Scientists hope to protect seals by understanding their sound

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Scientists learning the snorty language of Northern elephant seals are hoping to understand how the giant blubbery mammals use vocalizations to prevent costly fights and structure their colonies - and how we can keep the expanding population safe.

Armed with microphones researchers from UC Santa Cruz's Institute of Marine Sciences have spent hundreds of hours on the brush-filled, windy dunes and beaches of Ano Nuevo State Park, tracking more than 160 elephant seals and collecting some of their grumbly grunts and growls.

"These are fascinating animals, and they use sounds for really important parts of their lives," said Brandon Southall, a marine scientist and UC Santa Cruz research associate who studies elephant seal communication.

Like showing who's boss. Scientists think males use vocal calls to prevent fighting - much like smack-talk between two guys in a bar - since seals vocalize before coming to blows. Often, challenges are settled by the calls alone.

"It's striking how rare physical fights are," said Colleen Reichmuth, research director at UCSC's Pinniped Cognition and Sensory Systems Laboratory.

But when two males the size of a Ford Explorer fight, it's bloody and violent.

Once hunted to near-extinction, the Northern elephant seals have rebounded. Now, scientists are concerned about potential human impacts on the growing population, and they hope that understanding the seals' communication and organization will help protect the bulbous-nosed cutie-pies.

"The more we can learn, the more we can predict how they'll respond to these types of encroachments and better protect them," said Caroline Casey, the project's field research coordinator.

And as winter ends it might seem quiet during a visit to Ano Nuevo, because most of the seals have left this favored breeding ground. Make no mistake, though, they are among the loudest animals on land. Their calls can reach 130 decibels, as loud as a jackhammer, with frequencies low enough to vibrate the sand around them. To understand what all the fuss is about, Southall has been recording their rumblings from 3 feet away.

"It's kind of crazy to think you're so close to 4,000-pound males while they're trying to fight," he said. "You can feel it resonating in your chest and sinus cavities."

The team found that each male has a unique call. "Caroline knows these individuals so well she can recognize them from the other side of the dunes," Reichmuth said of Casey.

Ano Nuevo docent Rodger Alsobrook likens the noise to "starting a Harley-Davidson motorcycle inside a gymnasium." Park visitor Dianne France, from San Jose, said it's "like somebody crossed a pig with a dog. It's a sort of grumbly snort."

Indeed, the scientists' recordings contain all these characteristics. One male, "3C," produces a measured series of clanging pulses. Another's

call has the rhythm of a galloping horse. Other males sound like chainsaws, flamenco dancers or shuffling a deck of cards. Some, like "3C," begin and end their calls with a special touch - "a snorty flourish," according to Reichmuth. During the breeding season, scientists give the animals their own identifying mark by squirting codes on their rears with semi-permanent black hair dye.

This season, scientists used a speaker to broadcast recorded elephant seal calls to specific males on the beach. One seal, when hearing the recording, turned around and sped away. Another charged the speaker. "We've had a few speakers run over," Reichmuth said.

The different responses indicate that the calls are important, and the next step is figuring out what's encoded in the grunty orations. "There's no one thing about the sound that allows you to know whether it's a big male, or a dominant male," Reichmuth said.

When the seals return next winter, scientists will be there once more. "It's kind of addicting," Reichmuth said. "Sometimes the people migrate back as well."