SIODFA
Southern Indian Ocean
Deepwater Fishers' Association

IUCN
The World Conservation Union

Questions & Answers

Fishing companies announce world's first voluntary CLOSURE TO high-seas deepwater trawling

QUESTIONS & ANSWERS ABOUT THE DEEP SEAS AND BENTHIC PROTECTED AREAS

What is a benthic protected area?

The term "benthic" signifies on the bottom or under a body of water. The region at the bottom of a body of water, such as an ocean or a lake is known as the "benthic zone". The fauna in this zone is the "benthos". Benthic protected areas are zones set aside in the oceans and delimited by latitude and longitude coordinates or other boundaries such as those of Eclusive Economic Zones (EEZ) or territorial waters. The benthic protected areas declared by the Southern Indian Ocean Deepwater Fishers' Association (SIODFA) are a **global first** as no such zones in the high seas existed prior to this. These closures will contribute to the sustainability and conservation of water corals, other fixed benthos and related faunal communities.

What lives in benthic zones?

The benthic zone adjacent to the seabed in deep-sea areas is inhabited mostly by organisms that tolerate low temperatures and can survive without light. Between 500,000 and 100 million species are thought to live in deep ocean habitats. Benthic zones may consist of a variety of substrates including sand, rock outcrops (e.g. seamounts, knolls, tectonic ridges) and coral although much of the deep sea floor is covered with soft mud. The type of substrate influences the kind of creatures that live there. Fauna that inhabit the benthic zone of the deep sea include tiny clams, worms and crustaceans while a variety of larger animals such as sea cucumbers and starfish wander across its surface. A myriad of fishes live in the water column above this zone.

What is bottom trawling?

Bottom, or demersal, trawling refers to a fishing method whereby nets are towed along the sea floor. In pelagic trawling, the net is towed in the water column. Bottom trawling is practiced by vessels from small motor boats to large ocean-going trawlers; in the Southern Indian Ocean, these vessels may be up to 85 m in length. A bottom trawl net is kept open by two inclined trawl doors that act as planes as they are pulled by the vessel. Fish in the path of the trawl pass over the ground rope and beneath the head line down the net into the "cod-end", which has a smaller mesh size, where the fish are collected. The size and design of these nets depends on the species targeted, the engine power and design of the fishing vessel and local regulations. Trawling in this area may occur from 150 m down to 1400 m with most bottom trawling in the range 500 to 1400m.

What are the main effects of bottom-trawling?

Bottom trawling in areas where corals and sponges live can cause significant damage to such animals as these species are extremely slow growing and may take hundreds or even thousands of years to recover from the damage. Where benthos is of great age and of scientific importance, it

is important to avoid demersal trawling of their habitats to protect such animals and their ecosystems.

What are the benefits of marine protected areas such as benthic protected areas?

Protecting marine biodiversity in critical areas ensures the survival of slow growing benthic fauna and conserves sea floor biodiversity and fish habitat. Such zones also act as reserves for genetic material, an area of potential scientific research. Existing marine protected areas cover less than one percent of the seas and oceans; to date, not a single area exists on the high seas, which make up 64 per cent of the world's oceans.

What research has been done in the areas of the benthic protected areas?

The seafloor contour and bottom characteristics of these areas have been determined by the fishing operators using swathe-mapping, a method that uses low frequency sidescan sonar and multiple transducers to map the sea bed. In some areas, e.g. the Atlantis Benthic Protected Area, considerable submarine geological research has been undertaken. Fisheries and related scientific data exist for most of the benthic protected areas and a considerable amount was collected by research vessels of the Soviet Union, especially from the Ukraine.

What are the commercially important deepwater species fished in the Indian Ocean?

Commercially-exploited deep-water fishes include the very slow-growing orange roughy (*Hoplostethus atlanticus*) and oreos (*Allocyttus niger, Neocyttus rhomboidalis,Pseudocyttus maculatus*), the relatively fast growing alfonsinos (*Beryx splendens*), boarfish (*Pseudopentaceros richardsoni*) and *Epigonus telescopus* (Cardinalfish), Bluenose (*Hyperoglyphe antarctica*), ruby fish (*Plagiogeneion rubiginosum*), Cape bonnethmouth (*Emmelichthys nitidus*), bluenose warehou (*Hyperoglyphe antarctica*), violet warehou (*Schedophilus velaini*), imperial blackfish (*Schediohilus ovalis*), wreckfish (*Polyprion americanus*) and rudderfish (*Centrolophus niger*). In some areas, deepwater shrimp such as royal red shrimps (*Haliporoides spp., Solenoceridae*) may also be exploitable, though they have not supported ongoing fisheries in the southern Indian Ocean.

What is the current state of the Indian Ocean fish stocks?

Assessments of the current state of the different deepwater fish species and stocks of the Indian Ocean, in the lack of a regional fisheries management organization, have not yet been done. Data recording of fishing activities has been undertaken by various fishing companies but concerted efforts to collect, collate and analyze these data are only now beginning. Overall, overfishing and unregulated fishing are perhaps the greatest threats to the fisheries and biodiversity of this area. In the absence of an effective ocean governance framework, future supply of fish and other vital marine resources for the world's population is at risk.

What marine protected areas currently exist in the Indian Ocean?

Under the web link http://www.mpaglobal.org/ protected areas are listed by country and these are shown on a global basis in Figure 1. Prior to this closure, the Southern Indian Ocean had more than 200 marine protected areas, covering some 77 000 km^2 but all are in national exclusive economic zones. The high-seas sea-floor areas that will be voluntarily closed to bottom trawling cover 309 150 km^2, an area slightly larger than Norway. The areas closed to SIODFA vessels in the southern Indian Ocean are shown in Figure 2 and full details of the benthic protected areas are provided in Table 1.

Figure 1
Locations of MPAs on a global basis

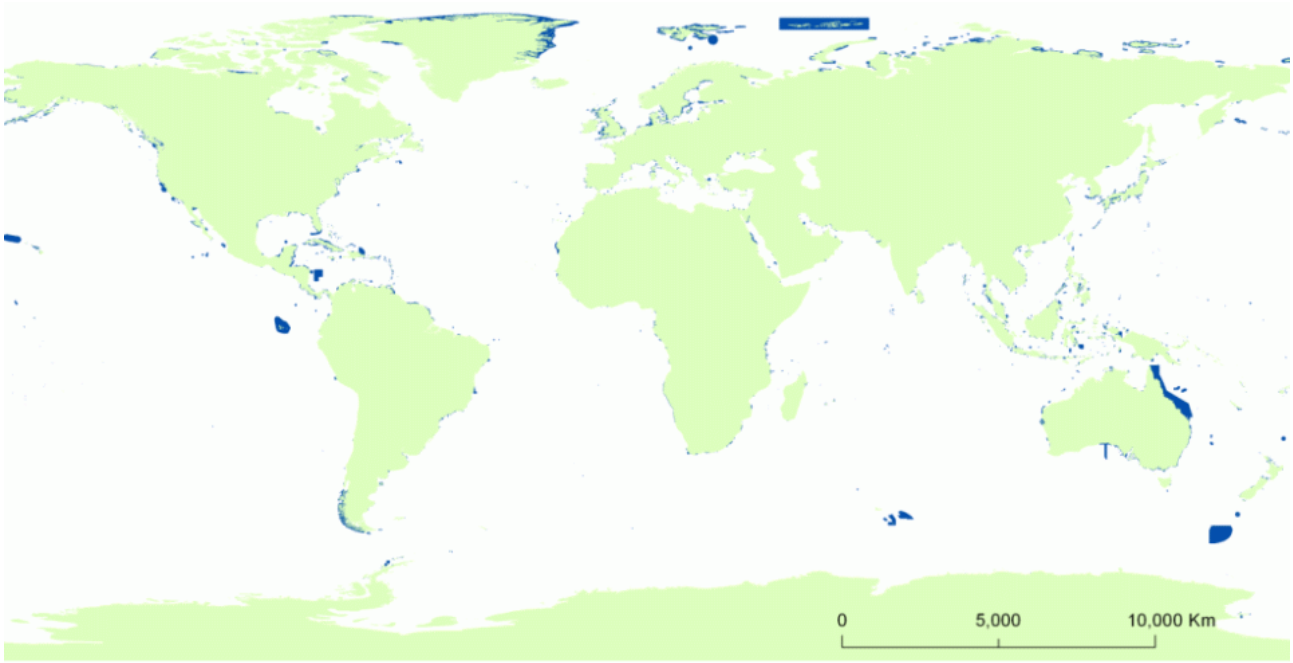

Figure 2
Proposed benthic protection area locations in the Indian Ocean

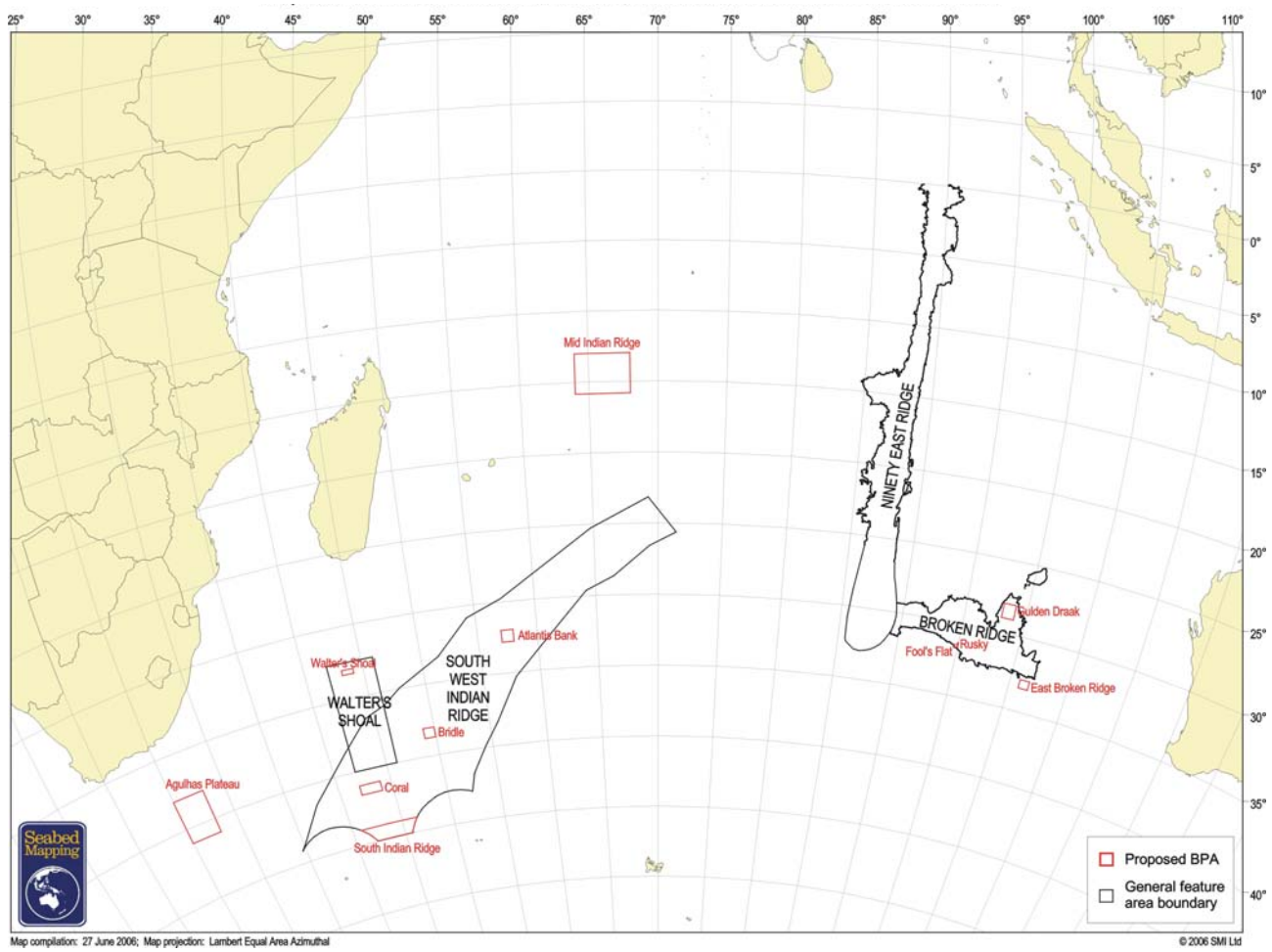

Table 1
SIOFDA Benthic Protected Areas

Area	Coordinates				Area ($km^{2)}$	Area Features
	Lat (S)	Long (E)	Lat (S)	Long (E)		
Gülden Draak	28˚ 00′	98˚ 00′	29˚ 00′	99˚ 00′	10 867	A massive mid-ocean seamount in pristine biological condition.
Rusky	31˚ 20′	94˚ 55′	31˚ 30′	95˚ 00′	147	A productive knoll located on extensive ridge; extensive black coral exists with the benthos in an almost pristine state.
Fools' Flat	31˚ 30′	94˚ 40′	31˚ 40′	95˚ 00′	585	A deep-sea bank with numerous canyons incising its slopes; strong upwelling currents sustain extensive coral beds; in pristine condition, this is a previously unmapped area of the seabed.
East Broken Ridge	32˚ 50′	100˚ 50′	33˚ 25′	101˚ 40′	5 037	A seamount rising to 1000 m, biologically pristine; its benthos and topography previously undescribed.
Mid-Indian Ridge	13˚ 00′	64˚ 00′	15˚ 50′	68˚ 00′	135 688	An area of seamounts rising to 650 m; a tropical region in pristine biological condition.
Atlantis Bank	32˚ 00′	57˚ 00′	32˚ 50′	58˚ 00′	8 694	This seamount was formed from an ancient island; extensive research has been conducted on this BPA by a number of agencies; it is the location of a productive fishery
Bridle	38˚ 03′	49˚ 00′	38˚ 45′	50˚ 00′	6788	An area of knolls and ridges in almost pristine condition; previously unmapped and undescribed.
Walters Shoal	33˚ 00′	43˚ 10′	33˚ 20′	44˚ 10′	3 443	This area, which rises from 4000 to within 10 m of the surface provides a habitat for a variety of whale species; the area is characterized by high biodiversity
Coral	41˚ 00′	42˚ 00′	41˚ 40′	44˚ 00′	12 376	A spreading centre with seamounts and ridges with depths from 4500 m to 180 m. Extensive coral beds, a near pristine area.
South Indian Ridge (North/ *South)*	44˚ 00′ 45 00′ S	40.878° S 42.124° E	44 00′ 45° 00′ S	46.544° E 45.711° E		An area of seamounts adjacent to the CCAMLR region to the south; in pristine biological condition. This area is bounded to the east and west by the EEZs of South Africa and France.
Agulhas Plateau	38˚ 00′	25˚ 00′	41˚ 00′	28˚ 00′	85 828	Region of seamounts north of the proposed South African Antarctic MPA; contiguous with the South African EEZ to the west.

WHY WAS SIODFA CREATED?

SIODFA, the Southern Indian Ocean Deepwater Fishers Association is fundamentally committed to biologically-sustainable and economically-viable commercial fishing operations in the southern Indian Ocean. Its members recognize their responsibility to contribute to resource management activities and fish habitat protecton and in this context they will continue to expand their programme of fisheries research in the area.

SIODFA is comprised of Austral Fisheries Pty Ltd, Perth, Australia; Bel Ocean II Ltd, Port Louis, Mauritius; Sealord Group, Nelson, New Zealand; TransNamibia Fishing Pty Ltd, Walvis Bay, Namibia. SIODFA membership is open to reputable companies who are fishing in the deepwaters of the Southern Indian Ocean and who support the objectives of the Association.

Fishing effort by SIODFA members has been fairly stable since 2002 at around four vessels. This is a major reduction from the peak of over 40 vessels operating in 2000, a level of fishing that would have been unsustainable during that period of opportunistic fishing by the numerous transient fishing operators.