Warning buoys for right whales installed along Massachusetts Bay

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Endangered North Atlantic right whales are safer along Massachusetts Bay's busy shipping lanes this spring, thanks to a new system of smart buoys. The buoys recognize whales' distinctive calls and route the information to a public Web site and a marine warning system, giving ships the chance to avoid deadly collisions.

The 10-buoy Right Whale Listening Network () -- developed at the Cornell Lab of Ornithology and Woods Hole Oceanographic Institution -- is arriving barely in time for the beleaguered right whale. The species was hunted to the brink of extinction centuries ago, and now fewer than 400 of the 50-ton black giants remain. Collisions with ships are currently a leading cause of death.

Living 60 years or more, right whales skim tiny plankton from the shallow coastal waters of the Atlantic. Each winter and spring, many right whales congregate -- along with fin, minke and humpback whales -- in the Stellwagen Bank National Marine Sanctuary, 25 miles east of Boston Harbor, which bisects official shipping lanes used by some 1,500 container ships, tankers, cruise liners and fishing boats every year.

"For the first time, we can go online and hear up-to-the-minute voices of calling whales, and see where those whales are in the ocean off Boston and Cape Cod," said Christopher Clark, director of the Bioacoustics Research Program at the Lab of Ornithology. "Better yet, those calls immediately get put to use in the form of timely warnings to ship captains."

Each "auto-detection" buoy recognizes the right whale's call, automatically rings up recorders at the lab and uploads the sound. Analysts verify the call and then feed the signals to the listening network's Web site and to the Northeast U.S. Right Whale Sighting Advisory System, operated by the National Oceanic and Atmospheric Administration (NOAA).

The network of buoys is strategically placed between inbound and outbound shipping lanes, and each buoy listens in a 5-mile radius, providing information on where collision risks are highest. To help protect whales when they are quiet, alerts remain in effect around a buoy for 24 hours after a call is detected.

The buoy system was installed to reduce impacts by ships traveling to and from a new liquefied natural gas terminal, built last year by Northeast Gateway Deepwater Port in Massachusetts Bay, offshore of Boston. NOAA officials mandated that the company take measures to avoid collisions between right whales and the terminal's 90,000-ton supply tankers.

Under a $47 million contract with the company, the Lab of Ornithology will operate the buoy array over the terminal's 40-year expected lifetime. Liquefied natural gas tankers must now slow to 10 knots in response to buoy alerts and post lookouts for whales and sea turtles. Clark hopes the reduced speeds from tankers will set a precedent for other ships, which are not required to slow down.

Clark has spent 30 years developing this idea from basic, exploratory science into a real-world application.

"Scientific studies show that even the deaths of one or two breeding females each year could lead to the population's extinction," Clark said. "If all ships slow down for whales, it could make a real difference."

Source: Cornell University