Island-Mainland Nexus: The case of the Coastal Livelihood of Tingloy Island and the Southwestern portion of Batangas, Philippines

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Abstract The research explored the natural resources base of the island municipality of Tingloy, Batangas. It looks at fisheries as island economic resource and how this activity is linked with the larger economic context of the mainland. Tingloy serves as a rural settlement that was spatio-economically linked with the mainland through fisheries for livelihood generation. Fishing is done for subsistence, and surplus is exported to mainland. However, fishery product flow analyses show that fisher folk of Tingloy were marginalized by the disproportionate income distribution in favor of middlemen and fish dealers. Support facilities (such as ports, cold storage, processing units, trading posts, etc.) to further improve the local economy of the island is limited and must be upgraded. Also, transport facilities and other infrastructures to assure the integration of the local-regional economic function of the island municipality must be carefully crafted. Interventions to further improve local economic condition of the island and its integration to the mainland are directed towards improved institutional arrangements, stricter implementation of existing local ordinances, and regional development planning that would take a holistic view and consider the vast resource base of the concerned local government units.

Keywords: Natural Resources, Livelihood, Island-Mainland Interaction, Spatio-Economic Linkage, Spatial Planning

1. Introduction

Island landscapes provide several and unique ecosystem services (provisioning, regulating, supporting, cultural/aesthetic, etc.) important for the sustained development of a larger spatial landscape. According to Agenda 21, small islands are strategically important environments and development resources that need to be properly managed.

Island ecosystems are fragile and vulnerable emphasizes the need for island management. Sustainable island management as an approach will provide the means to conserve the natural functions of island ecosystems. Furthermore, effective island management will define the synergistic development of the island and the larger regional spatial landscape it interacts with.

A study in the Pacific Coast of North America by Fitzhugh and Kennett shows two concurrent major factors of the small-island and mainland interaction through time: (1) the degree of socio-economic self-sufficiency of island populations and (2) the nature of resource distribution and the socio-political dynamics. Issues on island isolation come if these interaction features are not satisfied. However, another more relevant dilemma comes with regards to the actual distribution of the gains from the resources produced - were inequality emanates. The center-periphery continuum is very evident event in the context of island-mainland spatial interaction (Grydehoj, 2014).

The goal of this paper is to show the disparity in the economic resource exchange between the island and the mainland in terms of the fishery resources using the case of Tingloy Island municipality and Southwestern Batangas province in the Philippines.

2. The Island of Tingloy and the Southwestern Batangas (mainland) Context

2.1. The Natural Coastal/Marine Resources of Tingloy Island

Island landscape boasts its natural sources of fishery products. Various fish stocks harvested by the fisher folk in the municipality is affected by several reasons: (a) the actual catch for each fish stocks also varies and changes based from what is actually available; (b) the catch is very much attuned to the daily survival needs of the fisher folk; and (c) fisher folk of Tingloy uses traditional fishing gears, making the actual harvest variable. An estimated 105 tons of fishery resources (75 tons for fishery products and 30 tons for squids) are being harvested in the island municipality of Tingloy.

Table 1. List of the Primary Fish Stocks harvested in Tingloy Waters by Monsoon season

Fish Stocks/ Species	*Northeast Monsoon (Amihan)*	*Southwest Monsoon (Habagat)*
Alangulan, Burot-burot, Dalagang bukid/ Buglaw, Galunggong (Scad), Gulyasan, Kambabalo, Labahita, Lagidlid, Lapu-lapu, Lumahan, Matangbaka, Maya-maya, Talakitok, Yellow Fin Tuna (Tambakol), Tanigue, Tulingan	=	=
Alumahan, Balakwas, Dilis, Hasa-hasa, Pakpakan/Pigit/ Pakol, Tamban	<	>
Bakol, Burak, Batalay/Hambabalo, Bisugo, Kulapo, Malasube, Manitis, Marlin (layag-layag), Tingin	>	<
Dulong, Muslo, Purak, Tuna (Pusing)	✓	**x**

Barangay[1] coastal waters fishing is especially relevant to those that venture on non-motorized boats and shoreline fishing methods. Those areas common for majority of fisherfolk in Tingloy are the easternmost and the westernmost parts of the island municipality, and the open waters of Balayan Bay, Batangas Bay and the Verde Island Passage.

There are a variety of fish stocks available and harvested in the fishing grounds surrounding the island (Table 1). These reef fishes and other sea foods (squid, octopus, etc) are among the primary harvests in the fishing grounds surrounding the island. According to the fisherfolk of Tingloy, the fish catch during the months of November to May (Amihan season) is better than the rest of the months in a year. This is due to the prevailing winds/ monsoon influencing the capacity of fisherfolk to harvest fishes.

2.2. The Challenges for Tingloy Island

The traditional fishing technologies that the island population use are not seen as a challenge, however, with the issues on limited harvest and encroachment of other fishermen from other municipalities, some fisher folk opt to use motorized and large-scale fishing activities to cope up with the competition imposed by their demeaning situation. The introduction of new fishing technology has frequently led to a decline in fish stocks and the impoverishment of many traditional subsistence fishermen (Quinn, n.d.). Also, the monsoon dictates the kind of fish species that will be found in the fishing grounds since fishes are highly dependent on the wave action and direction of the prevailing winds.

The other problem that persists in this economic resource is that the freshly caught products must be marketed directly to the middlemen. This is due to the limits on storage and further processing capacity on the island municipality. Lack of electricity limits the fisher folk store or further process the primary products, thus, making it possible only for the fisher folk to do further processing at the household level for household consumption only. These limits in the facilities deem it compulsory for island communities to suffer from the unbalanced financial distribution of resources valued.

Furthermore, capacities of local fisher folk must be enhanced to form cooperatives and for them to be able to organize themselves thus allowing them to better take care of the rights and the products they sell. The significant impact of fishery cooperatives on fish income reveals that fishery cooperatives do serve their purpose on income improvement through monitoring of fishing efforts, by creating better market opportunities, making higher bargaining power, or reduced transaction costs (Garoma, et.al, 2014).

2.3 The Comparative Advantage of Southwestern Batangas

Mabini, San Pascual and Bauan collectively support the provicial capital and an international port city- Batangas City. Services provided by these municipalities include transport and communication services, man power and human resources services, processing, manufacturing and marking, etc. These is the genral economic activities done in the three municipalities making Tingloy island the raw matrial goods provider, especially fishery resources.

Infrastructure development and access to a larger market are among the few advantages of the Southwestern Portion of Batangas as compared to the island municipality of Tingloy geographically isolated.

Road networks, market, cold storage, electricity, and post processing facilities are very much available. These made it easier to assume the role of post processing and marketing of raw material goods harvested from the island municipality.

Access to a larger market, through an improved road networks and transporttation facilities, is conducive in the mainland where raw fishery goods are lodged. Resort owners and restaurants requiring fresh fishery goods also flock the coastal areas of the mainland thus helping the market as strategic site for the exchange of goods.

3. Fishery Resources Movement in the Island-Mainland Regional Landscape

3.1 Fishery Resources Flow

[1] *Barangay is the smallest political unit in the Philippines.*

The fishery product flow in Tingloy starts from the fishing grounds, where fish, squid and octopus are caught. These are then moved by the fishermen to the the middlemen (casa). The fisherfolk can be characterized into three: (a) those that ride or borrow a boat for them to be able to fish (mamamalakaya); (b) those that are engaged into an agreement with the middleman to have a rent-to-own boat, so long as that their daily fish catch will go directly to the middlemen as a form of payment to the loaned boat; (c) those independent fisherfolk who own their boat and choose to transact with the middlemen or go directly to the market or trading posts to sell the fresh goods. After being sorted and transported by the middlemen to the trading posts, fish dealers buy and trade these produce on a wholesale basis. These fish dealers and vendors transport these products to the markets on other adjacent municipalities. Sometimes, consumers buy directly from the trading posts to have a better choice of fish products at a lower cost.

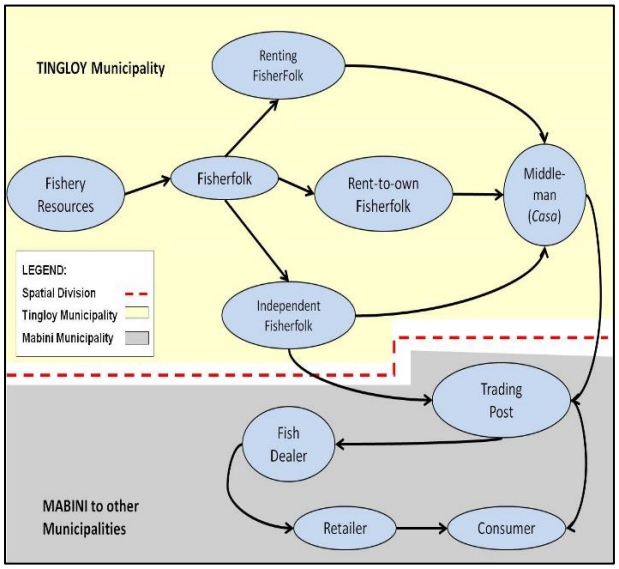

Figure 1. Fishery Product Flow between Tingloy Island and the Southwestern Batangas

The diagram (Figure1) also shows the spatial divide of the fishery resources flow. The upper part of the diagram, showing the actual fishing activity until the time it reaches the middlemen forms part of the concerns of the island municipality of Tingloy. The trading and consequent distribution of these fishery resources is done in the mainland. Mabini is the common drop-off point of the fish catch from Tingloy Island and here, the distribution flows from the Markets of Mabini, Bauan, and San Pascual.

This movement of fishery products revolves inside the region, only when the catch is so much that the fish dealers transport the catch to Batangas City. However, for the case of the squid the product flow extends to Batangas City as the demand for squid is higher.

3.2 Spatial Linkage of Island and Mainland

Providing a spatial dimension for the product flow of fishery resources entails tracing the actual movement of the products from one place to another. Figure 2 shows the actual fishery resources flow in space. The actual flow of resources is represented by the line coming from the island municipality. The lines surrounding the island municipality shows that the fishery resources from the fishing grounds moves back to the island municipality for the community's consumption. The lines extending outside the municipality to the mainland and other areas show the outward flow of fishery resources.

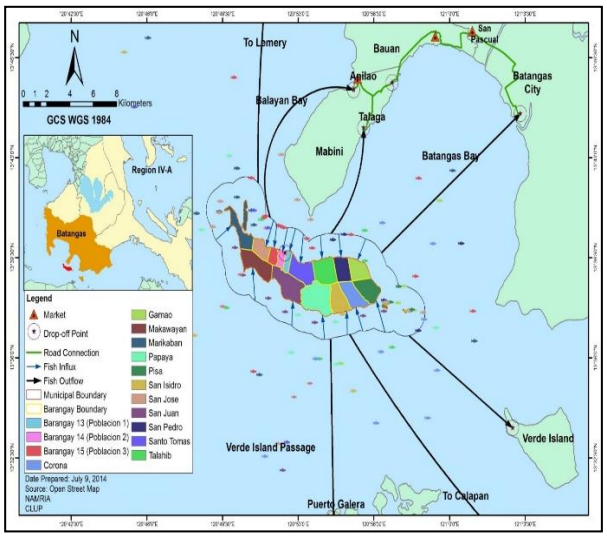

Figure 2. Fishery Resource Flow in the Region.

These outward flowing lines from the island municipality of Tingloy to the mainland represent the economic linkages between the island municipality and the mainland. Clearly, the economic flows, in terms of the fishery resources, are illustrated in the map (Figure 2). The established links between the island municipality and mainland are: (a) Tingloy- Mabini (Anilao and Talaga) for the region under consideration; (b) Tingloy-Lemery, for the linkage, however seldom, between the island municipality and other municipality in the mainland; (c) Tingloy-Batangas City, both direct and through land transportation (Tingloy-Mabini-Batangas City), such linkage is very evident especially in the product flow of squid; (d) Tingloy-Verde Island (Small Islands linkages), Verde Island is under the jurisdiction of Batangas City where several barangays are situated; and (e) Tingloy-Mindoro (Calapan City and Puerto Galera), economic linkages driven by the booming tourism of the island province of Mindoro.

The economic linkages between Tingloy and the mainland manifested through the physical link between Tingloy and Mabini. The municipalities of Bauan and San Pascual, since its markets are alongside with the road, also relates to the interaction as spillover of the existing economic flows between Tingloy and Mabini. Road networks connecting Mabini-Bauan-San Pascual up to Batangas City also show that physical links making it possible for the fishery resources to flow within the region.

Given such condition, if proper integration of these fishery resources flow is catered, these links will be further enhanced and be source of better income for the whole region. However, the organization and management of

Table 2. Value Chain of the Fishery Products in Tingloy, Batangas

STAGES	Description	Units Accounted	Number of Units Used		Price per Unit (PhP)		Total Cost (PhP)		Value Addition (PhP)	
			Min	Max	Min	Max	Min	Max	Min	Max
Preparation	Preparatory Activities for fishing activities (Maintenance of Input, buying of inputs required	Motorized Boat Fishing Gear (Set) Man Power	1 2 2	- - -	96 25 100	- - -	96 50 200	- - -	- - -	- - -
Actual Fish Catching	The actual activity of catching Fishery resources	Fisherman's Food Fisherman's Water Fish Bait (set)	2 2 1	- - -	20 20 100	- - -	40 40 100	- - -	- - -	- - -
Sorting and Storing	Collation of fishes and other catch and consequent storing in containers	Fish Containers Plastic Cover	2 2	- -	1 1	- -	2 2	- -	- -	- -
Sea Transportation	Transportation of Fish and other catch from the fishing grounds to the middleman	Gasoline for motorized boat (Liters)	2- - -	- - -	60 - -	- - -	120 - -	- - -	- - -	- - -
Collection of Fish Products	Collection by the middleman	Fishes (kilogram) Squid (Kilogram)	3 5	7 15	80 30	120 100	240 150	840 1,500	- -	
Transportation by middleman	Movement from the middleman bringing to the trading posts	Motorized Boat Gasoline Other Fees	1 2 1	- - -	96 60 100	- - -	96 120 100	- - -	- - -	- - -
Wholesaling by middleman	From the trading post, the middleman will sell the catch in bulk	Fishes (kilogram) Squid (Kilogram)	3 5	7 15	100 60	160 120	300 300	1,120 1,800	60 150	280 300
Retailing Fish Products	From Wholesale trade to the fish vendors in the market	Jeepney Gasoline Manpower	1 2 1	- - -	400 60 100	- - -	400 120 100	- - -	- - -	- - -
Final Consumption	Market Fish vendors selling the fish catch to the consumes	Fishes (kilogram) Squid (Kilogram)	3 5	7 15	120 120	180 200	360 600	1,260 3,000	60 300	140 1,200

these resources seems to need more time to fully integrate this capacity.

The existing interaction between the island municipality and the mainland through the fishing activity can be further analyzed using the value chain analysis. This tool differs from commodity flow analysis as it centers on the monetary or value addition on a particular resource flowing in a system. Furthermore, value chain focuses on systems, and how inputs are changed into the outputs purchased (Porter, 2008). Since the product flow under consideration remains a primary or raw material, not much of value additions can be observed (Table 2).

The commodity starts to incur value addition only during transportation by the middleman. The value addition for such commodity is attributed primarily to the costs of transporting the goods from one place to another and the services fee charged by the middleman. The same follows for the other later stages where the commodity incurred value addition up to its final consumption stageIn Table 2, it is clear that although there exists an economic linkage between Tingloy and the mainland, the distribution of the actual income from the commodity is not even, leaving the fisherfolk marginalized from the situation. The intensive labor input in the economic activity of Tingloy fisherfolk has fewer merits than that of the mainland employment activities in lieu of the same commodity (fishery resources) being circulated in the region. Looking closely at the value chain analysis, a range totaling PhP20.00-40.00[2] for fish products and PhP20.00-30.00 for squid per kilogram is attributed as gross income of the middlemen. If this is computed to the minimum kilograms of their transaction in the trading post (50 kilograms) and deducting all other expenses (transportation and other fees) they could have incurred, still the middlemen could assume a PhP 1,684.00 to 3184.00 net income.

For the case of the fish dealers and vendors, they accrue a total of PhP 20.00 income per kilogram sold for fish products and a range of PhP 60.00-80.00 for selling a kilo of squid. Taking the minimum (50 kilograms) of sold fish products of fish dealers/ vendors in the market and deducting all other costs, the net income of the fish dealers and/or vendors will sum up to PhP3,440.00 for fish products and PhP 4000.00 for the squid.

In addition, the price of the fishery products is dictated by the middlemen, which leaves the fisherfolk helpless of their condition. Furthermore, the fisherfolk are also limited by the uncertainty of their catch caused by the conditions imposed by the natural environment and the capacity of the fishing gears they use.

4. Conclusion and Recommendations

4.1 Conclusions

The island municipality's role in the mainland (Mabini, Bauan and San Pascual) remains to be a rural settlement. Tingloy provides fishery resources for livelihood generation. This synergy extends even far beyond the three municipalities under consideration including Batangas City and the municipality of Lemery at large. This physical link is very evident through the established buying and selling of fishery products. However, the benefits from fishing are not properly distributed resulting to the marginalization of fisherfolk in Tingloy. Much of the income from the fishing activity goes on the middlemen and retailers on the mainland. With this, spatial divide exist between economic benefits between the island and mainland. Furthermore, with limited economic opportunities, some implications for the fisherfolk of Tingloy are the evident exhaustion of their subsistence economic resource and the over exploitation of other fishery resources. also, overworking on the side of the fisherfolk are expected to happen.

4.2 Recommendations

Improved coastal management/ stricter enforcement of municipal waters law and protection of the MPAs. The following efforts must be simultaneously done: (a) conservation of fishing grounds using sustainable fishing technologies; (b) restoration and increase in the number of

[2] Philippine Peso (PhP), 1 US Dollar is PhP 50.300 as of March 2017.

people manning the area, (b) improvement in improvement of marine protected areas (MPAs) through water use zoning; (c) Capacity building for local coast guards-trainings on effective handling and conflict management, provision of basic incentives for workers (health and calamity funds, insurances, etc.), increase in the work force among the local coast guards.

Storage and further processing of fishery resources within the island. Storage facilities to maintain the quality of freshly caught fishery resources could provide options for fisherfolk to avoid wastage when supply is high. Processing of goods into more valuable products must be complemented by techniques used in harvesting or catching fishery resources, packaging of products taken from the municipal waters. Strategic branding and marketing of fishery products could further promote the products of the region as competitive not only on the local market but international as well.

Creation of fisherfolk cooperative. Fishing cooperatives can be especially critical to sustainable fisheries management, especially in areas where governance is weak (Rife, 2015). Middlemen as integral part of the fisherfolk cooperative will assure participation and that the tasks will not be completely replaced but only be under the concerns of the cooperative. The characteristic of the cooperative should be as follows: (a) members are the fisherfolk at the barangay level and the middlemen; (b) must have information-base, run by mobile phones, or any other existing simple yet effective means of communication; (c) has strong link to the mainland trading posts; (d) with financing and maintenance of a revolving fund for all the members, also, the allocation of calamity and emergency fund; and (e) has continuous training for cooperative management, building team rapport, and financial management

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