

\$2.00

South Carolina Wildlife

September-October 1981



South Carolina Wildlife

September-October 1981



EDITOR / John Davis

ASSOCIATE EDITOR / Nancy Ann Coleman

ROUNDTABLE EDITOR / Bob Campbell

FIELD TRIP EDITOR / Dennis Gunter

STAFF WRITERS / Mike Creel, Pete Laurie,
Julie Lumpkin, Tom Poland

ART DIRECTOR / Kay Jackson

ARTIST / Linda Laffitte

CHIEF PHOTOGRAPHER / Ted Borg

PHOTOGRAPHERS / Jim Goller, Phillip Jones

PROMOTION / Duncan Grant

FULFILLMENT / Ginger Bullard

CIRCULATION / Rose McManus

FINANCE / Carole Hedrick-Collins

INFORMATION AND PUBLIC AFFAIRS

DIVISION DIRECTOR / Prescott S. Baines

2 Biosphere

4 Search for the Golden Tile *by Mike Creel*

South Carolina's newest treasure from the sea comes in the form of a little-known fish with spots of olive-green, blue, rose, white, and brilliant yellow.

9 Jeffery on Bows and Hunting *by John Davis*

South Carolina's master bowyer shares his thoughts on the sport and its equipment after more than thirty years of designing, manufacturing, and shooting the bow and arrow.

14 Captured in Stone *by Pete Laurie*

Because of changes in sea level, South Carolina's coast harbors horse teeth and armadillo shells along with shark teeth and whale bones.

20 Trophy Quest *by Bob Campbell*

Proper deer management can go a long way toward making that special one-in-a-thousand trophy buck a reality.

28 Portraits from Carolina

Our photographers present a few of their personal favorites, which illustrate their style while capturing bits of Carolina that most of us have passed.

36 Rails On A Spring Tide *by William C. Crowley Jr.*

Marsh hens are simply ungainly birds striding awkwardly through the marsh. But add a fall tide and the first biting crosswinds of fall and the shooting becomes fast and frantic.

40 Poster Winners

42 Dove Clubs: Recipe for Tradition *by John Davis and Billy McTeer*

More and more South Carolina sportsmen are discovering that a modest investment in planning provides excellent dove shooting and outdoor fellowship.

50 Field Trip 55 Books and Events 57 Roundtable

54 Readers' Forum 56 Ramblings

The Cover *by Jim Goller*
Autumn Lichens

South Carolina Wildlife (ISSN-0038-3198) is published bi-monthly by the Information and Public Affairs Division of the South Carolina Wildlife and Marine Resources Department, 1000 Assembly St., Dennis Building, Columbia, S.C., 29201. Subscription rate is \$7.95 per year. Second-class postage is paid at Columbia, S.C., and additional mailing offices. POSTMASTER: Send address change and inquiries to South Carolina Wildlife, Circulation Department, P. O. Box 167, Columbia, S.C., 29202. Copyright © 1981 by the South Carolina Wildlife and Marine Resources Department.

VOLUME 28, NUMBER 5

Ask a question about the history of archery and Owen Jeffery is quick to speak of the bow's use by all major cultures as far back as 7,000 B.C. His eyes twinkle with wonder as he tells of Istanbul bowmen who shot the Ottoman Empire's composite bows. His gestures momentarily recreate the battles of Crecy (1346), Poictiers (1356), and Agincourt (1415), in which badly outnumbered English commoners used their famed longbows to practically annihilate the French aristocracy and its armies.

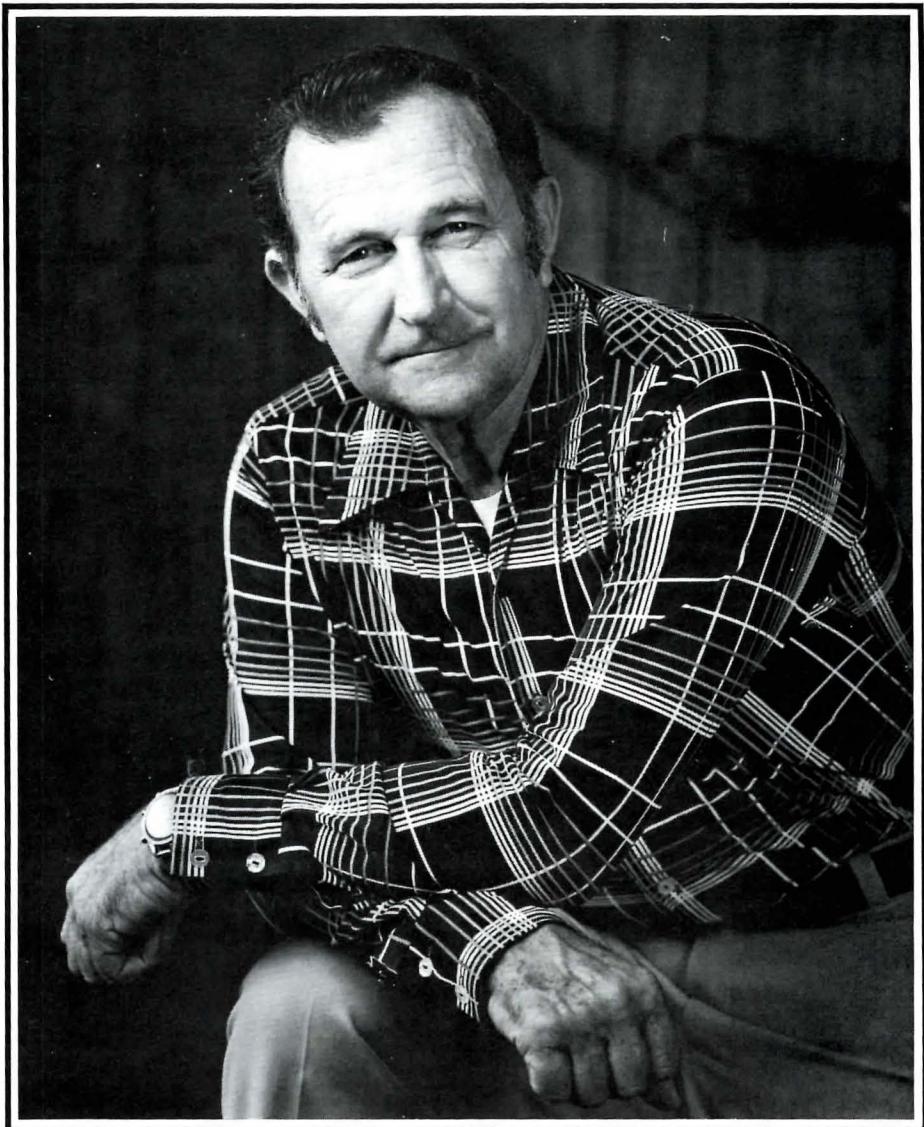
Jeffery knows the bow and arrow's history and he knows what it takes to design, produce, and successfully shoot the weapon. At eleven years of age, he fashioned his first bow with red cedar and a bailing wire string.

"Owen's the master bowyer," his son Tom states matter-of-factly with pride. "It's all in his head—how the bow works, stress points that must be met, designing for specific effects, or to correct for individual failings."

Owen Jeffery's Arkansas boyhood interest in bows and bow hunting intensified after World War II. In 1950, he visited Hoyt Archery Company in Missouri to see their laminated recurve bows. Jeffery returned with two bows of his own design and construction and was hired to run Hoyt's operation, producing top-quality tournament bows until 1966 when Bear Archery hired him to raise their product's standings in competitive shooting.

In 1973, he was hired by the Shakespeare Company in Columbia as their director of operations for the archery division. When Shakespeare divested itself of archery equipment, Jeffery decided to stay in South Carolina and go into business for himself. With the help of his wife Erin, and Tom, who is company vice president and general manager, Jeffery Archery was formed in 1976. The company's first compound bow, the "Regal 40.5," established a reputation for high performance and craftsmanship. Jeffery Archery has designed and made every type bow imaginable, including custom orders from tournament archers with specific needs, movie directors demanding authentic replicas of early bows, and a three-bow order from the King of Bhutan

by John Davis/photographs by Jim Goller



Perhaps more than any other sport, bowhunting demands a personal choice and dedication. South Carolina's master bowyer shares his thoughts on the sport and its equipment after more than 30 years of designing, manufacturing, and shooting the bow and arrow.

Jeffrey on Bows and Hunting

for use in his country's archery competition (the sport is taken so seriously there that one of the archers flung himself in front of an opponent's arrow to prevent a score).

While Jeffery is quick to talk about archery, he is hesitant, almost to the point of

Owen Jeffery and his son Tom share a love and knowledge of archery and bowhunting. Their combined interests and experience has produced an enviable record of tournament championships and hunting successes.

discomfort, in recounting the number of tournament championships he, his son, and his wife have won. Together they have held a total of fourteen state, five regional, and three national titles. He is equally reluctant to boast of his family's accomplishments in bow hunting, which include a 1960 world class Pope and Young typical whitetail of 122 6/8 points taken in Missouri.

As an archer and bowhunter, Jeffery recognizes that each individual has his or her own preferences. He points up the importance of this individuality when fitting out a person with archery equipment.

"Shooting a bow is a personal thing. There's a lot of effort required. If a guy knows what he wants, we work with him toward that end. For example, most hunters shoot a compound bow, but if a person has a really strong feeling for the more traditional longbow or recurve design, we'll work within those wishes. But if the individual asks us what he or she needs, we'll try to find out what they can comfortably handle and advise them of specifics," he says.

Most compound bows on the market offer draw weights of fifty up to seventy pounds. But the most common error Jeffery sees is a beginner selecting a bow which requires more effort to draw and hold than he or she is comfortable with. Such "overbowing" usually results in failure to practice and, ultimately, discouragement.

"You really need to draw different weight (pull) bows before settling on a specific draw weight," Jeffery advises. "Go to a shop or club that can help you select a bow that fits and a set of arrows matched to the bow and your own draw length.

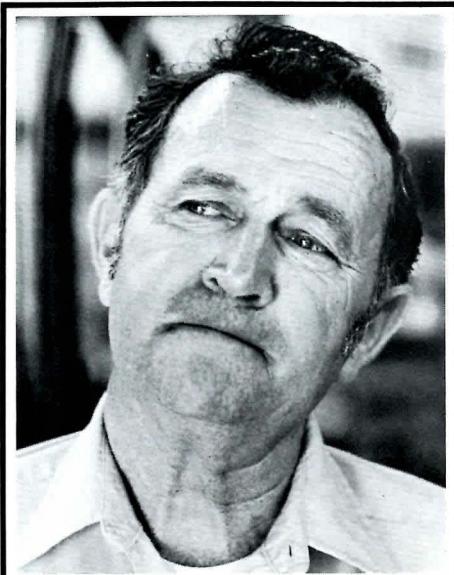
"When I talk about matched arrows to draw length, I'm speaking of the distance at full draw from the outside edge or back of the bow to the inside of the arrow nock (notch). This varies with each archer, depending upon arm length, stance, and anchor point (the place at which the draw hand touches the face)." The bowyer demonstrates by pulling an imaginary bow string until the index finger of his draw hand touches the middle of his mouth.

"An anchor point can be the thumb, first, second, or middle finger against the chin, nose, mouth corner, or midpoint—whatever is comfortable," he explains. "Once you decide on it, use the same point each time, or you'll lose consistency, and the arrow may go anywhere."

The dark-haired bowyer advises that arrows should be about one to two inches longer than an individual's draw length to allow for hunting broadheads. Arrows must be matched in spine (stiffness) to the bow's draw weight.

"Matching arrow spine to bow draw weight is essential because of a phenomenon called 'archer's paradox,'" Jeffery notes. "Without becoming too technical, the initial energy in the drawn bow string pushes an arrow so that it flexes inward then bounces outward around the bow and then





"Shooting a bow is a personal thing. It takes a special effort."

back inward. You can visualize this as a slight S. Too much stiffness and the arrow will go left of target. An arrow that is too limber will go right."

In addition to matched bow and arrows, Jeffery lists necessary archery equipment as an arm guard to keep the bow arm's shirt or coat sleeve out of the way, a glove or finger tab for the draw hand, a secondary arrow rest, a nocking point, and some type of quiver to hold extra arrows.

"Most hunters prefer a bow-type quiver such as the 'Kwikee Kwiver,'" Jeffery says. "Other items advisable for the hunter may include a camouflage bow cover, some good broadhead hunting points, string silencers such as the 'Cat Whisker,' a bow sight, and an extra string."

"The nocking point is the position on the bow string at which the arrow will always be held," Jeffery explains. "A tillered (balanced) bow normally produces satisfactory arrow flight when the nocking point allows the bottom of the arrow nock to rest one-eighth to one-fourth inch above 90 degrees, measured from the string to the contact point of the arrow on the secondary arrow shelf."

"Although arrows were originally shot directly off the shelf of the bow sight window, a flexible secondary arrow rest attached about one-half inch above the bow shelf allows more accuracy and decreases noise."

"Hunters used to aim and shoot instinctively, much like pointing your finger at an object. But most are having greater success with bow sights consisting of a series of pins attached to the bow sight window. Each pin is adjusted to allow for arrow drop at a predetermined range; say 10, 20, 30, and 50 yards."

While Jeffery says that almost any bow capable of casting an arrow can kill, other factors, such as penetration through muscle and shoulder or ribbones, necessitate a hefty draw weight for big-game hunting. He uses a fifty-two-pound bow, while Tom prefers a fifty-five-pound one. A forty- to forty-five-pound draw weight is considered by Jeffery as the minimum for hunting whitetail deer.

"You want good arrow penetration and flight speed to insure a hard hit and as little flight time as possible to prevent a deer from 'jumping the string,'" Jeffery emphasizes. "Deer will often hear the bow as it is released and move before the arrow reaches them. A bow with the design and power to cast an arrow well should also have string silencers to help with this problem."

"A good recurve will take as much game as the compound, but most compounds cast an arrow a bit faster, allowing a flatter trajectory and more penetration. But the main reason most bowhunters prefer the compound is the fact that the bow reaches full draw weight at about two-thirds draw, then lets off until you're holding only about fifty

percent peak draw weight at full draw. This gives a definite edge in holding at full draw while waiting for that last-minute improvement in a shot."

"The compound's design gives bowhunters another plus in that it allows a relatively



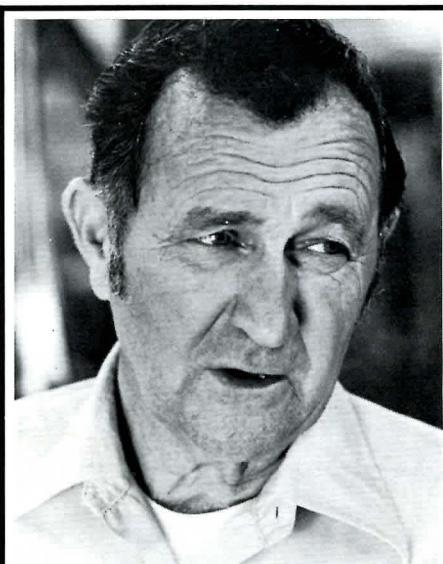
"Practice. Vary your targets and ranges. I've never seen a deer with a pie plate or milk carton behind its shoulder."

short bow length without sacrificing stability and freedom from vibration. A short bow is easier to stalk with and swing on target, because it lessens your chances of the bow hitting or becoming tangled in brush."

Jeffery prefers aluminum arrow shafts for hunting rather than wood or fiberglass, because of the aluminum's durability, resistance to warping, and lighter weight. He states that a shaft such as the "Gamegetter" is fine for hunting, but harder grade aluminum arrows, such as the XX75, usually last longer. His choice of plastic or feather fletching depends on hunting conditions.

"Plastic fletching doesn't deteriorate and works best when shooting under extremely wet conditions, but feathered is softer and allows more mistakes with less arrow flight error," he says.

Choice of broadhead hunting points is again an individual preference. Jeffery emphasizes that the most important factor is that the blades be kept razor sharp for deep penetration.



"Get yourself fitted properly with matched equipment —that's the first thing."

"I used to use a two-blade 'Black Diamond' head," he notes. "I'd file the blades a bit to get a concave cutting edge, which I believe does the best cutting job. But now I'm using a four-blade 'Satellite' head with removable razor inserts. I think the four-blade flies a little better and I like the 'Satellite's' bullet-like core which gives a strong impact point."

When the controversy of bow and arrow versus gun for a clean kill is mentioned, both Jefferys point up that gun hunters and bowmen can conjure up scenarios to back up their respective positions.

"What's important in either case is that you know your equipment and your accuracy limits and only take clean shots when you're certain of the target," the younger Jeffery concludes.

"You have gun hunters and archers who don't follow this rule," Owen Jeffery adds. "But because of the bowhunter's need to get closer to his game (usually within 35 yards), I feel that bowhunters are likely to be certain of their targets. If a man practices until he can consistently hit at 70 yards with an arrow or at 200 yards with a rifle, he's not taking too much of a chance when the game presents an open shot."

Jeffery stresses that bowhunting is a sport of consistency and accuracy, and that practice is essential. While tournament archers know the positions and distances they will be shooting from, the bowhunter can be certain only of the limits of his shooting ability. He must be capable of shooting from a variety of positions when his game is within that maximum range.

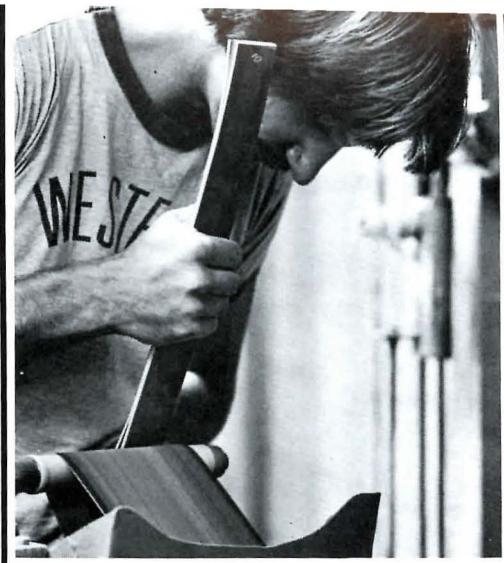
"Set up some targets starting at about 10 yards and shoot a few arrows each day to get your muscles conditioned and learn basic shooting techniques," Jeffery advises. "When you run into a problem, get qualified help. Archery is one of our most difficult sports when it comes to seeing and correcting your own mistakes."

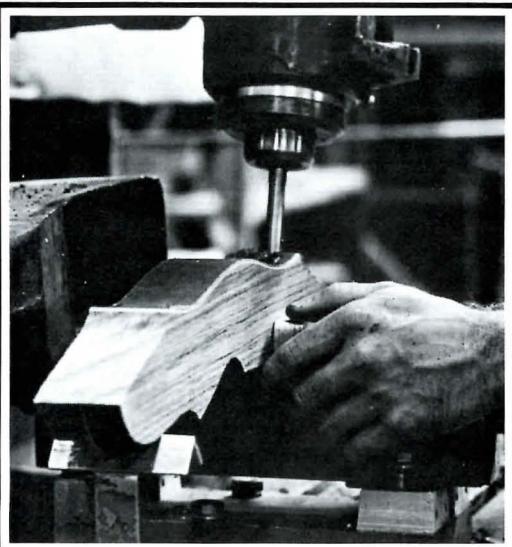
"Beginners should use field points for target practice, but hunters will want to put aside some broadheads for practice purposes. A 125-grain field point and a 125-grain broadhead just don't have the same flight characteristics. It's the same with plastic versus feather fletching, shooting with or without a camouflage bow cover, or with or without a bow quiver in place. Practice with the exact arrows and equipment you'll be hunting with."

"One common error beginners make is that of always shooting at the same type of target. You'll hear someone recommend shooting at a pie plate or at milk cartons. Placing arrows within an 18-inch grouping will usually get you within the vital chest cavity of a deer, but I've never seen a deer walking around with a milk carton or a pie plate behind its shoulder."

"A fellow aiming at a five-gallon can or at a one-quart can will usually come about as close to hitting one as the other. Pick a specific spot on your targets, whether it's a word on a can or carton or a tuft of hair on a deer. Keep your concentration on that spot until after the shot is released."

"After you've gotten the basics down, try walking through the woods and plinking at a variety of targets, such as stumps, pine cones, and tufts of grass. If you plan to hunt





A modern bow such as this adjustable compound begins with planks of wood. The mid-portion is cut, ground, drilled, and sanded from an extremely hard wood such as bubinga. Strips of more flexible wood such as ash are thinned to exact proportions, overlaid with fiberglass strips, glued and pressed, and ground for taper. After final sandings and coatings, adding decals and hardware, the bow is assembled and adjusted for a specific draw weight.

from a tree stand, set it up and practice from it, remembering to vary your angles and distances."

Jeffery feels that bowhunters must practice twice a month or more during the closed season. As the season approaches, these sessions should increase to as much shooting as the individual can manage. He also stresses practice during hunts when not actually stalking or standing for game.

"Tom and I like to get out as much as possible during the deer season, but we also use the bow for small game. During the closed hunting season, we'll go bowfishing

for carp and gar," he adds with a grin toward his son. "It's a good way to practice and get in some hunting, and we know plenty of people who welcome the fish."

The experienced bowyer and hunter also stresses the importance of learning to recognize and understand game habits and signs. He prefers to scout an area well before and again just prior to hunting, and tries to set up his deer stand a day before hunting from it.

"Get in the stand and see how it will feel and where your available shots might approach from," he says. "I also prefer to tie a safety rope around myself while in the stand. Unbroken falls have crippled and killed hunters.

"Most bowhunters, including myself, wear soft camouflage clothing when hunting, but if there are going to be a lot of people in the woods, such as during gun season on public lands, I would not be caught out there without blaze orange. Your own safety and that of fellow sportsmen comes first.

"Bowhunters and gun hunters must be aware of what we've got and conscious of our actions toward each other, the game, and the non-hunter. If we're not, we're only adding fuel to the anti-hunting fires, and fifteen or twenty years from now—Oh, God . . ." he shakes his head at the thought of laying down his bow.

Bowhunting has been part of man's past for over 9,000 years. Introduced as a means of taking more game at greater distances, the bow and arrow developed into an awesome weapon of warfare replaced only with the invention of gunpowder. Craftsmen and sportsmen such as Owen Jeffery brought the bow back as a challenging means of cleanly taking game. With an expanding number of bowhunters in South Carolina and throughout the nation, the bow is not likely to disappear from a lack of interest or ethics.

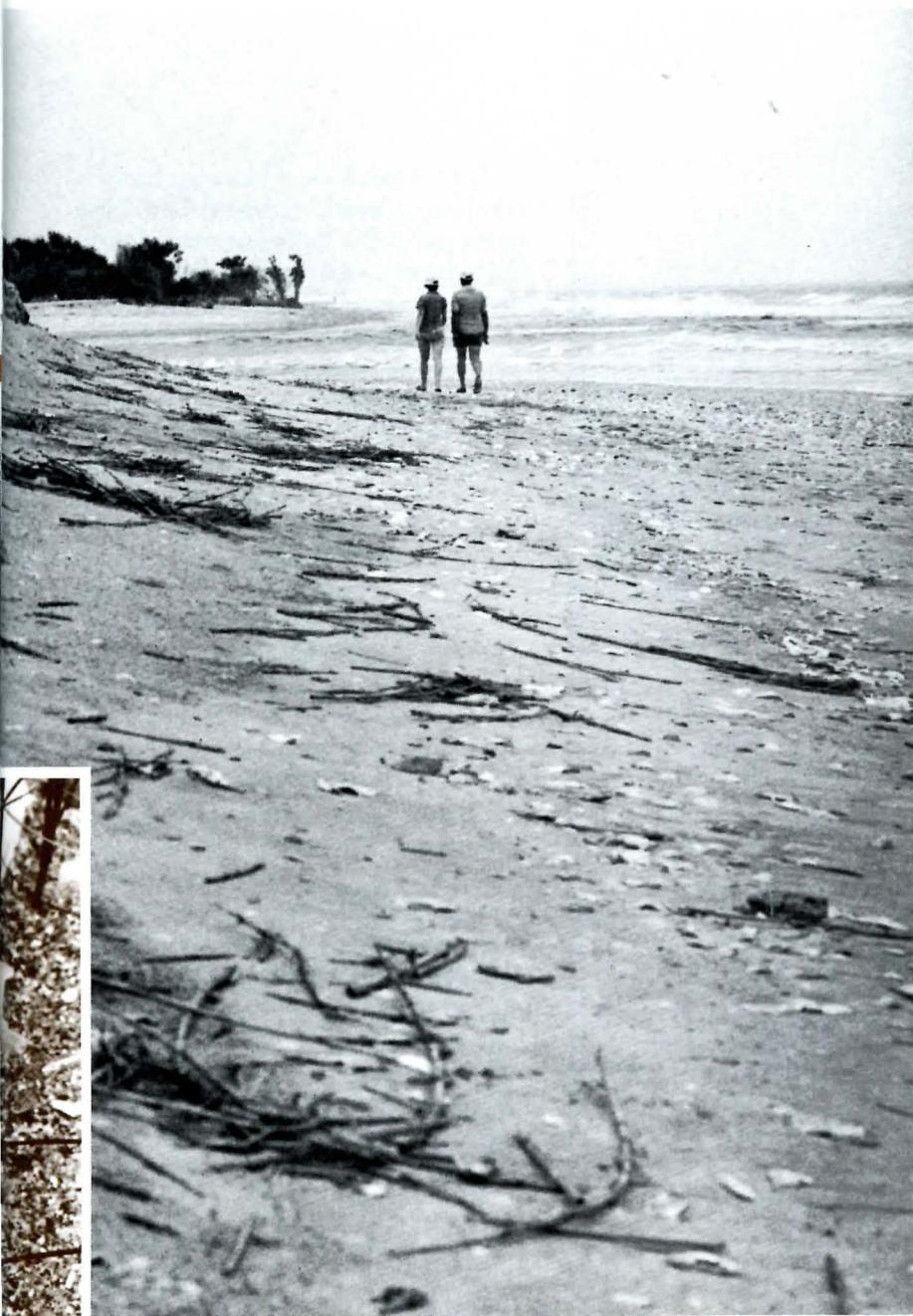
For more information on bowhunting in the state and contact with bowhunters in your local area, contact Larry W. Ammann, Secretary-Treasurer, S.C. Bowhunters Association, 5924 Willard Drive, Hanahan, S.C., 29406.

Formed this past spring, the association has representatives in each game zone who can provide information on local clubs and the state organization. 



Flipflops and sandals on the coast tread unknowingly past fascinating remnants of Ice Age South Carolina. Because of changes in sea level, this coast harbors horse teeth and armadillo shells along with shark teeth and whale bones, all making it an area of international significance.





d

uring the last Ice Age, when much of

the world's water was encased in giant polar ice caps, sea level fell dramatically and what now is Edisto Beach was left as much as fifty miles inland. The habitat then was a grassy savannah where horses, camels, llamas, and bison grazed with wary eyes on dire wolves and jaguars. In scattered forests huge mastodons and mammoths browsed on tree leaves alongside giant ground sloths. Mud turtles and pond sliders basked on the edges of freshwater streams and natural ponds.

Today, on an early summer morning before crowds of people arrive, the beach at Edisto State Park is quiet, save for the ceaseless pounding surf. A hazy sun glints on the wing of a hovering least tern; a mole crab scuttles through a raft of polished oyster shells. Up in the shallow dunes, a willet calls its own name repeatedly.

A few scattered beachcombers in floppy hats and rolled-up trousers walk the wavering water line. With eyes fixed on the sand, they clutch little buckets of treasure. They would be surprised at how very different this area looked 100,000 years ago, although the evidence surrounds them.

by Pete Laurie
photography by Phillip Jones

captured in stone



Albert E. Sanders of the Charleston Museum locates a fragment of mandible on a Squalodont skull taken from the Ladson site. When a fossil of this size is discovered, Sanders wraps it in a protective plaster cast for shipment to the museum where it is cleaned and more extensively examined. This particular fossil proved to be that of a previously unrecorded genus at least twenty-six million years old and is one of the largest and most complete Squalodont skulls ever recorded.

The animals of the last Ice Age, many now extinct, left a legacy of fossilized bones, teeth, and shells. A morning's stroll down Edisto Beach to Jeremy Inlet can produce a double handful of turtle shell fragments, horse teeth, armadillo shell scraps, and other fossil bits and pieces. Occasionally lucky collectors discover whole mastodon jawbone sections with teeth in place, or perhaps a complete sloth femur.

any remnant or trace of plant or animal of a past geological age found embedded in the earth's crust is considered a fossil. Leaf prints or tracks on now petrified surfaces are fossils, as are bones and teeth. The term fossilization refers to a geological process by which the natural minerals occurring in buried animal bones are gradually replaced by harder minerals from the surrounding soil. The result is to turn once fragile bone into rock. The fossilized remains of long-extinct animals provide one of the few clues to the changes life on Earth has undergone.

The coastal portion of South Carolina contains such an abundance of readily accessible fossils that it is considered one of the most important fossil areas in the world. Fossil beds found to date range from about 20,000 to 75 million years old. Although many people associate fossils with dinosaurs, fossil beds in South Carolina old enough to contain dinosaurs generally are marine deposits. As a result, these beds contain the remains of ocean animals,

not land animals. Unlike the often unconsolidated sedimentary rock of the coastal plain, the rocks in the upper part of South Carolina are igneous and metamorphic in origin and yield few fossils.

For fossilization to occur, an animal must be buried quickly. The bones of an animal that dies on an open plain generally will decompose before any natural burial could occur. But the bones of animals caught in mud slides, trapped in bogs, or buried by the shifting sands on a beach have a good chance to become fossils. Large limb bones, skulls, teeth, and shells stand the test of time better than tiny, more-fragile bones. Small rodents and birds are seldom found fossilized, and soft-bodied animals, such as jellyfish or worms, generally are not preserved at all. The result is a rather incomplete record of the animal community present at any given time.

To make the study of fossils even more difficult, seldom is a complete skeleton

discovered. Fossil hunters usually pick up a single tooth, perhaps a broken rib, or a skull fragment. Putting all these pieces together and understanding what they mean require patience, luck, and imagination.

Paleontologists, those who study fossils, generally compare fossil bones to the bones of living as well as extinct animals. Reptile skeletons, for example, all have certain similarities so that a single fossil bone might be readily identified as part of an ancient reptile. As museums around the world develop more extensive fossil collections, individual bones become easier to identify.

t

he ideal situation is to find a whole skeleton in one place, but a variety of factors work against that probability. The sediment beds where fossils develop often are later eroded by changing river patterns or by rising and falling sea levels. As a result skeletal parts become scattered.

In the coastal plain, where sea level fluctuated greatly during the Ice Ages, fossils from several different ages are mingled. An older sediment layer which contained marine animals was long ago eroded and mixed with a much younger layer containing land animals. The result is shark teeth mixed with horse teeth, although the sharks inhabited the area several million years before the horses. Wave energy on beaches continuously erodes fossils from the local sediments and mixes them with fossils from previously eroded beds.

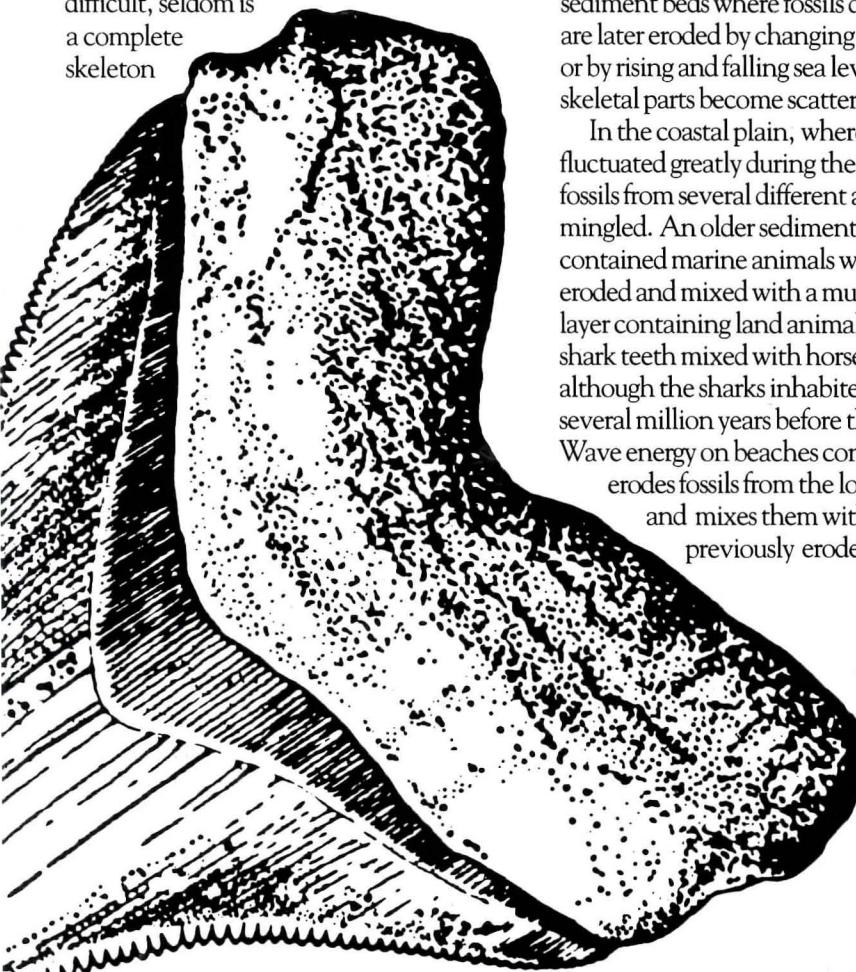
i

In 1969 two youngsters

found a series of extinct whale vertebrae in a ditch bank near Summerville. They reported their find to Albert E. Sanders, curator of natural history at The Charleston Museum. Sanders explored the area carefully and found enough fossils to convince him that a major excavation of the area would be worthwhile.

Funded by the National Geographic Society and the Charleston Scientific and Cultural Educational Fund, Sanders unearthed the remains of seventeen ancient whales during the summers of 1970-72. The whales represented four genera, three of which were previously unknown to science. Approximately 26 million years old, the skulls of these whales provide a great deal of new information on how whale skulls have evolved. Whales are thought to have evolved from land animals. The original skull bones were "telescoped" so that modern whales breath through the top rear of their heads rather than from the snout. The skulls from the Summerville dig exhibit intermediate stages in this telescoping process that illustrate how whale skulls changed to allow the animals to adapt to an aquatic existence.

Why were so many skeletons of such wide-ranging creatures found in such a small area? Studies of the sediments and clay minerals that compose the formation in which the whales were found show that the area was a shoreline, and Sanders speculates that the whale bones are the remains of animals stranded on this ancient



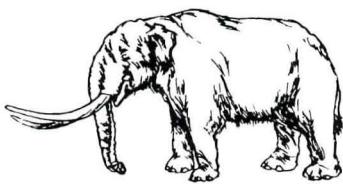
The four- to six-inch teeth of *Carcharodon megalodon*, a great prehistoric shark related to present-day great white sharks, indicate this beast's huge size and awesome power.

South Carolina's Fossil Record

Epoch

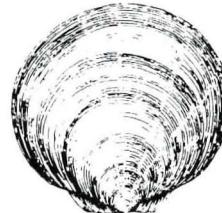
Pleistocene
(2,000,000 years ago)

Typical Animal



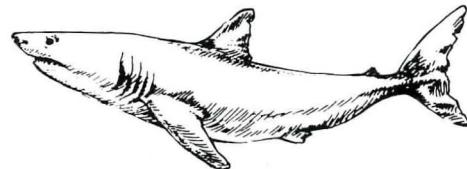
Remains of the large elephant-like mastodon have been found in an as-yet-unnamed formation type at Edisto Beach. Mastodons differ from the related mammoths and existing elephants chiefly in the form of the molar teeth.

Pliocene
(5,000,000 years ago)



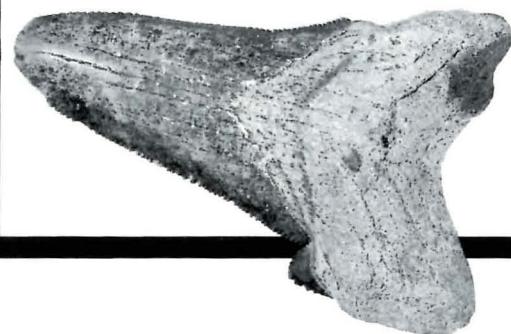
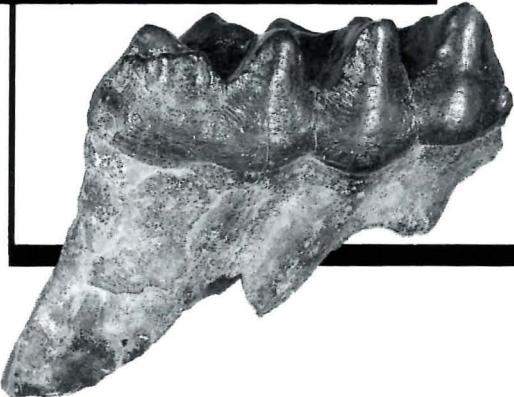
Amusium mortoni, a large thin-shelled scallop with a smooth exterior, has been found in the Goose Creek formations of Charleston, Dorchester, and Berkeley counties. This prehistoric scallop is related to present-day tropical paper scallops.

Miocene
(24,500,000 years ago)



Fossils of the great shark, a huge shark closely related to today's great white shark, have appeared in reworked beds (formations disturbed by the ocean and redeposited with more recent materials) in the Goose Creek formations of Charleston and Dorchester counties.

Common Fossil Types



beach just as whales are today on the modern coastal shore.

A limb bone of a giant crocodile, estimated to have been thirty feet in length, four kinds of marine turtles, and a number of birds were among the other fossils found during the Summerville dig. Numerous clam casts, fish vertebrae, and shark teeth also were found.

Teeth are common fossils because the enamel coating protects them from decay while fossilization takes place. In the Carolina area, shark teeth of all sizes are particularly common. Most sharks have a

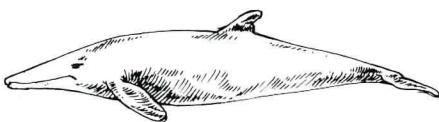
great many teeth that periodically fall out and are replaced, and sharks have been abundant ocean residents for millions of years. Since sharks have cartilaginous skeletons which seldom fossilize, nothing but the teeth remain.

The whales and other vertebrate remains found at the dig were instrumental in determining the age of the fossils. By comparing them with those remains found at other localities around the world, Sanders was able to determine the age at about 26 million years. In light of the vast amount of material unearthed and the

acquired knowledge of whale evolution, Sanders calls the area "one of the most important fossil cetacean (whale) localities in the world."

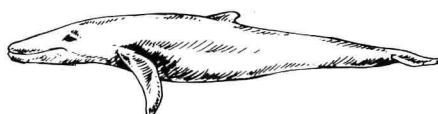
Rivers often are good places to find fossils as the currents continually cut through sediment beds and expose new material. Divers regularly explore coastal river beds for fossils, although a hobby diver's license is required for this activity and important material should be turned over to a museum. The generally poor visibility in local rivers makes the finding of fossils quite difficult.

Oligocene
(37,500,000 years ago)



The Cooper Marl and Chandler Bridge formations of Charleston and Dorchester counties hold the remains of an extinct group of whales known as Squalodont. These primitive whales probably gave rise to modern toothed whales, dolphins, and porpoises.

Eocene
(53,500,000 years ago)

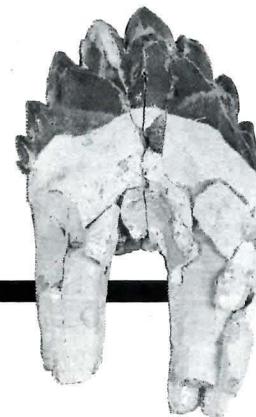


Scientists have only conjectured at the appearance of Archaeocete, another primitive line of extinct whales whose remains have been located in the Cooper Marl, Santee Limestone, and Chandler Bridge formations.

Paleocene
(65,000,000 years ago)



Turritella mortoni, an elongated, narrow, strongly curved marine gastropod related to modern turrell shells, has been found in a Black Mingo formation near Wilson's Landing on the Santee River in Berkeley County.



Technical assistance provided by Albert E. Sanders.

the state of South Carolina legally owns all material more than fifty years old that is found on the bottom of navigable streams. Although the law was initially written to protect the state's interest in man-made artifacts, it applies to fossils too. Divers who collect fossils are required to report their finds to the University of South Carolina's Institute of Archaeology, which passes the information on to the South Carolina Museum Commission. The Commission has the legal right to confiscate fossil

materials from individuals, but according to Rudy Mancke, the Commission's curator of natural history, the Commission has never done that and has no plans to do so.

"If people want to give us fossils, that's fine," said Mancke. "Otherwise we just like to know what people are finding." Mancke added that he sometimes photographs reported fossils for his records but puts no pressure on individuals to give up their prizes.

Ditch and canal excavation sites, which become exposed when the topsoil is removed from the sediment layers below,

are prime fossil grounds. Complete skulls, chains of vertebrae, or several large limb bones found together should be left for experts to excavate. Valuable material can be damaged or lost when improperly removed or handled.

And while a collection of fossils on the mantelpiece make for good conversation, scientific progress is stunted by the hoarding of specimens that could be made available for study by specialists today and many years into the future. Such specimens serve as permanent records of extinct animals that once inhabited South Carolina. 



State fisheries biologist Randy Geddings looks over a thirteen-pound twelve-ounce brown trout that broke a twenty-year South Carolina record. Mike Gravely (left) caught the fish while trolling a red and silver Swedish Pimple spoon in Lake Jocassee last January.



Jack Pace and his fourteen-pound ten-ounce brown trout. Caught from Lake Jocassee in April, Pace's trout took a jiggled live shad.



Curtis Hedden was fishing at night with a live shad on ten-pound-test line when this fifteen-pound fourteen-ounce state record trout took the bait.

Jocassee Pays Off

Wildlife department fisheries biologists' predictions that Lake Jocassee, South Carolina's scenic mountain lake, would eventually produce record rainbow trout have proven true.

During the first five months of the year, the three largest brown trout on South Carolina records were caught from this 7,565-acre Duke Power Company reservoir.

Largest of the trout weighed fifteen pounds fourteen ounces and was caught May 6 by Curtis Hedden of Pisgah, North Carolina. On April 11, Jack Pace of Saluda, North Carolina, landed a fourteen pound ten ounce trout. Earlier yet, January 22, Mike Gravely of Sunset boated a thirteen pound twelve ounce brown trout that broke the twenty-year record for the species.

Fisheries personnel with the South Carolina Wildlife and Marine Resources Department began an annual stocking program for Jocassee in 1972. The clear cold-water reservoir began filling in 1971 and reached full pool in 1973.

As a new reservoir, Jocassee provided extraordinary habitat for the fish of the new fishery. In a lake environment, trout grow larger and at a faster rate than in the stream environment.

"The trout fishery in Lake Jocassee is a put, grow, and take phenomenon," according to Randy Geddings, the wildlife department's trout biologist stationed at Clemson.

"Once a year," the biologist reported, "a minimum of 40,000 brown and rainbow trout of about nine inches each are stocked into the lake. These fish are not known to reproduce in the lake," he added.

Steelheads or searun rainbows have also been introduced at Lake Jocassee.

A RECENT STUDY BY the New York Department of Conservation found that fish which swallow a hook can survive after release—if they are handled properly.

Biologists found that sixty percent of the fish died when the hook was removed by hand, while only seventeen percent died if the leader was clipped and the hook was left in the fish. Less than one percent of the trout lightly hooked (hook embedded in jaw, tongue, or roof of mouth) died.

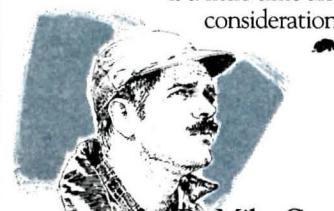
*Squeezing the fish's body cavity will kill it by damaging the internal organs. Hold it by the lower jaw and gently remove the hook, using needle-nosed pliers if necessary. If the fish has sharp teeth, gently grasp it by the gill covers when removing the hook.

*When the protective layers of slime which cover the fish are removed by handling, bacterial infection occurs. To minimize this, avoid handling a fish with dry hands. However, it is better to handle a fish with dry hands than to squeeze it because you have a poor grip. Holding it by the lower jaw and keeping it in the water while you remove the hook eliminates both problems.

*Inadequate live wells are also big mortality factors. Studies show that, under the best conditions, mortalities range from five to thirty-two percent of the fish held in a live well. Make sure the well is properly aerated, and return the fish to the water as soon as possible.

*Removing deeply embedded hooks is almost a sure way to kill a fish. If the fish has swallowed the hook, don't try to pull it out. Cut the leader as far down the fish's throat as possible.

By using the proper release techniques, anglers can reduce fish mortality considerably. All it takes is a little time and consideration.



By Mike Creel

Freshwater