The ocean is the largest habitat on Earth, yet data are sparse. Here, new species are discovered with major gaps in the southern hemisphere. A cross section of new species. Yet perhaps only 20 percent of the total number of species exist. A decade of effort assessing the scope of marine life has revealed thousands of new habitats and offer warnings that can inform policy for sustainability. Many gaps have been filled, but much remains to be done.  

Some 1,300 of them discovered and described by Census of Marine Life researchers reconstructed the history of marine life began much earlier than was thought and became significant – tracing major impacts to more than 200 years to the present-day ocean through field projects. Fourteen in the past, revealing an ocean that is far broader than imagined. This baseline of marine life on file, to improve, expanding the knowledge of ecosystems today, and project what changes the future might hold.

To gain insight into what has lived in the oceans, Census of Marine Life project researchers tagged elephant seals are providing oceanographic under the ice. By drilling holes through the ice to collect water samples from the mesopelagic zone, researchers are able to study the life that lives below the surface. The samples are then analyzed to determine the species composition and abundance of the plankton, which are the primary producers in the ocean food web. These findings are then used to improve our understanding of marine ecosystems and predict future changes in ocean productivity and biodiversity.

Many of the world's oceans are subject to overfishing, pollution, and climate change, which can have significant impacts on marine biodiversity. Through data collection and analysis, Census of Marine Life project researchers are helping to address these challenges by understanding the current state of marine biodiversity, tracking changes over time, and identifying areas of concern that require conservation and management efforts. The goal is to protect the ocean's delicate ecosystems and ensure their sustainability for future generations.