World Journal of Biodiversity and Management Research
Vol. 1, No. 1, May 2019, pp. 1- 4
Available online at www.wjbmr.com

Research article

POLICY ANALYSIS ON THE PROTECTION AND CONSERVATION OF TAKLOBO *Tridacna spp.*: A CASE IN LAGUINDINGAN, MISAMIS ORIENTAL, PHILIPPINES

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ABSTRACT

Tridacna spp. orgiant clams are recently targeted for trade in Mindanao due to an invalidated sale craze of high commercial market price. The shell can be a substitute for the ivory task of elephants for sculpture, jewellery, and other Chinese gems for good fortune aired in media. As such, residents of Brgy. Gasi, Laguindingan, Misamis Oriental were excavating their farms to gather fossilized shells of giant clams to hit big income and to make an instant fortune. Certain violations happened on the conservation measure adopted by the government under CITES I & II and Section 102 of RA 10654 for endangered species. Hence, this prompted the Local Government of Laguindingan to seek the technical help from BFAR 10 and MSU Naawan to conduct community participation discussion to provide information and common understanding of the regulations and the environmental objectives of such precautionary measure. The results and outcome of the case study are collaborative in nature with the LGU-Laguindingan, BFAR 10 and MSU- Naawan for providing technical, scientific, and socio-cultural information in a hope to provoke the critical consciousness of the community on the conservation and protection of the species.

Keywords: policy measures, protection and conservation initiatives, tropical giant clams

INTRODUCTION

Tridacna sp. locally known as ”Taklobo” are giant clams, the largest marine bivalves and typically inhabit tropical coral reef. Giant clams are members of the Subfamily Tridacnunae, which consist of two genera: *Tridacna and Hippopus*. The largest of them growing to 1.2 meters long and weighing more than 200 kilograms.

Giant clams play various ecological roles in the ecosystems (Neo et. al, 2015); their tissues are food for a wide array of predators and scavengers while their discharges of live zooxanthellae, faeces, and gametes are eaten by opportunistic feeders. They are reef builders and shapers, food factories, shelters, reservoirs of algae, and water filters, all rolled in one. Giant clams are also nurseries for fish, serving as refuges for juveniles escaping predators, and the shell ridges provide privacy for adult laying eggs. Their shells also help build reefs. Dense populations of clams mean that some species produce 80 tonnes of carbonate shell materials per hectare each year, which is available as housing for soft corals, sponges, sea squirts and large algae.

Giant clams are under great pressure from threats such as overfishing and global warming. The numbers in the wild have been greatly reduced by extensive harvesting for food and aquarium trade.

The Philippines is home to seven giant clam species (*Tridacna gigas, T. derasa, T. squamosa, T. croces, T. maxima, Hippopus hippopus* and *H. porcellanus*). In 1983, *T. gigas* and *T. derasa* were included in the list of endangered species during the convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to regulate its commercial trade.

Giant clams are slow growing, long living organisms, and the largest living bivalve shells in the world. They are found in tropical waters (in clear water, barrier protected lagoon environments) of the Indo-Pacific like Papua New Guinea, Indonesia, Malaysia, Palau, Northern Australia, and the Philippines. They reach sexual maturity in 4-5 years. Experts refer to them as unique because they manufacture their own food through the algae that live on them, similar to corals. The algae supply food to the clams through photosynthesis which supply sugars and nitrogen-rich compounds. Referred to as “built-in food factories,” giant clams need only sunlight, water, and carbon dioxide in order to make their food. This is considered an advantage because in culture, feeding is entirely omitted.

In the past decade there has been an enormous upsurge in interest in the giant clams (Family Tridacnidae), resulting largely from the realization that their artificial propagation is technically feasible (La Barbera, 1975; Jameson, 1976; Beckvar, 1981; Gwyther and Munro, 1981), that growth rates of the larger species are relatively rapid (Munro and Gwyther, 1981) and that, by virtue of their symbiotic relationship with a species or species group of dinoflagellate algae, they are the world's only self-feeding farm animals (Munro, 1983).

A recent craze on its market that commanded high price happened that prompted all walks of life to excavate their coralline lands in a hope to find a fossilized giant clam shell. This was particularly true to all parts of Misamis Oriental, but, mostly alarming in the municipality of Laguindingan, Misamis Oriental. The local government was alarmed not just its rampant unregulated gathering but the land formation of the municipality that is touted as a sinkhole due to its coralline landmass and its proximity to the sea. Hence, a participatory community discussion was conducted to inform the constituents of the ill-effects of their course of actions and mainly to stop the economic craze of which is not true.

METHODS

This study is participatory and collaborative in nature that was conducted through a participatory community discussion technique. All participants were allowed to express their opinions regarding the topic presented after the resource speakers were through presenting their corresponding topics. The purpose of this technique is to lay the ground for the dissemination of information to all levels of the residents involved. Documentation followed through to come up with comprehensive information particularly on sharing the scientific knowledge and legal impediments on the conservation and protection of giants clams. Respondents included representatives from the barangay residents, its officials and various partner agencies specifically BFAR 10, MSU Naawan and Local Government of Laguindingan.

RESULTS AND DISCUSSION

Mr. Venancio V. Hilomen III, the Regional Law Enforcement Officer of the Bureau of Fisheries and Aquatic Resources 10 (BFAR 10), had presented to the community the importance on the conservation of "Taklobo". BFAR, DENR and National Museum are government agencies mandated to enforce laws on the protection and preservation of endangered species listed under CITES and the national treasures of the Philippines. Government agencies concerned were called because of the report that collection of this fossilized species is very rampant in Mindanao. Secretary Piñol and Usec. Gongona of DA-BFAR stressed "to stop these unlawful activities". Those who were caught pleaded that they already invested big amount for collecting taklobo in a hope to make more instant income from its market or sales. However, samples from its fossilized shells were sent and tested at the University of the Philippines (UP). UP test results showed that those taklobo samples did not contain the high-commercial value compounds known as aragonites, hence samples tested had no monetary value and it only contained calcium carbonate, it is commonly used as "apog" and the main component in the manufacture of cement. The National Museum reiterated that main substance of a mother pearl is aragonites. Under the Fishery Law, Section 102 states that "collection, possessing species under Convention on the International Trade on Endangered Species (CITES) is not allowed and has penalty that reached Php300,000 to Php3,000,000 and imprisonment up to 8 years. An actual case was filed in Opol, Misamis Oriental, but the respondent was unable to pay the fine of Php300,000 because of poverty and instead pleaded for community service, the case is still pending for resolution. Another case, an owner of a grocery store in Baliangao, Misamis Occidental who was apprehended and paid Php105, 000 as a settlement penalty in an administrative case, rather than being imprisoned for more or less 8 years. BFAR commonly encountered ordinary fisherfolk being caught in this illicit trade.

Dr. Sonnie A. Vedra, Professor of environmental science and sustainable development studies at MSU Naawan explained the importance of Taklobo. Why collection of taklobo is not allowed since this belongs to CITES II & III. Giant clams locally known as "Taklobo" falls under CITES because it is endangered and is ecologically important. First, it is a source of food for sea creatures and habitat for crabs, shrimps and others. Why it is protected and conserved? Under the precautionary principle of CITES, regulatory action must be in place for endangered species to survive and reproduce naturally, as such collection of all its parts and derivatives are unlawful for trade. Moreover, under RA 10654, the Philippines adopted and passed a supplemental policy for its protection and conservation (Table 1).

Table 1. Laws, policies, protection and preservation pertaining to giant clams.

Corresponding Laws	Salient Points
Republic Act No. 10654, Philippine Fisheries Code of 1998	Section 96. Address the issues of "Ban on Coral Exploitation and Exportation". It shall be unlawful for any person or corporation to gather, possess, commercially transport, sell or export ordinary, semi-precious and precious corals, whether raw or in processed form, except for scientific or research purposes. Section 102. "Fishing or Taking of Rare, Threatened or Endangered Species. " It shall be unlawful to fish or take, catch, gather, sell, purchase, possess, transport, export, forward or ship out aquatic species.
Fishery Administrative Order 158 and 68; RA 550; Philippine Fisheries Code of 1980	Prohibit the collecting, theft, eating, sell and export of giant clams with the risk of paying fines or facing prison.
Republic Act No. 10066, National Cultural Heritage Act of 2009	Section 5.1 "Protect, preserve, conserve and promote the nation's cultural heritage, its property and histories, and safeguard the ethnicity of local communities.
Republic Act No. 9147, Wildlife Resources Conservation and Protection Act	Addresses the effective regulation of collection, extraction and transport of pearls and clams within the country.

CONCLUSION AND RECOMMENDATION

The numbers of giant clams are extremely low. A preliminary step is the legislative efforts must be strengthened and hopefully to give the total support for a programme to manage the conservation of clams, particularly *Tridacna spp.*The clams should not be gathered and leave the area free from collection. Also, it might be wise to have the concern agencies and asked the residents from the municipality to spare it.

The authors recommend the adoption of laws for its management to reduce overexploitation. Its goal should be to rebuild and sustain populations, species, biological communities, and marine ecosystems at high levels of economic and biological productivity and biological diversity; It would help produce the will to manage conservatively, which is required to rebuild the depleted populations. Some information would be considered such as: If excavation activity in Gasi is unregulated, since the soil is coralline, there is possibility that the area will sink and result to damage of properties.Taklobo collection has an ecological damage effect because it is rich in calcium, so it can be used as neutralizer of an acidic soil. Taklobo is used by anthropology as indicator of historical development. Strengthen implementation and strict enforcement of Law, rules and regulation on Giant clams as stated in RA 10654. LGU must to conduct IEC in their area of responsibility. Strengthening community participation. Provide alternative livelihood program. Creation of reward system to those law abiding citizen. Networking for strong monitoring on the transport of taklobo.

ACKNOWLEDGEMENT

The authors were grateful for the support extended by the Local Government Unit of Laguindingan, Brgy. Gasi residents and its officials, BFAR 10, and MSU Naawan for facilitating the activity.

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