

Lack of diversity in pygmy blue whales not due to man-made cause

May 6 2015, by Bob Yirka



Pygmy blue whale. Credit: © Research team (Attard et. al)

(Phys.org)—A team of researchers working in Australia has found via DNA analysis, that the lack of genetic diversity in pygmy blue whales is due to natural causes, not because of whaling. In their paper published in

the journal *Biology Letters*, the researchers, affiliated with a variety of institutions in Australia, describe their study of the whales and why what they learned may help save them.

Pygmy [blue whales](#) are a subspecies of blue whales and contrary to their name, are not really all that small. They average 24 meters in length compared to their bigger cousins, which average 28 to 30 meters in length.

For many years [marine biologists](#) have assumed that the lack of [genetic diversity](#) found in pygmy blue whales living around the shores of Australia, was due to their numbers being cut due to whaling. Now it appears that is not the case. In this new effort, the researchers sought to better understand the history of the whales and how they wound up with so little diversity. To learn more, they obtained DNA samples from several specimens and then studied patterns of genetic mutations—that allowed them to see that the whales had all come from just a few individuals, a "founder group," beginning around 20,000 years ago. After comparing the pygmy whale DNA with other blue whales living in other parts of the world, the team was able to ascertain that they had gotten their start as Antarctic blue whales.

The researchers note that 20,000 years ago, the Earth was experiencing peak glaciation, which allowed blue whales (currently the largest animal on the planet) to travel to other places, one of which was, apparently Australia. But then the glaciers retreated, leaving those that had migrated to adapt to their new environment—they evolved into the pygmy blue whales that exist today.



Pygmy blue whale. Credit: © Research team (Attard et. al)

That is good news for the species, because it means their lack of diversity is not due to whaling, (which did reduce their numbers dramatically, along with other blue whales)—it is because they are still so new of a species. Also because they are now a protected species, the researchers believe that if they can mitigate other threats, such as different sorts of human pollution, the whales have a good chance of returning to their pre-whaling population.

More information: Low genetic diversity in pygmy blue whales is due to climate-induced diversification rather than anthropogenic impacts, *Biology Letters*, [DOI: 10.1098/rsbl.2014.1037](https://doi.org/10.1098/rsbl.2014.1037)

Abstract

Unusually low genetic diversity can be a warning of an urgent need to mitigate causative anthropogenic activities. However, current low levels of genetic diversity in a population could also be due to natural historical events, including recent evolutionary divergence, or long-term persistence at a small population size. Here, we determine whether the relatively low genetic diversity of pygmy blue whales (*Balaenoptera musculus brevicauda*) in Australia is due to natural causes or overexploitation. We apply recently developed analytical approaches in the largest genetic dataset ever compiled to study blue whales (297 samples collected after whaling and representing lineages from Australia, Antarctica and Chile). We find that low levels of genetic diversity in Australia are due to a natural founder event from Antarctic blue whales (*Balaenoptera musculus intermedia*) that occurred around the Last Glacial Maximum, followed by evolutionary divergence. Historical climate change has therefore driven the evolution of blue whales into genetically, phenotypically and behaviourally distinct lineages that will likely be influenced by future climate change.

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