

Northern right whales head south to give birth, leave genetic 'fingerprints' with NOAA researchers

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Like many northerners who head south to warmer climates for the winter, many Northern right whales also head south in November and stay into April. Their destination is the only known calving ground for this rare and endangered population—the waters off Florida, Georgia and South Carolina. When they arrive, NOAA scientists are there to greet them, and to take DNA samples.

Although they are large animals, finding them in the ocean is not easy. “Like people, they don’t all congregate in one spot,” says NOAA researcher Dr. Richard Pace of the challenge. “There may be one here, and three others 50 miles away. And you don’t know who will be there this year.” Pace, and colleagues from the Georgia Department of Natural Resources (GDNR) and the Florida Fish and Wildlife Conservation Commission (FWC), are primarily focused on locating right whale newborns and adults who have not yet been sampled.

To find the whales, the researchers depend heavily on aerial spotting teams. Once close enough to a whale, the researchers work from an inflatable boat to collect small samples of skin and blubber. The DNA found in the skin can be used to determine sex and create a genetic “fingerprint” for later re-identification. These samples will be added to an already extensive collection of right whale DNA, maintained at Trent University in Ontario, Canada, obtained from approximately 300 individuals.

DNA collected and banked through the project not only helps researchers identify individual whales and their parents, but also to assess genetic variation in the population, determine how many females may be reproductively active, monitor the health of individual animals, and help understand their mating system. Better understanding of the stock's composition and condition improves prospects for the survival of this small population, currently estimated at just over 300 animals.

The right whale's name is believed to have come from whalers who thought they were the "right" ones to hunt because they are slow and float when killed. Populations were drastically reduced by intensive hunting during the height of the whaling era during the 19th and early 20th centuries.

Pace and his NOAA colleague Lisa Conger are usually found at the Woods Hole Laboratory of the Northeast Fisheries Science Center, a part of NOAA's National Marine Fisheries Service (NOAA Fisheries Service). The pair has studied Northern right whales for years. For the last two years during mid-January to early March, Pace has been in Florida participating in the genetic "fingerprinting" project. Conger arrived in Florida in early January.

Sampling is tightly controlled by federal authorities, and Pace and colleagues are permitted to biopsy no more than 30 whales this calving season. Samples are collected using a lightweight dart which takes a sample of skin and blubber about the diameter of a pencil eraser. The dart bounces off the whale after impact and floats until picked up by researchers.

"Whales cover a lot more territory than people think, and we have no idea how many will be in a general location at a given time," Pace says of the challenge. "We rarely know where more than half the population is at any given time." While the population off Florida is thought to be

mostly pregnant females, mothers with calves and juveniles, a few adult males may be in the group, and researchers have to look hard to find any of them. They may be 30 miles off shore, or 30 yards off the beach.”

Although obtaining the genetic samples is the primary goal of Pace’s group, the aerial observers are funded by other programs within NOAA primarily to alert nearby ships that right whales are in the area, reducing the risk of collisions, a leading source of serious injury and deaths among these animals. The aerial surveys also help confirm the identities of known whales and capture images of animals not yet in the master photo identification catalog maintained by the New England Aquarium in Boston.

Adult Northern right whales can be easily identified by callosities, large raised patches of rough skin that resemble barnacles, on their heads. “It is like recognizing a human face,” Pace says of the patterns. “Once we see an individual we can tell who it is.” Calves, however, are difficult to identify until a whale is seven or eight months old, when the pattern of the callosities stabilizes. The master catalog of photographs contains images contributed by more than 100 researchers and organizations and is used to help identify adult animals.

“There is a tremendous amount of collaboration involved between federal, state and private groups,” Pace says of the project. In addition to NEFSC colleagues in Woods Hole and researchers from NOAA Fisheries Service’s Southeast Regional Office in St. Petersburg, Pace and Conger work with staff from GADNR, FWC, the Wildlife Trust and the New England Aquarium. Related efforts, funded by NOAA, the U.S. Navy, Army Corps of Engineers and the U.S. Coast Guard, support the Florida Early Warning System (EWS) aerial surveys.

Adult Northern right whales range from 45 to 55 feet in length and can weigh up to 70 tons. Females, which are larger than males, give birth to

their first calf around the age of 9 or 10 and calve at intervals between three and six years. Calves can be 13 to 15 feet long at birth.

Seventeen mother-calf pairs have been identified to date, and researchers are watching eight females who may give birth this season. Another 80 or so non-mothers have been observed one or more times. More sightings are expected by March, when the animals head north to their summer feeding and nursery grounds off Cape Cod and in Canada's Bay of Fundy.

Conger recently returned to Woods Hole to prepare for sighting cruises for animals off the New England coast. An NEFSC team will be evaluating areas in Great South Channel east of Cape Cod and in Massachusetts and Cape Cod Bays that have been designated as critical habitats for Northern Atlantic right whales. Researchers will also be examining other areas in the Gulf of Maine that may warrant a similar designation.

Source: NOAA National Marine Fisheries Service

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