

Profitability and Resource Rent of Multi-Gear Fisheries in Lagonoy Gulf, Philippines

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We evaluated the profitability and resource rent of multi-gear fishery in Lagonoy Gulf, Philippines. Fishing costs obtained from socioeconomic survey and estimates of revenue from gear inventory and catch surveys were used in the benefit-cost analysis. An estimated annual revenue of PhP 1,035 million was obtained from the 26,000 mt production of multi-gear fishery in 2004. The quality of catch and the costs of fishing defined the differential profitability. Total cost was valued at PhP 598 million. The large opportunity cost of labor reconfirmed the economic significance of subsistence fishery as source of employment. Pure profit or resource rent of PhP 466 million was generated from the resource. The use of unsustainable gears and excess capacity eroded fishers' profitability and dissipated resource rent. Unsustainable gears derived negative returns from the fishery, amounting to PhP 168 million. More benign gears were found to be economically profitable, posting positive returns totalling PhP 634 million. However, their excess numbers constrained economic and ecological sustainability. Banning unsustainable gears, imposing higher license fees and reducing effort based on gears are recommended control mechanisms to address use of unsustainable gears and excessive efforts. Establishment of cluster of marine protected areas for resource regeneration and governance is a complementary strategy to address economic overfishing in the area in the current context of its socioeconomic and cultural realities.

Key Words: Lagonoy Gulf, multi-gear fisheries, profitability, resource rent, sustainable fisheries

INTRODUCTION

The world's major fisheries are harvested uneconomically by fleets with considerable excess capacity (Wilen 2005) and remain in extensive rent dissipation (Pauly et al. 1998). In Southeast Asia, particularly in the Philippines, fisheries resources have declined substantially since the 1970s (Licuanan and Gomez 2000; Silvestre and Pauly 2004 unpublished; Stobutzki et al. 2006) and experienced rent dissipation (Librero et al. 1985). Decline of fish catch has been attributed to the subsistence nature of the fishery, high fishing intensity and use of gears (Pauly and Murphy 1982; Cinner et al. 2008).

In the Philippines, multi-species fisheries are usually exploited by a heterogeneous small-scale fishery sector (Armada 2004 unpublished; Silvestre and Pauly 2004 unpublished; Silvestre and Hilomen 2004 unpublished; de Guzman 2004). Closely related to the survival and sustenance of coastal communities, this pattern of fish resource use resulted in the depreciation of the coastal ecosystem and the depletion of the fisheries stocks.

Each of the gears in a multi-gear fishery has its attributes and detriments in terms of potential effect on fishery and livelihood. Coupled with high fishing effort,

these gears can diminish economic benefits from the fishery (Miranda et al. 2000). With a mix of high-value and low-value species, high revenue may be derived from essentially low quantity of catch and vice-versa. The exorbitant costs of fishing low-value species under high fishing efforts erode profit. Conversely, gears that appear inefficient when considering the total quantity of output may be highly efficient when the revenue derived from the catch is considered (Herrero and Pascoe 2003). Thus, economic performance of the fishery depends on profit not yield (Kendal et al. 2008).

The resources targeted by multi-gear fishery are considered as the most accessible and valuable source of protein and income for the poorest of the poor (Davies and Beanjara 2009). The absence of employment opportunities as a source of income highlights the importance to the rural economy of fisheries as employment base (Israel and Banzon 1996). This situation develops a non-rational traditional value system in small-scale fisheries which conventional economic analysis could not explain (Kronen 2004).

While high fishing effort and heavy depletion of fishery resources may provide short-term relief to problems of unemployment and poverty, these may not be sustained in the long run. It is therefore important to

value the extent of natural resource depletion so that it may be adequately considered in assessing economic performance as a basis for implementing policies that promote economic growth but do not severely jeopardize and deplete the natural resource base (Tai et al. 2000).

Various types of fishing gears are used in exploring different types of fish resources in Lagonoy Gulf, but the economic gain from coastal fishery in the area is largely unknown. In the absence of such data, it is difficult to convince the communities and policymakers regarding the economic value of the fishery resource for sustainable utilization. In Lagonoy Gulf fishery, resource, ecological and biology studies have been done (Soliman et al. 1995 unpublished; Soliman et al. 2005 unpublished; Olano et al. undated). The biological information alone, however, will not be a sufficient basis for fisheries planning and management as economic concerns are always important. Social and economic conditions such as poverty and lack of political will hinder implementation of broader management policies needed for management to succeed (Bhat and Bhatta 2006). The lack of proper understanding of these interactions limits the ability of fishery agencies to assess the biological, economic and social implications of any management policy that may, in the long term, negatively influence the biological stocks and the livelihood of the very people who are dependent on it.

The objective of the study reported here was to analyze the annual gross revenue from the estimated annual catch and compare the cost structure and profitability of various types of fishing gears in Lagonoy Gulf to determine which ought to be promoted and which to be regulated or discontinued. A related objective was to determine the pure profit or resource rent from the fishery in an attempt to frame necessary policy measures for judicious exploitation and conservation of the fishery resource. This paper also provides an overview of the fishery in Lagonoy Gulf as well as a description of the sociodemographic, economic and livelihood profiles of the fisherfolk in the area for the sound understanding of its fisheries and socioeconomic contexts.

METHODOLOGY

The Study Area

Lagonoy Gulf is one of the country's major fishing grounds in Southern Luzon, Philippines. It lies approximately 123°31'37"E to 124°20'36"E longitude and 13°44'30"N to 13°10'33"N latitude (Fig. 1). It has a coastline of about 225 km. More than half of its 3,071 km² area is 800-1,400 m deep. The gulf is characterized by a multi-gear, multi-species fishery, composed of municipal and commercial fishery sectors (Silvestre et al. 1994 unpublished; Soliman et al. 2008).

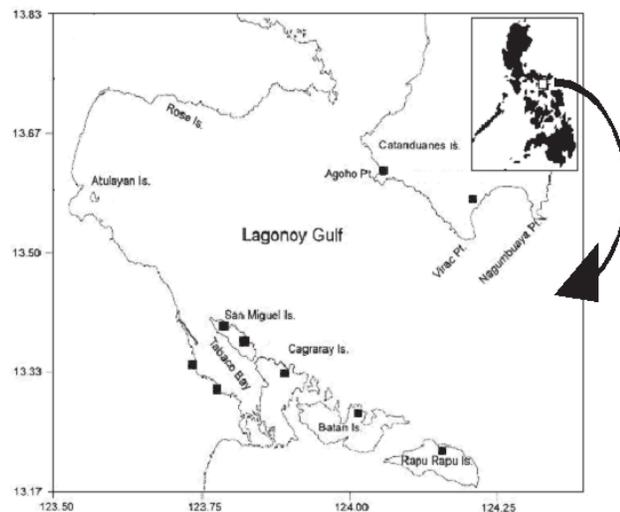


Fig. 1. Location map of Lagonoy Gulf in the Philippines indicating the sampling stations in RSA research.

The fishing gear technology and dynamics in the gulf have been investigated in studies by Jane et al. (2005 unpublished) and Soliman et al. (2008). Fishing operations of the different gears are conducted in coastal reefs and sandy areas, bays, cove, northern portion, mouth and middle portion of the gulf. The use of the fishing gears is influenced by the monsoons and the seasonal occurrence of fish. During the northeast monsoon (November–April), fishing activities are reduced. Fishing is favorable to almost all areas during the southwest monsoon (May–October). Catch rates of most fishing gears in the gulf are influenced by season. The peak season occurs in the summer months of April and May. All gear types, except seine net, have a common peak season which starts from February and peaks in April until August. The seine net has a long peak season, starting from March to September. Comparatively, the lean season is longer than the peak season, indicating low catch for relatively longer period in a year.

Fishing gears in Lagonoy Gulf consist of seven major categories with 55 distinct variants (Table 1, from Dioneda et al. 2005 unpublished). The variants within gear categories are primarily intended to suit the multi-species nature of the resource. The major gear categories as classified by Umali (1950) are handlines, long lines, gillnets, liftnets, seines, hand instruments, and barriers and traps. There were 14,986 total gear units in 2004. Handlines were the most dominant, followed by gillnets. The average fish catch from these gear categories ranged from 0.60 kg per trip for handlines to 7.23 kg per trip for gillnets. The combined total production from these multi-fishing gears in 2004 was 26,053 mt (Table 2, Dioneda et al. 2005 unpublished). Over the past 10 years, from 1994 to 2004, fishing gears in Lagonoy Gulf increased by 40 % (Dioneda et al. 2005 unpublished).