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# Whales and Dolphins Squeal With Delight, Study Finds

Posted by Jane J. Lee in Weird & Wild on August 13, 2014

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A bottlenose dolphin calls. Photograph by Frans Lanting, National Geographic Creative

**Beluga whales and bottlenose dolphins express their pleasure by squealing like children, a new study suggests for the first time.**

The squeaky sounds, which are different from the echolocation buzzes some whales and dolphins use to home in on prey, suggest there's yet another aspect of behavior that people share with marine mammals, among the smartest groups of the animal kingdom.

For decades, scientists and marine mammal trainers have noticed these "extra" vocalizations when they rewarded captive animals with food. They have also observed it in wild animals.

Some have brushed it off as an inadvertent artifact of the training process, or figured it was a part of the food calls some whales and dolphins make. (See "Dolphins Have 'Names,' Respond When Called.")

This new work, published August 13 in the *Journal of Experimental Biology*, suggests that belugas and bottlenose dolphins make the noises to express their delight.

It's a fun and creative study, Paul Nachtigall, director of the marine mammal program at the University of Hawaii in Kane'ohe Bay, said in an email.

Nachtigall, who was not involved in the study, has also noticed the sounds in some of the trained dolphins he's worked with.

"I had one of my dolphins during my dissertation emit a little squeak each time he pressed a paddle, even though he only received food on the average of once per minute," he said.

"I always thought it was inadvertently trained," Nachtigall recalled. "This [new study] could be an alternative explanation."

**"Victory Squeal"**

The study authors, led by Sam Ridgway of the National Marine Mammal Foundation in San Diego, California, trained captive bottlenose dolphins and beluga whales to perform various tasks in return for a fish reward. They found that the buzzes the animals emitted while approaching the fish continued after they had grabbed their reward.

Ridgway and colleagues called the pulsed buzzes after the animal captured the fish the "victory squeal." They also surmised that the animals weren't using the sounds to locate the fish. (Learn about the sensory capabilities of bottlenose dolphins.)

"Why continue to make buzzes [to locate the reward] when the fish is in your mouth?" noted the University of Hawaii's Nachtigall.

Trainers then associated a secondary signal—usually a whistle—with the fish. Over time, trainers started giving the secondary signal before the reward. Ridgway and colleagues found that their belugas and bottlenose dolphins would emit their squeal after the whistle but before they grabbed their fish—strongly suggesting that the animals expected a reward, the study authors wrote. (See "Dolphins Have Longest Memories in Animal Kingdom.")

The researchers then compared the time it took the belugas and dolphins to emit their victory squeal in response to the secondary signal versus a general vocalization in response to a different sound. They found a longer delay between the victory squeal and whistle than for the vocal response and sound.

That delay—151 milliseconds on average—is in the range of release times for a brain chemical called dopamine, which is also observed in land mammals (including us) that have been trained to expect a reward, the study authors wrote. (See "'Talking' Whale Could Imitate Human Voice.")

Dopamine, which acts as a kind of messenger between nerve cells in the brain, plays a big role in how humans register pleasure or happiness.

So it's likely that victory squeals in belugas and dolphins occur when their brains have released dopamine, according to the study.

**A Note of Caution**

Maddalena Bearzi, a marine mammal biologist and president of the Ocean Conservation Society in Marina del Rey, California, urges caution in taking the results of this study too far.

"It's a bit of a stretch to say [the squeal] is emotional," said Bearzi, who was not involved in the research.

"Based on 25 years in the field, I do believe these animals are emotional creatures," she said.

It's certainly possible that these squeals represent pleasure in bottlenose dolphins and belugas, Bearzi said, but there aren't enough data to rule out other possible explanations.

She would like to see further studies delving deeper into this question. "Emotion is so hard to define in us, let alone in a dolphin."

*Follow Jane J. Lee on Twitter.*

Keywords: behavior, beluga, bottlenose dolphin, delight, ocean, science, whale

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