

# UF vets make right whale sedation possible, enabling disentanglement effort

Two UF veterinarians were part of a multi-institutional team that helped disentangle a North Atlantic right whale from life-endangering fishing gear March 6 near the coast of St. Augustine Beach.

Dr. Mike Walsh, associate director of UF's Aquatic Animal Health program, has been working with sedation and anesthesia in dolphins and whales in oceanaria and with the support of the Aquatic Animal Health provided the drugs and dosages used to sedate the endangered animal. This allowed rescuers to remove 90 percent of the entanglement that was wrapped around the animal. Dr. James Bailey, an anesthesiologist and clinical assistant professor at UF's College of Veterinary Medicine with a longtime interest in marine mammals, provided anesthesia support and helped to document the sedation procedure.

The rescue involved the efforts of a multi-institutional team including the Woods Hole Oceanographic Institution; NOAA Fisheries, which manages the Atlantic Large Whale Disentanglement Network, based at the Center for Coastal Studies in Provincetown, Mass.; the University of Florida's Aquatic Animal Health Program; Florida Fish & Wildlife Conservation Commission; Georgia Department of Natural Resources and Coastwise Consulting Group.

Team members on four boats assisted by an aerial survey plane worked for two days to free the animal. Eventually they succeeded in injecting the 40-foot, 40,000-pound whale with two darts containing a mixture of sedatives that allowed them to cut away the gear that wrapped around the animal's head.

The new sedation delivery system, built by Trevor Austin of Paxarms, New Zealand, consists of a 12-inch needle and a syringe driven by compressed air, which injects the drug into the whale's muscle.

*This is the first time in worldwide history a free-swimming large whale was successfully sedated in the wild, according to experts at NOAA Fisheries Service and Woods Hole Oceanographic Institution.*

"This tool enhances fishing gear removal from entangled whales and minimizes the added stress from repeated boat approaches to the animals," said Dr. Michael Moore, a veterinarian and research biologist at WHOI. Moore has led the investigation into chemical and physical tools to facilitate and enhance the safety of large whale restraint during efforts to remove entangling fishing gear. "It's gratifying to have successfully employed this new technique."

North Atlantic right whales are frequently entangled in fixed fishing gear, especially from the trap and gill net fisheries. Many of them eventually disentangle themselves, but some entanglements persist for months, at times resulting in a slow and presumably very painful death.

Whale avoidance of boats attempting disentanglement has historically limited resolution of complex cases. Over the past 10 years WHOI, in collaboration with NOAA Fisheries, UF and the University of Wisconsin, has now developed a sedation system to hopefully make them more approachable by rescue boats.

Walsh said he initially was brought on board back in 2001, based on his experience at Sea World, where he was head veterinarian for nearly 20 years, and his familiarity with anesthetics used in marine mammals.

"I developed the anesthetic procedures, with the help of UF veterinarians, on manatees and the initial procedures used on walrus," Walsh said. "Many of these have improved, but we set baselines and also did a lot of the initial work on dolphins and whales."

He said this gave him a comfort zone in working with these animals.

"If we hadn't already worked out these techniques in other cetaceans (whales and dolphins), we'd be less likely to attempt this," Walsh said. "We plan things so that we decrease that potential for failure in the sedation process."

In the case of the most recent right whale — known as 3311 — Walsh convinced the team that the drug used was the best one that was available and had worked in other animals. He said Aquatic Animal Health program administrators had prepared for the possibility of a whale needing sedation this year by purchasing the drug ahead of time.

"Dr. (Charlie) Courtney helped us tremendously," Walsh said. "I felt that 'it's probably going to happen, so let's be ready.' In this case, it was a bigger investment than most people would be willing to take a chance on, but that is what wildlife vets are supposed to do — they take a chance, make the effort and prepare for any issue."

Courtney, the college's associate dean for research and graduate studies, oversees the AAH program within the college. ZooPharm in Colorado had the drugs needed in the right concentrations to fit the darts and in a form that the two could be mixed together.

"We were attacking the drug delivery system, the drug type and the potential drug effects at the same time," Walsh said, adding that the goal with 3311 was not to anesthetize the whale but rather to seek its cooperation so that it would continue breathing and moving on its own while the material ensnaring it was cut away.

"Trying to balance the safety of animals with the procedural needs to cut off the material is where the tension comes in," Walsh said.

The disentanglement team initially tried unsuccessfully to sedate whale 3311 back in January when it was swimming off the Georgia/Florida border. The animal subsequently left the area, but returned about five weeks later in early March, when the most recent effort was made. The dosage for the second attempt was increased significantly, but the dart did not hit the animal at the desired angle. There was a change in its respirations but the whale did not allow the disentanglement boat to get near its head. The next day, the drug dose was increased again. The dart team was able to make its approach and the whale was successfully darted.

"We felt confident that we got the drug into the muscle of the animal and after waiting 30 minutes for the drugs to take effect the animal allowed the disentanglement boat to approach



Dr. Mike Walsh



Dr. James Bailey



Disentanglement team cuts rope tightly wrapped over the whale's head. Cut releases approximately 150 feet of rope. (Photo courtesy of Wildlife Trust)

and did not turn away," Walsh said. "This allowed Jamie Smith, the right whale disentanglement coordinator, to begin cutting off the line."

He was disappointed that not all of the gear was able to be cut away.

"It was a mixture of elation and disappointment," Walsh said. "We accomplished something that hadn't been done before with a great team effort, but I was really hoping we could get it all off. However, now we have a potential tool that can be used to intervene more quickly with severely entangled whales that are slowly starving to death."

Walsh added that the new sedation technique may greatly expand the options for the disentanglement teams dealing with these severely compromised whales, and for the whales themselves.

"It is very exciting to be able to see this technique have an effect in an animal so large," he said.

UF's Bailey has worked with Walsh on a variety of marine mammals since the early 1990s.

"I've had opportunities to work with various large, difficult or dangerous species, including polar bears, manatees and dolphins," Bailey said. "Some of these patients even came here to UF for various procedures."

In the case of the recent whale disentanglement, Bailey was invited to participate when another member of the team was unable to participate at the last minute.

"This event was over a decade in the making and has involved numerous highly skilled and dedicated individuals from multiple organizations — sometimes with divergent opinions," Bailey said. "In the end, they all came together to get this done and they made me feel like a part of the team."

"The obvious concern was that the whale could drown. I was there to help everyone to believe their decisions were sound and I just happened to be on base when they hit a home run."

The animal remains in very poor condition and has a guarded prognosis, but the disentanglement will give it a better chance for survival.

The North Atlantic right whale is the most endangered great whale, with a population of less than 400. Human activity—particularly ship collisions and entanglement in commercial fishing gear—is the most common cause of North Atlantic right whale deaths.