

Investigating the trochus 'El Dorado'

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Scientific and indigenous knowledge must join together to better manage disappearing marine resources in developing countries, such as shark, trochus, and sea cucumber stocks on the islands to Australia's north.

That's the view of Dr Simon Foale, a researcher with the ARC Centre of Excellence for Coral Reef Studies and James Cook University, who studies coral reef fisheries in the Solomon Islands as they undergo rapid and dramatic change.

"Cultures change as the societies become more modern... the people become more detached from old beliefs and traditions erode," says Dr Foale. "Once large amounts of money enter a region, it undergoes an abrupt power shift and the traditions are marginalised," he says.

"Traditionally, Melanesian cultures believe in nature spirits...it is seamlessly part of nature and part of their culture...They would manage their reefs by prohibiting fishing for periods of time. Anyone who broke these rules would come under a curse.

"But traditional management tends to fall apart when the external pressure increases. When global markets expand, demand rises and marine products command high prices, the traditional rules are no longer sufficient to prevent overfishing," says Dr. Foale.

In studies of the Solomon Islands Trochus fisheries (a mollusc whose pearly shell has been a valuable source of cash for almost two centuries for Pacific Islanders), Dr Foale found that gaps in the locals' knowledge

of the species were making their harvesting practices unsustainable.

"The Nggela people have a tradition of harvesting trochus during a certain time in the lunar cycle when they are easier to find. However, while they identified these times as good for harvesting, they seemed oblivious to the fact that the trochus are breeding at that time too.

"They assumed the trochus they harvested were replaced by individuals from an "El Dorado" of trochus living in deeper water that wandered up to shallower parts of the reef.

"A large part of this problem is that fishers are unaware of the connection between the adult fish populations and the rate of supply of larvae that replenish those populations. When people are unaware of the reproductive cycle of fish, where spawned eggs and sperm combine in the sea to produce microscopic larvae that disperse and later settle to become juveniles, they tend to attribute the control of fish populations to other factors, including supernatural forces," he says.

While these beliefs remain and the pressure to harvest continues, Dr. Foale argues that these gaps in knowledge influence the Nggela people to believe they are not responsible for declines in the numbers of trochus.

"Fishers in many parts of the Pacific commonly fail to make the connection between their fishing activity and the decline or collapse of fish and marine stocks," he says.

Dr Foale argues that sharing cultural and scientific knowledge is essential to improving coral reef and fish stock management in developing countries, which usually have little or no access to information through libraries, scientists and the internet.

"The scientific community can contribute much to sustainable marine

management in developing countries, but it is critical that when they deliver it they understand the cultural, economic and political context, and the beliefs of the local people," says Dr. Foale

"Sharing knowledge is a two way process. There is a huge amount of knowledge in the heads of a both fisherpeople and scientists. Combining the two sets of knowledge, wherever possible, will make for better management of marine resources."

Source: James Cook University

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