



****NEWS RELEASE****

CONTACT: STEPHEN SAUTNER (1-718-220-3682; ssautner@wcs.org)
JOHN DELANEY (1-718-220-3275; jdelaney@wcs.org)

Study Says “Middle Class” Coral Reef Fish Feel the Economic Squeeze

**Wildlife Conservation Society, ARC Centre of Excellence for Coral Reef Studies,
and other groups say health of coral reef fish directly linked to local economies**

**Wealthy areas and least developed regions have healthiest fish populations, while
those in the middle are suffering**

NEW YORK (February 10, 2009)—The economy isn’t just squeezing the middle class on land, it’s also affecting fish.

According to a study by the Wildlife Conservation Society (WCS) and other organizations, researchers discovered a surprising correlation between “middle class” communities in Eastern Africa and low fish levels. Curiously, areas with both low and high socio-economic levels had comparatively higher fish levels.

Appearing in the latest edition of *Current Biology*, the study examined reef systems, human population densities, and socio-economics among villages in 30 fished and unfished study sites in five countries along Africa’s Indian Ocean coast.

The study is by Josh Cinner of James Cook University (JCU), Tim McClanahan of the Wildlife Conservation Society (WCS), Tim Daw of the University of East Anglia, Nick Graham of JCU, Joseph Maina of WCS, and Shaun Wilson and Terry Hughes of JCU.

In a comparison between villages, researchers found that communities with intermediate levels of infrastructure had the lowest fish levels in their adjacent reef systems—up to four times lower than sites of low and high levels of development.

“This is a significant finding on how socio-economics can influence reef fisheries in surprising ways,” said Dr. Tim McClanahan, a WCS coral researcher and co-author of the study. “It also shows the importance of combining ecology with social science for conservation planning on a regional scale.”

The explanation, said researchers, lies in the interplay between traditional customs and how growth influences the social fabric of communities. In poor communities, many of which rely heavily on marine resources, fishing levels are kept in check by local cultural institutions and taboos and a reliance on traditional, low-tech fishing methods. Increases in wealth often reduce a community's dependence on fishing, but it can also increase the number of motorized fishing vessels and fishing gear such as handlines.

Economic growth during the early stages can also erode cultural restrictions on overfishing, according to the authors. The net result: fewer fish. Among the countries studied, Kenya in particular, has experienced a sharp decline in cultural restraints and a subsequent increase in unrestrained and destructive fishing techniques.

The most affluent communities, by contrast, become less dependent on marine resources and more diversified economically, with more salaried positions and economic opportunities. Wealthier communities also possess higher levels of technology—larger boats that enable fishermen to fish on the open sea—and an increased awareness on the importance of coral reefs on ecological health.

The U-shaped curve in fish biomass with respect to socioeconomic levels approximates what is known as an environmental “Kuznet curve,” which is adapted from a graphical model that measures economic inequalities in developing countries driven by the extent of a country's economic influence.

Predictably, the research also found that fish levels were always negatively but not strongly affected by high human population density. And protected marine sites with no fishing had fish levels three times higher than sites where fishing was permitted.

“Coral reef fishery management will depend not just on fishing laws but also on improving human welfare and institutional capacity through appropriate socioeconomic development” added McClanahan. “Governments, donors, and other agencies help communities avoid ‘poverty traps’ through investments in programs and alternatives to reef-based livelihoods, where obvious examples include infrastructure developments such as schools and hospitals.”

WCS also conducts coral reef conservation projects in Madagascar, Belize, Nicaragua, Indonesia, Papua New Guinea, and Fiji. The U.S. Department of State and National Oceanic and Atmospheric Administration (NOAA) are two US government

agencies that have, through the International Coral Reef Initiative (ICRI) and numerous other programs and collaborations, made long-standing investments in coral reef conservation. This study points to the need to link more effectively with development assistance agencies and interventions in order to secure coral reef fisheries in the developing world. The U.S. Agency for International Development has also pledged over \$40 million in foreign assistance to the Coral Triangle Initiative, which aims to secure both coral reefs and human livelihoods in this marine global biodiversity hotspot in Southeast Asia. In addition, the U.S. Congress continues to lead strategic investments in coral reef conservation through the Tropical Forest and Coral Conservation Act and the Coral Reef Conservation Act –both awaiting action in the 111th Congress. The Wildlife Conservation Society supports these legislative measures, which would strengthen U.S. government’s support to protect the world’s coral reefs.

From Fiji to Glover’s Reef, The Tiffany & Co. Foundation has provided support for Dr. McClanahan’s research, which examines the ecology, fisheries, climate change effects, and management of coral reefs at key sites throughout the world.

The Wildlife Conservation Society saves wildlife and wild places worldwide. We do so through science, global conservation, education and the management of the world's largest system of urban wildlife parks, led by the flagship Bronx Zoo. Together these activities change attitudes towards nature and help people imagine wildlife and humans living in harmony. WCS is committed to this mission because it is essential to the integrity of life on Earth. Visit www.wcs.org.

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