New device to be tested off Outer Banks could help save sharks from commercial fishing all over the world

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An Outer Banks fisherman next summer will test a device about the size of a spark plug that could save rare sharks.

The waterproof gadget with a transistor inside would be connected just above the hooks on a long line used for commercial harvesting of species such as tuna and swordfish. It would emit an electric pulse that drives sharks away from the baited hook.

"If this works it will be huge," said Outer Banks fisherman Charlie Locke. "It could benefit fisheries all over the world."

Sharks swarm the waters around the Outer Banks with many species spawning and giving birth here.

Hungry sharks gobble chunks from large tunas on commercial fishing lines. Charter boat anglers often reel in nothing but a fish head after a shark has bitten off the rest.

"We already know there is a healthy population here," Locke said.

But some species are rarer and need protecting, according to conservation groups. An average of 100 million sharks are killed annually worldwide through commercial fishing, according to a study published in Marine Policy and reported on the Save Our Sharks website.

Researchers are always looking for ways to reduce bycatch, where protected species such as sharks and sea turtles are accidentally captured on commercial fishing hooks or in nets.

Shark species including scalloped hammerhead, dusky, sandbar and blacknose could benefit from an effective deterrent, said Sara Mirabilio, fisheries specialist with the North Carolina Sea Grant Extension Program.

Typically regulations and restricted fishing areas try to keep the gear

away from the shark. This effort is different.

"For this, we're trying to keep the sharks away from the gear," she said.

Locke will run his 32-foot boat in federal waters about four miles off Hatteras and Oregon inlets for 10 days beginning in August. He will pull a three mile long line with 150 baited hooks. Half will have the repelling device and half will not. "We hope to catch sharks only on the dummies," he said this week from his boat docked in Wanchese. "If not, then it's not repelling."

Locke already has a federal permit to catch sharks for commercial sale. He will also collect other shark data during the tests, he said.

Commercial fishermen reel off lines that stretch miles behind their boats. Connected to the line about every 50 feet are leaders called gangions. Each leader has a hook. Sharks love both the bait and the fish caught on the hook.

Sharks use an electric sense that guides them to the final strike on their prey, Mirabilio said. To a shark, a returning pulse can be disorienting or painful, she said.

"This just puts a buffer around that baited line," she said.

Mirabilio is working with Richard Brill at the Virginia Institute of Marine Science and Peter Bushnell at Indiana University-South Bend to test the technology in large water tanks. Demonstrations showed sharks avoided baited hooks with the repelling transistor.

This method appears more dependable than other methods such as those using magnets, she said.

The tests could uncover problems with tangling in the lines, battery lasting power and pulse distance, Mirabilio said. The transistor is waterproof, enclosed in plastic, about three inches long and larger at one end. The electric signal might only project a foot or two. In some cases, the fish caught on the line could be longer than the pulse power and the shark could bite off the back half without a hitch.

Ocean Guardian of Australia will make the devices. The company already makes Shark Shield, equipment with similar technology that for years has fended off sharks from areas used for surfing, scuba diving, spearfishing, kayaking and ocean fishing.

Next spring, a research team will run field tests at the Virginia Institute of Marine Science Eastern Shore Laboratory in the Chesapeake Bay. Then Locke will try them out in actual commercial fishing conditions off the Outer Banks.