

Monster from the deep hits the surface



Faculty of Science

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DNA The giant squid is one of the most enigmatic animals on the planet. It is extremely rarely seen, except as the remains of animals that have been washed ashore, and placed in the formalin or ethanol collections of museums. But now, researchers at the University of Copenhagen leading an international team, have discovered that no matter where in the world they are found, the fabled animals are so closely related at the genetic level that they represent a single, global population, and thus despite previous statements to the contrary, a single species worldwide. Thus the circle, that was first opened in 1857 by the famous Danish naturalist Japetus Steenstrup as he first described the animal, can be closed. It was Steenstrup that realized this beast was the same animal that in the past gave rise to centuries of sailors tails, and even in more recent became immortalized by writers such as Jules Verne and Herman Melville, by demonstrating that the monster was based in reality, and gave it the latin name *Architeuthis dux*.

It was less than 1 year ago, that the giant squid, *Architeuthis dux*, was first filmed alive in its natural element. Taken at a depth of 630m and after 100 missions and 400 hours of filming, the footage was captured by a small submarine lying off the Japanese island of Chichi Jima – near to the famous Iwo Jima that was the scene of some of the bloodiest fighting between Japan and the USA in the Second World War.

Now, PhD student [Inger Winkelmann](#) and her supervisor Professor Tom Gilbert, from [the Basic Research Centre in GeoGenetics](#) at [the Natural History Museum of Denmark](#), Copenhagen University, have managed to place new bricks into the puzzle of this giant 10 armed invertebrate, that is credibly believed to grow up to 13 meters long and way over 900 kg.



Photo credit: Frederik Wolff Tegllhus

And the two scientists conclusions are: No matter what a sample looks like, its one species all over the deep oceans of the planet.

Sinking to the depths

PhD student Inger Winkelmann says about these findings, that are about to be published in the esteemed British journal, the Proceedings of the Royal Society B:

-We have analysed DNA from the remains of 43 giant squid collected from all over the world. The results show, that the animal is genetically nearly identical all over the planet, and shows no evidence of living in geographically structured populations. We suggest that one possible explanation for this is that although evidence suggests the adults remain in relatively restricted geographic regions, the young that live on the

ocean's surfaces must drift in the currents globally. Once they reach a large enough size to survive the depths, we believe they dive to the nearest suitable deep waters, and there the cycle begins again. Nevertheless, we still lack a huge amount of knowledge about these creatures. How big a range to they really inhabit as adults? Have they in the past been threatened by things such as climate change, and the populations of their natural enemies, such as the planet's largest toothed whale, the sperm whale that can grow up to 20 m in length and 50 tons? And at an even more basic level...how old do they even get and how quickly do they grow?

The kraken and the seamonk

These new results about the mysterious giant squid are released, fittingly enough, on the 200th anniversary of the Danish naturalist and polymath, [Japetus Steenstrup](#) (born in 1813).

At the age of 44, in 1857, it was Steenstrup who saw that many of the monsters of sea-legend were related to fragments that he had been sent of what appeared to be a giant squid, and in doing so described the species for the first time and removed any hope that sea monsters such as the Kraken and sea-monk really existed (although nevertheless, similar monsters still inspired beasts in literature and even films throughout the 20th century, including Tolkein's Lord of the Rings in 1957).

Professor Tom Gilbert, who lead the team that undertook the research, says:

- It has been tremendous to apply the latest techniques in genetic and computational analyses, to follow up on Steenstrup's scientific research 146 years after he started it. But its also been a fantastic experience to work with the giant squid as a species, because of its legendary status as a seamonster. But despite our findings, I have no doubt that these myths and legends will continue get today's children to open their eyes up - so they will be just as big as the real giant squid is equipped with to navigate the depths.

The work was undertaken in collaboration with researchers around the world, including scientists in Australia, New Zealand, Japan, Spain, Portugal, USA and Ireland.

Link til the publication:

<http://rspb.royalsocietypublishing.org/content/280/1759/20130273.full>

Further contact: Tom Gilbert, +45 23 71 25 19  or email: mtpgilbert@gmail.com

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Kontakt

Professor Tom Gilbert
Basic Reasearch Centre in GeoGenetics
National History Museum of Denmark
University of Copenhagen
tgilbert@snm.ku.dk
Phone: +45 23 71 25 19 

PhD Student Inger Winkelmann
Basic Reasearch Centre in GeoGenetics
National History Museum of Denmark
University of Copenhagen
iwinkelmann@snm.ku.dk

[Faculty of Science](#)
[University of Copenhagen](#)
Bülowsvej 17
1870 Frederiksberg C

Contact:
Svend Thaning
svt@science.ku.dk

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Desai speculated that it could be a deep sea creature, washed to shore by Hurricane Harvey. Others thought it was some sort of prehistoric sea creature or a monster from the movie Tremors. According to Smithsonian biologist and eel specialist Dr Kenneth Tighe, the mystery marine monster could be a species of snake-eel. Tighe said the creature was likely an Aplatophis chauliodus, a fangtooth snake-eel or "tusky" eel. These eels are usually found between 30-90 metres beneath the sea's surface. The mystery marine monster could also be from the Congridae family of eel. "It might now, PhD student Inger Winkelmann and her supervisor Professor Tom Gilbert, from the Basic Research Centre in GeoGenetics at the Natural History Museum of Denmark, Copenhagen University, have managed to place new bricks into the puzzle of this giant 10 armed invertebrate, that is credibly believed to grow up to 13 meters long and weigh over 900 kg. And the two scientists' conclusions are: No matter what a sample looks like, it's one species all over the deep oceans of the planet. Sinking to the depths. -We have analysed DNA from the remains of 43 giant squid collected from all over the world. The results show, that the animal is genetically nearly identical all over the planet, and shows no evidence of living in geographically structured populations. Monsters from the deep. Tales of giant sea monsters have been common for many centuries, inspiring fear and (0) ___fascination___ among sailors. However, until comparatively (1) ____. RECENT. there was no firm evidence for the (2) ___ of such creatures. EXIST. Towards the end of the nineteenth century, a number of dead. giant squid were washed up on the shores of Newfoundland, which forced scientists to entirely (3) ___ their opinion. THINK. The (4) ___ of the dead animals spurred marine scientists. DISCOVER. to redouble their efforts to capture a live specimen. The Monster from the Deep. I am Professor Aronnax. My job is to study everything dead or alive under the sea. Everyone watched him silently. I saw the harpoon leave his hand and hit the giant creature right in its back. Water shot out of the wound. Its force knocked me right out of the ship into the dark cold ocean. Chapter two. Saved from the Ocean. I found myself underwater. It was very cold and I tried hard to get to the top and breathe. We sailed through the Mediterranean Sea and entered the deep mysterious Atlantic Ocean. The ocean became dark, and we continued to go further and further down. Captain Nemo came into the museum as I studied the ocean floor.