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Impact of “Census of Marine Life” on development of marine sciences

The Census of Marine Life program is organized around three grand questions: What did live in the oceans? What does live in the oceans? What will live in the oceans? This ten-year program (2000-2010) constitutes a unique global effort to develop the first comprehensive assessment of life in the ocean from bacteria to large animals to assess and explain the diversity, distribution and abundance of marine life in the world's oceans from coastal and shallow waters, to the poorly known habitats in the deep sea through more than 500 expeditions. It has developed partnerships and an international network of over 2,700 scientists from 80+ countries and territories. Through 14 field studies in distinct ocean realms, ranging from analyzing historical documents to modeling future ecosystems, the Census enables scientists to compare what once lived in the oceans to what lives there now, and to project what will live there in the future.

Many governments and organizations are supporting this unprecedented effort to gather and make information accessible. The partnership between the Census (CoML), the Encyclopedia of Life (EOL) and the World Register of Marine Species (WoRMS) has aggregated information on the 250,000 known marine species. Dedicated to the dissemination of knowledge, OBIS, the Ocean Biogeographic Information System, already provides the identification and location of nearly 120,000 marine species and reveals what we know or what we do not know (probably more than 1 million species of eukaryotes remain to be discovered and one billion of prokaryotes). The program benefited from the most advanced technologies including: a range of acoustic instruments, autonomous vehicles, high resolution cameras, sequencing for genetic studies... Today it is estimated that 95% of the global ocean remains unexplored. The discovery of new life forms is one of the many benefits derived from the exploration of an almost virgin territory. Researchers involved in the Census have discovered new habitats and over 1,200 new species. A project affiliated with the program has enriched the bank for DNA barcodes with 7,000 species of zooplankton and tens of thousands of other marine species. Scientists have monitored individually tagged sharks by satellite travelling thousands of kilometers into the Pacific Ocean, and leather back turtles (Great Turtle Race) migrating 800 km from the coast of Costa Rica to the Galapagos Islands during their annual migration, as well as sea birds, sea lions, seals, tuna...

Educational outreach programs and training workshops aim to introduce research protocols to ensure that data collected on different locations are comparable. These studies involve the public in matters relating to the ocean and inspire the next generation of marine scientists. Many books, papers, websites, videos, films, maps, and databases comprise a comprehensive overview of the scientific findings of the Census of Marine Life (www.coml.org).

In addition, the Census of Marine Life program is sensitive to the beauty of marine life and created a partnership with Galatee films to assist the film OCEANS. The knowledge of scientists and divers on multiple behaviors and spatial and temporal distribution of species has led to the choice of over 50 filming locations in all the world's oceans from the Arctic to Antarctica. All the scientific information is collected in a booklet entitled “Regards sur la vie marine” that combines the beauty of the images and a listing of zoological nomenclature of the species and is one result of this successful collaboration between artists and scientists.