Benefit sharing as key to conserving the Tubbataha Reefs, Philippines

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Mainly based on: Dygico et al. 2006, Tongson and Cola 2007, and others

Short title: Benefit sharing as key to conserving the Tubbataha Reefs, Philippines

Key Message: No-take zones in marine protected areas (MPA) have shown to be beneficial for fisheries. To fully implement a no-take policy in a MPA it is important to balance costs and benefits of conservation among stakeholders.

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The Tubbataha Reefs are one of the largest coral formations in the Philippines, lying in the very centre of the Sulu Sea. The nearest populated islands are 130 km away from the reefs which form together with the Tubbataha Reefs the municipality of Cagayancillo. The nearest landmass of considerable size is the Palawan Island approximately 150 kilometres northwest of Tubbataha (Fig. 1).

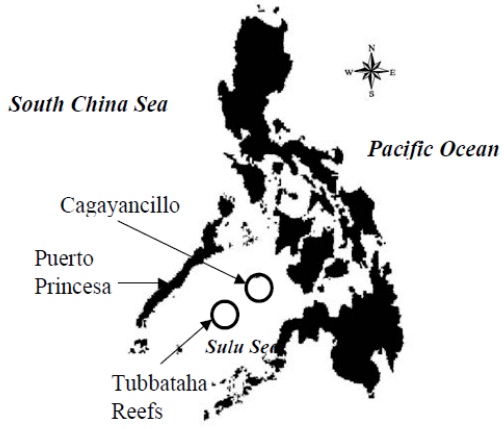

Fig. 1 Map of Tubbataha Reef Natural Marine Park (Tongson and Cola 2007)

What was the problem?

The Tubbataha Reef is an important habitat sustaining a high diversity of marine life providing the Sulu Sea and eastern coastline of Palawan with fish and invertebrate larvae. In the late 1980s exploitative fishing and the use of massively destructive fishing methods threatened the ecosystem.

Due to these threats the Tubbataha Reef National Marine Park (TRNMP) was founded in 1988 via presidential proclamation. Tubbataha's management jurisdiction was moved from

the Municipal Government of Cagayancillo to the national government, the Department of Environment and Natural Resources (DENR). But even though the TRNMP was declared it took serious efforts to fully implement the no-take policy. In the case of Tubbataha, the stakeholders' interests follow the typical conservation-development divide: interests were sharply contrasted between those pushing for more conservation and banning fishing within the park (e.g. divers, dive operators, NGOs and government agencies) and those claiming their rights to extract resources from the park - in particular fishers who's livelihood depends on fishing, commercial fishing operators, and agencies governing the fishing areas. Not only are interests sharply divided, power imbalances exist across stakeholders and within stakeholder groups (Tongson and Cola 2007).

With the introduction of Marine Protected Areas the extractionists (e.g. fishers) were those who bore the cost by giving up their access rights and political jurisdiction. Although it can be argued that the fishers of Cagayancillo and the commercial fishers indirectly benefit from the park through a "spillover" effect, their costs were immediate.

Which ecosystem services were examined? And how?

The Tubbataha reefs serve as a habitat for a multitude of species and genetic diversity (Habitat for Species and Genetic Diversity) (Dygico 2006). In addition the Tubbataha Reefs are believed to provide the Sulu Sea and eastern coastline of Palawan with fish and invertebrate larvae (Provisioning of Food). Biologists hypothesized that sea currents disperse larvae throughout the coral reefs and fishing grounds around the Sulu Sea, supplying human population with food, as many studies have shown the beneficial effects of MPAs to surrounding fishing grounds (Alcala 1988; Alcala and Russ 1990; Alcala, A.C. and Russ, G.R. 2006, Bohnsack 1994, Russ and Alcala 1989). Therefore, protecting the Tubbataha reefs secures a sustainable food source in the Sulu Sea (regulating biological control). Furthermore the park provides cultural ecosystem services since the reefs are a popular destination for divers. Furthermore, the reefs are a potential source of pharmaceutically active substances for medicinal resources which can be used in beneficial ways (Subade 2007).

Photo: WWF-Phillippines / Jürgen Freund

The best justification for up keeping a MPA is measurable evidence of its use. Hence, it is important to get empirical information about the benefits the MPA provides. For evaluating the biophysical, socio-economic and governance effectiveness of the MPA appropriate indicators were selected during a workshop held in 1993. Agencies and institutions that have mandates in managing the Park participated in selecting appropriate indicators. Biophysical indicators were used to measure the protection of marine species and habitats and the socio-economic indicators for determining the economic status of the coastal communities in terms of household occupational structure. Governance indicators are mostly process

indicators such as existence of a decision-making/management body and clearly defined enforcement procedures (Samonte-Tan et al. 2008).

The monitoring of biophysical indicators showed that reef health, fish biomass and densities have improved or stabilized. Compared to other offshore reefs, Tubbataha as a no-take zone has a higher fish biomass and that fish biomass in the nearby reef Jessie Beazly doubled since 2000, which is attributed to its proximity to Tubbataha (Dygico 2006). Living coral cover stabilized at 40% from 1999-2003 before reaching 50% in 2004 (Sabater and Ledesma 2004). For 2004, commercial fish biomass are at its highest at 60 mt/km^2 (Sabater and Ledesma 2004), twice that reported for a healthy reef at 30 mt/km^2. Total biomass and density averaged 166 mt/km^2 and 60 individuals/100 m^2 respectively, the highest since 1998 (Sabater and Ledesma 2004). Visitor satisfaction is high with most boat operators claiming more sightings of mega fauna species (i.e. manta rays, turtles, whale sharks, etc.).

What policy uptake resulted from examining the ecosystem services?

The Cagayancillo municipality is a model in "bootstrap" development. Illegal fishing has been contained mainly due to strong leadership supported by an active citizenry. On their own initiative, local officials established five MPAs as part of their coastal resources management program. Living coral cover and fish biomass in these MPA are at their highest levels (Sabater and Ledesma 2004). Fishers reported that fish catches increased outside the MPAs from 10 kg/day to 15-20 kg/day for the period 1999-2004 (Todd and Nunez 2004). However, fishermen tend to exaggerate the volume of their catches and the direct empirical measurement of fish biomass might be a better indicator (A. C. Alcala, personal comment).

It is important to mention that the conservation strategy of TRNMP has not sacrificed socio-economic development and living standards. All eight monitored socio-economic indicators (lot and house ownership, quality of construction materials and household utilities, electricity access, toilet ownership) show an increase in living standard from 2000 to 2004 in Cagayancillo (Tongson and Cola 2007).

Compliance of stakeholders with the conservation strategies was achieved by balancing the costs and benefits of conservation between the stakeholders in a way that all stakeholders were willing to accept the no-take policy. For stakeholder commitment to the no-take policy Cagayancillo and commercial fishers it was essential to point out the long term benefits they receive from the park. In a workshop in 1999 all stakeholders agreed on a user fee system for the park and a sharing scheme regulating the distribution of the collected fees for the park between the different interest groups (Tongson 2007):

- Cagayancillo, Commercial and Palawan fishers to respect no-take zone;
- Divers and dive operators to pay user fees;
- A share from user fees allocated to the municipality of Cagayancillo.

Important for the success of the workshop was the fact that the sharing scheme included compensation payments for local fishers for their lost access to the park. In addition fishers learned that that the park provides the Sulu Sea with fish, and is therefore crucial in the fish supply chain.
In order to establish the user fee system a user willingness-to-pay survey was conducted among divers and dive operators. It showed that the average diver was willing to pay US$ 41 per visit (Tongson and Dygico 2004). Based on this survey the user fee system for divers was introduced in 2000 with a splitting of the user fees as follows (Subade 2007):

- 50% are savings as a reserve fund for counterpart conservation finance
- 43% goes to the Tubbataha Park Management Office (TPMO) to be used for park operations and maintenance.

- 7% gets the Local Government Unit of Cagayancillo for livelihood development activities, disincentive to fishing in TRNMP, establishment of coral reef fish sanctuaries, information and education campaigns (IEC).

In 2002, after two years of fee collection the fees covered 41% of the core costs of the park. Visitor numbers and user fee revenues have been rising since then and in 2006, fee collections covered about 80% of the core costs (Tongson 2007; Tongson and Dygico 2004). The response from the commercial operators to the no-take policy was unexpected positive. Realizing Tubbataha's importance as larval source for the Sulu Sea and for their fishing operations (Alcala 1993) was enough for them to give up their access rights to the park. Although no quantitative data is available, the higher catch in the fishing grounds adjacent of Tubbataha seems to at least equal out the lost fishing ground. The small fishers are the main beneficiaries. Through membership in the livelihood cooperative they have more sources of income. The loan that the members obtain serves as capital for general merchandise stores, poultry, livestock, seaweed production and fishing (Tongson and Cola 2007).

References:

Alcala, A.C. and Russ, G.R. 2006. No-take marine reserves and reef fisheries management in the Philippines: A new people power revolution. Ambio 35(5) 245-254.

Alcala, A.C. 1993. Ecological Importance of the Coral Reefs in the Cagayan ridge, Sulu Sea, Philippines. Silliman Journal 36: 2: 3.

Alcala, AC, and GR Russ. 1990. A direct test of the effects of protective management on abundance and yield of tropical marine resources. *J. Cons. Int. Explor. Mer* 47: 1: 7.

Alcala, Angel C. 1988. Effects of Marine Reserves on Coral Fish Abundances and Yields of Philippine Coral Reefs. *Ambio* 17: 3: 194-199.

Bohnsack, J.A. 1994. Marine Reserves: they enhance fisheries, reduce conflicts, and protect resources. *NAGA, the ICLARM Quarterly*: 4.

Dygico, M., C. Salao, A. B. Honasan 2006. Tubbataha Reefs: A Marine Protected Area that works. WWF-Philippines. 41pp. URL: http://www.wwf.org.ph/templates/wf/downloads/publications/TubbatahaCaseStudy.pdf

Melbourne-Thomas, J., C. R. Johnson, P. M. Aliño, R. C. Geronimo, C. L. Villanoy, and G. G. Gurney. 2010. A multi-scale biophysical model to inform regional management of coral reefs in the western Philippines and South China Sea. *Environmental Modelling & Software* In Press, Corrected Proof.

Russ, G.R., and A.C. Alcala. 1989. Effects of intense fishing pressure on an assemblage of coral reef fishes. *Mar. Ecol. Prog. Ser.* 56: 15.

Sabater, M., and M. Ledesma. 2004. Project Monitoring Report. *World Wide Fund for Nature Philippines (WWF)*.

Samonte-Tan, G.P.B., M.D. Pido, N.P. Abesamis, S.Naguit, M.C.A. Pontillas, and R. B. Trono. 2008. Monitoring and Evaluation: Lessons from Tubbataha Reef National Park and Coron Island Ancestral Domain, Philippines. *Proceedings of the 11th International Coral Reef Symposium, Ft. Lauderdale, Florida*.

Subade, Rodelio F. 2007. Mechanisms to capture economic values of marine biodiversity: The case of Tubbataha Reefs UNESCO World Heritage Site, Philippines. *Marine Policy* 31: 2: 135-142.

Todd, D., and E. Nunez. 2004. GEF M&E Study of the Naure and Rold of Local Benefits in GEF Program Areas: The case of Tubbataha Reef National Marine Park, Sulu Sea, Philippines.

Tongson, Edgardo and Raoul Cola. 2007. Negotiating Stakeholder Agreements for Conservation: The Case of Tubbataha Reefs, Philippines. Science Diliman (January-June 2007) 19:1, 47-63

Tongson, Edgardo, and Marivel Dygico. 2004. User Fee System for Marine Ecotourism: The Tubbataha Reef Experience. *Coastal Management* 32: 1: 17 - 23.