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# ALLIGATORS

## Dragons in Distress

By ARCHIE CARR, Ph.D.

Photographs by TREAT DAVIDSON  
and LAYMOND HARDY

**I** FIRST HEARD the voice of the alligator long ago in a cypress swamp at the edge of the "Big Scrub," a sand-pine area near the St. Johns River in Florida. Suddenly, above the clamor of the frogs, a heavy, rhythmic rumbling sounded in the distant dark. I was newly arrived in Florida and had never heard a sound like that before.

The night was clear, so it couldn't be thunder, and for a moment I thought it might be somebody dynamiting fish. But then the sound rumbled in again, and I realized it was an alligator bellowing. Two others joined the first, and the ponderous, pulsing chorus, half sound, half shaking of the earth, seemed to rock the whole swamp.

Today no alligators bellow in that tract of swampland. The frogs are quiet there too, and the cypresses are long since lumber. However, a few places remain where the old song can still be heard, and I, for one, seek them out at every opportunity.

The roar of the alligator, rolling out of the mist of April marshes, is one of the great animal sounds of the world. It

**Eight feet of armored anger**, a hissing alligator warns intruders away from the nest while waiting for her young to hatch (above) in the Florida Everglades. Hardy survivors from the Age of Reptiles, alligators now face a serious threat as civilization claims their swampland and fashion puts a high price on their hides.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY



is a song 200 million years old, an echo of the Age of Reptiles, when cold-blooded creatures ruled the earth. But now the incredible voice is falling silent, and the needless loss will not sit well with our descendants.

Two things have happened to accelerate the alligator's decline. One is the recent fantastic rise in the price of hides and resulting increase in illegal hunting. The other is the destruction of habitat by drainage and development projects.

#### Family Gator Comes of Age

The plight of alligators, and of people who live in alligator country, is epitomized by my own family's experiences with the alligator in our pond near Micanopy, Florida.

The family alligator is going on ten years old. She measures about eight feet, and we have known her since she was two feet long. We have watched her grow up and drive off the other alligators, start catching turtles, and half choke to death on six mallards we had hopefully put on the pond.

One day at dawn she made us proud when she bellowed for the first time. Soon another big alligator turned up, and for a while the two of them circled and dashed about, making waves and throwing foam and scaring the gallinules into worried flight. Later we found her nest on the far shore of the pond. Forty-two little gators came out of it.

The pond was only eight acres in wet periods, and during every dry spell it shrank. In those times the fauna was concentrated, and the alligator ate furiously. We could hear her cracking turtles from clear up in our living room.

Then the pond would flood again and dilute the already reduced remnants of the turtle, bullfrog, and marsh-rabbit populations. The sulphur-bellied frogs that live out in the pond and the big bullfrogs that bellow under the button-bushes around the edge became few and quiet.

By this time the alligator was so hungry that she broke into the strong cage we had built for a new flock of mallards and ate two of them. Even the little alligators disappeared. My wife charitably suggested that they went away through the woods, but I can't help thinking their mother ate them.

So living with our alligator has become a problem. She is still out there in the pond and she is a nuisance—but a very exciting one.

In fact, the alligator is a pretty exciting kind of animal. It and its relatives—the crocodiles, the tropical American caymans, and the Old World gavials—are the only surviving members of the Ruling Reptiles, the main stem of the reptile tree that produced the dinosaurs and the flying pterosaurs.

There are two species of alligators: the familiar *Alligator mississippiensis*, ranging from North Carolina to the Rio Grande and up the Mississippi Valley to Arkansas (map, page 136), and *Alligator sinensis*, which lives in China, confined to the inhospitable marshes of the Yangtze Delta.

A great many features set the alligator and its relatives apart from other reptiles. One is the spectacular voice. Another is the care the female bestows on the nest and young. Most reptiles are pretty casual about parental obligations; instead of guarding their eggs, they lay them and leave them.

I personally fell afoul of the maternal instinct of the alligator one June day when I blundered into a den pool while

On a bold adventure, Dennis and Lydia Coulter open an unguarded alligator nest on their grandfather's ranch near Venus, Florida. Cumbersome gators, using mouth, claws, and body for tools, engineer snug mound-shaped hatcheries made of plants and mud. Thirty to seventy eggs, laid in early summer, hatch nine weeks later.

Eight-inch dragons weighing only two ounces squirm free of shells after breaking through with a tiny "egg tooth" atop their snouts. Colleagues held the mother at bay to allow the photographer to make this unusual picture.

When ready to emerge in late summer, the babies signal by calling "rumpf, rumpf" while still in the egg. Solicitous mothers pull away nest material so the infants can escape to the nearest water.

Young enter a hostile world as the prey of mammals, large birds, and reptiles, including adult gators. Those that survive three years measure as many feet or more; by then the hunted become the hunters, capturing former enemies in bone-crushing jaws armed with 80 teeth.

No one knows the life expectancy of an alligator in the wild. Tagging studies may provide answers in years to come.

Eager eater, a 14-inch alligator lunches on a crayfish. Other shellfish, insects, small fish, and carrion round out its diet.

Gators down any animal they can catch—plus cake and marshmallows offered by sightseers. But the awesome reptiles rarely attack humans unless provoked. Despite voracious appetites, mature gators go without food during winter months, when they emerge from sleep only on warm days. Scientists suspect that when cold weather slows their metabolism, gators can stay submerged almost indefinitely. In summer they must rise to breathe every few minutes.





KODACHROMES BY LAYMOND HARDY (CENTER) AND TREAT DAVIDSON © M.G.S.



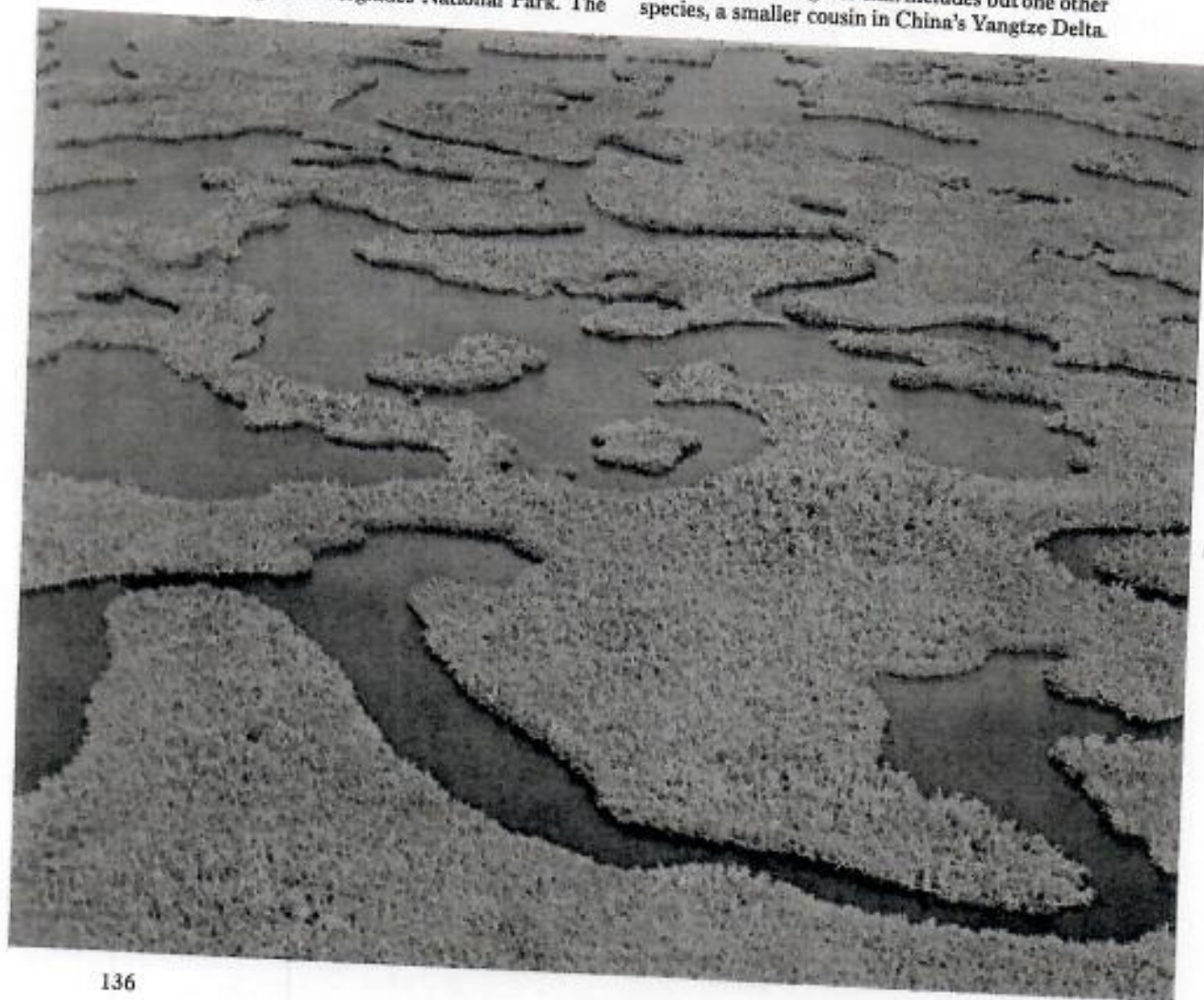


Gator country spreads from North Carolina to the Rio Grande, but its heartland lies in Florida. Spanish explorers found southern wetlands teeming with the reptile, which they called *el lagarto*, the lizard—a term anglicized to alligator.



In a jigsaw puzzle of mangrove thicket and water, alligator poachers play hide-and-seek with rangers trying to stop nocturnal raids along the western fringe of Everglades National Park. The

Everglades provide one of the last strongholds for embattled *Alligator mississippiensis*, the American alligator. The gator clan includes but one other species, a smaller cousin in China's Yangtze Delta.





hunting nests of the round-tailed muskrat in northern Florida. The old alligator came foaming over from out of the grass at the far side. I fell over backward in the mud trying to retreat up the bank. Fortunately she made no move to follow me out of the pool.

#### Tobacco Can Becomes "Gizzard Stone"

Alligators grow a little more than a foot a year. Both sexes reach maturity when they are five years old and about six feet long. From there on, the growth rate of the male is greater than that of the female. The resulting disparity in size gives the only visible clue as to which is which. In the old days alligators reached lengths of 19 feet. Today males rarely exceed 12 feet, females 8.

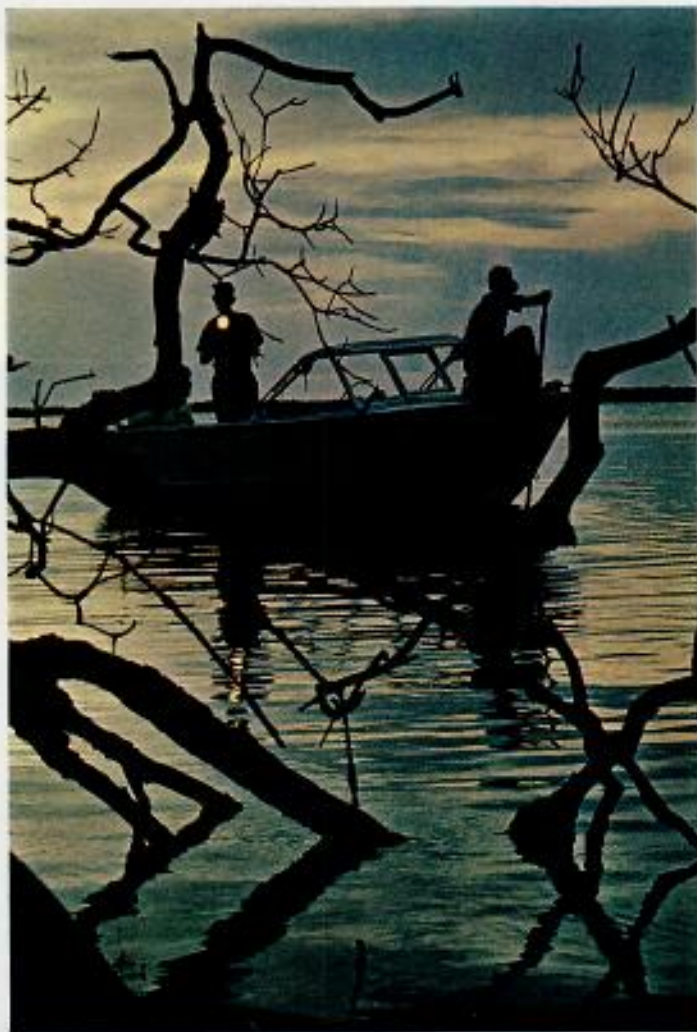
The food of the alligator is anything it can outswim or ambush and overpower, pieced out by dead animals it finds. I once cut open a big gator that had been pointlessly shot by a duck hunter near my home in Florida. In its

stomach I found, besides some garfish scales and a few feathers, three smoothly rounded pieces of pine wood, a fishing sinker, and a crumpled Prince Albert tobacco can.

Such odd objects are not proof of foolish feeding by the alligator. They are taken in as "gizzard stones," to help grind the coarse food the gator eats. Where duck hunting is heavy, alligators are often found with shotgun shell casings in their stomachs.

Because of their great size, heavy armor, and frightful biting power, mature alligators

**Peering for poachers,** rangers patrol the park. Though legal hunting exists only in a few counties in Georgia, poachers slaughter thousands of gators annually, selling hides to black-market buyers for up to \$6 a linear foot. National Park Service Ranger Richard A. Stokes (left) reports a typical result: "In 1958 one branch of the Shark River contained over 300 alligators in one mile. Today you're lucky to see three in that same mile."



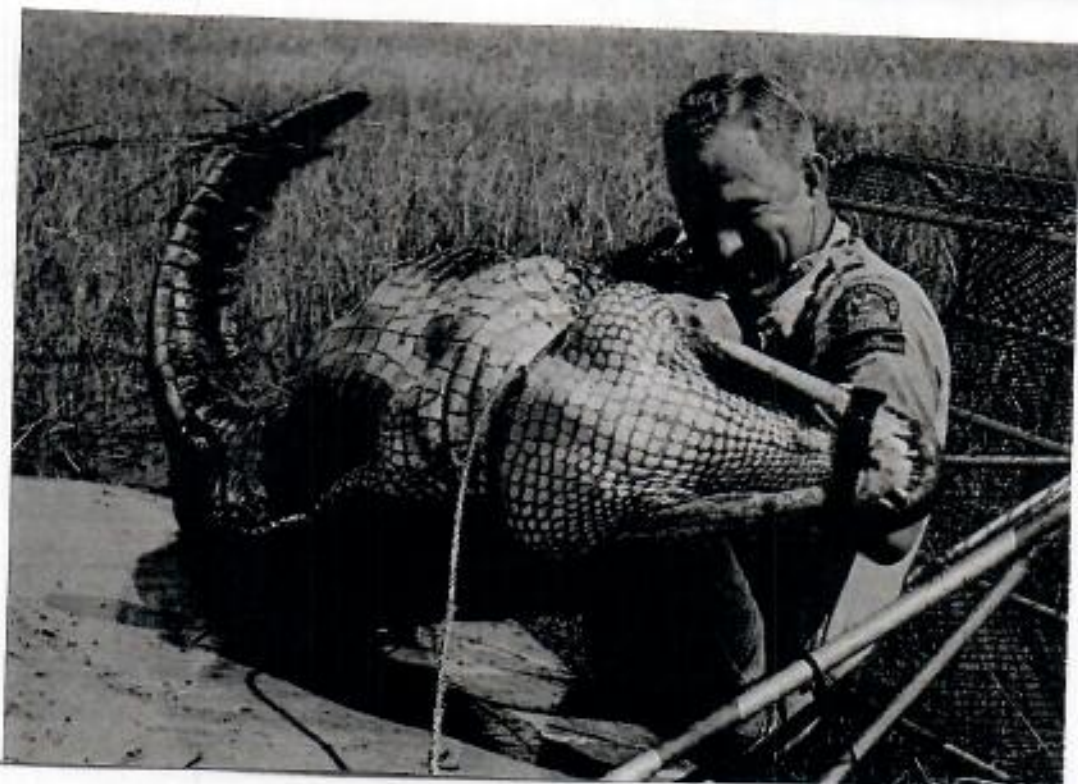
EXTACHROME (ABOVE) AND KODACHROME BY OTIS IMBODEN © N.G.S.





EXTACHRONES (RIGHT AND BELOW) AND KOGACHRONES BY TORY RASSETT © R.S.S.

Squaring off with a snapping, tail-lashing nine-and-a-half-footer, Lt. Tom Shirley of the Florida Game and Fresh Water Fish Commission exploits its only weakness—the jaws. Despite a bite that can smash cow bones like kindling, an alligator's jaws, once closed, can be held together by a man with relative ease (opposite and pages 146-7). Lieutenant Shirley will force the mouth of this one shut by prying up its lower jaw with a pole. Each summer he zips in his airboat over a saw-grass sea near Lake Okeechobee, marking gators for conservation studies.





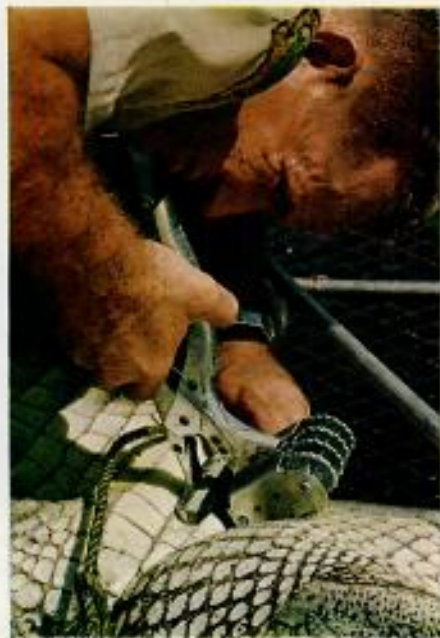


**Death-dealing snout in his grasp,** Lieutenant Shirley struggles to turn his captive on its back before the gator twists imprisoned jaws free. Overturning causes the alligator to relax, almost as if hypnotized.

After taping the mouth, the officer heaves the 250-pound beast onto his airboat (left).

**Hog-tied and helpless,** the gator gets a number tattooed on a throat scale. The number will enable scientists to trace the animal's development and travel. The lieutenant also records measurements for later comparison.

Though never bitten in 12 years of conservation work, Lieutenant Shirley has taken glancing blows from thrashing heads and tails. "Once a big male jumped four feet off the ground trying to get at me," he recalls. "Releasing man-handled gators can be as chancy as taking them. Sometimes they bite big chunks out of the steel-mesh 'grass roll' on the front of the boat. When we work from swamp buggies, they go for the tires."





are immune to attack by any predator in their geographic range except man. The eight-inch babies, on the other hand, are relished by many other creatures. Otters, raccoons, herons, snapping turtles, fish, water snakes—all are avid eaters of little alligators. If it were not for the asylum of the den pool and their mothers' vigilance, little alligators could not possibly survive in numbers great enough to keep the race alive.

Adult alligators have a strong sense of territory. Zoologist Robert H. Chabreck of the Louisiana Wildlife and Fisheries Department analyzed movements based upon studies of 2,024 alligators that were tagged and released between 1959 and 1965. He found that, after spending the first 18 months of their lives in or near the mother's den pool, the young leave home and start traveling. They retain their wanderlust until they mature.

Once the young are grown, they make dens of their own and presumably defend their territory from encroachment by fellow alligators of either sex. The territory of the bulls is greater than that of the females, especially in the spring months, when they wander in search of mates or strike out to join females that have answered their amorous bellowing. It is then that alligators show up on Florida highways or in the yards of suburban homes.

Besides their regular seasonal movements, alligators travel about to avoid drought, ab-

normally high water levels, or other drastic changes in their habitat. They also congregate wherever any unusual feeding opportunity presents itself. It is this tendency that makes it dangerous to feed alligators regularly in public places. The feeding draws unnaturally heavy numbers of alligators, and at the same time gives them the idea that anything that falls into the water—pets and people included—is meant for them to eat.

Only four months ago I saw a dramatic example of the bad effects of feeding big alligators when one ate a dachshund while we watched helplessly from the living room of my brother's home on a northern Florida lake. In this case the alligator was almost certainly one of several big ones that had been regularly fed at a lakeside cocktail lounge.

#### Unknown Instinct Guides Gators Home

One of the most surprising results of Robert Chabreck's tagging study was the revelation of a strong homing urge and capability in the alligators he worked with. One made a homing trip of eight miles in three weeks, from a point to which it had been transported in a closed box. Another was found back in its home lake four years after having been released in a place 12 miles away. Still another made a homing return of 20 miles. This may not seem impressive when compared with the long-distance homing of pigeons, but it is an



Spadelike head distinguishes the alligator from its slender-faced relative, the American crocodile. Meaner-tempered and faster-moving, the croc prefers salt water and the tropical climate of Latin America. It occurs in the United States only in the Keys and extreme southern Florida.

Crushing a gar, an alligator aids nature's balance while it satisfies its own healthy appetite. The bony-scaled fish fears few other enemies. Without a check on their numbers, schools of spotted gars (right), growing to two and a half feet, would eat the Everglades clean of bass and bream.

Valuable allies of conservation, alligators help fellow marsh creatures survive drought. The holes they live in create reservoirs where fish take refuge. Enough escape being eaten by the gators to re-propagate their species when high water returns.

Birds, deer, raccoons, and other reptiles seek gator holes to slake their thirst. With wriggling bodies and sweeping tails, alligators dredge up banks around the holes, where plants otherwise unsuited to the area take root.

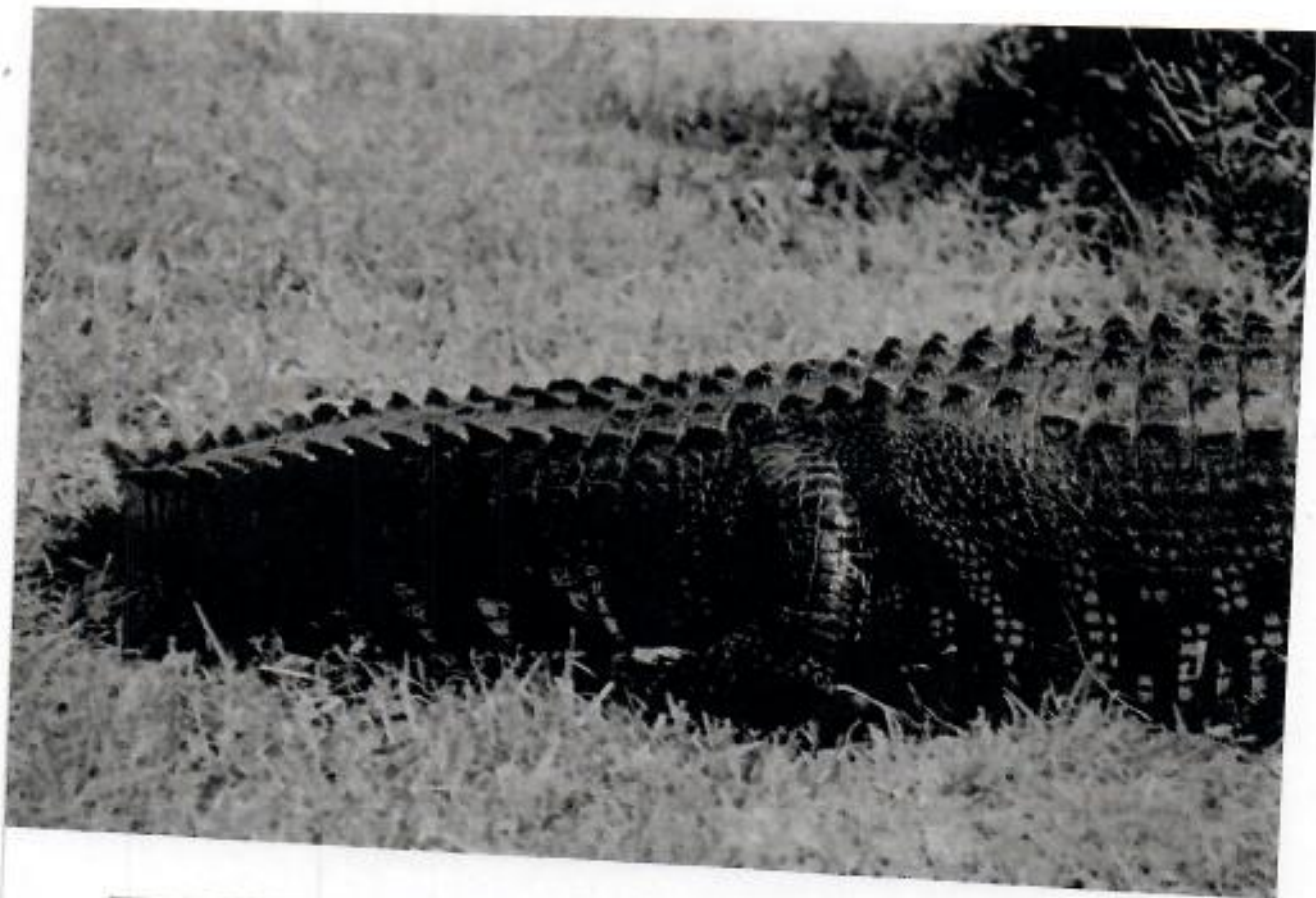




RESEARCHED BY TREAT DAVIDSON © N. E. S.







RODACHROMES BY TREAT DAVIDSON AND LAYMOND KASEY © NATIONAL GEOGRAPHIC SOCIETY



extraordinary performance for a creature that normally stays within half a mile of its den. The guidance mechanisms used in its homing feats are wholly unknown.

All animals to some degree affect the landscape they live in. The alligator does so to a greater extent than most. Its habit of controlling its environment is part of the special resilience which has allowed the species to live through the ages. To an alligator, home is a

nest, a "gator hole" or pool, a cavelike den, and a system of trails. All affect the look of the landscape.

Individual alligators live a long time in one place, and because some dens pass from one generation to the next, the effect on marsh topography can be considerable. Some gator holes come to be flanked by spoil banks of material dredged from the pool or excavated from the den. On these piles, plants different





## Gator gulps a deadly dinner

**M**OUTH wide open and fangs erect, a 5½-foot diamondback rattlesnake strikes again and again but proves no match for "Grandfather." Knowing that gators relish almost anything they can kill and swallow, photographers Treat Davidson and Laymond Hardy released the snake near the 13-foot gator. Grandfather promptly attacked.

The alligator suffered no ill effects, though he took one vicious strike on his tender tongue. At last he subdues his victim with powerful jaws. Then Grandfather systematically crushes the rattler along its entire length, finishing the job in the water. He downed the snake head first. Alligators use jaws and teeth to capture, crush, and dismember; they cannot chew and must swallow food whole or in chunks twisted from larger prey.

from those of the surrounding area take root. Little islands with sedges, grasses, and even trees often stand beside old gator holes. These islands have been made by the alligator and its ancestors by heaping up of nest piles and dredging of the den pool with mouth and tail.

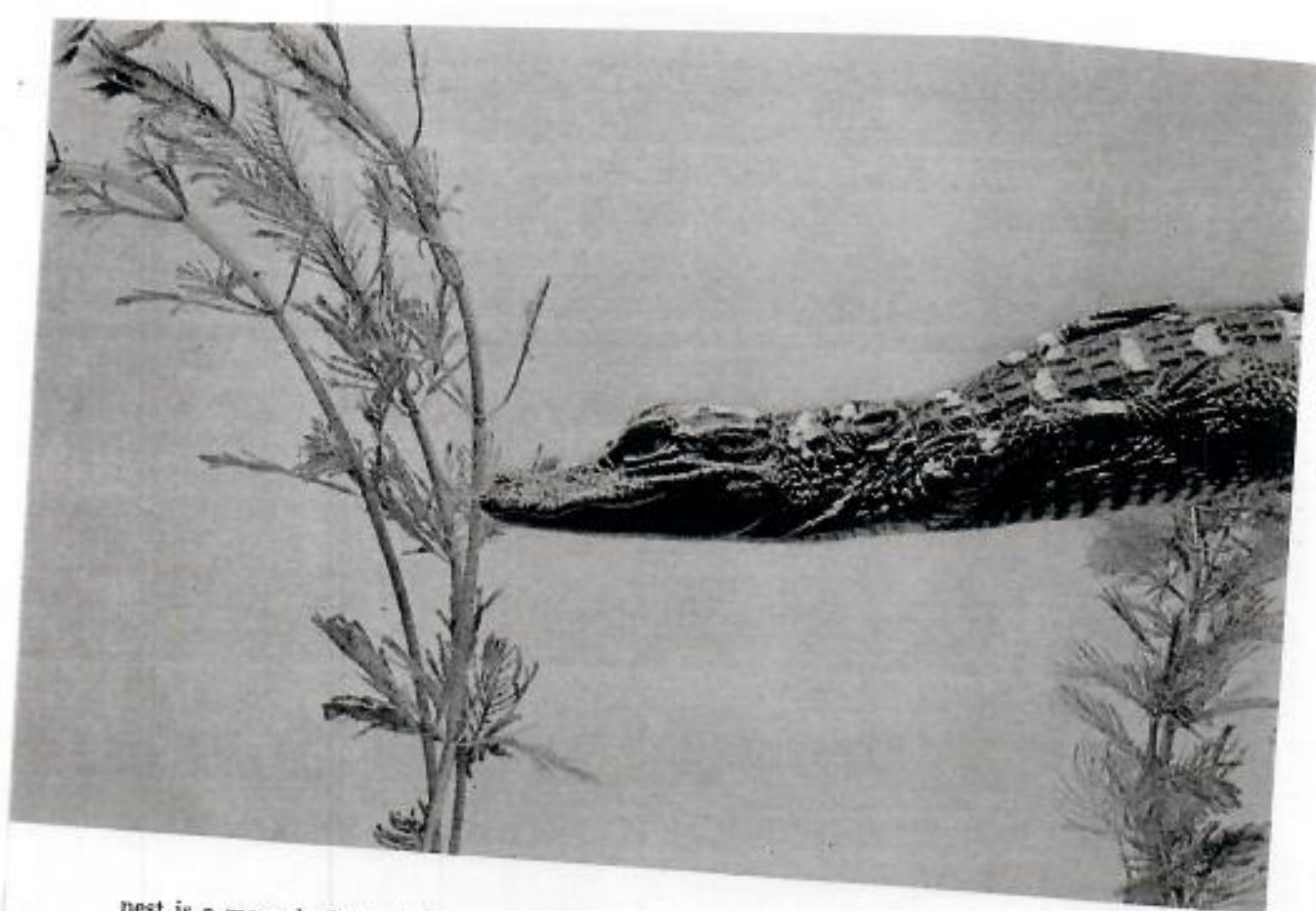
Flying over northern Florida recently, I saw a patch of white in the middle of a marsh. A closer look revealed dozens of white herons nesting in a small clump of willows.



"Bound to be a gator nest there," said the pilot, and a moment later we saw the alligator in a pool just beneath the birds. Those herons were the only ones nesting on the whole wide marsh. They were there because willows had found foothold on the spoil pile left by generations of industrious alligators.

The nest of the alligator is unique. Most crocodilians bury their eggs in sand, soil, or trash—as other reptiles do. But the alligator





nest is a mound of vegetation and debris, a solid and sizable structure (page 135).

When the nest mound has been heaped to a height that suits the alligator—usually three or four feet—she digs a cavity with her hind legs and lays 30 to 70 eggs. She covers them with vegetation which she pulls up with her mouth, and after further crawling back and forth and fussing with the mound, she finally returns to the water. She may spend much of the nine-week incubation period close by the nest, repairing the mound if storms damage it, and finally helping the young to get out of the nest when she hears their croaking.

#### Gator Holes Save Swamp Creatures

An alligator in a pond is an influential member of the pond community. His droppings fertilize the water and contribute to its productivity. His comings and goings open channels in the vegetation and slow the processes by which the pond gives way to marsh.

In much of the territory alligators live in, the normal regimen is an alternation of wet times and dry times. During droughts the alligator holes may keep the fauna from being wiped out completely. When a marsh goes suddenly dry, most of the fish, amphibians, turtles, and invertebrates suffocate in the hot mud. But each time some are saved in the

water-filled gator holes. Like a Noah in reverse, the alligator provides a place where a few aquatic creatures of every kind can survive until the water returns.

Another way alligators mold the lives of their fellow creatures is by providing islands of well-drained material in which other species can nest. Last June, walking along the shore of a lake near Gainesville, Florida, I came upon an old alligator nest. I scratched into the top and found a clutch of 16 eggs of the big black, red-bellied Nelson's turtle.

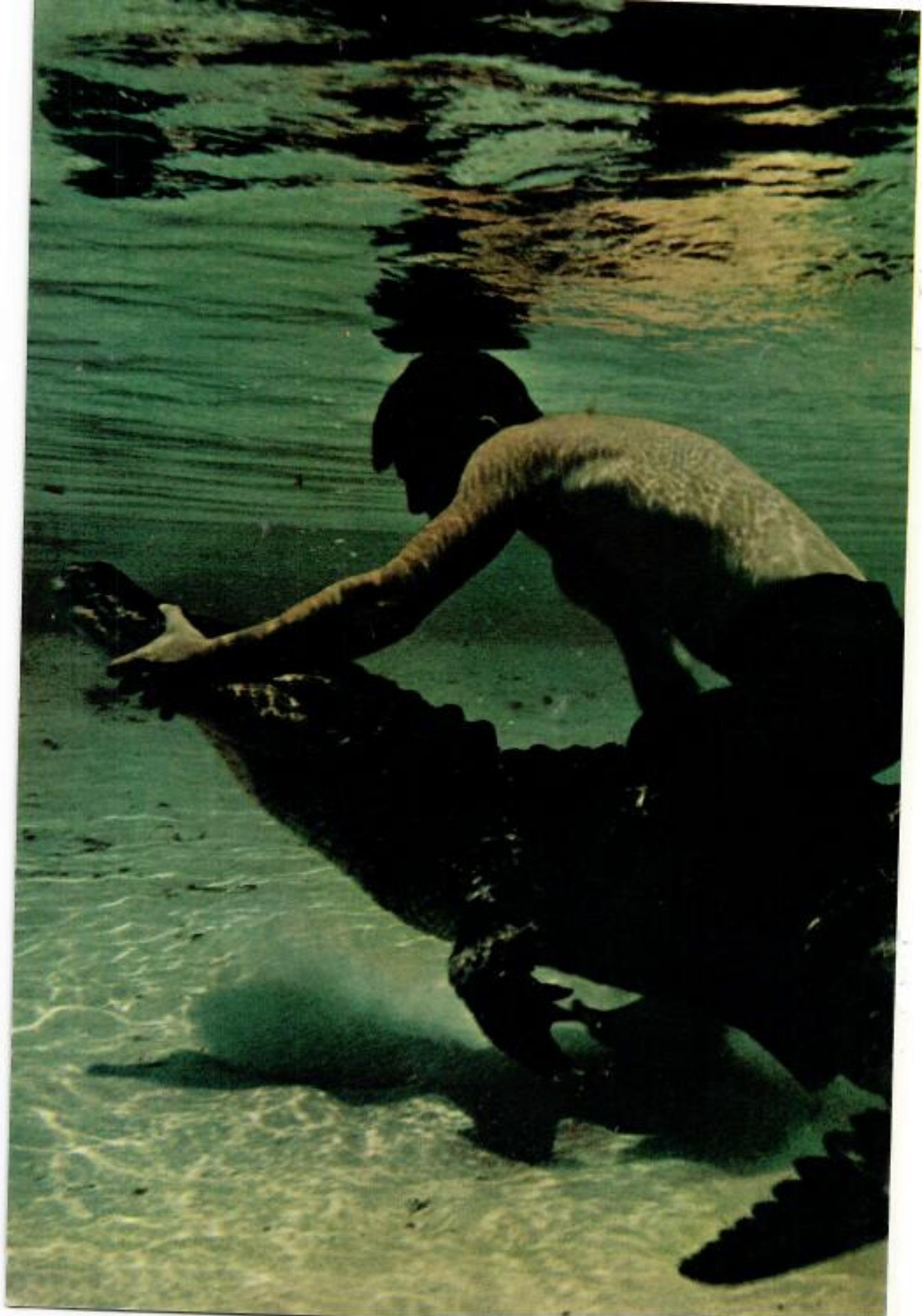
Although wild alligators serve as saviors to the swamp population, they themselves are becoming alarmingly few. Last summer my neighbor Joe Hare, who has a small airplane, flew me around Orange Lake, once the best alligator lake in northern Florida, to make a census of alligator nests. We failed to locate a single one.

This was a melancholy change in the big lake, and I asked my old friend Ross Allen, head of the Reptile Institute in Silver Springs, Florida, what he thought had caused it.

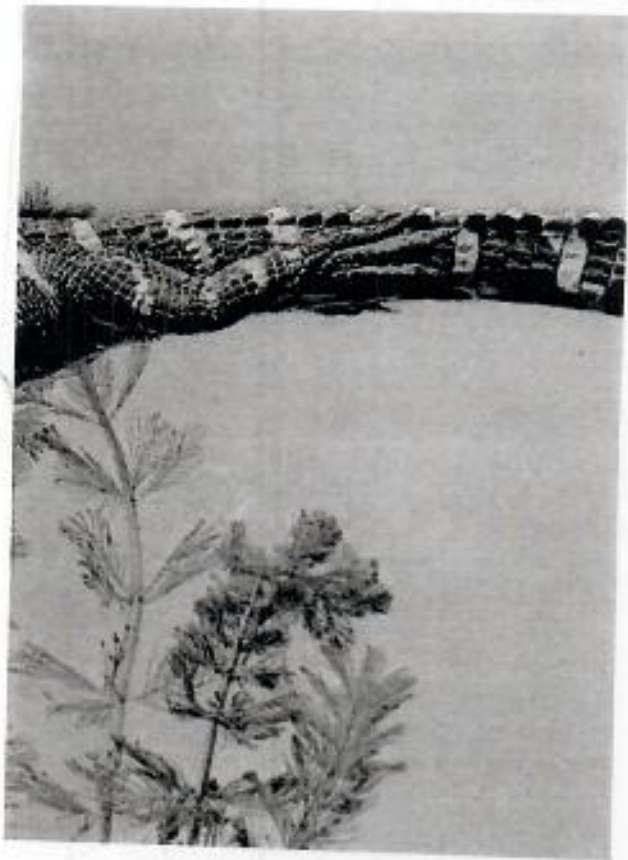
"Illegal hunting," Ross said. "With hides bringing six dollars a foot, gators are big business. Thieves even stole the breeding stock out of my alligator farm.

"Nearly all poaching used to be done at night with a jacklight and rifle," Ross said,









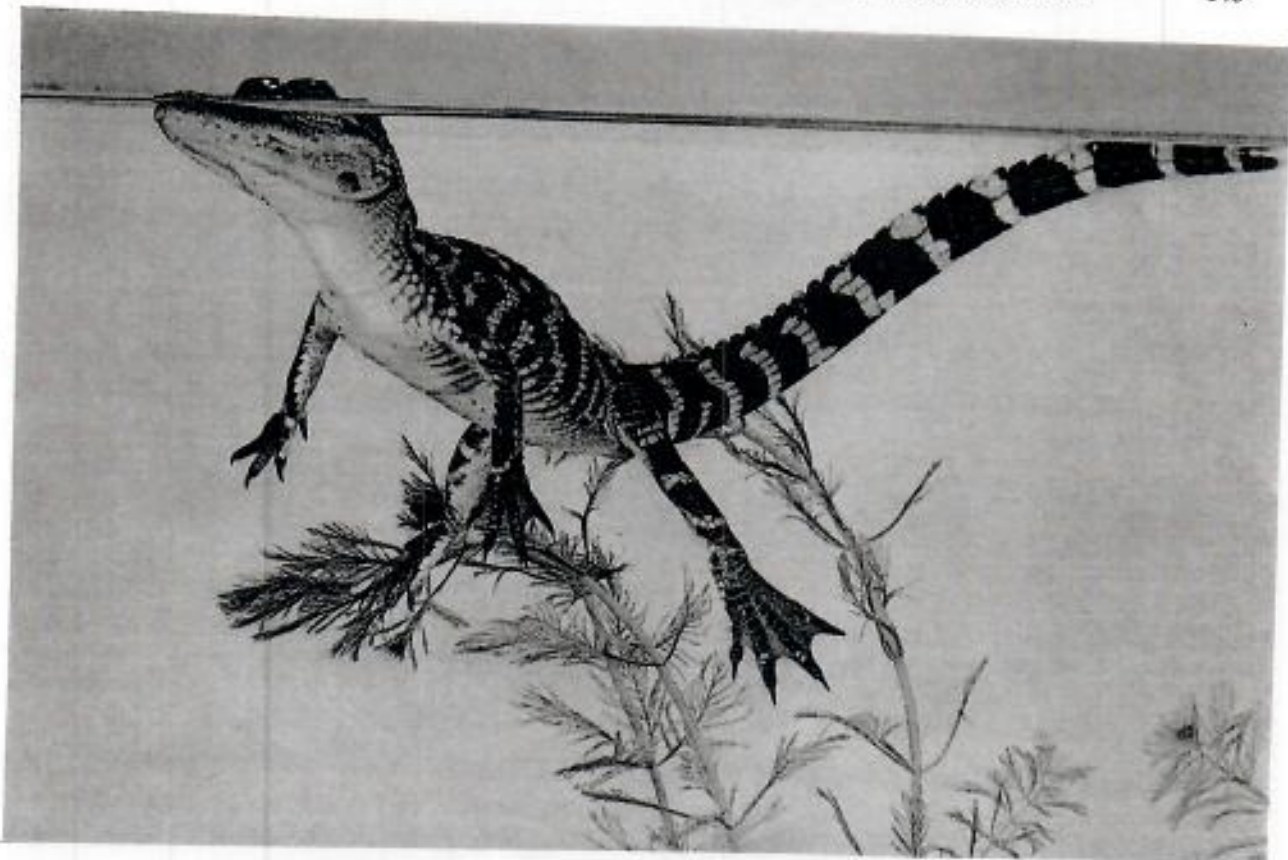
Buttoned up like a submarine, a 14-inch youngster swims by wriggling its tail. Valves close nostrils, windpipe, and ears under water; in floating trim (below), gators show only eyes and nostrils above the surface.



KODAKACHROMES © NATIONAL GEOGRAPHIC SOCIETY

Leaping "Le Roy," a pet gator, rears on its tail for a tidbit of raw meat. Only the young display such dexterity out of water. Long rear legs indicate that the alligator's ancestors walked upright like many of their dinosaur kin.

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"or by locating dens and dragging the alligator out with a long pole with a hook at the end. Both methods are still favored in big tracts of marsh like the Everglades, where visibility is good and a warden can be seen coming.

"But in the more densely settled parts of Florida the setline is a major technique nowadays. It's quiet and deadly, and the poacher can stay out of sight. He just hangs a big hook on a pole stuck in the bottom of the lake and baits it with a beef heart or a chicken. The alligator hooks himself, and the poacher can go after him when he is sure the law is nowhere around."

In the early days fantastic numbers of gators were killed in the Everglades. For the ten-year period before 1891 an estimated 2½ million were taken in the State of Florida. In the 1890's, 800 were killed in a single lake in a year.

It is hard to get accurate figures on the volume of illegal traffic in hides today, but educated guesses on the profits from bootleg hides marketed in Miami alone run close to a million dollars annually.

The illegal hunters cruise in airboats and glades buggies. Some, in airplanes, search out gator holes and communicate by radio with hunters below.

One of the biggest remaining reservoirs of wild alligators is Everglades National Park,\* but even there many fall victim to poachers, despite the best efforts of hard-working rangers (page 137). Poachers in motorboats steal across the park boundaries by night, shoot or hook the alligators, skin them on the spot, and stuff the carcasses down the dens. If park rangers catch up with their boat, the poachers quickly dump the weighted hides overboard.

#### Fashion Change Might Save the Species

If the alligator is to be saved, its reprieve may come from a change in fashion.

At the turn of the century our beautiful filmy-plumaged egrets were brought close to extinction by plume hunters. Then, largely as a result of a campaign by the National Audubon Society, concerned groups began to urge measures to save the birds. By 1910 the wearing of plumes had virtually stopped. In 1918, mere possession of the feathers became a Federal offense. Plume hunting ended.

The same thing could happen to alligator poaching. If the vogue for alligator bags, belts, and shoes should pass, the profit would go out of poaching, and it would stop.

\*Daniel B. Beard described "Wildlife of Everglades National Park" in the January, 1949, *GEOGRAPHIC*.

"It's ticklish work," says Robert Allen, who began grappling with alligators at age 10. "Just make sure your hand doesn't slip!" Here the 180-pound Robert wrestles a 300-pound saurian at the popular Reptile Institute of his father, Ross, in Silver Springs, Florida.

KODACHROME BY OTIS IMBODA © NATIONAL GEOGRAPHIC SOCIETY





KODACHROME BY TREAT DAVIDSON © U.S.S.

Extra hazard confronts a golfer playing the Hole in the Wall course at Naples, Florida. Most club members cheerfully accepted the loss when "Aunt Helen" lumbered over to gobble a ball on the lakeside fairway. To obtain "gizzard stones" needed to grind food into digestible form, alligators eat hard objects; one gulped the photographer's can of insect repellent, even though it exploded when he bit into it. Poachers have since killed Aunt Helen, together with most of the gator population in the area.

Some conservationists feel that the answer is Federal legislation. They seek to amend the Lacey Act—which forbids taking certain illegally caught game across state lines—to include a ban on transporting alligator hides.

#### Rangers Help Dig Lifesaving Pools

When the works of man interfere with the natural rise and fall of water levels, real disaster can result. This has happened often in the Everglades in recent years. At times the water level fell so low that many of the gator holes disappeared, and the alligators that crowded together in those that remained started eating each other.

Last year, in contrast, heavy flooding plagued the Everglades. I spent a morning with Ranger Erwin Winte on an airboat cruise of the Shark River Valley, seeing for myself the effects of the sudden return of water to dried-out glade land. Ranger Winte located the gator holes for us. In fact, he showed us two kinds of holes. One kind was made by proper alligators. Park rangers had made the other kind the year before, when the water was so low that holes had to be dynamited down to the water table in order to keep the

alligators and other swamp creatures alive.

Now the trouble was too much water. The alligators in the area had nested a month or six weeks before, when the level was still low. We found that the crest of the flood was just high enough to have swamped the smaller nests, made by the younger alligators, killing their eggs. Nests of the bigger females stood safely above the water.

If normal water levels can be maintained, and the poachers kept out, Everglades National Park is one place where the alligator seems sure to live on. But the alligator population need not be reduced to the point where it can survive only in pens and preserves. We have no reason to fear these animals, yet we are mindlessly pushing them toward oblivion, simply because they are big and muddy and fit awkwardly into our world.

It may not be all easy, living on into the future with the alligator. But by protecting him, we will show that we have the sense and soul to cherish a wild creature that was here before any warm-blooded animal walked the earth, and that, given only a little room, would live on with us and help keep up the fading color of our land.