

https://www.sciencedaily.com/releases/2016/06/160620161054.htm

Science News from research organizations

Manta rays are local commuters, not long-distance travelers, study finds

Study has important implications for the threatened species' conservation

Date: June 20, 2016
Source: University of California - San Diego
Summary: Oceanic manta rays -- often thought to take epic migrations -- might actually be homebodies, according to a new study. A research team studied satellite-tracked manta rays to shed light on the lives of these mysterious ocean giants.
Share: Facebook Twitter Google+ LinkedIn + Email

RELATED TOPICS

- Plants & Animals
 - Nature
 - Fish
 - Marine Biology
 - New Species
 - Wild Animals
 - Endangered Animals

RELATED TERMS

- Stingray
- Radiography
- Ultraviolet
- Fish
- Ocean acidification
- Jane Goodall



Scripps graduate student Josh Stewart swims near a giant oceanic manta ray at Bahía de Banderas off mainland Pacific Mexico.
Credit: Scripps Oceanography/Octavio Aburto

Oceanic manta rays--often thought to take epic migrations--might actually be homebodies, according to a new study. A Scripps Institution of Oceanography at the University of California San Diego-led research team studied satellite-tracked manta rays to shed light on the lives of these mysterious ocean giants.

Manta rays (*Manta birostris*) spend much of their lives swimming in remote open-ocean environments, such as on seamounts and offshore islands, in search of tiny free-floating plankton, their main source of food. They can live for over 40 years and reach a wingspan of up to seven meters (23 feet).

The findings, published in the journal *Biological Conservation*, have important implications for the conservation of the threatened species.

To better understand their travels, the researchers tagged and collected muscle tissue samples from the rays at four different sites in the Indo-Pacific separated by 600-13,000 kilometers (373-8,078 miles), to see if the local aggregations of mantas were in fact a network of highly connected subpopulations.

Using the tagging information, which included up to six months of data on their movements, along with genetic and stable isotope analyses on the collected tissues, the researchers found that manta rays remained close to their tagged location, and are very likely distinct subpopulations with very limited connectivity between regions.

"These animals are showing a remarkable degree of residency behavior compared to the migrations we were expecting," said Scripps Oceanography PhD candidate Joshua Stewart, a researcher in the Scripps Gulf of California Marine Program and the study's lead author. "While mantas do make the occasional long-distance movement, it appears that the norm is to stay put. This means that any one population of mantas is highly susceptible to fisheries and other human impacts, but that local populations are also more easily protected."

Populations of manta and closely related mobula rays are in decline worldwide due to targeted fishing mainly for their gill plates, which are used in traditional Chinese medicine, and from accidental bycatch in other fisheries.

Scientists had previously assumed manta rays to be long-distance travelers, similar to other large marine vertebrates such as sharks, tunas, and whales, largely based upon their size and pelagic habitat preference.

"We found that these patterns of residency remain true on multi-year and generational time scales, with both genetic and isotopic separation between populations," said Stewart, also a researcher at the UK-based nonprofit The Manta Trust.

According to the authors, this study demonstrates that oceanic manta rays can be effectively protected by local and regional management strategies, which are often not considered viable for highly migratory species.

"The research we've conducted has shown that perhaps the most effective management strategies for oceanic manta rays will come from the local and national level," said study co-author Calvin Beale of the Misool Manta Project.

The population of manta rays studied in Indonesia appears to reside exclusively in Indonesian waters, where there is a complete moratorium on the landing of manta rays, and local marine protected areas that cover a substantial portion of the population's range.

"If more countries follow suit and protect their local manta populations, the outlook for the species may improve from the current downward trajectory," said Beale.

In a separate study recently published in the journal *Zoology*, Stewart and his team analyzed the diving behaviors of six satellite-tagged oceanic manta rays at the Revillagigedo Archipelago in Mexico. They found seasonal shifts in diving behavior, likely the result of changes in the location and availability of their main prey source-zooplankton.

"This additional study helps explain why the mantas may remain resident, unlike most other large marine animals," said Stewart. "Rather than move horizontally over long distances to track specific prey items, it seems that oceanic mantas are quite flexible in their foraging behavior, perhaps allowing them stay put rather than migrate."

Stewart and colleagues at National Geographic Crittercam are conducting a follow-up study to affix cameras to the animals to directly observe their feeding behaviors.

Story Source:

The above post is reprinted from materials provided by **University of California - San Diego**. Note: Materials may be edited for content and length.

Journal Reference:

- Joshua D. Stewart et al. **Spatial ecology and conservation of Manta birostris in the Indo-Pacific**. *Biological Conservation*, June 2016 DOI: 10.1016/j.biocon.2016.05.016

Cite This Page:

MLA APA Chicago

University of California - San Diego. "Manta rays are local commuters, not long-distance travelers, study finds: Study has important implications for the threatened species' conservation." *ScienceDaily*. ScienceDaily, 20 June 2016. <www.sciencedaily.com/releases/2016/06/160620161054.htm>.

Share This Page:



Powered by Google



Furniture China 2016

Ad ubmonlinereg.com



Giant Ape Lived Alongside Humans

sciencedaily.com



TCKW- stainless-steel products

Ad tckw.com.tw



World's Oldest Living Tree -- 9550 years old --...

sciencedaily.com

NEXT >

Recommended Articles

A case study of manta rays and lagoons
University of California - Santa Barbara, ScienceDaily, 2014

First satellite tag study for manta rays reveals habits and hidden journeys of ocean giants
Wildlife Conservation Society, ScienceDaily, 2012

Tags reveal Chilean devil rays are among ocean's deepest divers
Woods Hole Oceanographic Institution, ScienceDaily, 2014

Tracking endangered leatherback sea turtles by satellite, key habitats identified
University of Massachusetts at Amherst, ScienceDaily, 2014

Marine protected areas: A solution for saving the penguin
CNRS (Délégation Paris Michel-Ange), ScienceDaily, 2010

Migratory shearwaters integrate oceanic resources across the Pacific Ocean in an endless summer. [↗](#)

Scott A Shaffer et al., *Proc Natl Acad Sci U S A*, 2006

Millennial-scale isotope records from a wide-ranging predator show evidence of recent human impact to oceanic food webs. [↗](#)

Anne E Wiley et al., *Proc Natl Acad Sci U S A*, 2013

When an ecological regime shift is really just stochastic noise. [↗](#)

Scott C Doney et al., *Proc Natl Acad Sci U S A*, 2013

Identifying critical regions in small-world marine metapopulations. [↗](#)

James R Watson et al., *Proc Natl Acad Sci U S A*, 2011

Pleistocene to historic shifts in bald eagle diets on the Channel Islands, California. [↗](#)

Seth D Newsome et al., *Proc Natl Acad Sci U S A*, 2010



Related Stories

New Listing to Protect 21 Species of Sharks and Rays
Nov. 10, 2014 — Conservationists are rejoicing at the listing of 21 species of sharks and rays under the Appendices of the Convention on Migratory Species, made official today in the final plenary session of the ... [read more »](#)



A Case Study of Manta Rays and Lagoons

July 2, 2014 — Doug McCauley chose one of the most isolated places in the world, Palmyra Atoll, to study the ecology of the Manta alfredi. About halfway between Hawaii and American Samoa, this complex of small ... [read more »](#)



Key Environmental Factors Influencing Manta Ray Behavior Identified

Oct. 3, 2012 — Manta rays are more likely to gather together under either a new or a full moon, according to new research published Oct. 3 in the open-access journal PLOS ONE by Fabrice Jaïne and colleagues at the ... [read more »](#)



First Satellite Tag Study for Manta Rays Reveals Habits and Hidden Journeys of Ocean Giants

May 11, 2012 — Using the latest satellite tracking technology, conservationists have completed a ground-breaking study on a mysterious ocean giant: The manta ... [read more »](#)



Main Reducer

Specialized in XCMG main reducer assembly manufacturing. Factory Price.



Strange & Offbeat

PLANTS & ANIMALS



Predicting Loaf Volume Without Baking the Bread



Tadpoles Hatch in Seconds to Escape Predator



Rush Hour on Palmyra Atoll



How the Butterfly Got Its Spots

EARTH & CLIMATE



Sea Snakes Have Extra Sense for Water Living



Minecraft Tree 'Probably' the Tallest Tree in the Tropics



Underwater 'Lost City' Found to Be Geological Formation



Methane-Producing Microbes in California Rocks

FOSSILS & RUINS



One Snake's Prey Is Another's Poison: Scientists Pinpoint Genetics of Extreme Resistance



Electric Eels Make Leaping Attacks



Tiny 'Vampires': Paleobiologist Finds Evidence of Predation in Ancient Microbial Ecosystems



New Horned Dinosaur Species With 'Spiked Shield'



Powered by Mobitel, myJobs.Ik helps you find your Dream Job!

Print Email Share

Free Subscriptions

Get the latest science news with ScienceDaily's free email newsletters, updated daily and weekly. Or view hourly updated newsfeeds in your RSS reader:

- Email Newsletters
- RSS Feeds

Follow Us

Keep up to date with the latest news from ScienceDaily via social networks:

- Facebook
- Twitter
- Google+
- LinkedIn

Mobile Apps

Get the latest news from ScienceDaily via our free mobile apps, available for download on the following platforms:

- iPhone/iPad
- Android

Have Feedback?

Tell us what you think of ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?

- Leave Feedback
- Contact Us