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# The Caves That **DREAMS** Are Made Of

Story and Photography  
By MIKEWISENBAKER



**T**he Woodville Karst Plain is a huge network of some of the most awesome caves into which divers have ever ventured. How they were formed and how they are interconnected is a mystery that only God and the divers exploring the system can truly appreciate.

Millions of years ago limestone formed when ancient seas covering the coastal plain, retreated, stranding marine animals and plants.

Over time, the debris from the ocean floors fused into bedrock. Rain picked up carbon dioxide as it fell through the earth's atmosphere, creating carbonic acid. Once on the ground, the water became even more acidic as it soaked through a thin cover of soils, roots and decaying vegetation. These acidic waters slowly began dissolving the limestone underlying the region, forming caves and sinkholes. The term "karst" refers to the limestone surfaces that have been shaped by thousands of years of chemical and hydrologic erosion. A good example of this erosion occurs at Silver Springs near Ocala, Florida. This fountain delivers 530 million gallons of water a day carrying a load of 540 tons of dissolved rock!

Acidic waters continue to etch new cavities into the 20-36 million years old rocks that shoulder what geologists have labeled the Woodville Karst Plain. This karst plain covers more than 450 square miles in Leon, Jefferson and Wakulla counties in Florida's Big Bend south of Tallahassee. The plain runs from west of Highway 319 to just east of the Wacissa River, and south a few miles into the Gulf of Mexico. The northern border of the karst plain is a break called the Cody Scarp that slices across the landscape near the Tallahassee fairgrounds. It separates the Red Hills to the north from the Woodville Karst Plain. The scarp developed when Gulf waves lapped ashore about 100,000 years ago during a warm phase of the last Ice Age.

Caves, lost rivers, springs, sinkholes and windows represent the most noticeable examples of karst features. Karst windows (called spring-siphons by divers) form when the roof of an underground stream collapses. This leaves a gap where water from a cave spring reaches the earth's surface. The water flows for a short way through an open channel before vanishing into a swirling gyre known as a siphon. All of these geologic marvels form due to the voids in the rocks below them.

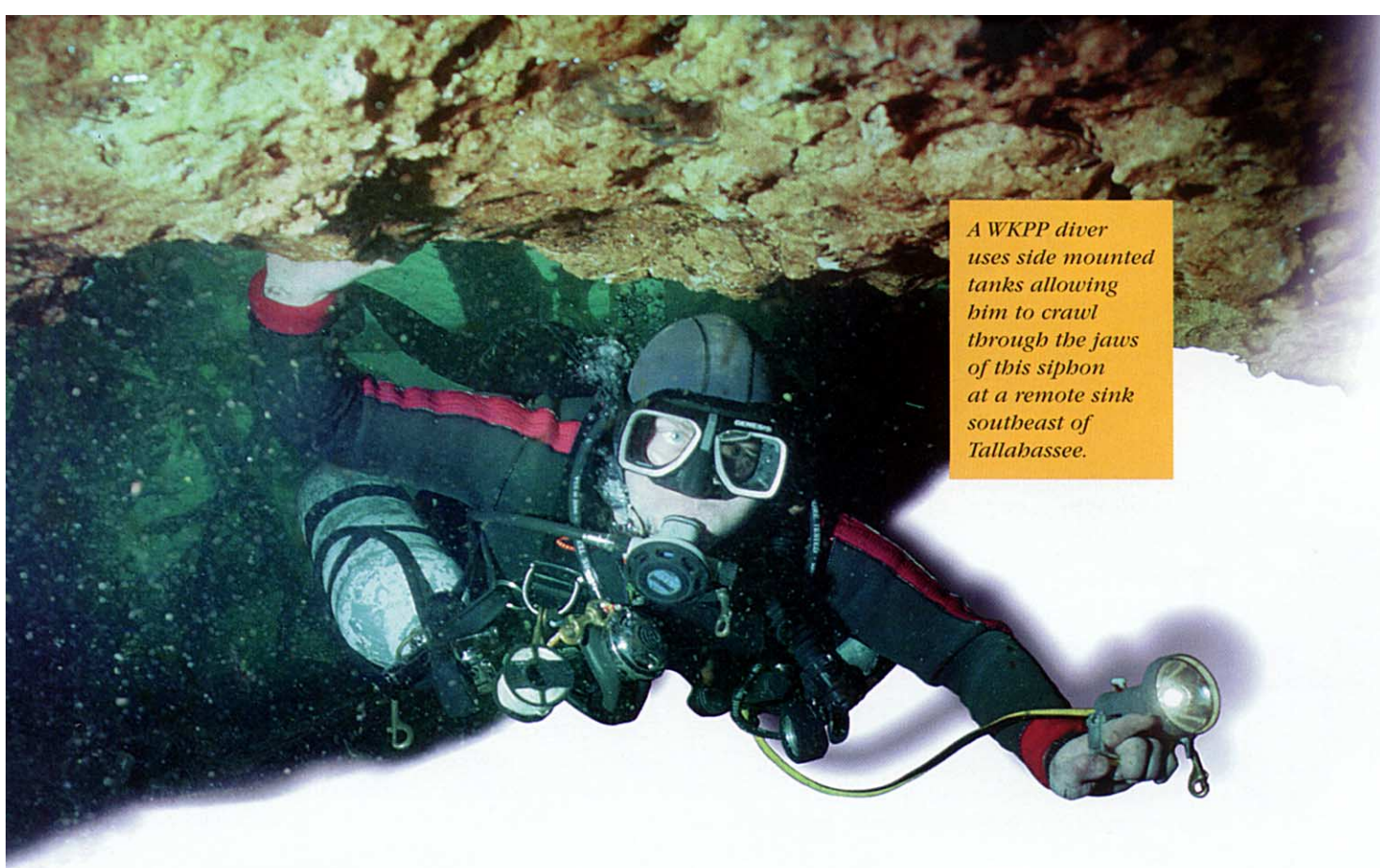
As for the hundreds of sinkholes found here, many remain dry depressions, others hold dark surface water and those opening into aquifers contain pure groundwater. The depressions that dip into groundwater, though, often catch surface runoff or may be topped by warm algae blooms. Temperatures, as well as color, give clues that reveal if water in sinks is groundwater or surface water. Groundwater sinks in this area read 69 degrees throughout the year and are generally clear in times of drought, whereas surface water temperatures vary with the changing of seasons.

Underwater cavities in the karst plain range in size from a gallery named the Black Abyss—large enough to hold a small skyscraper—to minuscule fissures. While most caves here lack stalactites found in the cenotes of Mexico or the blue holes in the Bahamas, many possess striking bands and formations of minerals like chert and goethite. The lack of dripstone suggests the grottos have been filled with water for most of their existence.

The Woodville Karst Plain holds more than a quarter of Florida's 27 first magnitude "springs." These include: Spring Creek Springs, St. Marks Spring, Wakulla Springs, Wacissa Springs Group, Kini Spring, River Sink Spring and Natural Bridge Spring. Four of these seven karst features, however, are not true artesian springs. St. Marks Spring represents a river rise, while Kini Spring (a.k.a. Upper River Sink), River Sinks Spring (a.k.a. Lower River Sink) and Natural Bridge Spring are karst windows. Despite what we call them, they comprise an impressive list of hydrologic marvels. More than 64.6 million gallons of water issue through each of these "springs" every day.

In the 1830s, French naturalist Comte de Castelneau believed that water from Tallahassee's Lake Jackson, which occasionally vanished mysteriously, rose at Wakulla. Similarly, E.H. Sellards, the first person to head the Florida Geological Survey, predicted more than 80 years ago that water whirling underground at river sinks fed Wakulla. For the past 25 years or so, dedicated cave diving explorers seem to be proving Sellards' theory. They've charted more than 11 miles of cave passages in the Leon Sinks Cave System (LSCS) in North-central Florida, which currently is the longest surveyed underwater cave in the U.S.. The water in this cave system passes through 26 karst widows. It probably furnishes about half the 252 million gallons of water that daily gush from Wakulla Springs, the crown jewel of the karst plain.





*A WKPP diver uses side mounted tanks allowing him to crawl through the jaws of this siphon at a remote sink southeast of Tallahassee.*

The sink and spring openings in the karst plain host a wide array of flora and fauna that favor their cool waters and rocky walls. Above exposed cliff faces trees such as southern magnolia, laurel, live oak, gum, dogwood, redbud and hickory hug the slopes. Wax myrtle, sparkle berry, beauty berry, wild grape, Virginia creeper and the infamous poison ivy fill the understory. These plants often create oases in drier areas of the plain such as the sandhills portion of the Leon Sinks Geological Area in the Apalachicola National Forest. Lush growths of mosses, liverworts and ferns, including the endangered Venus-hair fern, cling to the stony bluffs of sinks, grottos and nearby outcrops. In sink basins and twilight zones of aquatic caves, divers may spot bass, bream and pickerels. Farther into the caves, several species of globally imperiled crayfish and other rare troglobites abound. The typically blind, albino organisms spend their entire life cycles underground. They have unique adaptations enabling them to survive in total darkness. Divers' bright lights often reveal fleeting glimpses of the tiny trolls that call the stygian reaches home. At other times, errant eels and bullheads—not

used to masked monsters blundering through their territory—may crash into unsuspecting divers.

The caves in the Woodville Karst Plain also hold evidence of life-forms long since extinct. For example, the waters of Wakulla Springs have harbored many Ice Age giants, including almost three entire mastodon skeletons, one of which is on display at the Museum of Florida History in Tallahassee. A mastodon tooth also turned up at 45 feet beneath the surface just inside the downstream cave of Venture Sink, one of more than two dozen openings into the LSCS. Project cartographer Steve Irving recently reported and gathered samples of dugong bones about 1,200 feet into the cave at Indian Springs. The remains

represent an ancestor of the manatee that thrived in prehistoric oceans. According to paleontologists at the Florida Museum of Natural History, this

aquatic mammal lived more than 30 million years ago.

Serious cave exploration of these natural treasures caught on in the late 70s when explorers began using scooters to extend their range. Multiple staging, using appropriate gases for various depths, wearing dry suits and riding custom-made super scooters have allowed them to go even deeper and farther into the caves. They even inflate their dry suits with argon to

cut down on the loss of body heat in the chilled aquifer during their lengthy decompression stops.

In their explorations of the karst plain, these aquanauts face an environ-



The WKPP has gained access to practically all caves in the region including Big Dismal Sink in the Apalachicola National Forest.





*Upper River Sink (a.k.a. Kini Spring) is one of the largest karst windows in the Leon Sinks Cave System.*





**From top to bottom:**

**Top right:** A diver peeks into the upstream cave with the surface of Emerald Sink in the background. Vehicle access was recently closed here because an imbecile ditched a stolen car in the sink.

**Top left:** Tim Norkus (left) and Steve Irving (right) hold slave strobes to help illuminate the small dry corridor of Cal's Cave in Wakulla County. Unlike most caves in the region, it's only one of three partially dry caves in the karst plain.

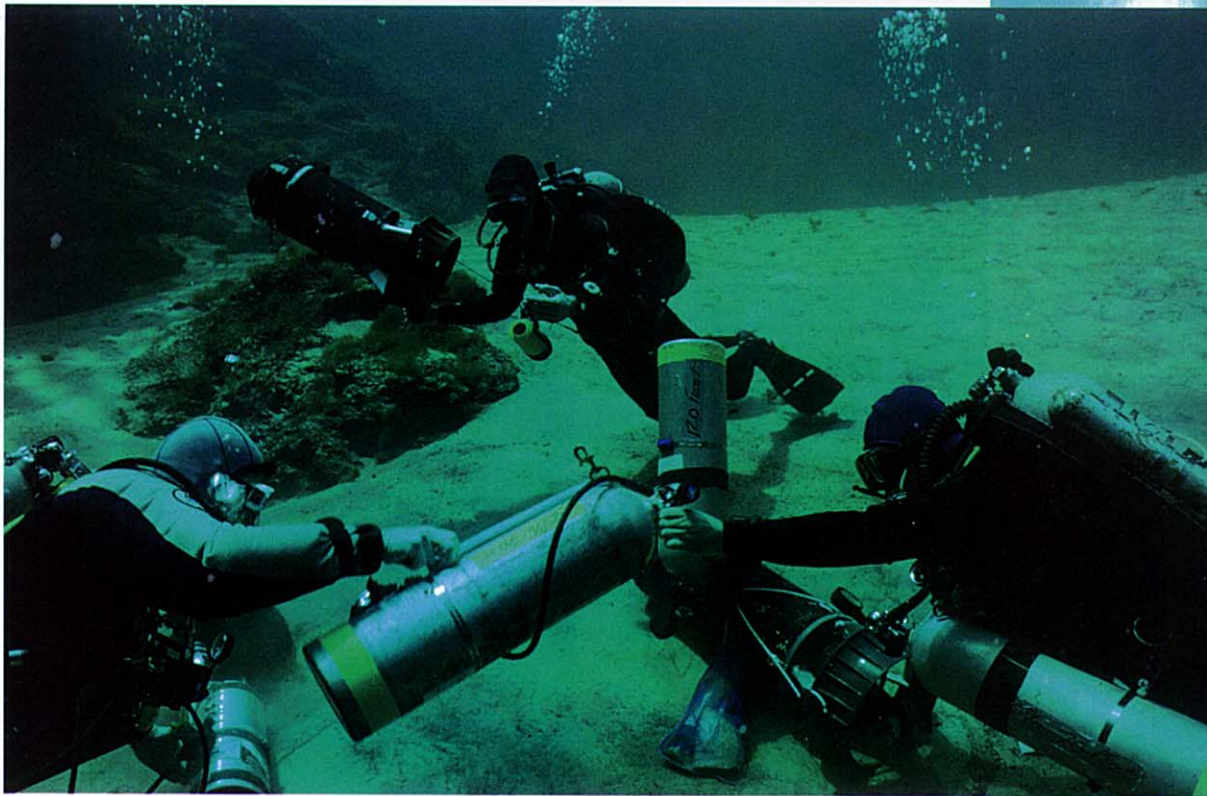
Cave diving explorer Bill Gavin makes ready for a dive into Cheryl Sink. His exploration reel holds hundreds of feet of line. Note the small yellow cylinder, which holds argon, used for inflating his dry suit.

WKPP director George Irvine passes the time reading as he degases for nine hours after a long deep dive into the "A" tunnel of Wakulla Springs.

Tom Payne eases his way out of a cul-de-sac in Osgood Sink near Woodville, Florida.

Barry "the rat" Miller, laden with stage bottles, rides one of the super scooters, developed by Bill Gavin and George Irvine, into Indian Springs.





ment perhaps more hostile than deep space. They meet with limited gas supplies, currents, bone-chilling cold from long immersions and task loading that would tax an air traffic controller at Atlanta's Hartsfield airport. One big difference from dry caving, other than having to carry something to breathe, stems from the possibility of a careless fin stroke reducing visibility from a hundred feet to less than an inch in a matter of seconds. Even with flawless propulsion techniques, problems may arise from exhaust bubbles causing particles to rain from cave roofs. On the other hand, unlike their terrestrial counterparts, these cavers don't have to worry about vertical skills when they encounter pits and shafts. A thin guideline to the surface, rigorous training, specialized gear, Hogarthian configurations and nerves of androids enable them safely to negotiate the mazes.

If the linear trend of the Leon Sinks Cave System continues, it may one day become one of the world's longest underwater caves. Should nearby cave systems such as Big Dismal Sink, Pipeline (Chip's), Indian, Wakulla and Sally Ward be tied into this network, the system would possess more than 25 miles of passages. In contrast to the shallower clear conduits in the

Yucatan peninsula, which presently hold the world's longest water-filled caves, the deep dark passages in the LSCS can only be dived a few months each year—if that long. For the past two years, visibility has been generally poor. Explorers must wait for droughts to allow tea-colored surface runoff to be flushed out of the system.

The exploration of upstream Sullivan Sink eventually led cave divers to work with scientists for the first time to study the Woodville Karst Plain.

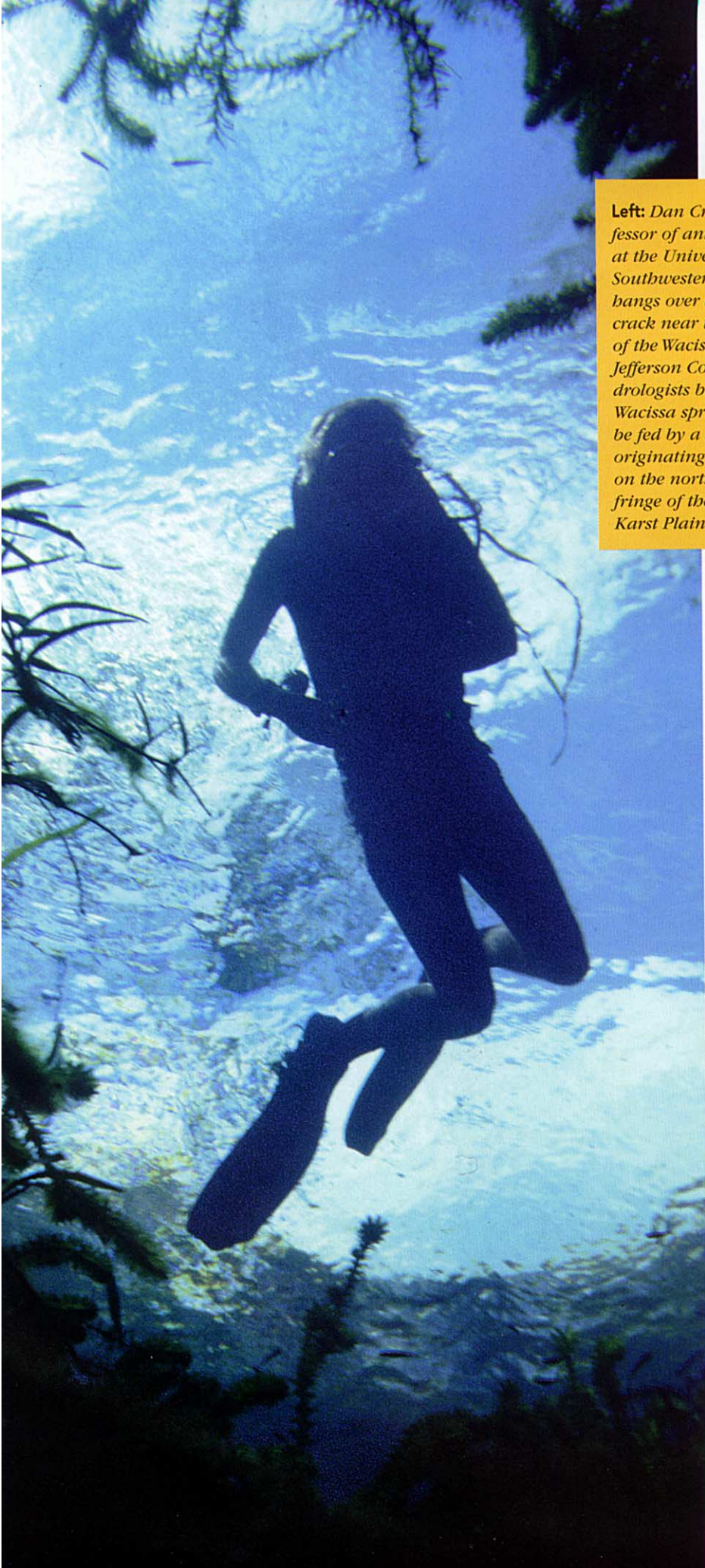
Parker Turner later advanced this effort in 1990 by founding and heading the Woodville Karst Plain Project (WKPP). Tragically, Turner died in 1991 in a caving accident at Indian Springs resulting from a freak underwater avalanche that buried his safety line. His dream, though, to link and map the vast network of underwater caves and sinks in the Woodville Karst Plain lives on. Several years ago, the WKPP became an official project of the National Speleo-

**Upper Left:** WKPP support divers hustle to keep track of stage bottles of various gas mixes and scooters in Wakulla Springs.

**Right:** WKPP support divers busy themselves with the tasks of getting explorers ready for dives that carry them to depths in excess of 300 feet and distances of more than one mile.







**Left:** *Dan Cring, a professor of anthropology at the University of Southwestern Louisiana, hangs over a lime-stone crack near the head of the Wacissa River in Jefferson County. Hydrologists believe the Wacissa springs may be fed by a siphon originating at Bird Sink on the northeastern fringe of the Woodville Karst Plain.*

logical Society—the nation's premier caving fraternity.

WKPP divers, under the direction of Parker Turner, Bill Gavin and George Irvine have performed some remarkable feats in the Leon Sinks Cave System. After making scores of set-up dives, four explorers entered Sullivan Sink and cruised downstream through places over 200 feet deep. Following a precarious 1.5 mile journey, they reached their goal by surfacing at Cheryl Sink. During this mission they sailed through a giant chamber,

mentioned earlier, dubbed the Black Abyss by earlier explorers.

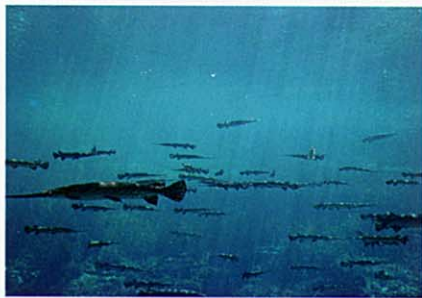
In 1987, Bill Stone's U.S. Deep Caving Team surveyed over two miles of caves in Wakulla Springs. They found that the main passageway heads southwest from the spring entrance. Several hundred feet back in a chamber called the Grand Junction Depot, the cave splits into six smaller passages known as tunnels A, B, C, D, F and G. The water quality in one of the four larger tunnels differs from the others. While tunnels B, C and D carry air-clear water, tunnel A often bears a charge laced with tannic acid. The fluid in this tunnel seems to match that in the LSCS and affects the general clarity of the spring.

In recent months, WKPP divers have added about 2,500 feet of line to the B tunnel. In January of 1994, they also pushed 6,129 feet from the cave mouth at Wakulla at depths averaging just under 300 feet into A tunnel. During the 1993 drought, the team discovered a channel emptying into the natural pipeline between Sullivan and Cheryl sinks. This uncharted artery passes through another enormous room called the White Abyss as it trends northeast toward Big Dismal Sink (with its 12,000 feet of mapped passages). Presently, the missing link between the two systems covers only about 400 feet. When joined with Big Dismal, the LSCS will comprise almost 15 miles of underwater cave! Thus, with each



season, we move closer to solving the riddle of the sinks in the Woodville Karst Plain.

Some might question why cave diving explorers engage in the high risk activity of probing these uncharted labyrinths in the Woodville Karst Plain. It can't be denied, though, that explorers supply crucial information about the origins and paths of our drinking water. Sometimes ignorant individuals dump fetid garbage, rotting animal carcasses, car batteries and other toxic wastes in



Gar hover over the huge spring vent at Wakulla Springs.

sinkholes. Sheriff's divers once recovered more than a half dozen VW beetles from Gully Sink just west of Woodville. Knowing that the Floridan aquifer supplies most of that state's potable water, the sinks and springs that pock this reservoir demand more respect.

Karst areas such as this also are subject to wide array of other human misuses. Merely walking up and down the banks of steep-sided sinks can create gullies, damaging fragile plants. Submerged parts of sinks may be marred by witless divers who carve graffiti on beautiful rock formations or scar caves by their poor swimming skills. The most flagrant damage occurs when divers attempt to remove fossils, artifacts or mineral formations from these underwater jewels.

The imposing sinks and conduits in this and other karst plains deserve our continuous stewardship. Countless treks by cave diving explorers such as WKPP divers have shown that these complex systems play a critical role in supplying potable water to the nation's fourth most populous state. They also provide field laboratories in which scientists can study karst and the unique creatures living there. Lastly, the alluring windows into the aquifer exhibit some of nature's finest artistry. 🐠

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