed through open car windows to open the glove compartment and help themselves to whatever goodies are found inside. Ropes securing garbage cans have been found untied rather than bitten through which indicated that a raccoon can use its forepaws almost as skillfully as a monkey. One raccoon reportedly carried a bottle of whiskey out of a camper. The coon then sat down in a bear-like fashion and tugged on the cork until it popped out. What happened afterward is not known.

The raccoon's amazing manual skills, keen sight, and sharp hearing are useful in finding food. Although it is not much of a tracker, its scenting abilities are excellent. The raccoon is primarily a nocturnal animal. Hundreds of thousands of light-gathering rod cells, which equip its eyes for dim light, glow brilliant red or green when a bright light hits them. This glow often gives away the treed coon's position.

The coon hunter is a unique breed who

prides himself on fine "treeing" hounds, self-reliance, and ability to follow the dogs all night through thick woods and murky swamps in pursuit of the elusive coon.

This elusiveness makes the raccoon a challenging quarry. An experienced coon will run along rail fences or logs, circle and double back across his tracks, cross streams, climb onto drifting logs, and jump into ponds and lakes. Once in the water the coon has been known to swim out to lure the hound into deep water, then circle around, climb on the dog's head and sit there until the dog drowns. "Tapping" a tree is another trick used by the coon to throw the hounds off its scent. In this case the pursued coon hurriedly climbs a tree or merely taps the trunk with its paws. It then jumps onto a nearby tree or long limb, runs to the end of it, leaps to the ground several yards away from the "tapped" tree and takes off again. The dogs are sure they've treed the coon, and by the time they and the hunters figure out what has happened, the coon is long gone.

The raccoon has proven its intelligence in psychologist's studies, especially in mazes and multiple choice tests. They have excellent memories and quick learning abilities, both of which seem to improve with age.

Sometimes this superior intellect makes them carelessly bold. A forest ranger claims that several raccoons, curious about a group of campers around a fire, gradually edged their way closer and closer to the circle of people until they were sitting among their astounded hosts enjoying the hotdogs beside the crackling fire.



TED BORG

In early spring females accept a mate and "den-up." Males leave the female to raise the young, which are born blind and helpless. By mid-summer the cubs are fully weaned and active, but will stay with the mother throughout their first year.

Page 42:

Raccoons are excellent swimmers and often use water to escape from enemies. If cornered in deep water, the coon may circle, climb onto, and drown a much larger pursuer.



Most campers' experiences with raccoons are not as pleasant. Too often the raccoon makes a nuisance of itself by raiding campsites and backpacks, where it has a grand time plundering through food-stuffs and equipment.

A raccoon is an omnivorous creature, which means it will eat anything. Most of its time is spent ambling about searching for tasty morsels. Its menu will include shellfish, frogs, earthworms, baby birds, baby rabbits, as well as all sorts of garbage delicacies and carrion. But due to the abundance and availability of plants, raccoons have a tendency to be vegetarians. For this reason the raccoon has become unpopular among many farmers. It has destroyed crops of corn, melons, and other vegetables, scattering half-eaten portions all over the field. Coons have been feasting in this manner since the first settlers arrived in America. Captain John Smith complains in his dispatches of 1612 about the "Aroughcuns" eating up all the colonist's corn.

Eggs are a favorite food on the raccoon's list. It will climb high in a tree and stretch out onto thin wavering branches just to rob a nest of a few eggs. A frequent raider of waterfowl nests laid close to the ground, it has been observed to slice the eggs expertly in two before gobbling them up. Along the

South Carolina coast, raccoon predation is threatening the survival of the loggerhead sea turtle, already classified as an endangered species, because the raccoon relishes turtle eggs laid in the soft sand each spring.

The male raccoon begins breeding at two years of age and is openly promiscuous. The female accepts only one mate each season and is ready to breed when one year old. In early spring the male roams the forest in search of a receptive mate. Choice of mates is made by the female, and once accepted, the male will "den-up" with her for a week or so before leaving to find another. The female must raise her family alone.

After a sixty-three day pregnancy, one to six cubs are born. Only a few ounces at birth, they are blind and helpless, but fully furred. Within three weeks their eyes open and soon afterwards they begin to forage with their mother. By fourteen weeks the cubs' sharp teeth are beginning to appear and the mother weans her young. Cute and playful, they remain with her throughout the first year. Barring disease or accident, they will live about ten years.

Raccoons vary in their adult weight from the tiny three-pound specimens of the Florida Keys to the thirty-pound giants of Maine. In South Carolina the average adult raccoon weighs about twelve pounds,

is about thirty to thirty-six inches in length, including ten to twelve inches of tail.

Despite its endearing appearance, a cornered raccoon is a match for almost any large dog and has been known to take on several dogs at one time. The raccoon, like a cat, puffs up, lowers its head and snarls viciously when threatened. It fights furiously and with a quickness that seems out of character. Raccoons have few enemies as adults, although hawks, owls, bobcats, and other predators will take young coons.

Raccoons have been known to bark like a dog, squeal like a pig, or purr like a kitten. At other times they may grunt, hiss, screech, scream, or make a chirping-rattling noise like a bird. Mother coons will make soft, muttering sounds to comfort their young.

The raccoon coexists well with man. Even though it is the number one fur animal in South Carolina (19,433 hides were sold for an average price of \$14 apiece in 1978), its population is thriving. Raccoons are permanent residents along the outskirts of most cities and towns as well as in our forest and swamps.

The success of this animal is partially due to its adaptability. The raccoon tolerates a wide range of temperatures as evidenced by its presence in both Florida and Canada. Opportunistic in its feeding habits, it adapts to whatever food sources are available.

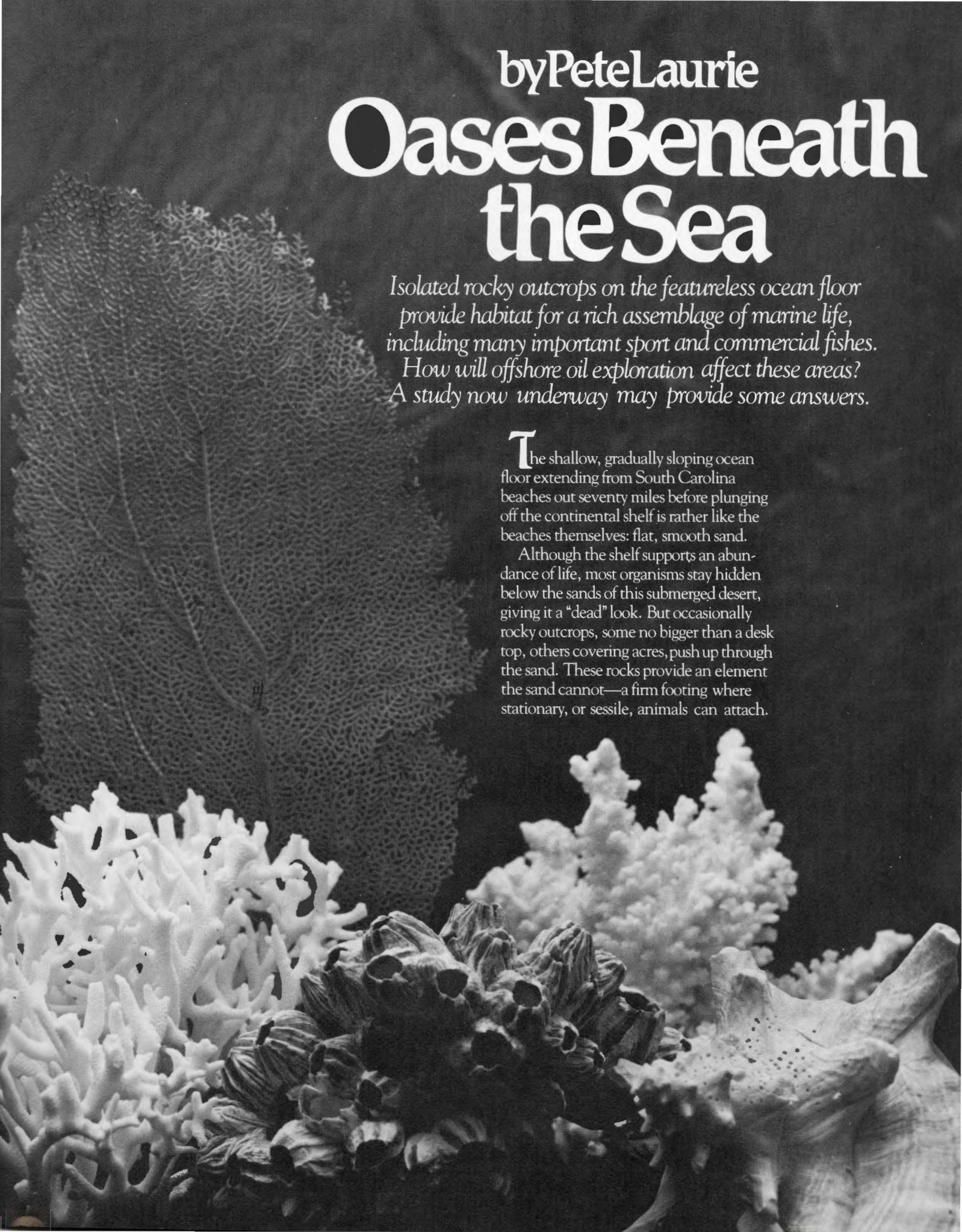
This adaptability was proven in a study conducted by the wildlife department and Clemson University. A number of raccoons were moved from the state's Coastal Plain to the upper Piedmont. Although some of the raccoons traveled great distances from their release site, most were able to adjust quickly to their new homes.

There is no need to question the future of the raccoon. We can admire these animals for their ability to adapt to many types of habitats and lifestyles. Perhaps we can learn from them too, by appreciating their strong instincts for survival. 🐾

Marty Sorrow is a mother and an EKG technician at Lexington County Hospital. She and her husband Jim, a biologist with the wildlife department, recently raised a raccoon.



TED BORG



by Pete Laurie

Oases Beneath the Sea

Isolated rocky outcrops on the featureless ocean floor provide habitat for a rich assemblage of marine life, including many important sport and commercial fishes. How will offshore oil exploration affect these areas? A study now underway may provide some answers.

The shallow, gradually sloping ocean floor extending from South Carolina beaches out seventy miles before plunging off the continental shelf is rather like the beaches themselves: flat, smooth sand.

Although the shelf supports an abundance of life, most organisms stay hidden below the sands of this submerged desert, giving it a "dead" look. But occasionally rocky outcrops, some no bigger than a desk top, others covering acres, push up through the sand. These rocks provide an element the sand cannot—a firm footing where stationary, or sessile, animals can attach.



As a result, these areas host colonies of large, often spectacular sponges, corals, seafans, and sea whips. This startling diversity of colorful lifeforms gives hard bottoms a very different look from the surrounding drab sand. These areas were long ago dubbed "live bottom." The attached animals on hard bottom provide food and shelter to other animals, such as black sea bass, snappers, and groupers, making live bottoms of considerable interest to both commercial and recreational fishermen.

The rocky outcrops generally do not rise more than a few feet above the bottom. Near the shelf edge where the water depth reaches 300 feet or more, some reefs have a relief of thirty feet or so. Other live bottoms are virtually flat.

Although live bottoms cover only ten or fifteen percent of the continental shelf, their presence, combined with the warm Gulf Stream current, allows Caribbean reef animals to extend their ranges far to the north. Many of the attached organisms, which generally have free-swimming larval stages, can trace their origins back to tropical waters.

Some live bottoms may have a thin veneer of sand covering the hard substrate. These areas often have the appearance of a park-like forest of spaced seafans and tall corals. Other live bottom areas support such a dense, tightly packed array of life that 200 or so invertebrate species may

inhabit a few square feet of bottom.

The most diverse group of organisms on South Carolina's live bottoms are polychaete worms, many of which cement sand grains together to form tubes which they attach to the rocky bottom. The tubes increase the size and height of the reefs and provide habitat for many other animals. Polychaete worms and other invertebrates play a vital role in the live bottom food chain by capturing tiny animals suspended in the water. This transforms food into a form available for many fish. Fish that are unable to utilize tiny floating or swimming creatures dine readily on the polychaetes.

Live bottoms also provide habitat for a huge number of crustaceans, most of which are small and live in the empty spaces of the attached organisms. Many crustaceans go to great lengths to camouflage themselves from predators by assuming the same bright colors of the sessile organisms or the eroded surfaces of the substrate. A member of the spider crab family, the decorator crab, places small sponges, sea urchins, and other organisms on its back for camouflage. Some crabs have developed a special pair of legs to hold their riders, while other crabs allow the hitch-hikers to attach to their shells.

Other crustaceans that associate with live bottoms are a myriad of amphipods, isopods, and other groups. Some of these animals spend their entire lives within a single sponge. Large crustaceans generally are absent from live bottoms in our area, although the spiny lobster, common off the Florida coast, occasionally wanders this far north.

A variety of mollusks inhabit live bottoms, but many are small and inconspicuous.

Gastropods, bivalves, and small sea slugs are most common. Few of the large, spectacular mollusks sought by shell collectors live on local reefs.

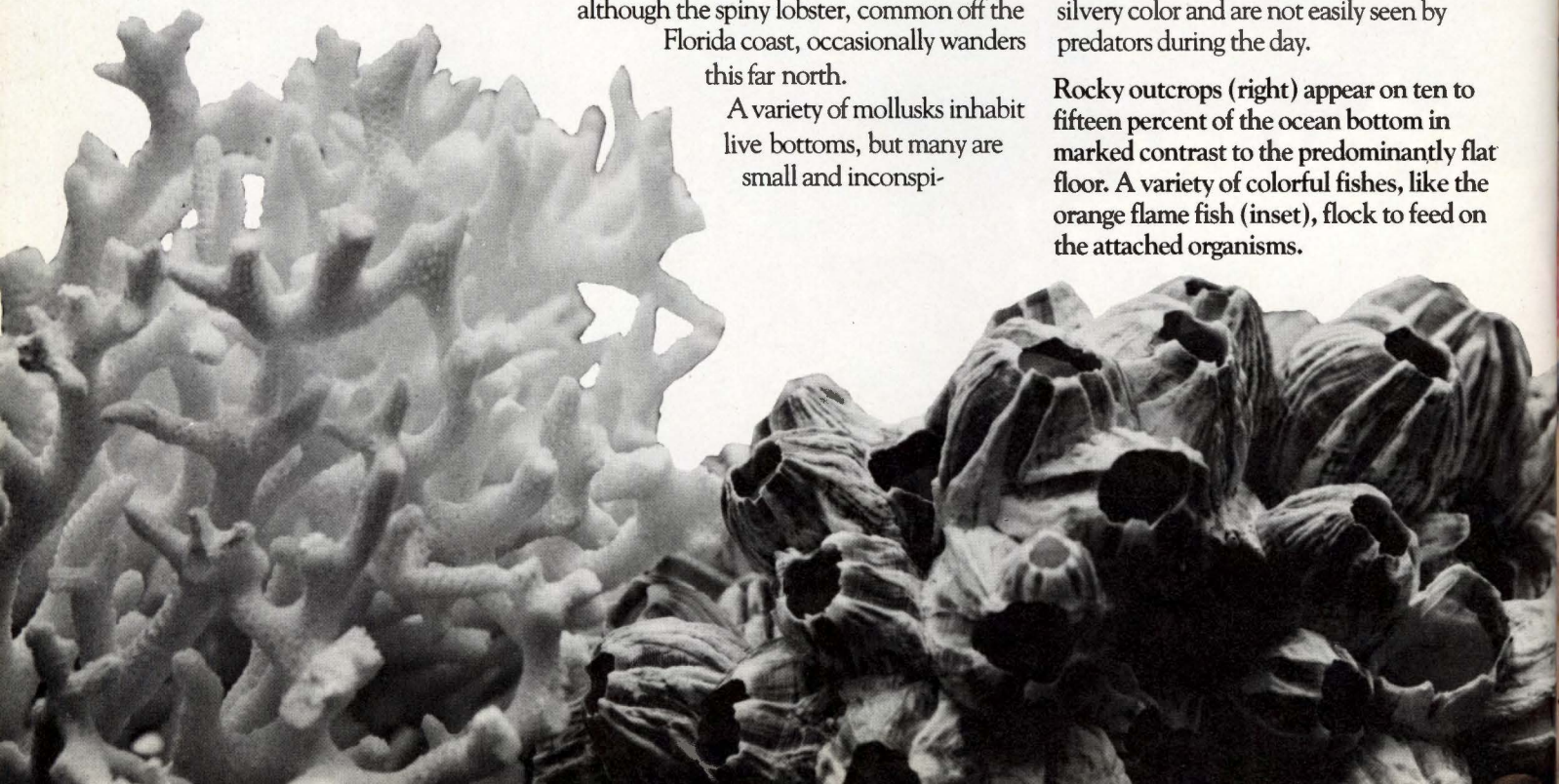
Because many of these invertebrates are small and because only a few of the many species occur in large numbers, none have any direct commercial value as do inshore invertebrates, such as shrimp, blue crabs, oysters, and clams.

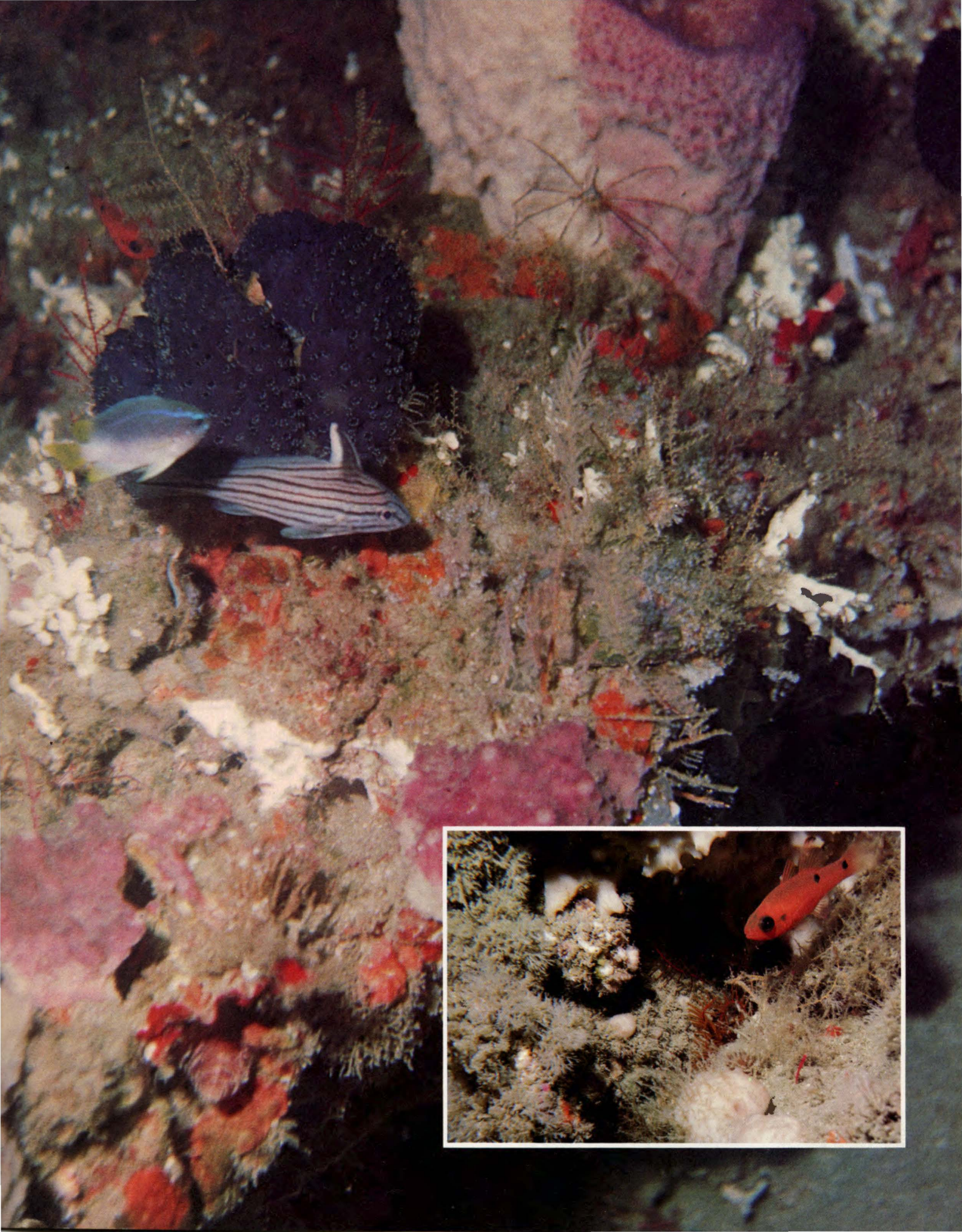
Fish inhabit live bottoms for a variety of reasons, some of which are not well understood. Certain fish are attracted to solid objects that rise above the ocean floor just as they are attracted to other fish to form schools. These fish may spend virtually their entire lives at one rock, eating whatever comes along.

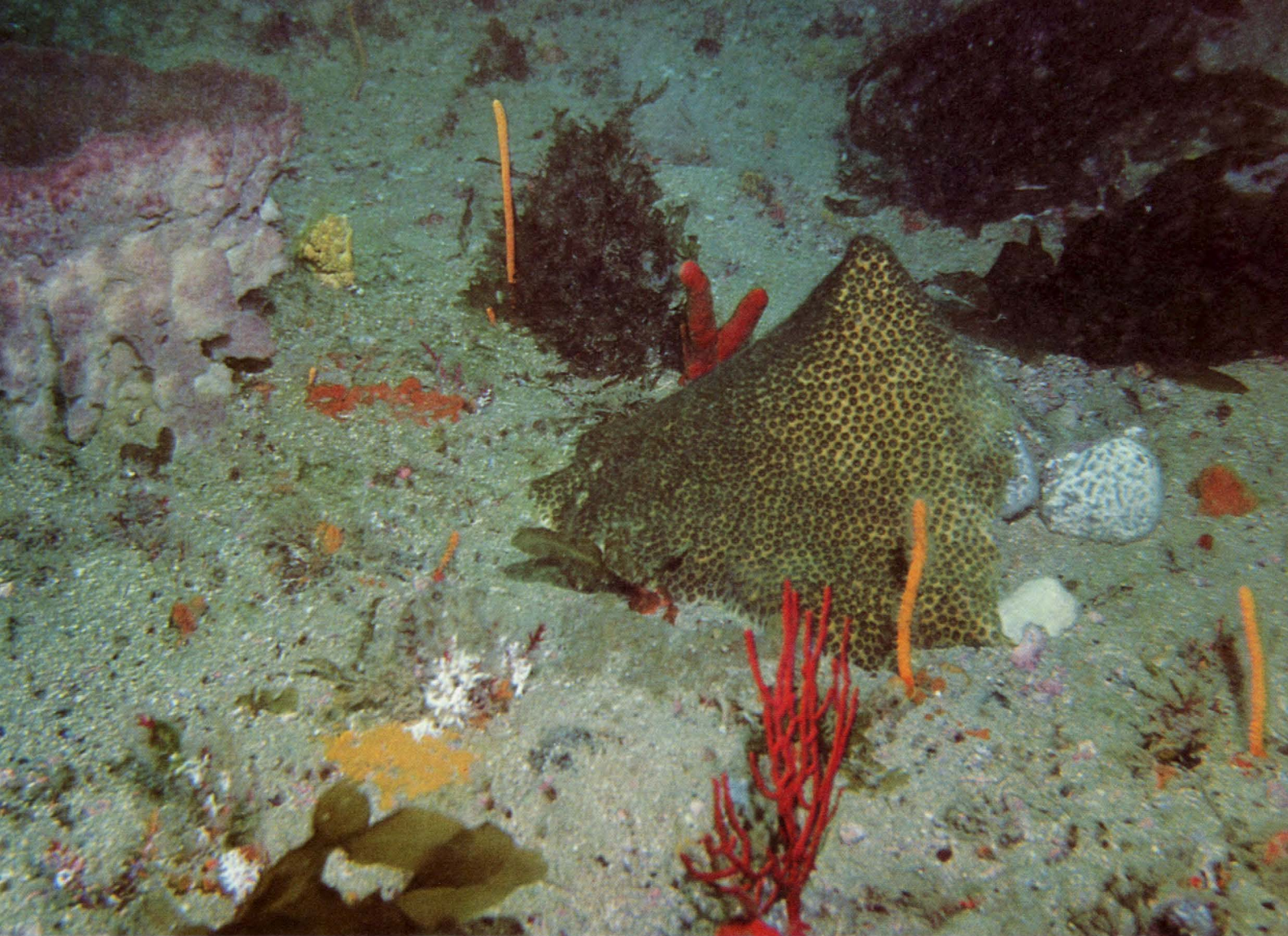
Other fish graze like cattle on the attached worm tubes, injecting the occupants and spitting out the sandy tubes. The tiny crustaceans that live among the corals and sponges are an important source of fish food and even some fairly large fish consume these animals.

Other fish, such as grunts, hang around live bottoms during the day, then move off across the sand flats to feed at night. Each dawn they return to the live bottoms. In many cases the same fish will return to the same rock, but no one knows why. Damsel fish and other fish spend the day feeding in the water column above live bottoms and drop in at night to hide among the sessile animals. These fish generally are silvery color and are not easily seen by predators during the day.

Rocky outcrops (right) appear on ten to fifteen percent of the ocean bottom in marked contrast to the predominantly flat floor. A variety of colorful fishes, like the orange flame fish (inset), flock to feed on the attached organisms.







COURTESY OF THE GEORGIA DEPARTMENT OF NATURAL RESOURCES



Fishing boats from South Carolina ports search out live bottoms, such as the one above, and use electric reels to bring aboard profitable commercial species, like the vermilion snapper (left).



PETE LAURIE



With all these comings and goings, dusk and dawn are the times of greatest activity at live bottoms. At these times smaller fish are most vulnerable to the sharks, amberjacks, groupers, and the other large reef predators.

Like the invertebrates that make up live bottoms, most of the associated fish are native to the tropics and follow the warm Gulf Stream to our coast. In the Caribbean these fish inhabit the larger, more continuous reefs that fringe tropical islands. But they adapt readily to the patchy reefs we have locally. Water temperature limits the range of most to no farther north than Cape Hatteras.

Flounder, spot, and other fish that inhabit South Carolina's near shore and inshore waters generally are much more temperature tolerant. The same species often range from New England to Brazil. Tropical fish that cannot tolerate cold water or sudden changes in water temperature can exist in the much deeper water near the edge of the shelf, where water temperature varies little.

The snappers and groupers that occur on live bottoms are commercially important but their life histories are not completely understood. Biologists are not even sure if these fish successfully spawn along the South Carolina coast. Tiny, just-hatched fish larvae are difficult to collect for research. The adult fish that inhabit local live bottoms may have been spawned in tropical waters. If so, heavy fishing pressure might not deplete the populations. But if local populations of snapper and grouper do reproduce within our waters, the brood stock must be carefully managed.

Among the commercial and recreational fish species associated with live bottoms are tomtate, vermillion snapper, whitebone porgy, red snapper, black sea bass, red porgy, white grunt, gag, scamp,

and speckled hind. Because of the uneven contours of most live bottoms, trawling a net across these areas is usually impossible. Instead, commercial fishermen use hooks and lines with electric reels to bring the catch aboard.

Party fishing boats or head boats out of Little River, Murrell's Inlet, Charleston, and other South Carolina ports depend on live bottoms to ensure good fishing for their patrons. Even inexperienced anglers can bring home a good many pounds of fish after a day's trip on one of these popular vessels.

The Marine Resources Division currently is studying live bottoms extensively under a contract with the Bureau of Land Management, the federal agency that soon will lease oil drilling rights off the South Carolina coast. The study is designed to assess the little-known ecology of live bottoms so that some predictions can be made on the possible impact of offshore oil and gas exploration.

Oil drilling could affect live bottom communities in both negative and positive ways. The potential for oil spills, of course, is always present, but since oil generally

floats on water, bottom dwellers are not always affected by spills. However, the larvae of many of these animals swim near the surface and could be affected.

Another potential problem is the disposal of the drilling muds, the fine slurry of rock and sand forced from the well by injecting a mixture of sea water and assorted chemicals into the hole. It is not known how even a light coating of this material might affect live bottom communities. Placing drilling platforms some distance from live bottoms and pumping the drilling muds to areas where they will not be washed across live bottoms could minimize this impact.

On the positive side, drilling rigs serve the same function as the hard bottom by providing a secure point of attachment for sessile organisms. Drilling platforms placed off the South Carolina coast probably will be colonized quickly by live bottom organisms and this increased productivity could increase the fish harvest.

The amount of oil or gas that ultimately may be discovered off the South Carolina coast is not yet known. But a better knowledge of the live bottom communities will help predict the impact of petroleum

exploration and perhaps protect these vital areas from unnecessary disruption.



Striking!

by Dean Poucher

Gigging saltwater fish under a light is a year-round sport in the South Carolina Lowcountry.

Daylight's last shreds vanished with the sudden flare of brilliant light from Doug Hancock's lantern. Hancock locked a special platform into the bow of the boat, hung the lantern from the platform's projecting arm, and we were off for a night of striking.

Gigging saltwater fish with the aid of a light is a year-round sport in Beaufort County. If you use the term "gigging" to a native, he'll look at you askance. Down here it is "striking," pure and simple. You go out in a bateau with a strong light, "strike" the fish, and put it into the boat.

A ten-horse outboard on the transom became my responsibility once everything was arranged according to Hancock's wishes. He had brought two "wicked" five-tined gigs with ten-foot bamboo handles, and I learned that one was mine, even though there was no light in the stern. The gig usually served as a spare in case Hancock's broke and would occasionally

be used with its twin for gigging.

It seemed we had traveled a fair distance and I was amazed that Hancock could keep his bearings in the watery world of inky blackness outside the lantern's glow. To my eye, all the lines of the drooping marsh grass looked alike. It was evident that he had negotiated these channels, flats, mud bars, and oyster rakes (beds) so many times that a single clump of grass or exposed oysters was familiar.

Lesson 1:

Know your territory well.



Hancock motioned in a chopping gesture and I cut off the engine, letting us glide through the misty darkness toward a partially exposed oyster rake. Standing atop the platform, he used his gig to feel the rake's edge. He instructed me to hold the stern out so that the boat slid past the rake, bow in.

Lesson 2: The striker must be able to drift quietly over the striking area.

Almost immediately, Hancock invited me forward to view a small flounder below us. At first look I couldn't see the fish, but my mentor pointed out the arrowhead shape of the fish's head, its jaws, and eyes. Confident of its camouflage, the little fellow had settled into the mud rippling its fins to throw a dusting of mud back over its body. Hancock brushed this one with the side of his gig. It scooted off, leaving a tiny cloud of mud.

Lesson 3: Don't look for the whole fish when striking for flounder.

We'd moved on less than fifty feet when Hancock dug in his gig, swung the stern farther outward, and positioned his gig for a strike. Directly above the fish, he slipped the tines noiselessly into the water and plunged the hilt downward, hard. Underwater, mud flew everywhere like an exploding ash can. There was a visible turbulence on the surface and the muscles stood out in Hancock's arms as he struggled to pin the fish to the bottom.

"That's a dinner flounder, ol' buddy. That's what we came after," Hancock grinned as he hoisted a platter-size fish over the side. I agreed. The fish would go five pounds and easily dress out three. It held plenty of filets for an evening meal.

Lesson 4: Striking from directly above the fish means better light, less refraction, and the increased ability to hit the fish directly behind the head so as not to mar the tender filets.

I had noticed the two-by-six-inch slot in the rear of the platform and thought he must have run out of wood when he made it. But then Hancock slipped the tines into the slot with the flounder hanging underneath. A simple jerk of the gig dislodged the flounder into the boat's front compartment and we were ready to continue.

Lesson 5: This notch is a useful tool and could be used in a boat with wooden seats.

After taking two smaller fish off the same rake, we drifted along thick walls of heavy wet marsh grass with roots still a foot above the water line. The water was clear. Hancock explained that the water muddies on the last hour of the ebb tide and usually starts to clear rapidly as the tide begins to flood. Except in the very coldest months when the phytoplankton bloom is killed down by low temperatures, it is practically useless to start striking until the beginning of the flood tide.

Lesson 6: Go out on the last of the ebb tide or the first of the slack tide and plan to hit your best spots as the waters rise back toward the grass.

As we continued through the surreal night world of the marsh, I realized I was sold and wondered why I hadn't bought a license a long time before. While South Carolina has no closed season on striking in saltwater, a license is required in Jasper, Beaufort, and Colleton counties. Georgetown County allows no daytime striking in the waters between the northern tips of South Island and Magnolia Beach. Striking freshwater gamefish is illegal throughout the state.

I leaned forward to marvel at the world unfolding beneath our light. Small schools of baitfish darted in and out of the beam's edge as a large blue crab skulked about in search of prey. A shallow depression in the bottom momentarily sparkled as the light hit the eyes of hundreds of immature shrimp. An unseen heron gave a startled, gargling croak and flapped off into the night.

We entered a shallow cove covered with oysters. Suddenly silver missiles were flying all around us as a school of mullet erupted from the water, apparently spooked by the approaching boat and the light. I was dodging and swatting at the fish. Hancock laughed until one hit him in the belly, almost sending him overboard.

Lesson 7: Don't make sport of the guy poling, even if you are the expert.

As we recovered and continued creeping past the ghostly bank, the tide

seemed to be coming in faster. Hancock positioned the two gigs carefully so that their long handles formed a "V" and then plunged both at once. A brief struggle brought up our first spottailed bass.

Lesson 8: Use two gigs for maximum penetration on bass and trout in water deeper than three feet.

As we slid past the last bank of the evening, Hancock pointed out some of the factors that must combine to provide an ideal night for striking.

Lessons 9-12

—An easterly wind near the ocean is deadly, and even a land breeze of sufficient strength can cause broken water to the extent that you can't see the bottom clearly.

—Striking success also depends on the phase of the moon, as it relates to the tide and to reflection on the water. A full moon brings muddy water on both stages of the spring tide, and trips should be planned so that nothing brighter than half moon rises while the tide is right for striking.

—The tide should be low just at deep dusk if you are to make your striking soirée complete and plan to be back home around midnight.

—And finally, in the coldest part of winter, in January and February, perhaps even early March, the flounder and other fish grow torpid from the low water temperature. Fish encountered in these coldest months are likely to be schools of bass and trout with only very large flounder. During the colder months the larger fish tend to move into the shallows from nearby deep water. This makes striking more productive than if you are closer to the deep channels and actual ocean inlets.

But the inshore creeks retain their resident populations of fish and provide a challenge just about anytime all the factors mentioned come together to create good striking conditions.

Hancock put another flounder into the boat, but the tide was now well into the grass and the hour was growing late. We stowed away the gear and he guided me back through the labyrinth of small channels to home. 🐟

Dean Poucher is a well-known Beaufort area angler and free-lance writer who also writes our saltwater column.



Readers' Forum

A Genuine Service

On behalf of the South Carolina Wildlife Federation, I would like to express appreciation for Julie Lumpkin's exceptionally fine article, "Conservation: An Issue Comes of Age." This work not only covered the history of conservation in our state but also made readers more aware of the origin, as well as the history, and many of the issues in which these various groups and individuals have been involved.

There was a monumental amount of research involved in pulling this information together and the author is to be commended on both the factual content as well as her understanding, synthesis, and perspective of the entire conservation movement in South Carolina through the years.

Julie has rendered a genuine service in recognizing many groups—individuals whose work has often gone relatively unnoticed. Yet, because of these very efforts, future generations will enjoy those natural resources a few have dedicated their lives to conserve.

Jacqueline E. Jacobs, Ph.D.
Executive Director
South Carolina Wildlife Federation
Columbia

A Faulty Premise

I am slightly concerned regarding Mr. Howell's letter to the editor printed in your January-February edition under "Gas Rationale." If taken at face value, it would appear to be an indictment of a honest and dedicated group of public employees based on a faulty premise.

The gas pump at Plantersville was abandoned more than seven years ago. Since that time, vandals and curiosity-seekers have long since broken the face glass and rotated the money wheels of the computer to a quantity that struck their fancy.

Standards used by South Carolina Weights and Measures officials are traceable to the National Bureau of Standards and their accuracy is constantly monitored by N.B.S. These facts are verifiable by anyone so inclined.

Charles T. Smith, Director
Consumer Services Division
South Carolina Department of Agriculture
Columbia

Proud Cabin Builders

I would like to let you know how much my husband and I enjoyed your article on "Cabin Fever" in the January-February issue of *South Carolina Wildlife*. We can identify with this since we are now nearing completion of our own log house, which is not a kit, but logs cut off our



land—skinned, treated, and the whole bit. Lots of hard work was done by us and one helper.

If you are ever in the Charleston area, we would enjoy showing this—proudly, I must say.

Ruth R. Canady
Adams Run

Seeking Water Watchers

I read the article by Mr. Kenneth Redmond of Greenville in the January-February issue of *South Carolina Wildlife*. Mr. Redmond has a right to be concerned about the water quality of Lake Hartwell. Already parts of Lake Hartwell are so contaminated with waste that the fish are not fit for human consumption.

Practically every stream that flows into the Seneca River part of Lake Hartwell has at least one type of sewer plant located on it and within the last three years there has been built two large sewer plants. One on Coneross Creek and another on Eighteen Mile Creek. Environmental protection agents have found that in many states it is the sewer treatment plants of the communities along the shoreline that are the serious

polluters of our lakes and streams. Something can be done; concerned citizens can get involved in cleaning up Lake Hartwell. They can join together and form a program of volunteer water watchers who can be trained to analyze the water for contaminants and report violators to the proper authorities. The goal of such a project would not be just to catch polluters but to provide information for authorities so problem areas could be investigated. I feel that the Department of Health and Environmental Control would be glad to advise such a group on testing procedures and equipment needed.

I am interested in joining such a group of concerned citizens or I will be glad to help organize one. I would appreciate hearing from interested parties.

Robert T. Foster
P. O. Box 3155
Anderson

Lament for Lost Acres

In reference to "Duke Power Gives 378 Acres to State" (*South Carolina Wildlife*, November-December 1980, page 61): Keen's myotis is a member of the order *Chiroptera* (bats) and not a rodent (*Rodentia*). They are really quite dissimilar.

Perhaps you would also like to discuss in a future issue the even larger number of acres of unique South Carolina ecosystems lost forever under the flood waters of Duke Power projects in the upstate. I believe that it would be equally as enlightening.

Fletcher G. Shives
Pullman, Washington

Catching Sac-au-lait

I am an old subscriber of your magazine. In your last issue, January-February 1981, I enjoyed your article on "Doing the Jig." I am a jig fisherman, have been for years.

John Davis, the next time you see Bob Tindal, you tell him how the "Cajuns" catch crappie ("Sac-au-lait" down here). Tell Bob he has to aggravate the fish and work the jig past him with action that makes it look just like a butterfly with the hic-cups.

I save all of my issues of *South Carolina Wildlife*.

B. H. "Doc" Phillips
New Iberia, Louisiana

Praise of Coastal Issue

I have just finished reading your special "Year of the Coast" issue (volume 27, number 4) and wish to join what must be a long list of people who have similarly complimented you and your staff of editors, writers, and photographers. It is a great issue, one which certainly epitomizes the highest standards of journalism, both in content and production.

W. M. Sutton
Washington Crossing, Pennsylvania

Books & Events

WILD PLACES OF THE SOUTH by Steve Price. 190 pages. Illustrated with black and white photographs. An East Woods Press Book, published by Fast and McMillan, 820 East Boulevard, Charlotte, N.C., 28203. \$7.95. Paperback.

In an attractive book, Price covers 23 wild areas in the Southeast including the Chattooga River and Congaree Swamp in South Carolina. The fast-growing South is home to a surprising amount of wilderness areas where the impact of civilization has not been felt. This book is more than a guide, according to the publisher, but a literary exploration of the areas. In addition to practical information on recreational opportunities and exploration, Price includes history, geography, wildlife, and vegetation.

HANDBOOK OF AUDUBON PRINTS by Taylor Clark and Lois Elmer Bannon. 122 pages. Illustrated. Published by Pelican Publishing Company, 630 Burmaster St., Gretna, Louisiana, 70053. \$9.95.

The result of years of research by two Audubon experts, this small volume presents in concise form a wealth of information about Audubon prints. It fills a special need for serious collectors as well as those who simply desire to become more knowledgeable about Audubon and his work.

CONSERVATION BIOLOGY: An Evolutionary-Ecological Perspective by Michael E. Soule and Bruce A. Wilcox. 395 pages. Illustrated with photographs, maps, charts. Published by Sinauer Associates, Sunderland, Mass., 01375. \$14.95.

A book of problems facing wildlife today, "Conservation Biology" will interest wildlife professionals, teachers, and serious students. The emerging field of conservation biology draws on the research of population biologists, reproductive biologists, and experts on the captive breeding of endangered species.

The book is written by leading researchers, educators, and practitioners in these fields. It provides a solid framework for understanding both practical and theoretical problems that face conservationists.

LIVING WILD by David Robinson. 208 pages. Illustrated with 273 photographs and

drawings. Available from the National Wildlife Federation, 1412 16th St. NW, Washington, D.C., 20036. \$14.95 plus .95 for handling.

"Living Wild" could be a tabletop adornment with its 268 color photographs, but it's more than that. Robinson, a naturalist and author, explores dark burrows, gurgling sea caves, and windswept aeries to report on how animals actually live and why they behave as they do.

The book examines many patterns of animal behavior, including the mysteries of animal parenthood. Six chapters cover the survival techniques of various birds, mammals, reptiles, and insects—where and how they find food and shelter, how they communicate, and the startling ways in which they choose and win their mates.

MAY 9

Balloon and Country Fair Festival. Hot-air balloon races and rides. Old-time country fair featuring games, crafts, arts. Place: Camden. For more information, call Historic Camden at (803) 432-9841.

Lowcountry Shrimp Festival. Blessing of the fleet, music, arts, crafts, seafood, Indian storyteller. No admission. Place: The Archibald Rutledge Academy, McClellanville. For more information, call Nancy Morrison at (803) 887-3323.

MAY 10

Greek Spring Festival. "Bazooki" music, folk dancing, authentic Greek foods. Place: Middleton Place near Charleston. For more information, call (803) 566-6020.

Charleston Dog Training Club. All day trials. Place: Gaillard Auditorium, 77 Calhoun Street, Charleston. For more information, call (803) 577-4500.

MAY 21

Riverbanks Zoo Senior Citizens Day. South Carolina's senior citizens enjoy the zoo free of charge. Place: Columbia. For more information, call (803) 779-8717.

MAY 21-22

14th Annual S.C. Governor's Conference on Water Resources. Place: Carolina

Inn, Columbia. For more information, call Mable K. Haralson at (803) 758-2514.

MAY 22-23

Sandlapper Festival. Antique cars, arts, crafts, parade, entertainment. Place: Batesburg-Leesville Middle School, Batesburg. For more information, write P. O. Box 349, Batesburg, S.C., 29006, or call (803) 532-4339.

MAY 22-24

Wonderful Williston Weekend Festival. Arts, crafts, antique show, flea market, parade, children's events, "Run For Your Life" road race, Black Powder Shoot. For more information, write Denise Bolen, 301 East Main Street, Williston, S.C., 29853, or call (803) 266-7241 or -7496.

MAY 22-JUNE 7

Spoletto Festival U.S.A. The Spoleto Festival celebrates its gala fifth season in historic Charleston under the direction of Gian Carlo Menotti. A cultural potpourri of the arts—including plays, jazz by Ray Charles, major opera, dance, and symphony works. Place: Charleston. For more information, call the Spoleto office at (803) 722-2674 or the ticket office at (803) 577-7863.

JUNE 5-8

Sun Fun Festival. Beauty, bikini pageants, arts, crafts, concerts, games. Place: Myrtle Beach. For more information, call (803) 448-5135.

JUNE 6

South Carolina Food Festival. Clogging, barbecue, music, displays, contests. Place: State Farmer's Market, Columbia. For more information, call (803) 758-3531.

JUNE 13-14

Caesar's Head Crafts Show. A weekend showing of traditional crafts. Many of the area's leading craftspersons demonstrate, display, and sell their wares. Place: Caesar's Head State Park, Caesar's Head. For more information, call (803) 758-3622.

JUNE 15-21

Hampton County Watermelon Festival. Watermelon-seed-spitting contest, judging, and eating contests. Place: Hampton-Varnville. For more information, call (803) 943-4165.

If you know of an event that might interest our readers, please contact Tricia Way, *South Carolina Wildlife*, P. O. Box 1067, Columbia, S.C., 29202, (803) 758-0001.

field trip

May-June 1981 Volume 28, Number 3 For Ages 6-14

Five That Need Your Respect

In the last issue of *South Carolina Wildlife*, "Field Trip" announced its first "Field Trip Poster Contest" as one way for you to help publicize the state's new RESPECT program. In this issue of "Field Trip," you will find other ways to remind everyone who uses the outdoors for sports, recreation, nature study, and other purposes that we should treat our natural resources with the same care and pride we give our most cherished possessions.

When you visit a park, a wildlife management area, a sanctuary, someone's private land, or any other natural area, there are two kinds of rules. One group of rules are written laws set by our government for the good of all. These rules are enforced by law enforcement officials. The other rules are unwritten. They are set by you to govern your own conduct and are enforced only by your conscience. These rules are called *ethics*.

If we respect our natural resources, obeying both written and unwritten rules becomes easy. The RESPECT program points out five groups that need your respect—nature, wildlife, fellow sportsmen, the landowner, and the law.



RESPECT.

There are many ways for you to accept responsibility for the protection and wise use of natural resources. Here are a few things you can do to get started.

Respect for Nature

The natural outdoor world is composed of living things that depend upon energy from the sun for survival. All plants and animals are joined together by a common need to supply themselves with energy in order to grow and to live. In nature, all living things absorb and use energy, finally returning some of that energy to nature when they die.

A food chain is the pathway by which living things obtain, use, and transfer energy. Plants trap energy from the sun and serve as the basic food producers for animals. Animals, like the

rabbit, eat plants for energy. Other animals, like the hawk, depend upon the rabbit for food to supply their energy needs.

You too play an important role in a food chain. For example, beef cattle feed upon corn and other grasses that get energy from the sun. When you eat a hamburger, you become a part of the food chain that began with corn absorbing the energy from the sun. This energy was transferred to cattle that ate the corn. The cattle were later processed to make hamburger.

You and your friends play a part in the natural processes of life. It's up to you to help in the wise use and protection of our natural resources. When outdoors, you can help easily:

1. If you see some litter, pick it up.
2. Throw all your cans, bottles, paper, and other litter in trash cans instead of on the ground or in the water.
3. If you see someone else throw litter on the ground, speak up and show them the right way to dispose of it.

If everyone followed these rules, there would be a lot less litter in our forests, fields, and waterways.

When you go camping, gather natural materials from a large area.



Gathering firewood, cutting saplings, or gathering bedding material from a small, single place will leave the area stripped and barren.

Learn to build fires the proper way and in a safe place. Keep them small and make sure they're completely out before you leave. Uncontrolled forest fires destroy trees and leave wildlife either dead or homeless.

There are other ways to show respect for what nature gives us. But a good way to begin is by realizing you are part of the natural process and it is your responsibility to use our resources wisely.

Plants trap energy from the sun and serve as energy food for animals.

Respect for Wildlife

Wildlife can grow and survive only if they have enough space to grow and get food, water, and shelter in the right amounts. The land that provides food, water, shelter, and space for each species is called its *habitat*. As wildlife populations increase each year, habitats cannot provide enough food, water, shelter, or space to provide for the additional numbers. As a result, young and weakened animals are killed by predators. Others are killed by disease and parasites, while many starve to death.



In addition, severe winters may kill many, many more.

Today, much needed wildlife habitat is lost to changes in forestry and farming practices. The need for more lumber and paper products as well as food to meet the needs of man's expanding population have resulted in a great loss of wildlife habitat.

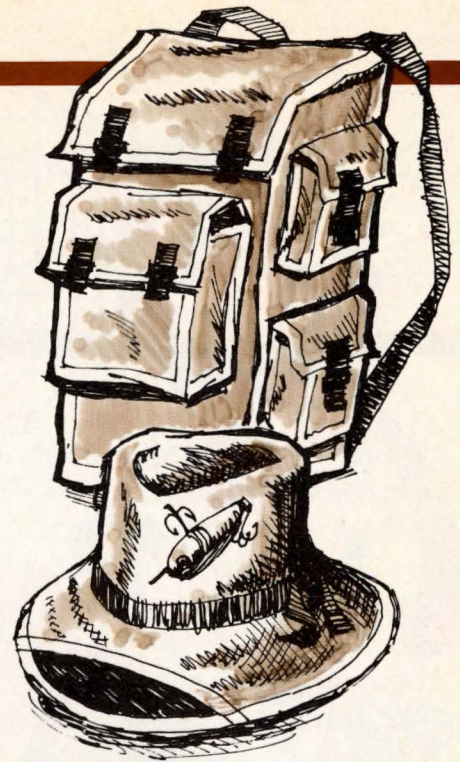
You can do much to help wildlife. Learn the different kinds of wildlife that live in South Carolina. Find out all you can about the differences between animals that live in the forest, fields, swamps, and marshes. Next, learn to identify the different types of animals that look similar to each other. For example, there are at least twenty different kinds of ducks that spend part of their lives in South Carolina.

Another important activity that you can do to help wildlife is to help improve their natural habitat. If you live in a town or suburb, plant shrubs and seed-bearing plants that birds can feed on. Make your own nest boxes for bluebirds, or try a bird feeder.

If you live on a farm or in the country, leave space between fields and along fence rows to provide food and shelter. Placing brush piles in open fields will help provide rabbits and other smaller animals with a secure place to hide from predators.

Build and install wood duck nest boxes around ponds and marsh areas. You can provide wildlife food plots near a soybean field or forest.

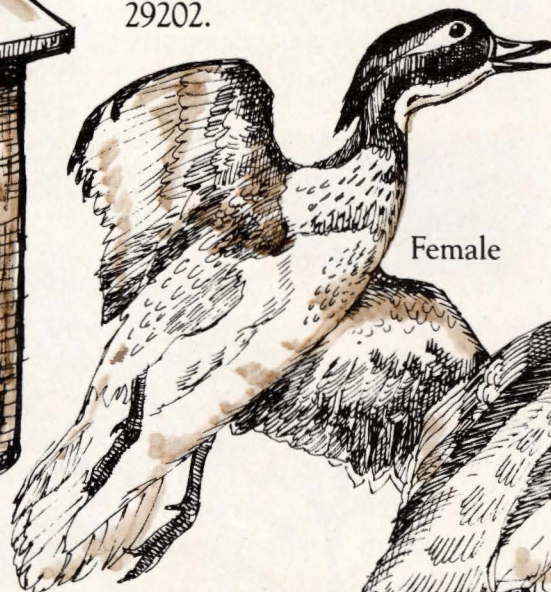
For more information on these projects and other ideas to help improve wildlife habitat, contact the South Carolina Wildlife and Marine Resources Department, P. O. Box 167, Columbia, S.C., 29202.



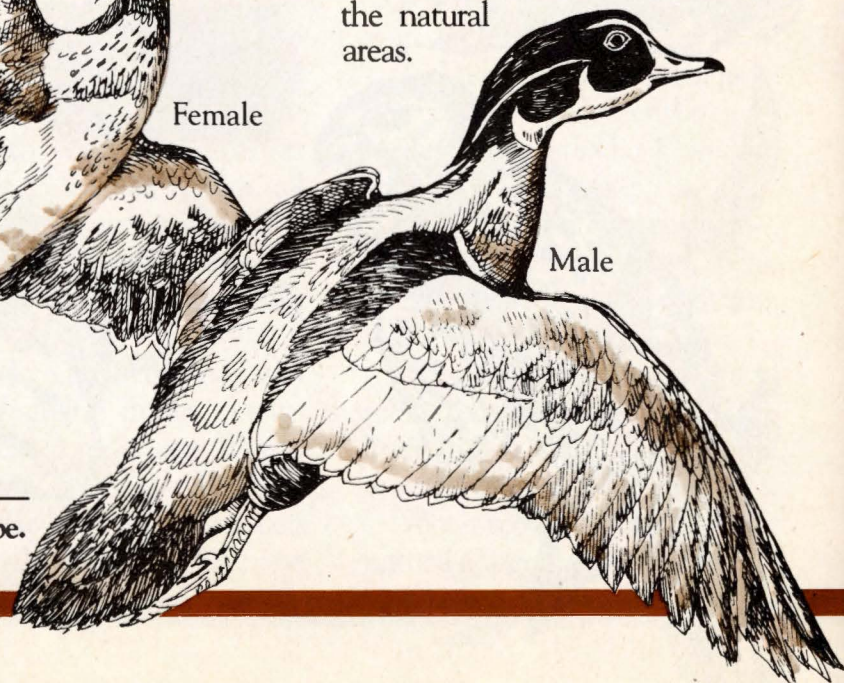
Respect for Fellow Sportsmen

You may like to fish or you may like to backpack, canoe, hike, take pictures, hunt, bicycle, or just plain loaf. Our parks, sanctuaries, game management areas, and wilderness areas allow most of us to participate in whatever outdoor activity we enjoy.

Because so many people enjoy outdoor activities, we must share the natural areas.



Female



Male

Help a wood duck—
Build a nesting tube.

Respect the rights of others who want to use the natural resources in their own way. Be thoughtful to others and do your part to leave a natural area in better condition than you found it.

Respect for the Landowner

When you visit a natural area that is not your own, you are a guest on that land. Even if the land is owned by the public, some local, state, or federal government agency has to maintain it. Over half of the land in the United States is owned by private individuals or large corporations, such as lumber or paper companies. No matter where you visit, you must show respect for the landowner to continue using the land.

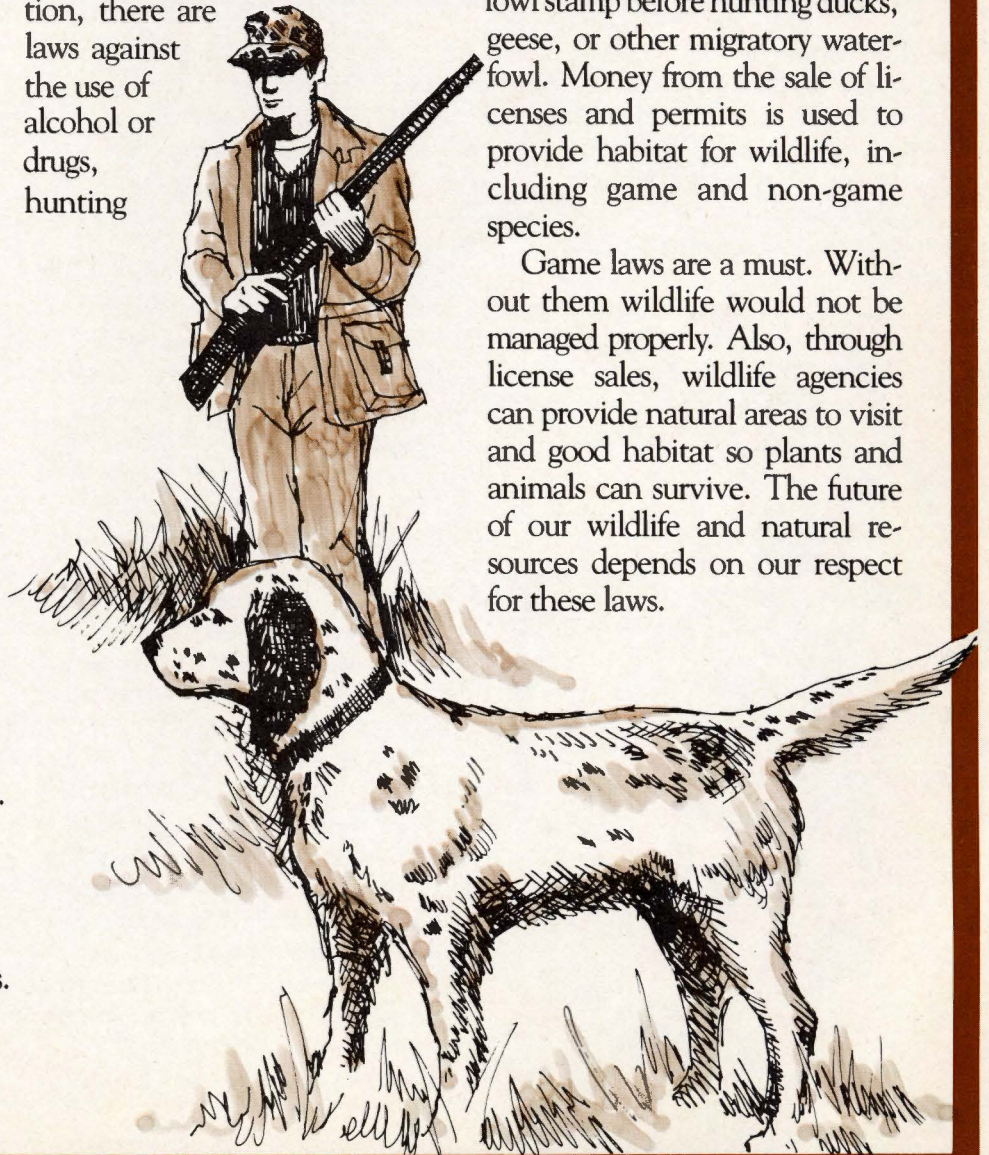
To respect the rights of landowners, you should:

1. Always ask permission before you visit an area. If the area is public, abide by the rules and regulations for visits.
2. Always leave the area as you found it. Throw your trash in a proper waste receptacle.
3. Never cut, bend, or break any fences or gates.
4. Stay out of farm areas that have corn, soybeans, or other crops.
5. Observe controlled or restricted areas. Never go where you are not supposed to enter.
6. Never deface or mark any buildings, structures, trees, or rocks.
7. Always thank the landowner for use of the land.
8. If you see someone misusing or destroying property, report it.

Respect for the Law

Fish and game laws are made for three main reasons: 1) To protect wildlife; 2) To protect people; and 3) To make sure everyone has an equal share of the natural resources.

For these reasons, seasons are set for hunting and fishing. The number and types of game animals you may take and the ways you may safely and humanely take them are also set. In addition, there are laws against the use of alcohol or drugs, hunting



from or across public roads, littering, and carrying loaded guns in automobiles.

These laws are made to give everyone an equal right to hunt, fish, and enjoy nature while protecting wildlife from overpopulation and excessive harvest. Those fourteen years old and older must purchase a hunting or fishing license and certain special permits to take certain kinds of game. For example, you must purchase a state hunting license and a federal migratory waterfowl stamp before hunting ducks, geese, or other migratory waterfowl. Money from the sale of licenses and permits is used to provide habitat for wildlife, including game and non-game species.

Game laws are a must. Without them wildlife would not be managed properly. Also, through license sales, wildlife agencies can provide natural areas to visit and good habitat so plants and animals can survive. The future of our wildlife and natural resources depends on our respect for these laws.

Above the screeching and scraping of our cities is a wilderness called Ellicott Rock, set aside for those who appreciate unchanging woods and still streams.

A Mountain Escape

This summer take your family backpacking, hiking, trout fishing, and camping all in one trip to Ellicott Rock Wilderness Area just above Walhalla in Sumter National Forest. Until recently this 3,332-acre area was the only federally designated mountain wilderness in South Carolina.

You can enter the area from two routes. From Burrells Ford off Highway 107, walk up the Chattooga River about a mile to where the East Fork joins the Chattooga.

Cross the East Fork and continue upstream into the Ellicott Wilderness. From the U.S. Fish Hatchery just off Highway 107, walk downstream on the East Fork to where it meets the Chattooga. Follow the Chattooga upstream into the wilderness.

The natural beauty of Ellicott Rock is not confined to the area's official boundaries. Outside the tract, there are thirty miles of scenic trails that run along the Chattooga to Highway 28 and to Oconee State Park.

Camping is permitted at Burrells Ford, but you have to walk in about a quarter of a mile from the parking lot. Walking in from the fish hatchery is more interesting. This trail along the East Fork is about two and a half miles long. It's an easy walk. At the confluence of the East Fork and the Chattooga is an excellent primitive camping area and there are other designated sites north along the Chattooga.

Campers are asked to build fires and set up tents at least one-fourth mile from the road and at least fifty feet from the trails, rivers, or streams to preserve the rustic atmosphere for other hikers and fishermen.

Early spring is as good a time as any to visit this out-of-the-way upstate area. Spring wildflowers are beginning to peep out and the weather is mild and refreshing. Fishing in the spring is excellent. It's a terrific place to go to cure yourself of the winter's cabin fever.

At the East Fork-Chattooga site you are naturally near excellent water. Since the

spacious, flat camping area is in the Chattooga Gorge, high winds don't penetrate your camp. Anyone willing to walk the several miles of easy trail will find this area highly accessible.

Ellicott Rock is not a secret. Like many choice hideaways, remoteness has made it popular and thus less remote. Forest Service spokesman Bill Craig encourages families to visit on weekdays to avoid the weekend rush.

Trout fishermen will find the area productive. Both the Chattooga and the East Fork are excellent trout streams and provide some wild trout as well as stocked rainbows and browns. While the Chattooga seems to get all the glory, the East Fork is an excellent trout stream in its own right. Some wild brown trout inhabit the stretch between the hatchery and the main river.

As for the mighty Chattooga, well known for its mischief in its lower stretches, the river here is peaceful. You can practically sit by your camp and cast into the large, quiet pools of the Chattooga along this stretch. Rainbow and brown trout are plentiful and, so I'm told, relatively easy to catch.

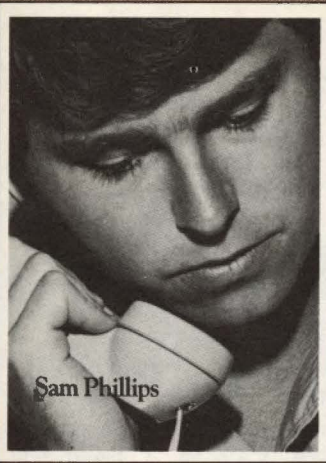
While this area in general might be referred to as Ellicott Rock, the actual rock landmark is a pleasant hike of several miles north to the North Carolina line. The rock itself is a historic boundary marker denoting where Georgia and the two Carolinas meet. Don't look for a prominent formation. The rock has a geographical inscription but can be easily overlooked. It's tucked away along the stream edge about eight feet below the trail.

Ellicott Rock and the Chattooga River are protected by federal law. As a designated wilderness area, Ellicott Rock is protected under the National Wilderness Preservation System. The Chattooga River and a quarter-mile corridor on each side is protected by the National Wild and Scenic Rivers Act. Motorized vehicles are not permitted in areas protected by either act.

Under the authority of the U.S. Forest Service, and as part of the Sumter National Forest, we can expect Ellicott Rock, the Chattooga River, and this excellent primitive camping area to be around for future generations just the way you'll find it this spring. —BOB CAMPBELL



Ramblings



Sam Phillips

"Hello, may I help you?"

Those few words have really kept me busy this year. Since last August, I have handled almost all nuisance animal complaints for the non-game and endangered species section of the wildlife department in Columbia. Calls have ranged from farmers worried about cougars attacking their livestock to a rubber alligator on a patio.

In this period of fiscal restraint, the department cannot directly handle as many nuisance animal complaints as it did in the past. Today emphasis is placed on giving the caller technical help and then letting him handle the problem. An exception is nuisance alligator complaints which are handled only by trained department personnel.

Following are the most common questions and answers concerning nuisance animals:

Q: What can I do about woodpeckers damaging my home and driving me crazy with their incessant drumming?

A: Act quickly before the woodpeckers develop a pattern of destructive behavior. Cut strips of aluminum foil two to three inches wide and two to three feet long and hang it above and around the damaged area or drumming site. These strips will flash and frighten the birds.

Childrens' handheld pinwheels tacked up around the affected area will also work. Banging pans, firecrackers, or bottle rockets will scare the birds for a short while. Repeat this several times during the day. Recordings of woodpecker distress calls are available at

BIOLOGIST ON CALL

Wildlife Questions Answered

some local hardware or sporting goods stores. Projecting the call out a window near the damaged site will drive the birds off. Mothballs in a nylon stocking hung at the area may be effective, although periodic replacement is required. Cracks and projections should be repaired if possible.

A combination of these methods used for several days will yield faster results. A woodpecker nest box may provide the woodpeckers with a home and prompt them to stop. If possible, leave snags or dead trees standing in your yard; they will provide the woodpeckers with a plentiful source of food. Don't attempt to kill or trap these birds. This is only a short-term solution and all woodpeckers are fully protected under the federal Migratory Bird Treaty Act and state law.

Q: What can I do about pigeon droppings?

A: Change the flat ledges around your home to steep slopes where the birds can't nest. Sheet metal, slanting boards, or mortar can be used to create a steep angle, 45 degrees or greater, eliminating the ledge. Holes and other small roosting areas can be boarded up or screened with hardware cloth or chicken wire. "Porcupine" rods with sharp metal spines sticking out can be used to create a barrier.

A flying hawk silhouette or an owl model from a sporting goods store can be hung near the ledge to scare the pigeons away. Moving the model's location every few days or removing it entirely for a day every three or four days will prolong its effectiveness. If the birds are scared away for a few days, they should move to another area permanently.

Feral or wild pigeons, their nest, eggs, and young may be destroyed at any time. Air rifles are effective at short distances, but local ordinances on firearms must be observed. You can also get a trap,

catch the birds, and dispose of them. Carrier, racing, or homing pigeons, recognized by a leg band or other marking, are protected by state law against killing or harassment. Killing or removing individual groups of nuisance pigeons should be followed by measures to prevent new birds from taking their place.

Q: What can I do about hawks and owls that prey on chickens or other poultry?

A: Hawks and owls may not be killed at anytime. The Migratory Bird Treaty Act and the state wildlife code give these birds complete protection. Years ago it was considered good farm management to shoot every hawk or owl on sight, but now raptors are considered beneficial because they feed on rodents, feral pigeons, and starlings. Rare instances of poultry killing almost always involve free roaming flocks. Therefore, poultry should be raised in pens enclosed with chicken wire or nylon netting.

Q: What should I do with an injured or dead hawk or owl?

A: An injured bird should be placed in a covered cage or cardboard box and kept from extremes in temperature. Attempts to handle the bird could result in painful injury from its powerful talons and in additional suffering for the bird. Contact your local wildlife department office or call the Hotline number. If officials there cannot arrange to pick up the bird, see if a local veterinarian is willing and able to treat it until it can be picked up.

State and federal laws prevent

the mounting of specimens by taxidermists except for education or scientific purposes, which require a special permit.

Q: What can I do about an aggressive alligator?

A: Alligators are fully protected by state law and the federal Endangered and Threatened Species Act.

Most problems with alligators arise when an individual alligator loses its fear of man. Feeding alligators is one of the fastest ways to erode this fear. People may start out feeding a cute little two-foot alligator that shows up in their pond, only to find out a few years later that it has tripled in size and is scaring their neighbors.

Nuisance alligators are reported to the district biologist for that area. He investigates that complaint to determine the severity of the problem and the best solution. Where there is a genuine threat, department employees will remove the problem animal. Under extreme circumstances it may be necessary for them to destroy it.

For additional assistance with resident wildlife species call Columbia 758-0014 or Charleston 795-6350 (non-game animals), 758-0007 (game animals or furbearers).

The U.S. Fish and Wildlife Service has primary responsibility for assisting with nuisance migratory birds. Their biologists, located in

Columbia, can be reached at 765-5957/5285 for technical assistance.

—SAM PHILLIPS



Roundtable

BEFORE YOUR SHOT-guns hibernate for the off-season, prepare them for storage. Open the action and carefully check the gun's chamber (back end of barrel) and magazine (tube or clip where ammunition is stored). When you're sure the gun is empty of shells, cleaning may begin.

If the gun was dragged through rain, mud, or blowing dust, it should be partially dismantled. This usually means removing the barrel and perhaps dismantling the magazine. Clean these with gun solvent. This inside of the barrel may need several vigorous brushings followed with a cloth soaked in solvent. This will remove gunpowder residues, dirt, and rust. After the bore is clean (a dry rag should come out as spotless as it went in), it should be "rust-proofed" by pushing a lightly oiled swab through it.

Give the chamber itself special attention, as the residue from plastic shells and shotgun powder will form a powerful rusting agent which quickly makes pits in the chamber walls.

Grime around a gun's action can be removed with cloth, toothbrushes, and cotton-tipped swabs. Wipe all metal with a lightly oiled rag to prevent rust. Furniture polish will spruce up wood stocks.

The finished product should be stored in a dust-free area. Cases are good for storage, but they should remain open slightly to allow moisture condensation to escape. Take care not to leave any cleaning patches in the barrel.

The gun storage area should be secure, locked, and out-of-sight. The location should not be exposed to extremes of heat or moisture, such as you would find under a house or in the attic. Check your firearms for early signs of rust every couple weeks during the summer. ☛

HERRING STUDIED



A highly sophisticated count of the blueback herring entering the Santee-Cooper lakes each spring will guide future Santee-Cooper management. Herring are important in the striped bass food chain.

State fishery biologist Tom Curtis counted some nine million blueback herring swimming through the Pinopolis Locks last spring. He's now analyzing this season's count. During about a two-month spring migration, the prolific herring, a marine species that spawns in freshwater, move up coastal rivers in great numbers. The herring provide a valuable supplement to the diet of the renowned striped bass of the Santee-Cooper lakes.

Curtis acknowledges that the Rediversion Project now under construction is an unknown factor in this striped bass-herring phenomenon. The Santee-Cooper reservoirs currently discharge their waters into the Cooper River where the herring have been found in great numbers each spring. Once completed, the Rediversion Project will allow the reservoirs to spill their main flow into the Santee River rather than the Cooper.

While reducing the flow in the Cooper River, the U.S. Army Corps of Engineers will redirect the major flow into the Santee River with a canal now under construction. Doing so will perhaps reduce the silt load now going into Charleston Harbor via the Cooper River.

"One of the major concerns," the biologist said, "is that it (rediversion) might reduce the number of herring we can put into the lakes." A reduction in herring going into the lakes could have a

detrimental effect on the striped bass fishery.

The Santee River, once its volume is increased, will theoretically provide an equal number of herring for the lakes. The Corps is banking on this, but Curtis is less sure this will happen. "It's an unknown," he said.

With the current herring count, at least the biologists know how many should be going in once rediversion is completed in 1983. The Corps plans to put a fish lift on the new Santee River Dam to lift the herring into the lakes.

Curtis is a fishery biologist with the South Carolina Wildlife and Marine Resources Department, an agency that has expressed official reservation about the Rediversion

Project. Curtis is stationed at the department's Dennis Wildlife Center on the eastern shore of Lake Moultrie near Bonneau.

"This is an actual count based on biomass. It's not an estimate," Curtis says. "The fish are counted with a sonar fish-counter especially designed for the Pinopolis location."

In 1975 divers placed eleven sonar transducers at the mouth of the upstream lock where they record the fish passing over when released from the lock. Data are recorded at a computer terminal in the lock master's office atop the Pinopolis Dam.

The project is in cooperation with the South Carolina Public Service Authority. Curtis says quite a bit of trouble and expense are required to make sure the fish can enter the lakes. Three times daily the downstream gate is left open thirty minutes to one hour to allow the migrating herring to enter the lock. The fish are then lifted to lake level, released, and then counted.

A great many herring also enter the lakes during normal locking operations for navigational purposes. ☛

Eight Win Sportsman Award

Eight South Carolina sportsmen received the Carolina Slam award recently in recognition of outstanding performance as hunters and fishermen.

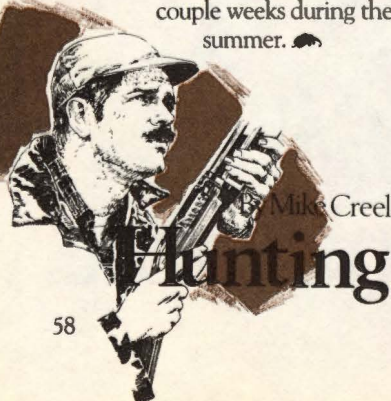
J. Drake Edens Jr., chairman of the South Carolina Wildlife and Marine Resources Commission, presented award plaques to Carolina Slam qualifiers during the commission's November meeting in Columbia.

Receiving the awards were Randy Bickley of Newberry, Robert R. Brown Jr. of Winnsboro, Joseph Kelly of Mountville, W. W. Fennell of Rock Hill, W. D. Morris of Columbia, J. Enoch Sox of West Columbia, James W. Henderson Jr. of Lancaster, and Wayne

Strange of Laurens.

The Carolina Slam for the past three years has been an annual program to encourage good sportsmanship, award hunting and fishing skills, and show South Carolina's diversity of outdoor sport opportunities.

Beginning August 15, 1980, the Carolina Slam became a lifetime program rather than a yearly program. It is designed to bring out the very best sportsmen and sportswomen in South Carolina to set examples of outdoor ethics. A copy of the rules governing the new Carolina Slam program may be obtained by writing: Carolina Slam, P. O. Box 167, Columbia, S.C., 29202. ☛



Barnwell: THE Nuclear Option

More eyes are turning toward Barnwell as Washington leaders and nuclear industrialists look for solutions to the continuing accumulation of nuclear wastes.

Their discussions of nuclear policy are often hard for the public to follow, as these accumulated wastes vary greatly in form, intensity, and purpose. High-level wastes come from weapons manufacture and from reprocessing spent fuel rods to save unused plutonium and uranium. In 1977 President Carter continued President Ford's ban on such commercial reprocessing and began to set up a program to deal with permanent disposal of high-level wastes.

Because of this ban, power plants all over the country are keeping their spent fuel rods in storage pools. As these pools fill up, some plant officials are saying they will have to build more pools or shut down unless the federal government provides an away-from-reactor (AFR) site for "temporary" storage.

The Barnwell Nuclear Fuel Plant has been considered a prime candidate as this AFR site.

AFR or Reprocessor?

Now, however, Energy Secretary James B. Edwards has said that President Reagan wants to "get the country moving" back toward reprocessing, the original purpose of the Barnwell plant. If that plant were on line today, Edwards was quoted as saying, it would be reprocessing nuclear fuel in the equivalent of one million barrels of oil a day. If licensed and operable, the Barnwell plant would become the world's largest reprocessing plant of any kind.

The Barnwell plant, however, is said to be designed to discharge radioactive emissions in excess of those now allowable. At a recent nuclear forum held in Columbia by five environmental organizations and the League of Women Voters, Dr. Curtis Rhodes, a Uni-

versity of South Carolina professor in engineering, said the Barnwell plant isn't designed to adequately retain the gases released in processing.

Reprocessing plants have much higher emissions than power plants, he said, and end up with similar storage problems.

The West Valley Ordeal

Commercial reprocessing was once attempted at a plant in West Valley, New York. In its intermittent operation between 1966 and 1972, the West Valley plant generated about as much waste as the Barnwell plant would in six months of full-scale operation. Then the plant's owners closed it, saying regulations and necessary modifications made it uneconomical. Because the federal government had encouraged its development and had been its major customer, New York state officials asked the Department of Energy (DOE) to assume responsibility for the site. In agreement, the federal agency has recommended that the government pay to dispose of West Valley's 600,000 gallons of high-level waste at an estimated cost of \$1.1 billion and then de-commission the plant.

West Valley also stores 750 spent fuel rods and, like Barnwell, has been considered as a possible AFR site. The third possibility for such a site is a Morris, Illinois, plant, also originally meant for reprocessing, but never opened because of design problems. The state of Illinois has sued the DOE; the Nuclear Regulatory Commission; and General Electric, managers of the Morris plant, to prevent its expansion and to prevent the state from being liable for cost of the plant's waste management.

Illinois Strategy

The Illinois legislature also passed a law saying no commercial high-level waste shall be shipped there from any state which doesn't have

its own AFR site. This would, in effect, prevent Illinois from ever having an AFR site, since no state has its own site, and, if it did, it wouldn't need to ship elsewhere. This law is being tested in court.

State Vs. Federal

In March the South Carolina General Assembly passed a resolution saying the federal government shall not establish an AFR site in South Carolina unless the legislature votes its approval. The resolution also creates a committee to consult with the federal government on any proposal to put an AFR site here.

State Rep. Harriett Keyserling of Beaufort, sponsor of the resolution, told the nuclear forum, "The Department of Energy has said there must be an AFR. If Congress goes along with them, they have three choices: New York, Illinois, or South Carolina. The other two seem to have taken themselves out of the running."

When asked about the likelihood of a vote against reprocessing, Keyserling acknowledged that the General Assembly is generally pro-nuclear and is unlikely to vote against reprocessing at the Barnwell plant.

"The state's vote, either way, would be largely symbolic, but most of government is symbolic," said Dr. Richard Kearney, USC professor of Government and International Studies. "Constitutionally, the feds have the power to decide the question. The federal government can establish an AFR site where it wants and a reprocessing plant where it wants. State laws against nuclear transportation, et cetera, can be pre-empted. . . . We (South Carolina) already carry the nation's burden in both low- and high-level waste. Should we take more? Any sense of equity demands that we say no."

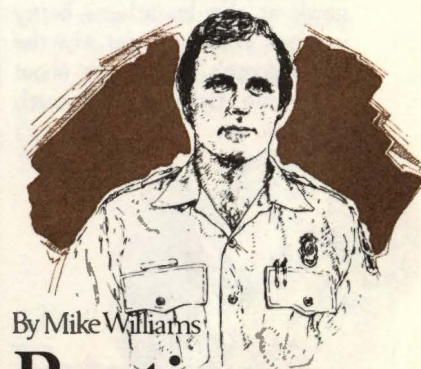
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WHILE DRIVING TO the lake last week, my son exclaimed, 'Hey Dad, ain't that our boat?' Glancing to my left I watched in horror as my brand new, fully equipped bass boat and trailer rolled past us going toward a steep embankment. As it rolled down the hill crashing and burning, I remembered that I had failed to attach my safety chains before leaving home."

This story was passed on to me recently by a gentleman who had totalled his new rig before getting it into the water. Those of us who have been boating over the years have either been involved in or witnessed a similar boat-trailer accident.

Before leaving home to fish, water ski, sail, or whatever, check out your rig. The trailer hitch should be secure, the safety chains crossed and hooked to the hitch. Check your winch rope, tie down the strap, and be sure your boat is sitting on the trailer properly. Check your lights, turn signals, and brakes to make sure they are working. Check your spare and if you have not greased the wheel bearing, do so.

THEN LOOK IN YOUR BOAT FOR ANY LIGHT ITEMS, SUCH AS EMPTY ICE COOLERS, MINNOW BUCKETS, PADDLES, LIFE JACKETS. If you don't tuck them away, they won't be there when you arrive at your destination. Finally, when you get into your car, adjust your rear view or side mirrors so you can glance up while you are driving. And, just before launching, don't forget to put your drain plug in. 🐟



By Mike Williams

Boating

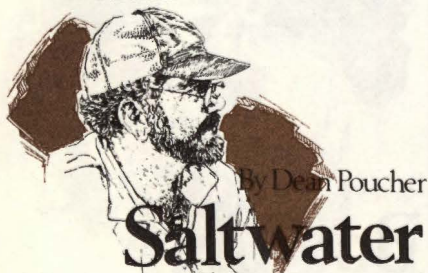
ONE ASPECT OF OFF-shore fishing in the Palmetto State is the glamorous big game billfishing which hasn't received the publicity it deserves.

It started back in June 1967, with Virginia Pingree, fishing from the family yacht *Roulette* out of Beaufort. Pingree landed for record a 395-pound blue marlin. The shock waves from that catch are still reverberating along the coast in the form of big-money billfish tournaments out of nearly every major marina along the coast.

May and June appear to be the times of major northward migration for the giant blue marlin, the smaller white marlin, and the most beautiful Atlantic sailfish—the three prime targets of the tournament angler. But it is unquestionably the "Old Man," the blue marlin of Hemingway fame, that elevates blood pressure when the lines go out in the indigo blue Gulf Stream some sixty miles or more off our coast. Golden sargassum weed flecks the surface or rafts in huge patches or even long lines, and flying fish burst like coveys of quail away from the bow.

This is the angler's sport of kings without question. A boat capable of fishing safely that far offshore is extremely expensive . . . not to mention the upkeep, operations, dockage, bait, and the investment in quality fishing tackle able to withstand a raging battle with a fish that may well exceed one thousand pounds in weight.

In fact, even hitching a ride as a spectator is becoming almost impossible, much less being included as one of the tournament anglers. Best suffice to be dockside when they return each evening and gawk at the leviathans being weighed in and wonder why the world doesn't know more about big-game fishing off South Carolina. 🐟



Barnwell (continued)

The Nation's Burden

Besides the large volume of high-level waste in South Carolina, Chem-Nuclear in Barnwell is now the nation's principal low-level waste burial site. The world's largest fuel fabrication plant is operated in Columbia by Westinghouse.

State Rep. Bill Campbell of Richland County introduced the recent forum with a short history of how the nuclear industry had become so concentrated in South Carolina. In the initial period of development, from 1950 to 1966, Campbell said all major political figures in the state supported the nuclear industry. By 1968, the utilities had built nuclear plants here without opposition. "At the time that these plants were getting

cranked up, environmental groups were working on so many other issues they figured they didn't have the time, money, or knowledge to deal with the nuclear power. Polls showed that people either weren't concerned or had faith in the regulatory process. Later they found that this faith was misplaced."

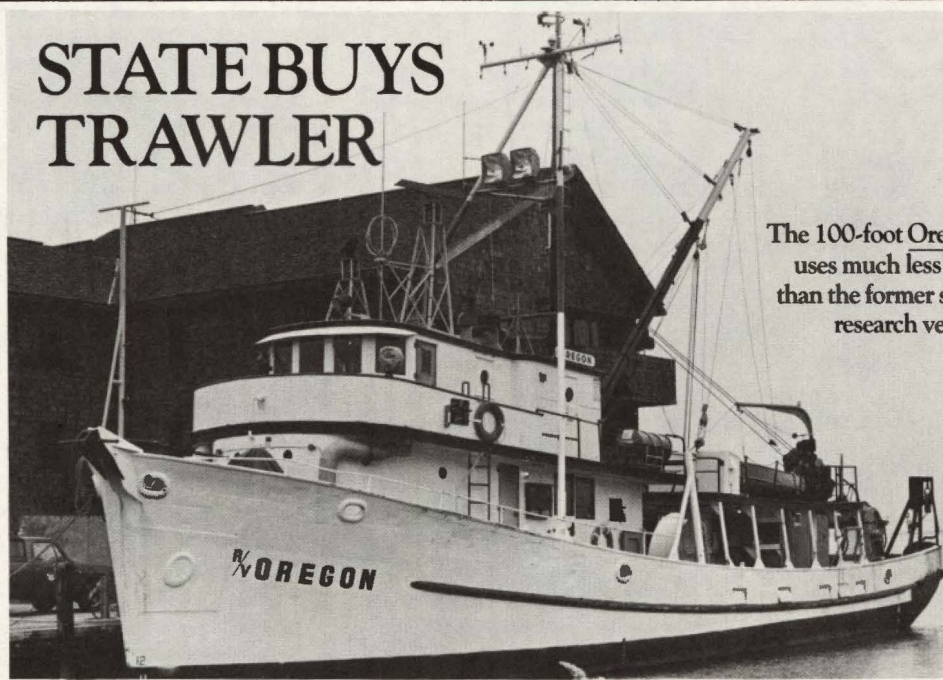
Campbell referred to an April 1980 review by the Legislative Audit Council, which reported that South Carolina's radiation monitoring capability was seen as insufficient by many state and local officials. The council also found that public officials were ill-equipped to protect the public in the event of a nuclear accident.

The review then warned: "The history of federal government involvement in oversight of the nuclear industry has been plagued with vagueness, ineffectiveness,

confusion, and contradictory policies among federal agencies. It would be a mistake for South Carolina to rely solely on federal initiative and actions to provide adequate protection for public health and safety relating to potential nuclear hazards in South Carolina."

For those who wish to learn more about South Carolina's role in the nuclear issue, Rep. Campbell suggested three publications: 1) a special supplement to *The State* newspaper titled "The Nuclear State," by Marilyn Thompson, April 13, 1980; the April 11, 1975, issue of *Osceola* newspaper; and "Tower of Babel," an article in *Southern Exposure*, 1975, Vol. 4, No. 4. These and other nuclear publications can be found in libraries around the state.—NANCY ANN COLEMAN 🐟

STATE BUYS TRAWLER



The 100-foot *Oregon* uses much less fuel than the former state research vessel.

An old friend is returning to the Southeast after a twelve-year absence. The ocean-going research vessel *Oregon*, a hundred-foot steel-hulled tuna boat, was recently transferred to the state Marine Resources Center.

Built in 1946 in Astoria, Oregon, the *Oregon* was acquired by the U.S. Fish & Wildlife Service for exploratory fishing and the development of commercial fishing

gear. For nineteen years, the *Oregon* worked out of Pascagoula, Mississippi, and St. Simons Island, Georgia. In 1968 it was transferred to Alaska and worked the North Pacific until it was acquired by the state of South Carolina. Stationed now at the Fort Johnson Marine Resources Center, the *Oregon* has replaced the research vessel *Dolphin*.

The *Oregon* is now used in proj-

ects designed to assess the life off the Southeast Coast. Better suited for trawling than the *Dolphin*, the *Oregon* uses about half as much fuel.

The *Dolphin* was returned to the U.S. Army, which loaned it to the state in 1971. The converted ocean-going tug was never designed for trawling but was the only vessel available to the wildlife department until recently. 🐟

4 Steps Can Prevent Rabies

Editor's Note: With the spread of rabies in raccoons, particularly in the lower part of the state, the public should be cautious when wild raccoons are encountered. Wildlife biologists say there is no cause for alarm, but common sense is the order of the day. Raccoons or any wild animal should be discouraged from approaching households. They should not be fed nor should garbage be left available to them. Here, Dr. Martin Goldfield of the Department of Epidemiology, College of Health, University of South Carolina, tells about rabies, the disease.

Rabies has been detected in raccoons, bats, rats, foxes, and dogs in South Carolina with no area of the state spared. Knowledge and caution can help you prevent human infection.

People have always feared rabies. At least 4,000 years ago, there was a law requiring the caging of mad dogs and providing a penalty of 40 shekels of silver for the owner of a dog whose bite caused a human death. Then French chemist Louis Pasteur developed a vaccine for the prevention of rabies in 1884.

Rabies is a viral disease usually acquired from the bite of a rabid animal. It is almost always fatal. An infected person experiences no symptoms for a period lasting anywhere from ten days to eight months, followed by gradual, but relentless destruction of vital brain centers.

Rabies virus appears to maintain itself by transmission from one wild animal to another. Skunks, bats, raccoons, and foxes are the most commonly found rabid wild animals in the United States. Infected wild animals can transmit it to domesticated animals, such as cats and dogs.

When dog control programs of vaccination and elimination of strays are ineffective, dog-to-dog and dog-to-human transmission may occur. Raccoons, foxes, and especially skunks purchased as pets have been involved so often in ex-

posing their owners to rabies that many states have passed laws making it illegal to keep wild animals as pets.

The risk of getting rabies can practically be eliminated by following some simple rules:

1. Consult your veterinarian or health department about getting your pets immunized.

2. Keep a respectful distance from wild animals and don't try to pet, feed, or catch them. If you see a wild or domesticated animal acting suspicious, inform your local health department and leave the trapping to professionals. Don't try to make pets of wild animals.

3. A person bitten by an animal, especially if the bite was unprovoked, should wash the wound without delay. Soap and water is preferable, but if it is not available, anything from coffee, tea, or soda or creek water will do. Thorough

washing within twenty minutes markedly diminishes the chances of rabies transmission.

4. You should then consult a physician or health department about a course of immunization. The immunization is accomplished by an immediate injection of a preparation made from the serum of immunized humans and a series of twenty-one daily inoculations of rabies vaccine followed by boosters ten and twenty days later.

Only a few cases have been recognized in the United States so far this year. A deep-rooted fear of rabies exists in our society, probably because it has been known for thousands of years that an infected person will almost certainly die. But when modern measures of prevention and control are practiced, human rabies is not a common disease. 🐾

RARE SITES PICKED

Hellhole Bay, Wambaw Swamp, Little Wambaw Swamp, and Wambaw Creek have been added to the National Wilderness Preservation System. The four areas totaling nearly 14,000 acres are portions of the Francis Marion National Forest in Berkeley and Charleston counties.

Under the National Wilderness Preservation System, an area is left in its natural state free of development and where people can only visit. Sites for inclusion in the system were selected by the U.S. Forest Service for Congressional approval through the RARE Project. RARE is an acronym for Roadless Area Review and Evaluation.

RARE was one of the most comprehensive public participation projects ever undertaken by the forest service. During the project, the service evaluated some 65,000 acres within all national

forests to find sites meeting the basic criterion for roadless areas or wilderness.

Originally, the forest service chose nine areas in South Carolina for Congressional approval. Five areas in the mountain section of Sumter National Forest were later deleted from consideration. Less than 3 percent of the total national forest land in South Carolina is represented in these wilderness areas.

Hunting, fishing, hiking, canoeing, and sightseeing are permitted in a wilderness area, but management activities such as wildlife habitat improvement, timber harvests, and recreational development are prohibited.

Ellicott Rock, a 3,332-acre tract just above Walhalla in the Sumter National Forest was designated in 1975 as the first mountain wilderness area in South Carolina. (See "Ramblings," page 56.) 🐾

WHERE CAN I GO fishing? In a state with as much water as South Carolina, it's hard to imagine anyone asking that question. Yet, there are plenty of folks who want a change from our reservoirs and rivers, or just don't have the boating equipment big waters require.

The unusual answer is to seek out the small private pond. There are thousands of these scattered throughout the state and many have excellent fishing. The problem comes in locating them and in obtaining permission to fish. We'll cover that in a future column.

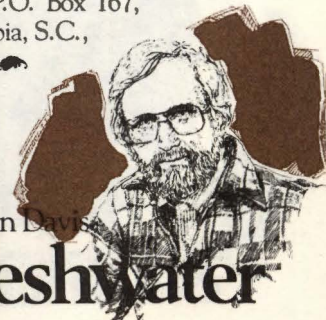
Right now, it's time to be fishing rather than looking. So here's a tip on some prime spots open for the price of a state fishing license. They're paid for by your fishing license fees, camping fees, and state or federal taxes.

There are two state forests, two national fish hatcheries, thirty-four state parks, four national wildlife refuges, and twelve state wildlife fishing lakes. That's fifty-four sports with just about any type fishing imaginable. You can expect anything from a mess of mountain trout through a string of largemouths and bluegills to a chest of channel bass or whiting, depending upon your choice of locations.

Some offer only access points to large reservoirs, rivers, or the ocean, but most have lakes in the ten- to hundred-acre range stocked with largemouth bass, bream, and occasionally, channel catfish. If you doubt the quality of fishing, take note that our state's number two largemouth (fifteen pounds, four ounces) came from one of the above—I'm not saying which.

For a list of these spots and a bit of information on the type fishing available at each, write: "Freshwater," *South Carolina Wildlife* magazine, P.O. Box 167, Columbia, S.C., 29202. 🐾

By John Day
Freshwater



PERHAPS THE MOST overlooked and under-appreciated item in a packer's pack is the first-aid kit. One might go for years without ever using it. But when you need it . . . well, you need it.

Few kits available commercially seem to be entirely adequate for the backpacker's needs. You should build your own and include those items you feel you might need personally.

One rule, of course, is to keep it as small and compact as possible while providing the complete personal kit. So what's so special and personal about a first-aid kit?

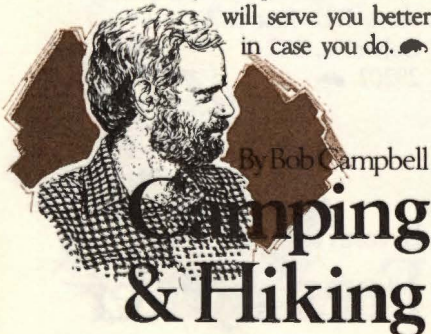
Most everyone needs the traditional treatments for blisters, minor cuts, bruises, and abrasions. The usual kit contains items to treat these afflictions.

As for more personal items, anyone who is sensitive to bee stings should without question carry the proper emergency treatment. If you are fearful of poisonous snakes, a snakebite kit might be good for the morale.

Other items might be: aspirin or other pain remedy (I like Alkasetzer for the head as well as the stomach), cold remedy or antihistamine, insect bite lotion, itch treatment (hydrocortisone), burn ointment, smelling salts, a laxative (particularly if you eat a lot of freeze-dried foods), and a small container of table salt for gargling.

You might want to include a small, sterilized lancet for boils and blisters, a small pair of scissors, and don't forget the Ace bandage. This latter item could be of great importance if you should twist an ankle or knee and have a distance to go to return to your vehicle.

You might not ever need your kit. But if you've personalized it, it will serve you better in case you do. 🐾



By Bob Campbell

Camping & Hiking

EAGLE SHOT IN S.C.

A wounded immature bald eagle was found in December in Berkeley County by a deer hunter. The bird, an endangered species, had apparently been shot about a week earlier by No. 4 shot, a load used by waterfowl hunters.

Federal and state conservation officers launched an investigation and announced a sizable reward for information leading to arrest and conviction of the person or persons responsible.

Two James Island veterinarians, Drs. Jean McKee and Keith Bryan, operated to repair the right wing bone of the bird. An assistant to the veterinarians, Jean Pfaff, nursed the bird back to health. Then it was "hacked" or exercised and released.

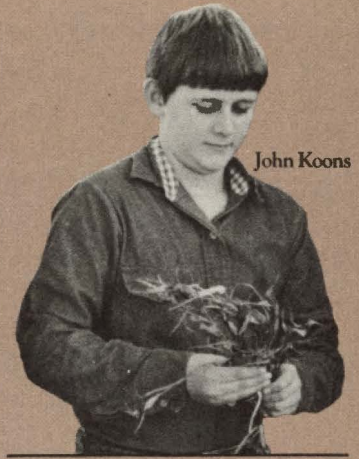
Garland Swain, a special agent with the U.S. Fish & Wildlife Service, said this didn't detract from the seriousness of the offense. Such an act violates two federal laws—the Eagle Protection Act and the Endangered Species Act. Both designate severe penalties for violators.

Swain said the eagle act offers a reward to anyone providing information that leads to arrest and conviction. The reward is one-half the assessed penalty up to \$2,500. The National Wildlife Federation also offers a \$500 reward.

Deer hunter Lee Revele of Moncks Corner found the bird early one morning under a tree. The tree supported an eagle nest, but wildlife biologists say the bird, less than a year old, did not belong in that particular nest. Sally R. Hopkins, an endangered species biologist, said the bird had been banded in Virginia.

Persons convicted of violating the Endangered Species Act can receive a fine up to \$20,000 and one year in prison. Violation of the Eagle Protection Act carries a maximum penalty of \$5,000 and one year in prison. 🐾

Endangered species biologist Sally R. Hopkins (right) and federal agent Garland Swain check the wounded eagle.



John Koons

Koons Wins Plot Contest

Fourteen-year-old Aiken High School student John Koons planted the best wildlife food plot judged from nine counties in a pilot program known as F.A.C.E. for Wildlife.

FACE (acronym for Food And Cover Establishment) is a cooperative effort between the South Carolina Wildlife and Marine Resources Department and the Clemson University Extension Service, the agency that conducts the 4-H program. Through it the state's youngsters learn more about wildlife habitat management. It also provides new small game with



habitat and youngsters with friendly competition.

Started last growing season as a pilot project in nine counties, F.A.C.E. for Wildlife should enter all forty-six counties this year, said small game biologist Billy McTeer.

During the pilot competition, twenty-five wildlife food plots were judged. Several more were planted but failed to germinate due to severe drought. Participating 4-H clubs were in Aiken, Berkeley, Clarendon, Colleton, Edgefield, Fairfield, Horry, Lancaster, and McCormick counties.

South Carolina's F.A.C.E. for Wildlife program is modeled after a similar project in Tennessee. "Its aim is to teach youngsters proper wildlife management practices so they will understand the need for proper wildlife habitat on their property as adults," explains McTeer.

"We are looking now for interested adults in each county to help with the program," says the biologist. "Also we hope conservation clubs will volunteer to sponsor awards on a county-by-county basis."

Anyone interested should contact McTeer by writing: Small Game Program, South Carolina Wildlife and Marine Resources Department, P. O. Box 167, Columbia, S.C., 29202, telephone 758-0007.

The food plots planted during the past season will provide food and cover for small game over the next several years, McTeer says. The first year seeds are planted, annual plants such as browntop millet show up abundantly, but in the second year the perennial bicolor lespedeza takes over and can provide wildlife food for the next twenty to thirty years.

Lamar Robinette, an Extension Service biologist, says, "Information we can get through the F.A.C.E. program is perhaps more valuable than the number of wildlife food plots planted. The educational process is having a multiplier effect from youth to adult and makes both the present and upcoming generations of land managers more aware of the value of weedy areas and cover for small game species." 🐾

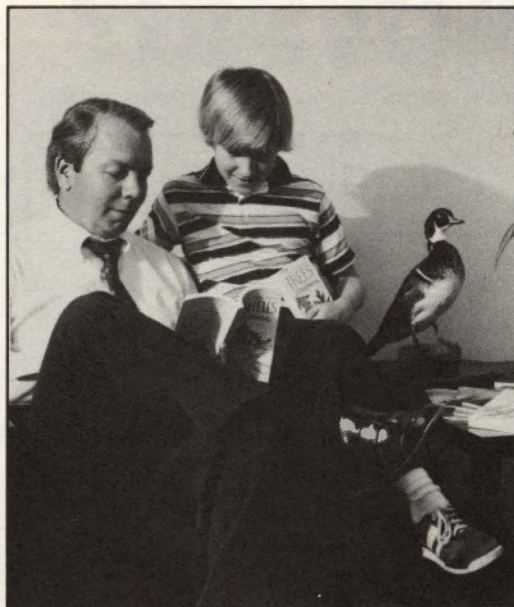
Lights Confuse Wildlife

Light pollution is generally waste light produced from man-made sources, such as billboard signs, streetlights, advertising signs, searchlights, illuminated building facades, and lighted office buildings.

Streetlights emit light in almost every direction, while that which strikes the roadway is all that is used. Seventy to eighty percent of the light emitted from billboard-illuminating flood lamps is wasted, falling uselessly out around the billboard. Last year, energy employed on streetlighting alone amounted to at least \$180 million, according to figures from General Electric; of this, forty percent is probably wasted energy.

Light pollution can cause environmental problems. "Birdkills" occur when migrating birds are caught in storms over urban areas. The birds become confused by the many lights and are killed by repeatedly crashing into tall lighted office buildings and other lighted obstacles. Sea turtles, too, fall victim to lighting. When baby sea turtles hatch, they are attracted to brightness, which used to be the ocean, but is now likely to be a brightly-lit highway. If the turtles crawl in that direction, they are crushed by automobiles or left to bake in the sun.

Cities can pass laws which limit advertising lights and other lighting. They can install only "cutoff luminaries," streetlights which eliminate waste light and glare, instead of the usual type. Plastic shields can be clipped on streetlights in about two seconds and will earn their price back in a week in terms of energy conserved. Most town officials have other priorities or may not even be aware of light pollution.—RICK BASS. 🐾



DADDY, WHAT'S A BROWN-BANDED WENTLETRAP?

If your son or daughter asks questions about nature that you can't answer, a set of these Golden Field Identification Guides will help.

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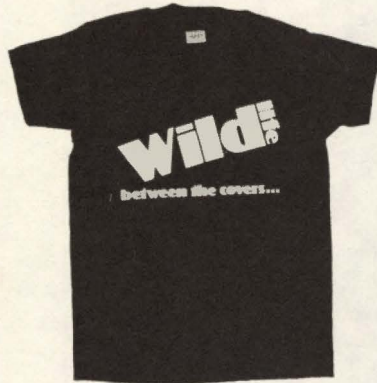
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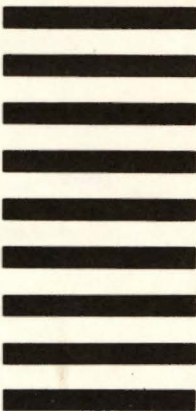
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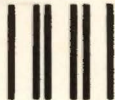
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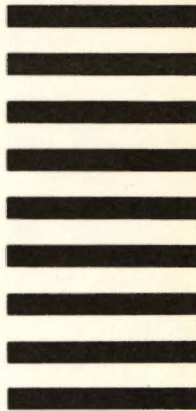
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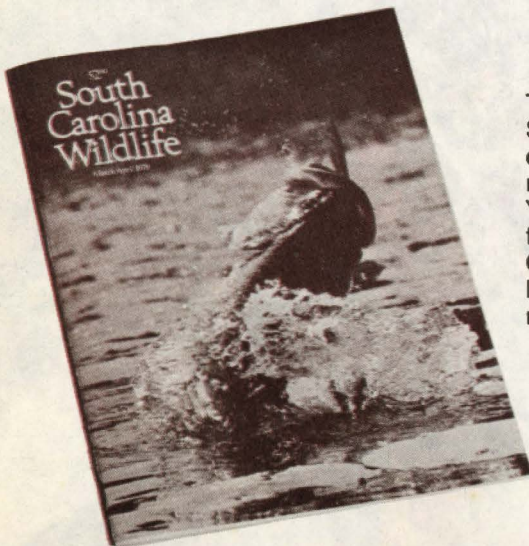
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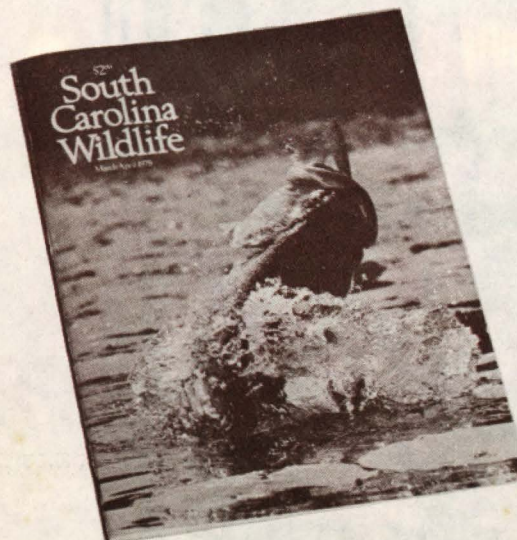
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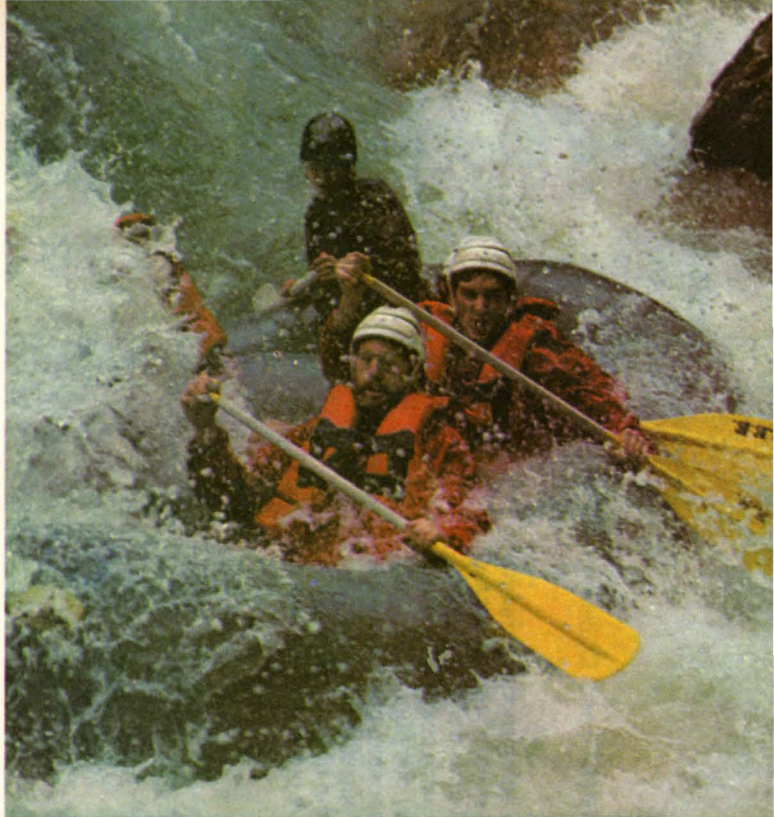
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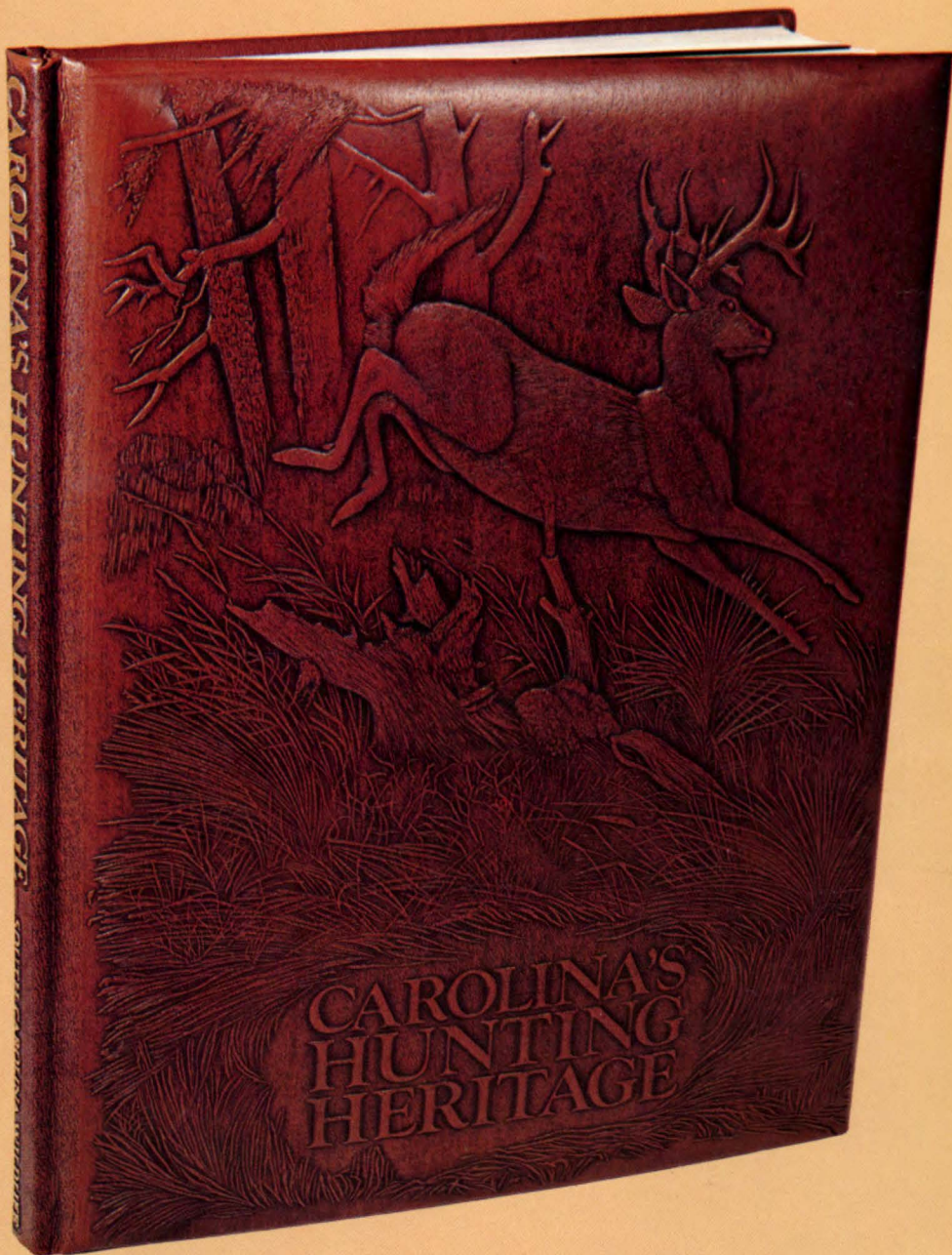
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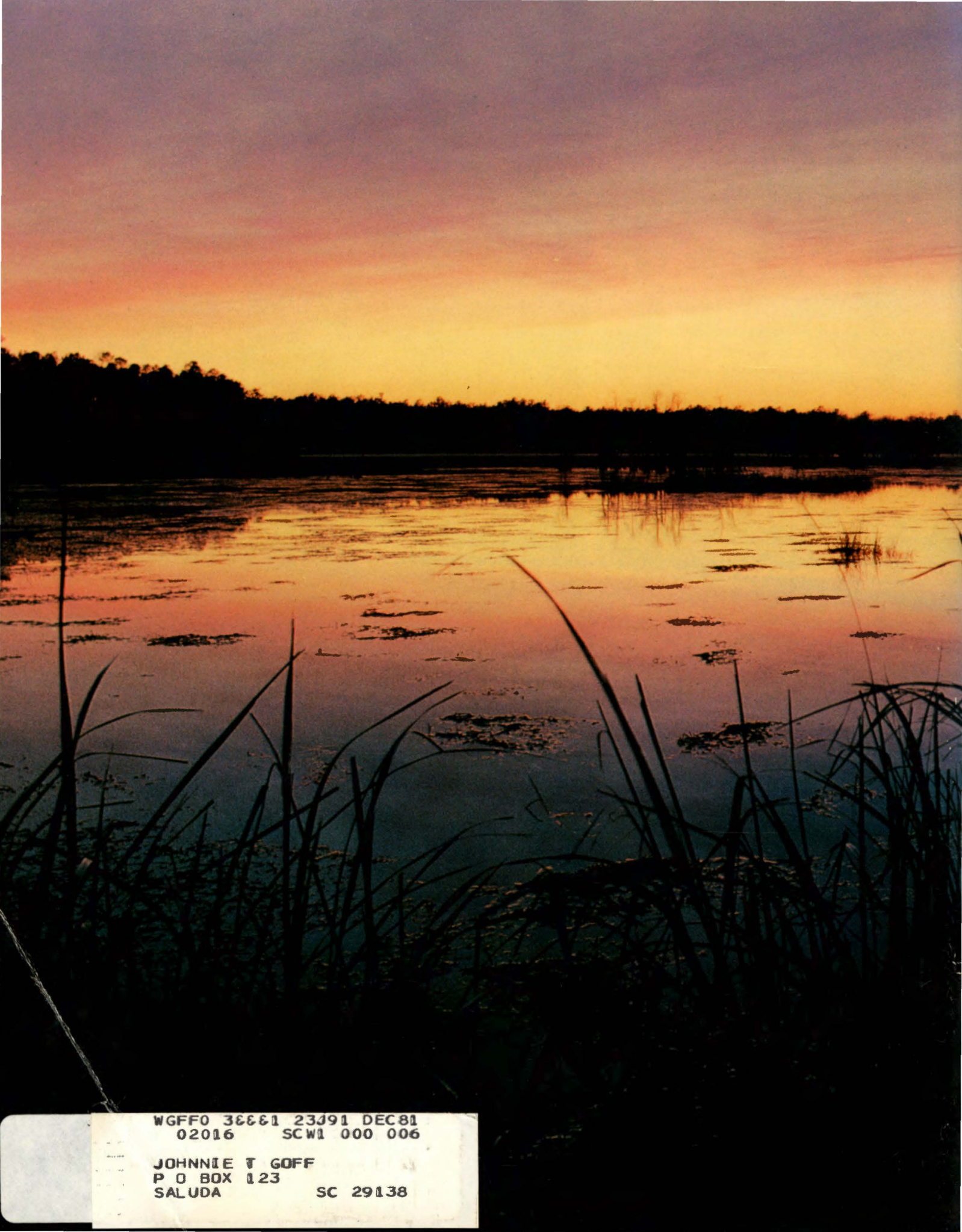
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