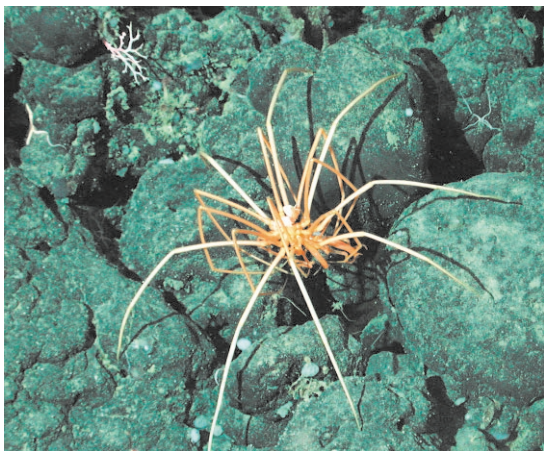
DSCC policy paper

United scientific community calls for: Moratorium on deep-sea bottom trawling on the high seas

In February 2004, 1,136 scientists from 69 countries released a statement expressing profound concern "that human activities, particularly bottom trawling, are causing unprecedented damage to the deep-sea[1] coral and sponge communities on continental plateaus and slopes, and on seamounts and mid-ocean ridges." The statement called on governments and the United Nations to establish a moratorium on high seas bottom trawling.
(For a full text of the statement, see www.mcbi.org).



Sea Spider at the Davidson Seamount off the coast of California, USA.

Images courtesy of NOAA and MBARI

The scientists' statement represented an unprecedented call to action by experts in marine sciences and conservation biology – never before had such a large number of scientists united around a specific marine environmental issue – and a turning point in the mounting global campaign to halt deep-sea bottom trawling.

That same month, the Parties to the Convention on Biological Diversity (CBD) called on the United Nations General Assembly (UNGA) to stop destructive practices harming deep-sea ecosystems. Referring to marine areas beyond the limits of national jurisdiction that have seamounts, hydrothermal vents, cold-water corals and other vulnerable ecosystems and features, the Parties urged the UNGA to:

> "urgently take the necessary short-term, medium-term and long-term measures to eliminate/avoid destructive practices, consistent with international law, on a scientific basis, including the application of precaution, for example, consideration on a case by case basis, of interim prohibition of destructive practices adversely impacting the marine biological diversity associated with the areas…"

Underlying the statements made by the scientists and the Parties to the CBD is a still-emerging body of science. Scientists are just beginning to understand the diversity, significance and vulnerability of deep-sea biodiversity and ecosystems. It is estimated, for example, that less than one percent of the world's seamounts have been explored. One of the driving forces behind the scientists' letter, in fact, was mounting concern that entire deep-sea ecosystems will be destroyed before they can be subject to scientific study. More time, more science and more knowledge is needed.

The advent of

manned and unmanned submersible technology has opened a whole new deep-sea frontier for ocean scientists and marine biologists. Previously undetected, life around seamounts, cold-water coral and sponge ecosystems and hydrothermal vents is beginning to be observed and studied. The world deep beneath the oceans' surface is far more diverse than had ever been imagined. Virtually every study finds species that were previously unknown and are endemic (found in a certain area and nowhere else).

Among the many significant findings of the past few years are the following:

- an estimated 500,000 to 10 million species live in the deep sea, most of them still undiscovered;
- approximately 98 percent of the oceans' species live in, on or just above the floor of the sea;
- the estimated number of seamounts ranges from a minimum of 30,000 to a maximum of over 100,000;
- seamounts are home to a breathtaking array of species (for example, over 850 species were recently found on seamounts in the Tasman and Coral Seas);
- because 15 percent or more of the breathtaking array of species being found on seamounts may be endemic (Coral and Tasman Sea seamounts have endemism rates of 29-34 percent), each unsampled seamount is a potential source of numerous undiscovered species;
- two-thirds of all known coral species live in waters that are deep, dark, and cold – some live three miles deep and are able to survive in 30°F;
- some cold-water corals are 5,000-8,500 years old or more, and some grow into beautiful structures that rise up to 35 meters high;
- deep-sea corals, sponges and other habitat-forming organisms provide protection from currents and predators, nurseries for young fish, and feeding, breeding, and spawning areas for hundreds of thousands of species;
- commercially important deepwater fish and crustacean populations found in the high seas include crabs, shrimp, cod, Pacific cod, orange roughy, armorhead, grenadier, Chilean sea bass, jacks, snappers, porgies, sharks and groupers, rockfish, Atka mackerel, and sablefish;
- because deep-sea species live in rarely disturbed environments and tend to be slow growing, late maturing and endemic, they are exceptionally vulnerable to extinction;
- deep-sea coral and sponge communities are largely untapped sources of natural products with enormous potential as pharmaceuticals, enzymes, pesticides, cosmetics, and other commercial products; for example:
  - Gorgonian corals produce antibiotics;
  - compounds found in certain deep-sea sponges are potent immunosuppressive and anti-cancer agents;
  - some coral species contain the pain-killing compounds known as pseudopterosians;
  - seafans contain high concentrations of prostaglandins (compounds used to treat asthma and heart disease);
- ancient deep-sea corals provide valuable records of climate conditions that may assist our understanding of global climate change.

While scientists are just beginning to learn about deep-sea ecosystems, a number of devastating human

activities already threaten their existence. Foremost among them is bottom trawl fishing. As coastal fisheries are depleted, and with the advent of more powerful vessel engines, mapping technology, navigational and fish-finding electronics, and stronger, lighter synthetic net materials, trawlers are fishing seas up to two kilometers (1.2 miles) deep.

Today's trawlers are capable of fishing deep-sea canyons and rough seafloor that was once avoided for fear of damaging nets. Deep-sea bottom trawl fishing vessels drag huge nets armed with steel plates and heavy rollers across the seabed, plowing up and pulverizing all in its path in order to capture one or two target commercial species. Fragile coral systems, in particular, stand little chance against this onslaught. If the heavy gear does not demolish the coral outright, it breaks up reef structure, buries coral with sediment or inflicts deadly wounds to coral tissue.

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In several areas, great harm has already been done. Considerable damage to deep-water coral communities has been recorded off both coasts of North America, off Europe from Scandinavia to northern Spain, and on seamounts near Australia and New Zealand. In Norwegian waters, for example, an estimated one-third to one-half of the deep-water reefs have been damaged or destroyed by trawling. Photographs document giant trawl scars up to 4 kilometers (2.5 miles) long.

On the high seas south of Australia, in an area known as the South Tasman Rise, observers recorded trawlers bringing up an average of 1.6 tons of coral per hour in their nets in 1997 – the first year of the area's orange roughy seamount fishery. An estimated 10,000 tons or more of coral were brought up in the nets of the 20 or so deep-sea trawlers working in the area. This figure does not include coral that was damaged but not brought up in the nets. By contrast, the catch of orange roughy – the target species in this fishery – in the first year of the fishery was reported to be less than 4,000 tons. In a matter of a few weeks or months bottom trawl fishing can destroy what took many thousands of years to create.

Once destroyed, slow-growing deep-sea species are either lost forever or unlikely to recover for decades or centuries. Stable, living habitats such as coral and sponge communities in particular tend to be both the most heavily damaged and the slowest to regenerate. A study in the Gulf of Alaska observed a trawl path that had pulled up one ton of corals. Thirty-one red tree coral colonies had been in the 700-meter trawl path observed. Seven years after the damage, some of the larger colonies that survived the initial trawl tow were still missing 95–99 percent of their branches. No young corals had replaced the dead ones in the damaged colonies.

Deep seabed trawling poses an enormous threat to the extraordinary, often unique biodiversity of deep-sea habitats and ecosystems. Because of the high degree of endemism on seamounts and bottom trawl fishing's tendency to cause serial depletion of targeted fish stocks, the extinction of countless other undiscovered deep-sea species can be predicted unless protective action is taken.

In their February 2004 statement calling for a moratorium on bottom trawling, the scientists urged that the precautionary principle be used to ensure that the deep-sea environment is protected and "to avoid the very real threat of serious or irreversible damage to them by bottom trawling". To protect deep-sea biodiversity on the high seas from continued indiscriminate destruction the Deep Sea Conservation Coalition is joining with the 1,136 international scientists who signed the statement by calling on the UNGA to adopt an immediate moratorium on deep-sea bottom trawl fishing on the high seas until legally binding regimes for the effective conservation and management of fisheries and the protection of biodiversity on the high seas can be developed, implemented and enforced by the global community.

For references to some of the data above and additional information about deep-sea environment and the effects of bottom trawl fishing see:

- A. Frewald, J. Fossa, A. Grehan, T. Koslow, J. Roberts, *Cold Water Corals – Out of Sight, No Longer Out of Mind*, 10 (UNEP 2004), http://www.unep-wcmc.org/index.html?http://www.unep-wcmc.org/press/cold-water-coral-reefs/index.htm~main
- M. Gianni, *High Seas Bottom Fisheries and their Impact on the Biodiversity of Vulnerable Deep-Sea Ecosystems*, (IUCN/NRDC/CI/WWF 2004), www.iucn.org/themes/marine/pubs/pubs.htm
- S. Roberts and M. Hirshfield, *Deep-sea corals: out of sight, but no longer out of mind*, Front Ecol Environ 2004, 2 (3): 123-130, www.frontiersinecology.org
- A. Rogers, *The Biology, Ecology and Vulnerability of Seamount Communities* (IUCN 2004) www.iucn.org/themes/marine/pubs/pubs.htm
- A. Rogers, *The Biology, Ecology and Vulnerability of Deep-Water Coral Reefs* (IUCN 2004), www.iucn.org/themes/marine/pubs/pubs.htm

FOOTNOTE

[1] The deep sea starts beyond the shallower continental shelf and includes the slope and rise of the continental margin, deep-ocean basins and plains, trenches, mid-ocean ridge systems, smaller ridge systems, seamounts, plateaus and other underwater features rising from the deep ocean floor. This area constitutes over 90 percent of the ocean bottom and mostly lies beyond 200 nautical miles from shore.

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The Deep Sea Conservation Coalition, an alliance of over 30 international organisations, representing millions of people in countries around the world, is calling for a moratorium on high seas bottom trawling. For further information about the Coalition visit www.savethehighseas.org