‘Serengetis of the ocean’ discovered in U.S., Australian national waters

Large tuna, marlin, sharks, turtles concentrate in unique hotspots

Hotspots shown to be ideal candidates for marine reserves

Large oceanic predators concentrate in unique ‘diversity hotspots’ much like those that exist on land, according to new research published this week in the prestigious U.S. journal „Proceedings of the National Academy of Sciences USA“. Many predators, such as tunas, sharks, billfishes, and sea turtles, are of immediate conservation concern due to their vulnerability to overfishing, or high mortality as by-catch in commercial fisheries. Although terrestrial conservation efforts have focused on identifying and preserving such concentrations of vulnerable species (for example in National Parks and Wildlife Refuges), little is known about similar hotspots in the global ocean. To determine if oceanic hotspots exist, Boris Worm and colleagues of Dalhousie University in Halifax, Canada, examined detailed scientific observer records from longline fisheries in the Atlantic and Pacific Ocean. Longliners are the most widespread fishing vessels in the open ocean, and catch a large variety of species through a long fishing line fitted with hundreds of baited hooks. The scientists found that species diversity peaks at distinct locations, always located at intermediate latitudes (20-30 degrees North and South) where tropical and temperate species overlap. Individual hotspots are located close to prominent marine geographic features, such as reefs or shelf breaks. They are found east of Florida, south of Hawaii, and off the east coast of Australia, and within national waters. Additional studies show that these hotspot areas seem to be important for many species at once, from plankton to sharks. Through modeling, the researchers predicted that protecting these hotspot areas from fishing would yield greater benefits for threatened species than closing any other area. The scientists suggest that the ocean has unique, and previously unrecognized concentrations of pelagic species, which should be used to focus future conservation measures. They also propose that marine protected areas in national waters, combined with reduced fishing effort, could be used to safeguard threatened marine predators from further declines and ecological extinction.

"Predator diversity hotspots in the blue ocean" by Boris Worm, Heike K. Lotze, Ransom A. Myers. Proceedings of the National Academy of Sciences USA Vol. 100: pp. 9884-9888
AFTER THIS ARTICLE PUBLISHES later this week, it will be available at http://www.pnas.org/cgi/doi/10.1073/pnas.1333941100

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RELATED WEBSITES
Additional media resources and related publications on sharks, tuna and billfish can be found at http://www.dal.ca/~bworm/Boris_Worm.htm
Photos of large marine predators (sharks, billfish, turtles, tuna, molas, whales) can be found at http://www.oceanlight.com
http://www.norbertwu.com

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