

Can magnets keep crocodiles away from Florida's suburbs?

March 9 2009, By Curtis Morgan

Veteran trapper Todd Hardwick, who has hauled hundreds of alligators and crocodiles out of neighborhoods over the years, tried something strange earlier this year.

To the puzzlement of onlookers, Hardwick pulled two colored magnets from his pocket and taped them atop the nubby noggin of an 11-foot croc he'd caught in Coral Gables.

"I was quite embarrassed the first time I did it," he said. "People were like, 'Todd, what are you doing? What is that?'"

That was the start of a modest but fascinating experiment by state wildlife managers, aimed at short-circuiting the [homing instincts](#) that often lead captured reptiles right back to the spot that got them in trouble.

The hope is that magnets, removed just before an animal is freed in a faraway spot, might disrupt a primitive but powerful [navigation system](#) the lets [crocs](#) follow the earth's [magnetic](#) fields - almost like a [Global Positioning System](#) satellite guides drivers.

With only two crocs magnetized so far, it's far too early to say if it will work. But if it does, the technique could give captured animals a better shot at surviving in the wild and help reduce increasing conflicts between people and South Florida's small but spreading population of [crocodiles](#).

"If there is a way we can break that homing cycle on some of these crocs, maybe there will actually be some validity to relocating them," said Lindsey Hord, a biologist with the Florida Fish & Wildlife Conservation Commission.

Right now, relocating wandering North American crocodiles usually proves futile. Most transplants get killed in territorial fights, crushed by cars while crawling back home or recaptured soon after. They tend to return quickly, within weeks or even days, bee-lining back from 30 to 50 miles away.

"Anything that slows that down or prohibits it from happening is good," said Hardwick, owner of Pesky Critters and one of the state's best-known reptile wranglers.

Hord said he was inspired to try magnets by a recent journal article that detailed how biologists in Chiapas, Mexico, reported good success relocating 20 crocs. That wasn't exactly a rigorous test, however, using magnets yanked out of scrap truck horns and uncertain techniques to verify the crocs' identities.

Still, scientists who study the reptiles say the idea has potential.

"It's not a loony suggestion," said Gordon Rodda, a zoologist with the U.S. Geological Survey in Colorado, who authored one early study on the magnetic sensitivity of juvenile gators.

Similar tests have had disorienting effects on ocean-ranging tuna and the homing pigeon, which earned its name for a reason, Rodda said. Though they don't look alike, birds are the most closely related relatives of crocs and gators and they share navigational ability.

The prevailing theory, Rodda said, is that sensors in crocs' brains detect

small geomagnetic deviations to guide them across distances. The process is not fully understood and may rely on other guideposts as well, such as the sun or smells.

Rodda's 1984 research found homing power developed with age, turning from basic compass to magnetic map. Though undetected by humans, gators and crocs can follow the subtle forces almost like a GPS satellite.

Rodda speculated that more sophisticated gear using high frequencies to "degauss" a croc's magnetic sensors - a process similar to erasing a music tape - could be more effective, but said magnets also could do the job.

"It has worked in some animals, so I'd give it a shot," he said.

Frank Mazzotti, a University of Florida wildlife professor and crocodile expert, cautioned the challenge isn't just temporarily confusing crocs but keeping them close to their release points _ difficult with a beast known to swim and walk 10 miles a day.

"If it translates into stopping the animal from moving, then you have certainly solved the problem," he said.

Hord described the experiment as "something thrown together" by an agency on a penny-pinching budget. Evidence: The only expense has been a box of small multicolored lab magnets, which were taped on the croc's skull during the ride to a new location.

"Ideally, we would like to do a very rigid scientific study using magnets and radio transmitters," Hord said.

Because crocs remain rare, only two years ago moving from federally endangered to slightly less critical threatened status, they get chances their alligator cousins don't.

After three captures in suburbia, crocs get taken into captivity. Gators get taken to the butcher.

Because wildlife managers consider gators over-abundant, outnumbering crocs 1.25 million to 2,000, trappers only relocate youngsters under four feet.

Hardwick released the only two crocs magnetized so far along the 18-mile stretch of U.S. 1 leading to the Florida Keys, an expansive and isolated wetlands with a healthy resident population.

The whereabouts of crocodile No. 2, another 11-footer hauled off three weeks ago from Palmetto Bay, remain unknown. The first one Hardwick caught last month did show up again on Feb. 15 - but only as a decaying carcass floating off Card Sound Road, the likely victim of vehicle strike.

While the state intends to continue the magnet effort, Hord said the test would be re-evaluated if it looks like the practice makes crocs so disoriented they "literally walk into traffic." It seems more likely the dead croc was the victim of an accident. Crocs, gators and even Florida panthers are routinely struck along the dark road.

"It's not an ending we are happy about," Hardwick said of the hit-and-run.

But the discovery, at least for him, suggests maybe the magnets aren't such a daffy idea. The croc, which he'd twice previously captured far to the north, hadn't strayed very far from where it had been freed - just seven miles in three-plus weeks.

"I tend to give something to those magnets," he said.

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