



# A Guide to Saving Marine Megafauna



In cooperation with Dr. Andrea Marshall  
Marine Megafauna Foundation





Change often results from the cumulative actions of many people working in different ways toward a common goal. Although a single person may not have much of an impact on the conservation of an entire species, collectively our impact is huge. This guide was compiled jointly by the **Oceanscape Network** and Dr. Andrea Marshall of the **Marine Megafauna Foundation** to help you better understand the challenges facing large ocean animals and ways you can assist with their conservation.

## What Is Megafauna?

“Mega” means large and “fauna” means animal, so megafauna is any large animal existing in a particular ecosystem. Megafauna generally have an average mature weight of 90 lbs (40 kg) or heavier. Under this definition, human beings are considered megafauna.

Compared to the Earth's distant past, today's megafauna are comparatively small. Although the modern blue whale is the largest animal to ever exist, most of the planet's truly large megafauna disappeared about 15,000 years ago during what was known as the Quaternary extinction event. During this period, the Earth began to warm and widespread glaciers receded. Many of the megafauna who lived during the early Pleistocene era could not adapt to the warmer climate and died off. Others may have been hunted to extinction by early human beings or been depleted by disease. Vanished were some of era's most iconic animals, including the woolly mammoth, Shasta ground sloth and sabretooth cat.

The woolly mammoth (*Mammuthus primigenius*) was a common megafauna species during the Pleistocene. They were roughly the same size as the modern African elephant.

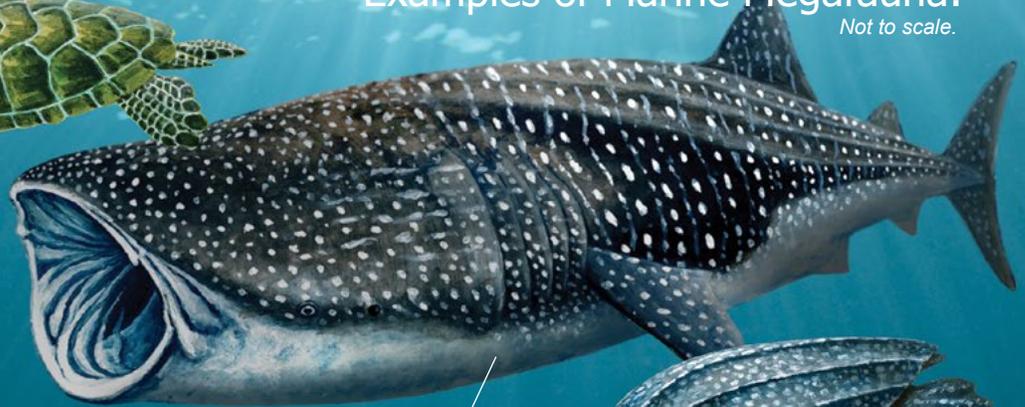




## Examples of Marine Megafauna:

*Not to scale.*

Green sea turtle  
(*Carcharodon carcharias*)



Whale shark  
(*Rhincodon typus*)

Leatherback sea turtle  
(*Dermochelys coriacea*)



Harbor seal  
(*Phoca vitulina richardsi*)



Great white shark  
(*Carcharodon carcharias*)



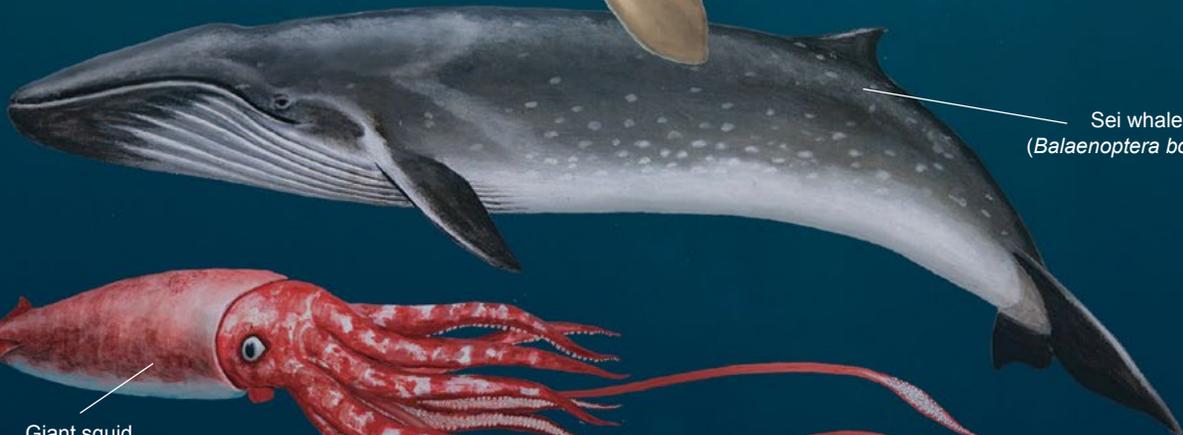
Coelacanth  
(*Latimeria chalumnae* and  
*Latimeria menadoensis*)



Dugong  
(*Dugong dugon*)



Sei whale  
(*Balaenoptera borealis*)



Giant squid  
(Genus *Architeuthis*)



Find complete descriptions  
of these animals and more  
on the Oceanscape Network.



## Challenges Facing Marine Megafauna Today

Because of their size, megafauna require more food and habitat to survive than comparatively smaller animals. From an evolutionary standpoint, this means megafauna are not as sustainable over long periods of time. Many challenges to the survival of marine megafauna are related to competition for limited resources, particularly with people. For example, overfishing may deplete food stocks. Animals may become entangled and drown in discarded fishing nets. Climate change and pollution may alter the water's temperature or chemical composition, further depleting food supplies or causing disease.



Whale sharks filter feeding.



### From Andrea: Direct Actions To Help Marine Megafauna

You can help marine megafauna (or any wildlife) through changes in your every day behavior. More information follows on the next pages.

1. Don't use plastic bags or buy soda cans with 6 pack rings because sea turtles can ingest them or become entangled in them.
2. Recycle to keep plastics and pollutants out of the environment.
3. Volunteer with a conservation or citizen science organization.
- 4) Fundraise, as this is a good way to support the causes you believe in.
- 5) Help spread the word. Anyone can be an ocean advocate and educator.





## What You Can Do To Help

No matter where you live, you can help marine megafauna.

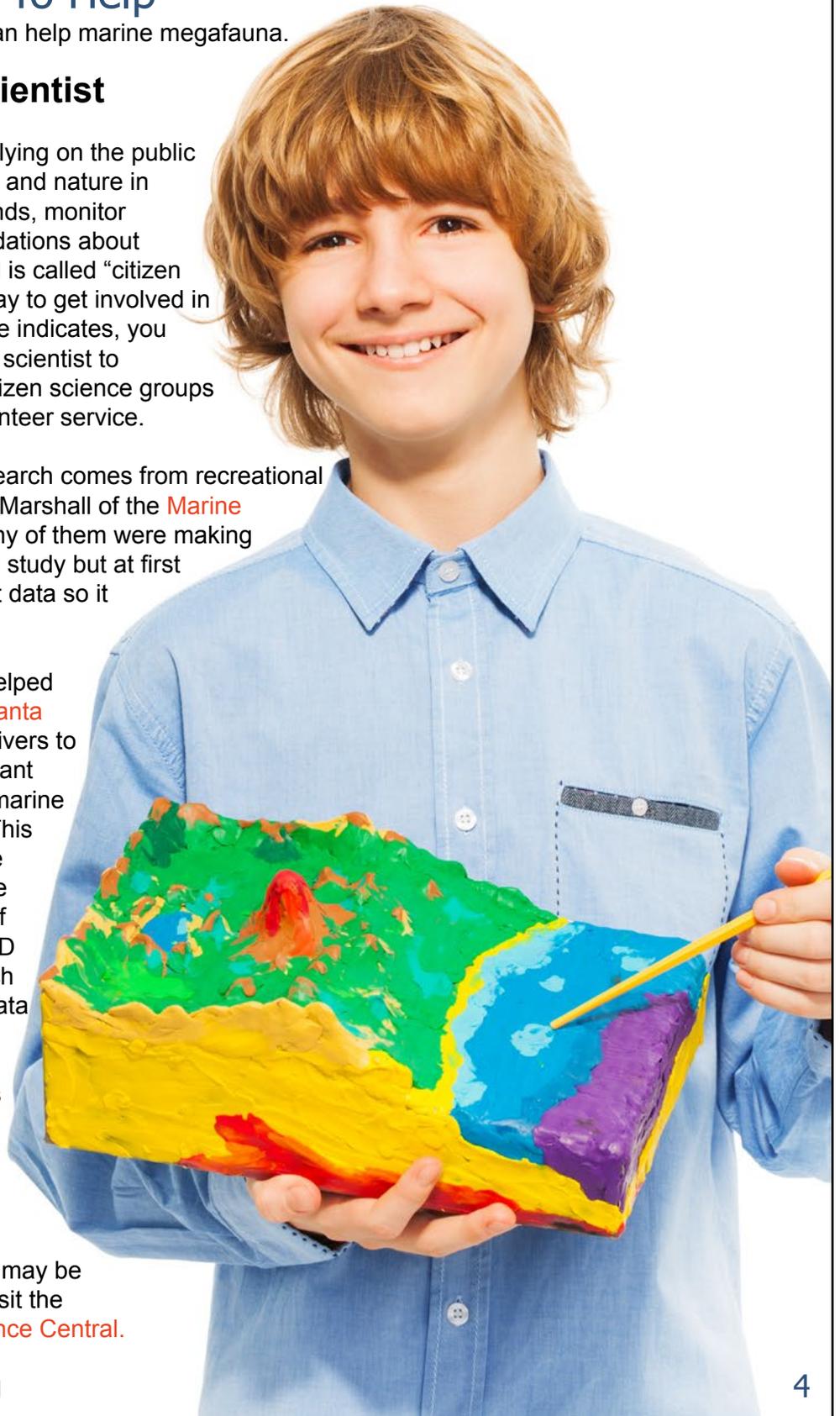
### Become A Citizen Scientist

More and more, scientists are relying on the public for information about the oceans and nature in general to better understand trends, monitor resources and make recommendations about conservation. This growing trend is called “citizen science” and it is a fun, active way to get involved in ocean conservation. As the name indicates, you do not have to be a professional scientist to participate in these activities. Citizen science groups will train you as part of your volunteer service.

“A lot of the data I use in my research comes from recreational SCUBA divers,” said Dr. Andrea Marshall of the **Marine Megafauna Foundation**. “So many of them were making observations about the animals I study but at first there was no way to capture that data so it was useable.”

To solve this dilemma, Andrea helped establish an online tool called **Manta Matcher**. This database allows divers to upload photos of the bellies of giant manta rays, another species of marine megafauna studied by Andrea. This sophisticated program works like facial recognition software for the unique markings on the bellies of manta rays. By automating this ID process, Andrea can easily match mantas across the globe. This data is then be used to determine population and migration patterns, or to assess the effects of large scale environmental factors like climate change on these animals.

Depending on where you live, different citizen science projects may be available. Try a web search or visit the **Cornell University’s Citizen Science Central**.





## For Educators: Citizen Science Academy

This is a professional development course which provides an overview of citizen science (past, present and future) and highlights several existing citizen science programs targeted toward professionals.

Visit their website for additional information including fees. [citizenscienceacademy.org](http://citizenscienceacademy.org)

Or check out the [Oceanscape Network's Youth Activities page](#) for additional ideas related to citizen science.



## Use Your Pocket Technology

Yes, that smart device you carry everywhere can actually help save the ocean. A variety of apps have been developed to help citizen scientists gather and transmit data to scientists and conservation organizations. All of these resources are free to the public.

**Dolphin and Whale 911:** This app from the National Oceanic and Atmospheric Administration (NOAA) deals specifically with marine megafauna by enhancing accurate and timely reporting of stranded marine mammals in the southeastern United States. The app allows the public to quickly and accurately identify species and know who to call and what to do if they find a sick, injured or dead marine mammal.  
[ccsinventory.wilsoncenter.org/#projectId/56](http://ccsinventory.wilsoncenter.org/#projectId/56)

**Release Mako:** Also from NOAA, the app allows fishermen to report live releases of shortfin mako sharks from mobile devices. The app uses a device's built-in global positioning system (GPS) feature to fill in location coordinates. NOAA uses this information to help track and conserve this endangered species.  
[nmfs.noaa.gov/sfa/hms/shortfinmako/mako\\_app.html](http://nmfs.noaa.gov/sfa/hms/shortfinmako/mako_app.html)

**Secchi:** This mobile interface to the Secchi Disk Project enables any seafarer to take part in a global study of the phytoplankton in our oceans. By using this app you will help scientists learn more about the phytoplankton at a time when their habit is being altered by climate change. [secchidisk.org](http://secchidisk.org)

**mPing:** This app was developed by the National Oceanic and Atmospheric Administration's National Severe Storms Laboratory (NSSL) and allows the public to forward "on the ground" weather observations, which cannot be accessed by weather radar. mPing reports are used by NOAA to fine-tune their forecasts, develop new forecasting technologies and techniques and study climate change.  
[ccsinventory.wilsoncenter.org/#projectId/24](http://ccsinventory.wilsoncenter.org/#projectId/24)



**Project NOAH:** Supported by the National Geographic Society, this app helps you explore nature, document and photograph wildlife, track your outdoor expeditions and share your data with scientists studying world biodiversity. [projectnoah.org](http://projectnoah.org)

**iNaturalist:** Using this app, every observation you make can contribute to biodiversity science, from the rarest butterfly to the most common backyard weed. The app shares your findings with scientific data repositories like the Global Biodiversity Information Facility. [inaturalist.org](http://inaturalist.org)

**Shedd Aquarium's Citizen Science Pinterest Board:** The board provides examples of citizen science projects that you can do with classmates or family. [pinterest.com/sheddlearning/citizen-science/](http://pinterest.com/sheddlearning/citizen-science/).

**Cocorahs:** Pronounced KO-ko-rozz, this is a grassroots volunteer network of backyard weather observers of all ages and backgrounds working together to measure and map precipitation in their local communities. [cocorahs.org](http://cocorahs.org)

A nesting leatherback sea turtle.



## Be An Earth-Smart Consumer

Making informed decisions on buying new products and disposing of waste will help marine megafauna — and all other forms of wildlife — by ensuring foods are being sustainably harvested, trash is being appropriately handled and we are reducing our carbon footprint. Below is an abbreviated list of free resources which will help you make wise consumer choices. Plenty of others are available through a simple web search.

**OceanWise:** This conservation program from the Vancouver Aquarium was created to educate and empower consumers about the issues surrounding sustainable seafood. An iPhone app is also available for this program. [oceanwise.ca/](http://oceanwise.ca/)



**Marine Debris Tracker:** This app allows you to help make a difference by telling scientists with the University of Georgia and the National Oceanic and Atmospheric Administration when you find trash on our coastlines and waterways. [marinedebris.engr.uga.edu](http://marinedebris.engr.uga.edu)

**iRecycle:** Recycling is one of the simplest things you can do to help marine life so trash does not end up in our waterways. This app will help you find local (United States only), convenient recycling opportunities when you are on the go or at home. [earth911.com/irecycle/](http://earth911.com/irecycle/)

**Dropcountr:** This app enables you to conserve water by connecting you to your water utility company via your smartphone. Your water company can send you customized drought and water budget messages, or notify you of leaks. [dropcountr.com](http://dropcountr.com)

**Goodguide:** This app helps you find safe, healthy, green, and ethical products with product reviews based on scientific research and ratings. GoodGuide's scientists rate products on a zero to 10 scale for their health, environmental impact, and social impact. The ingredients, health impacts, and certifications contribute to the health rating. [goodguide.com](http://goodguide.com)

**Seafood Watch:** The Monterey Bay Aquarium's popular app provides recommendations that help you choose seafood that's sustainably fished or farmed. [seafoodwatch.org](http://seafoodwatch.org)



### More about Andrea Marshall and her work

Andrea Marshall is a marine biologist, researcher, conservationist and educator based out of Inhambane, Mozambique. Her work with marine megafauna, particularly the giant manta ray, has been the subject of two documentaries and has brought her international recognition.

You can learn more about Andrea by visiting the Marine Megafauna Foundation website at [marinemegafauna.org](http://marinemegafauna.org)



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