The Middle-American Dinosaur

For five days now she has heard the noise. It's too faint to tell what it is yet, but she knows two things for sure - it's getting closer, and it's incessant. Faint pressure from inside her belly reminds her exactly why she's made the 600-mile journey from Glendale, Ohio, to the tributaries of the Ozark plateau. She must find solace soon.

Millions of years before Lewis and Clark passed these lands on their journey west, before the great herds of buffalo roamed the Mississippi River Valley alongside the Osage, the Cherokee and the Chickamauga, a strange dinosaur lurked beneath the surface of the water. Five feet long and weighing 100 pounds, this ancient freshwater shark cruised the river's offshoots in an endless search for sustenance. Hollow eyes peered into the blurry darkness while its mouth, stretched wide-open like a snake swallowing an egg, vacuumed plankton out of the murk. Most buffalo have been killed off, the American Indian tribes decimated, and the rivers largely spoiled, but today the spoonbilled paddlefish swims on. "There was a record-breaking 139.25-pounder caught at Table Rock Lake just after the season opened last year," Missouri Department of Conservation's Regional Fisheries Supervisor Tim Grace says. "Someone seeing one for the first time, whether kids or adults, are really impressed." As they should be. Polyodon spathula, polyodon meaning many-toothed in Greek, and spathula being Latin for blade, is America's most recognizable freshwater fish

because of the Pinnocchio-like appendage extending from its forehead. This flattish nose, or rostrum, comprises one-third of the paddlefish's body length, and when viewed opposite the sickle-shaped tail fin, it gives the fish a dart-like profile. The rostrum was originally thought to be an important part of the creature's feeding practices. "Everyone thought that they used it to root up food from the river bottom," Vince Travnichek, a biologist at the conservation department, says. "After doing some research, they discovered the paddlefish is actually a ram-filter feeder that swims with its mouth wide-open, filtering plankton out of the water." Unblinking eyes as cold and dark as the river's bottom perch just above a crescent-moon mouth that droops slightly on either side. Two body-length ridges of bone-like cartridge streamline the fish's frame while wing-shaped dorsal fins betray its Jurassic origins. "The paddlefish has evolved relatively unchanged for 30 to 40 million years," says the conservation department's retired fisheries research biologist Kim Graham, aka "Mr. Paddlefish" for his life's research on the creature. "It is almost identical to fossils that have been found dating back to the dinosaur age." The paddlefish's immense size and strength (It is one of the fastest growing animals in the world - in some instances doubling its length between birthdays in its first few years of life.) make it an especially sought-after prize for freshwater fishers in the Midwest. Graham describes the feeling of snagging a paddlefish on the end of a fishing line "like tying a string

onto a cow and trying to hold on." Despite its tasty white meat (The flavor has been compared to salmon or swordfish.), valuable eggs (Much of the caviar that is sold as sturgeon roe is actually paddlefish roe.) and high-profile image (It's the Missouri state aquatic animal.), paddlefish have continued to survive in the Midwest, with their only other relative in China's Yangtze River. "I saw some museum specimens over in China that were 14 feet long," Graham says. "The Chinese species is a piscivore, meaning they're carnivorous - they eat other fish, whereas the American paddlefish only feeds on plankton," says Bill Turner, a conservation department's fisheries biologist. This may be a blessing considering the drove of tourists who flock to the Lake of the Ozarks each year to dangle their toes in front of the paddlefish's wary eyes.

Having survived the ice ages and lived through humankind's pollution of the rivers they inhabit, paddlefish are no strangers to adversity. But how can a fish that weighs as much as a small person possibly find enough to fill its belly? Like its distant cousin the baleen whale, the paddlefish is equipped with comb-like gill-rakers around its mouth that strain food from the surrounding water. "The gill-rakers are bony, finger-like projections on the gills where plankton is collected," Travnichek says. "Water exits through the sides of the gills, but the plankton remains." No research has been conducted on how often paddlefish must swallow these mouthfuls. Both

baleen whales and paddlefish thrive on the large quantities of microorganisms they manage to force into their gaping maws while swimming. Because so much water passes through its gills on a day-to-day basis, the paddlefish is extremely sensitive to aquatic pollution. "There used to be paddlefish in Pennsylvania, but coal mining depleted their habitat," Graham says, "I really don't know how in the hell they've survived as long as they have. They're tough as nails." A few years ago scientists at the University of Missouri-St. Louis began to wonder how young paddlefish, which have yet to develop gill-rakers or plankton-straining abilities, manage to catch enough microscopic morsels to grow as fast as they do. Employing high-tech observation chambers, surveillance cameras and infrared illumination, the biologists stumbled upon a discovery that set paddlefish even further apart from mundane river denizens. Using the electromagnetic radiation sensors, which cover nearly half of their grayish skin, juvenile paddlefish can actually feel the extremely small electrical pulses emitted by water fleas and other plankton. Instead of straining these microorganisms from the water, juvenile paddlefish hunt and capture each individual morsel using these sensory pores. It is thought that perhaps the pores and the unusual length of the fish's nose are used only for locating food at a young age. After reaching maturity, when the gill-rakers are well-formed enough to begin ram-feeding, electro-sensory awareness is not as useful. "I've collected many fish

without rostrum that looked fine and weighed as much as a normal adult should," Travenichek says. "They were obviously still able to find food; as adults, maybe they don't use it as much. Maybe adults use filter-feeding, and the young use electrical detection systems. That's just my hypothesis."

The noise is actually hurting her now. She can feel the pulses of sound hit her nose and send shock waves through her entire body. She wants to rest, turn around and swim back to her favorite spot under the fallen dogwood tree in Ohio.

But the pressure in her belly is too great to ignore. She must go on. She swims toward the noise, which repels her with every swish of the tail, and runs headlong into an iron grate. The pressure from the babies in her stomach grows. She senses danger but is so confused by the sound, which now claws at her every nerve ending, that she doesn't realize she's slowly being sucked toward it. And suddenly, the paddlefish is minced to pieces in the dam's steel turbines. Between May and July of 2002, an estimated 4,300 adult paddlefish were killed in the turbines and spillway of the Bagnell Dam in the Lake of the Ozarks. The paddlefish kill was the largest documented in Missouri history. "Many of these were large fish at least 15 to 20 years of age, the size anglers dream of catching," says Turner. The Missouri Department of Conservation is currently investigating the paddlefish kill. "I worked my entire career to stock paddlefish in Missouri's lakes and rivers.

There we were bickering about whether we should release 100 fish, and what I did didn't mean a damn thing," Graham says sadly. "I don't want to see these little dudes go down the toilet now."

Paddlefish are massive. Check out these stats. maximum length: 7 feet (without rostrum) size of rostrum (nose): 1/3 of body's length maximum weight: 160 pounds year officially designated Missouri's state (not fish, but) aquatic animal: 1997 largest caught in Missouri: 139.25 pounds relatively unchanged for: 30 to 40 million years number of adult paddlefish killed at Bagnell Dam in spring of 2002: estimated 4,300.

-Brady Teufel
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