

**Under strict embargo until 3am on 19 September 2008 AEST**  
***Note that experts are available for interview from 15 September***

## **Multiple threats to coral biodiversity lend urgency to scientific inventory of life on Australia's famous reefs**

Hundreds of new kinds of animals have surprised international researchers who have been systematically exploring waters off two islands on the Great Barrier Reef and a reef off northwestern Australia, waters long familiar to divers.

Amid rising concern about the impact of multiple threats to coral habitats, the Census of Marine Life-affiliated scientists today released the first results of a landmark four-year effort, led by AIMS, to record the diversity of life in and around Australia's renowned reefs.

Working at Lizard and Heron Islands (part of the Great Barrier Reef) and Ningaloo Reef in northwestern Australia, researchers turned up a wealth of new insights into – and stunning images of – ocean life, much of it never seen by humans before, including:

- About 300 soft coral species, up to half of them thought to be new to science;
- Dozens of small crustacean species – and potentially one or more families – likewise thought unknown to science;
- A rarely sampled amphipod called Maxillipiidae, featuring a bizarre whip-like back leg about three times the size of its body. Only a few species are recorded worldwide;
- New species of tanaid crustaceans, shrimp-like animals, some with claws longer than their bodies; and
- Scores of tiny amphipod crustaceans – insects of the marine world – of which an estimated 40 to 60 per cent will be formally described for the first time.

As well, the researchers deployed new methods designed to help standardise measurement of the health, diversity and biological makeup of coral reefs worldwide and enhance comparisons.

Preparing for future discoveries, the divers pegged several layered plastic structures for marine life to colonise on the ocean floor at Lizard and Heron Islands. Creatures that move into these Autonomous Reef Monitoring Structures (ARMS), which provide shelter designed to appeal to a variety of sea life, will be collected over the next one to three years.

“Corals face threats ranging from ocean acidification, pollution and warming to overfishing and starfish outbreaks,” said Dr Ian Poiner, AIMS Chief Executive Officer. “Only by establishing a baseline of biodiversity and following through with later censuses can people know the impact of those threats and find clues to mitigate them.”

Dr Poiner also chairs the Scientific Steering Committee of the Census of Marine Life (CoML) which, after a decade of research, will release its first global census in October 2010.

Dr Julian Caley, Principal Research Scientist at AIMS and co-leader of CoML's CReefs project, said the three coral reef sites being studied were selected because they were thought to offer the greatest possible range of biodiversity.

“These site characteristics offer insights that will help us to better predict patterns of biodiversity on reefs in areas that are well known and those that aren't,” Dr Caley said.

“We were all surprised and excited to find such a large variety of marine life never before described – and in waters that divers access easily and regularly. It reveals the enormous challenge faced

by scientists trying to create an inventory of the vast diversity and abundance of life across all ocean realms,” he said.

Expeditions to the same three sites will be repeated annually over the next three years by researchers committed to establishing a baseline inventory of life inhabiting Australia’s magnificent reef ecosystems.

Funding for the work was provided from several sources: BHP Billiton (the giant multinational resources company) through the Great Barrier Reef Foundation, the Census of Marine Life, and AIMS, which leads the Australian node of the international CReefs project. As well, the Australian Biological Resources Study is funding follow-up taxonomic work, including DNA barcoding of organisms in support of the Barcode of Life initiative.

Generous support has also been provided by the many consortium partners. The AIMS-led consortium includes the Australian Museum, the Museum and Art Gallery of the Northern Territory, Museum Victoria, the Queensland Museum, the South Australian Museum, the Western Australian Museum, the University of Adelaide, Murdoch University, the South Australian Herbarium and the Smithsonian Institution.

Issues being addressed by CReefs Australia include:

- How many species live on coral reefs?
- How many of these are unique to coral reefs? and
- How does this diversity respond to human disturbance?

The biodiversity data generated will be made publicly available through the Ocean Biogeographic Information System (OBIS) ([www.iobis.org](http://www.iobis.org)), a CoML initiative.

CReefs is a multi-agency collaboration, led by scientists at AIMS, the Smithsonian Institution and the Pacific Islands Fisheries Science Center (PIFSC) of the National Oceanic and Atmospheric Administration (NOAA), which aims to strengthen tropical taxonomic expertise, conduct a census of life in coral reef ecosystems and consolidate and improve access to coral reef ecosystem information scattered throughout the world.

Coral reefs are highly threatened repositories of extraordinary biodiversity and have been called “the rainforests of the sea,” but little is known about the ocean’s diversity compared with its terrestrial counterpart.

“We don’t even know to the nearest order of magnitude the number of species living in the coral reefs around the globe,” said Dr Nancy Knowlton of the Smithsonian Institution, Washington, another principal investigator with CReefs. “Our best guess is somewhere between one and nine million species based on comparisons with the diversity found in rainforests and a partial count of organisms living in a tropical aquarium.”

The Australian CReefs expeditions are part of an unprecedented global census of coral reefs, CReefs, one of 17 CoML projects. CoML ([www.coml.org](http://www.coml.org)) is a global network of researchers in more than 80 nations engaged in a 10-year initiative to assess and explain the diversity, distribution, and abundance of marine life in the oceans - past, present, and future.

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**A more detailed media document and a range of relevant images are available at**

**<http://www.coml.org/embargo/creefs2008.htm>**

**To see blogs from the three 2008 Australian CReefs expeditions, go to:**

**<http://www.aims.gov.au/creefs/field-program.html>**