

# Study questions the role of kinship in mass strandings of pilot whales

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Thousands of pilot whales have died in mass strandings the last few decades and recent genetic analysis challenges one of the popular hypotheses for why they strand. These pilot whales stranded at Stanley, in northeast Tasmania in 2008. (photo courtesy of DPIPWE Marine Conservation Program)

Pilot whales that have died in mass strandings in New Zealand and Australia included many unrelated individuals at each event, a new study concludes, challenging a popular assumption that whales follow each other onto the beach and to almost certain death because of familial ties.

Using [genetic samples](#) from individuals in large strandings, scientists have determined that both related and unrelated individuals were scattered along the beaches – and that the bodies of mothers and young calves were often separated by large distances.

Results of the study are being published this week in the *Journal of Heredity*.

Scott Baker, associate director of the [Marine Mammal](#) Institute at Oregon State University, said [genetic identification](#) showed that, in many cases, the mothers of calves were missing entirely from groups of [whales](#) that died in the [stranding](#). This separation of mothers and calves suggests that strong kinship bonds are being disrupted prior to the actual stranding – potentially playing a role in causing the event.

"Observations of unusual social behavior by groups of whales prior to stranding support this explanation," said Baker, who frequently advises the International Whaling Commission and is co-author of the *Journal of Heredity* article. The OSU cetacean expert is a professor in the Department of Fisheries and Wildlife at the university's Hatfield Marine Science Center in Newport, Ore.

The mass stranding of [pilot whales](#) is common in New Zealand and Australia, involving several thousand deaths over the last few decades, according to Marc Oremus of the University of Auckland, who is lead author on the study. The researchers say their [genetic analysis](#) of 490 individual pilot whales from 12 different stranding events showed multiple maternal lineages among the victims in each stranding, and thus

no correlation between kinship and the grouping of whales on the beach.

This challenges another popular hypothesis – that "care-giving behavior" directed at close maternal relatives may be responsible for the stranding of otherwise healthy whales, Oremus said.

"If kinship-based behavior was playing a causal role in strandings, we would expect that whales in a stranding event would be related to one another through descent from a common maternal ancestor, such as a grandmother or great-grandmother – and that close kin would be clustered on the beach," Oremus said. "Neither of these was the case."

Because of the separation of mothers and calves, or in some cases, the outright absence of mothers among the victims, the study has important implications for agencies and volunteers who work to save the stranded whales, Baker said.

"Rescue efforts aimed at 'refloating' stranded whales often focus on placing stranded calves with the nearest mature females, on the assumption that the closest adult female is the mother," Baker pointed out. "Our results suggest that rescuers should be cautious when making difficult welfare decisions – such as the choice to rescue or euthanize a calf – based on this assumption alone."

Long-finned pilot whales are the most common species to strand en masse worldwide, the researchers noted, and most of their beaching events are thought to be unrelated to human activity – unlike strandings of some other species. Both naval sonar and the noise of seismic exploration have been linked to the stranding of other species.

The phenomenon is not new. In fact, mass strandings of whales or dolphins were described by Aristotle more than 2,000 years ago and were thought to have some kind of natural cause, Baker said, although it

is unclear what that may be.

"It is usually assumed that environmental factors, such as weather or the pursuit of prey, brings pilot whales into shallow water where they become disoriented," Baker said. "Our results suggest that some form of social disruption also contributes to the tendency to strand."

"It could be mating interaction or competition with other pods of whales," Baker said. "We just don't know. But it is certainly something that warrants further investigation."

The researchers hope their study will lead to better genetic sampling of more pilot whales and other stranded whale species, as well as the use of satellite tags to monitor the survival and behavior of whales that are helped back into the ocean.

"The causal mechanisms of these strandings remain an enigma," Oremus said, "so the more avenues of research we can pursue before and after the whales beach themselves, the more likely we are to discover why it happens."

**More information:** [jhered.oxfordjournals.org/content/03/08/jhered.est007](https://jhered.oxfordjournals.org/content/03/08/jhered.est007)

Provided by Oregon State University

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