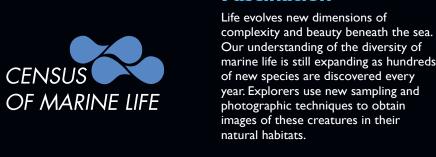
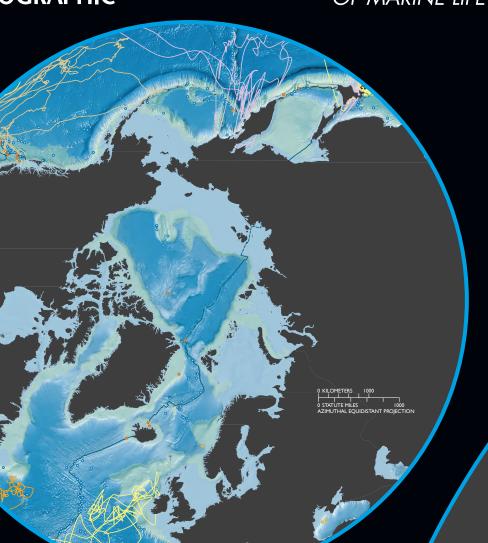
)cean

Diversity, Distribution, Abundance

IN PARTNERSHIP WITH CENSUS OF MARINE LIFE





or millennia, the ocean has enchanted human imagination with the lure of treasure, monsters, and mystery, all hidden beneath a seemingly endless surface. Centuries of exploration have revealed wonders beneath the waves, but much more remains to be discovered. Facets of oceanography and marine biology remain only partially understood; including questions about the diversity, distribution, and abundance of the life that dwells in the ocean. A collaboration of scientists working with unprecedented scope has provided a push to answer many of these questions. In the year 2000, the first Census of Marine Life began a 10-year effort to reveal the state of life in the ocean. Enrolling some 2,700 researchers from more than 80 countries, it employed divers, nets, and submersible vehicles, genetic identification, sonars, electronic and acoustic tagging, listening posts, and communicating satellites. The Census spanned all oceanic realms, from coasts,

down slopes, to the abyss, from the North Pole across trop-

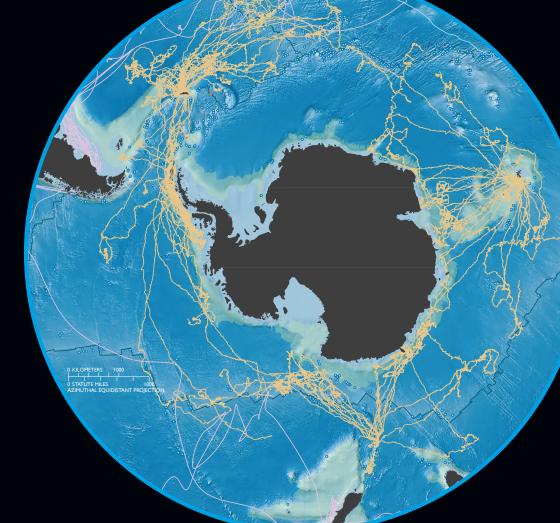
ics to the shores of Antarctica. It systematically compiled

information from new discoveries and historic archives

and made it freely accessible. Census explorers found life wherever they looked—a riot of species. The last decade has improved our understanding of the very small, the very large, and very remote creatures that call the ocean home. Marine life continues to bring forth surprises. In the Caribbean, explorers encountered a clam that thrived 200-65 million years ago, thought to have been extinct since the early 1800s. Off Mauritania, they found cold-water corals extending over 400 kilometers in waters 500 meters deep—one of the world's longest reefs. Near Chile, they found giant microbial mats covering an area of seafloor the size of Greece. Long-term tracking revealed migratory highways. Combining all this information has created a deeper understanding of new habitats and ecosystems, and also of habitats that have a long history of

This map highlights discoveries of ocean life—its variety, extent, and habitat. It offers a glimpse into the discoveries of a decade's investigation into life in all ocean realms from microbes to whales.

human contact.



Polar Regions

More than geographic opposites, the Arctic is an ocean surrounded by continents and Antarctica is a continent surrounded by ocean. Yet the polar regions both face uncertainties as climate changes. The Antarctic is the only region where waters of all the great oceans mingle, a crossroads for the spread of marine species. The Arctic may serve a similar role if the polar ice cap recedes. The prospect of an open Northwest Passage and an ice-free Arctic summer would enable a mixing of life previously confined to separate ocean basins.

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The first Census of Marine Life, completed in 2010, brought together 2,700 scientists from more than 80 nations to establish a baseline of the diversity, distribution, and abundance of life in the global ocean against which future change can be measured.

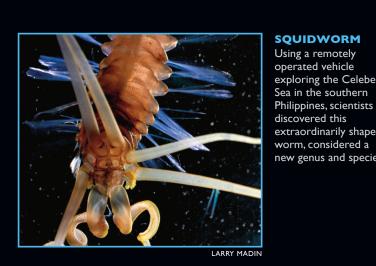
MAP DESIGN AND DEVELOPMENT: CENSUS OF MARINE LIFE MAPPING & VISUALIZATION TEAM: PATRICK HALPIN, JESSE CLEARY AND BEN DONNELLY; NATIONAL GEOGRAPHIC MAPS: ALLEN CARROLL, FRANK BIASI AND RICHARD BULLINGTON. PHOTO AND CONTENT DEVELOPMENT: CENSUS OF MARINE LIFE EDUCATION & OUTREACH TEAM; SARA HICKOX, DARLENE CRIST AND FRANK BAKER. TOPPVISUALIZATION: AUTUMN-LYNN HARRISON

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Discovery and

A Crossota norvegica sea level in the Arctic's Canada Basin. Researchers northward expansions of invertebrate species into Arctic waters.



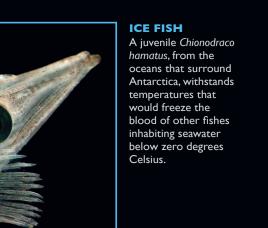
hilippines, scientists

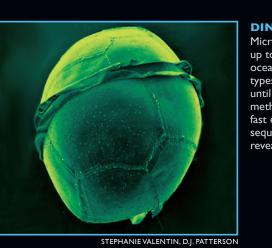
new genus and species.



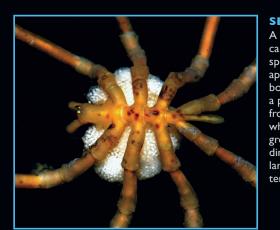








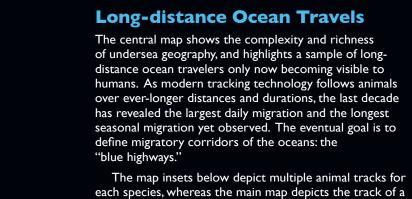
up to 90 percent of all types remained hidden until technological methods, especially fast extraction and sequencing of DNA, revealed their diversity.

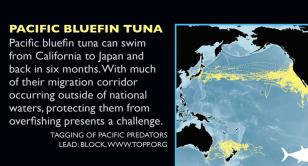


A male sea spider specially adapted appendages under its body. This specimen is a possible new species from the Antarctic where sea spiders grow to the size of dinner plates, much larger than relatives in temperate waters.



On a vent near Easter Island, Chile, Census the yeti crab, Kiwa hirsuta, which is not only a hairy new species, but also a new genus and a new family.





single or a small number of individuals from each species.

PACIFIC WHALES Blue and humpback whales roar the global ocean, though these tagged animals stayed in the Eas Pacific. On the main map, individual blue whales are tracked





PACIFIC PINNIPEDS

Seals and sea lions thrive in

data difficult until recently.

ATLANTIC BLUEFIN

A single bluefin tuna traverses

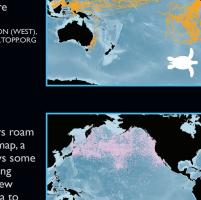
the north Atlantic over the

management areas.

Atlantic gyre.

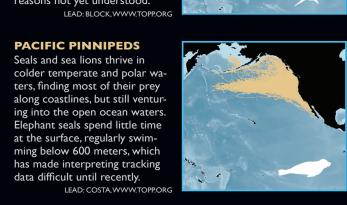
their voyages.

of Australia.









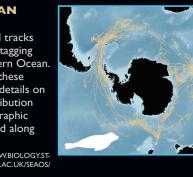


















LEAD: BERGSTAD, WWW.MAR-ECO.NO, GODØ AND PATEL (2009)



