

# 'Serengetis' Under the Sea

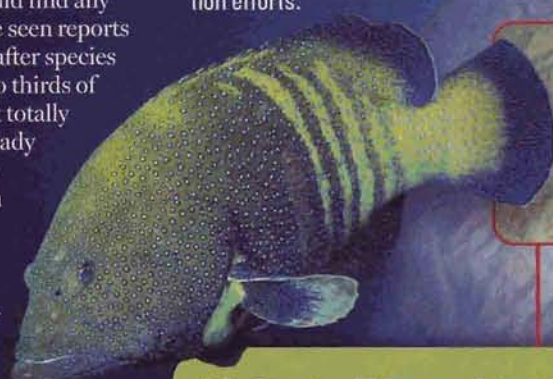
Fishermen have almost managed to empty the blue ocean—but in a few 'hot spots,' biodiversity still thrives

BY MARY CARMICHAEL

**R**EMEMBER WHEN EVERYONE wanted to save the whales? These days, whales are only the beginning. The list of animals that need saving has grown to include sharks, turtles and fish species too numerous to count. At least, they'd be too numerous to count if we could find any of them. This summer we've seen reports decrying the loss of species after species of ocean life—more than two thirds of fish stocks have been almost totally depleted, if they haven't already disappeared. In short, there may not always be other fish in the sea.

So thank goodness for Dr. Boris Worm, whose latest study puts the old proverb right again, at least in part. Last year Worm went looking for "serengetis"—areas of the ocean where large predators might congregate, as they do on the African savannah. And he found them in our own subtropical backyard. According to a report released last week, "hot spots" off the coasts of Florida, Hawaii and Australia are still teeming with turtles, sharks and large open-ocean fish like tuna—almost all of them endangered. Like rain forests, these previously uncharted regions are hugely diverse. Closing them to commercial fishing might be our best shot at saving their denizens. It's a measure even fishermen can support, since the hot spots aren't home to many popular market fish (except tuna). What they do have is something fishermen don't like, says Worm—"nasty by-catch." In other words, the very animals we're trying to save. ■

**Grouper** Some species spawn at the same time and place each year, making them easy pickings for fishermen and candidates for conservation efforts.



## Aloha to Diversity

Constantly in motion and rich in plankton—the foundation of the ocean food chain—the waters off the islands are ideal homes for a wide variety of life.



### Leatherback Turtle

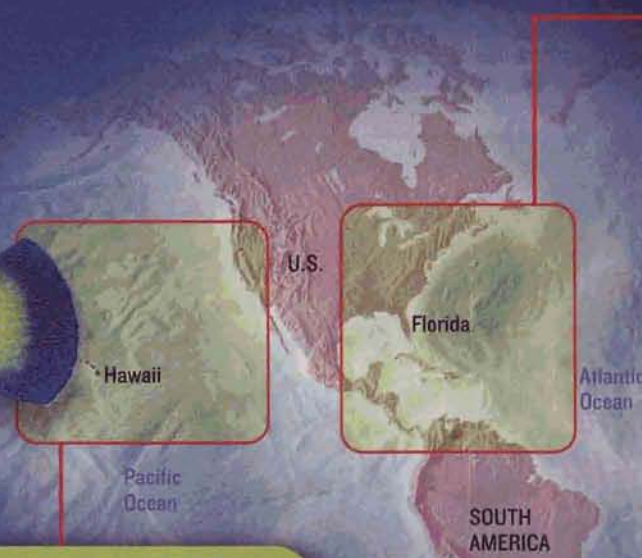
Prone to getting caught up in commercial fishing lines, the world's largest turtles could be extinct in 30 years.

## Marine Diversity

A new study identified four species-rich hot spots throughout the world where sea life still abounds. A guide to diversity levels in the maps:

Map index:

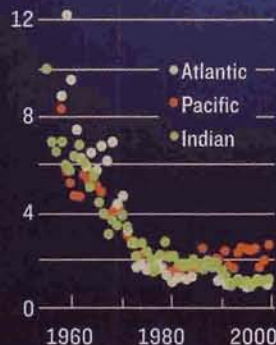
Low Medium High



## Declining Catches

Industrial-scale fishing has eliminated 90% of all large fish such as tuna and marlin.

Number of fish caught per 100 hooks from longline fishing in subtropical waters



## Florida Fish Tales

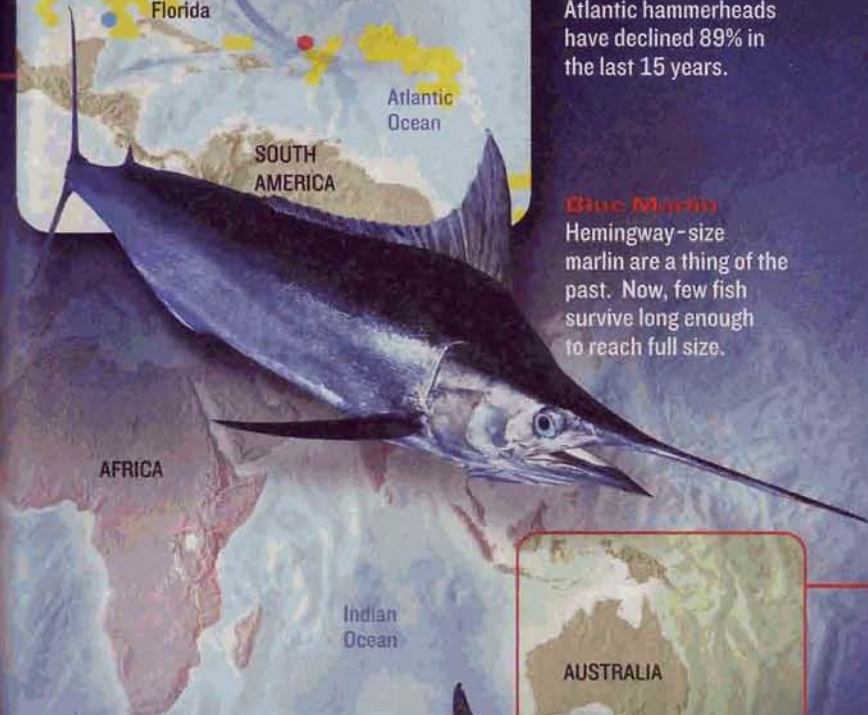
"The water goes crazy" off the Florida coast where the Gulf Stream meets a shelf break, churning up nutrient-rich silt and attracting fish, says Worm.



**Hammerhead Shark** Demand for shark-fin soup has taken a big bite out of shark populations. Northwest Atlantic hammerheads have declined 89% in the last 15 years.

SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, NATURE, SCIENCE. GRAPHIC BY KEVIN HAND. TEXT AND RESEARCH BY JOSH ULICK

**Blue Marlin** Hemingway-size marlin are a thing of the past. Now, few fish survive long enough to reach full size.



## Riches Down Under

Home to two of the four identified hot spots—off the Great Barrier Reef and Lord Howe Island—Australia also has fantastic coral reefs that provide food for large predators.



**Great White Shark** Sharks take years to reach maturity and then produce few young, so populations are slow to bounce back from overfishing.

**Yellowfin Tuna** Nets intended for yellowfins accidentally scoop up dolphins because the two groups often school together.

