THE CHALLENGES OF THE AGRARIAN TRANSITION IN SOUTHEAST ASIA

ChATSEA

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Tourism, Industry and Protected Areas: Contested Coastal Livelihoods in Southern Luzon, Philippines

by

Kristian Saguin

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TOURISM, INDUSTRY AND PROTECTED AREAS: CONTESTED COASTAL LIVELIHOODS IN SOUTHERN LUZON, PHILIPPINES

Kristian Saguin
PhD Candidate
ksaguin@tamu.edu
Department of Geography
Texas A&M University
8th floor, Room 810, Eller O&M Building, College Station, Texas 77843-3147
United States of America

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Abstract
Coastal environments in the Philippines are experiencing significant ecological and economic transformations, often driven by the juxtaposition of small scale fisheries with emerging strategies for globally-oriented development. This paper examines the transformation of two southern Luzon fishing villages in Mabini, Batangas due to the expansion of tourism-driven marine conservation and industrial development, and assesses the resulting impacts on municipal fisherfolk livelihoods. The study argues that development policies and plans formulated at the national and regional scales are translated unevenly into local coastal environmental changes, which in turn influence how fisherfolk make a living. Mabini’s municipal fisherfolk, bear the most immediate impacts of ecological changes and resource-use restrictions but respond using a variety of livelihood strategies and diversification to ensure survival.

Keywords
Fisherfolk livelihoods, tourism, industrialization, coastal resource management.
Introduction

Philippine coasts are undergoing rapid economic and ecological transformations. Coastal communities traditionally dependent on fishing are witnessing the expansion of conflicting and state-supported development activities that have increasingly shaped how people make their living. Tourism and port industrialization are two such activities present in Mabini, a peninsular town in Southern Luzon where fishing remains an important, albeit diminishing, source of livelihood. This paper seeks to document the empirical dynamics of these changes as they relate to the livelihood strategies that fisherfolk households employ to cope with and negotiate the reconfigured landscapes.

The paper explores how Mabini fisherfolk respond to the resulting changes in economic and political arrangements brought about by environmental transformations associated with tourism expansion, marine conservation and industrial growth. The linkages between state policies and environmental changes are mapped out, as well as the interactions, conflicts and collaborations among the various users of the coastal resources of Mabini.

The changes of Mabini fisherfolk livelihoods can be linked with actions, relations and decisions about resource use by other actors, including dive resort owners and managers, dive boat operators, industrial managers, industrial labor migrants, commercial fishers, environmental NGOs, and the local government. The paper illustrates how the burdens of coastal conservation and industrial development are primarily borne by fisherfolk, who in turn respond with a variety of strategies and diversification to en-

Figure 1. Location of the Municipality of Mabini, Southern Luzon

![Location Map of Mabini, Southern Luzon](image-url)
sure livelihood security.

**Study Site and Methods**

Located 125 km south of Manila in a peninsula that juts from the rest of southern Luzon, Mabini is a municipality known for industrial activities on its eastern Batangas Bay shore and a thriving dive tourism sector on its western Balayan Bay coast. The majority of its 2007 census population of 40,629 resides in its 19 coastal barangays or villages. The paper examines case studies of two fishing barangays representative of the emerging development activities: San Teodoro’s dive tourism and Calamias’ port industries.

San Teodoro, on the western coast, hosts several resorts within its territory and is still home to a sizeable fisherfolk population. Although experiencing declining yields, fishers still make use of their municipal waters for subsistence fishing despite competition from occasional commercial fishing intrusion and the restrictions of marine protected areas (MPAs). Known worldwide for its unique and high biodiversity, Mabini’s marine environment has been subjected to several attempts at conservation. Situated on the northeastern corner of the municipality designated as an industrial zone, Calamias is a small, densely populated barangay tucked in a cove surrounded on three sides by steep hills that face Batangas Bay. Because of its proximity to a regional industrial center and an international port, Calamias and the northeastern portion of Mabini have received spillover industrial investments beginning in the 1990s.

Data for this research was drawn from semi-structured interviews and participant observation conducted between May and July 2007. Forty-two municipal fisherfolk (21 from each village) were interviewed, along with 12 local (barangay, municipal and provincial) government officials, two NGO workers, a dive resort owner, and an industrial manager. Sampling was purposive through a snowballing technique, wherein I asked those I interviewed to refer me to other possible respondents. I asked fisherfolk about fishing practices, livelihood profiles and perceptions about conservation or industrial activities. Interviews with non-fisherfolk also elicited various perspectives about fishery, tourism, conservation and industrial development in Mabini. The data gathered reflects on the research period, especially since fishing is highly seasonal and catch and incomes fluctuate on an episodic basis. The research period also came at the heels of local

**Figure 2. A fishing village in San Teodoro**

**Figure 3. Fishing boats beside a port in Calamias**

Saguin, Kristian
PhD Candidate, Texas A&M University
elections, which resulted in significant local administrative and political changes.

I conducted participant observations of fisherfolk interactions in both barangays, as well as of a multi-stakeholder coastal resource management board meeting. The primary qualitative methods were also supplemented by a reading of various government plans, coastal environmental profiles, laws and ordinances, reef surveys, fishery profiles and other documents. Coding and identification of emerging common themes in the data were undertaken in the analysis stage.

Entry to the study area was facilitated by a previous research experience in 2006. Through this study, I was able to gain access to various data, as well as establish contacts with local officials and NGO workers who introduced me to my first informants in both barangays. In initiating the interview process for instance, I relied on local members of the marine patrol unit called Bantay Dagat to refer me to other informants.

The paper begins with a discussion of the broader context of tourism, conservation and industrial development in Mabini. The next section then describes the various livelihood responses employed by fisherfolk on both villages. A brief conclusion ties the empirical findings together.

Tourism, Conservation, and Industries: Policies and Practices

Beginning in the early 1990s, the coastal environment of Mabini experienced a series of changes paved by the introduction of interrelated municipal, regional and national policies. Dive tourism, long a mainstay of the economy of Mabini’s western coast, took on a more central role in marine conservation. During this time, industrialization associated with Batangas Bay also extended well into Mabini’s eastern coast. Both development activities, dependent on the use of the coastal environment and marine waters, contributed to further complicating an already problematic municipal fishery sector. This section details the multi-scalar context of the policies and realities associated with dive tourism, coastal resource management or CRM, and port-oriented industrialization in Mabini.

Tourism and Coastal Resource Management in Mabini

Mabini’s reputation as a tourist destination lies in its popularity among divers since the 1960s. Although state policies had minimal involvement in this initial expansion, recent policies have allowed the now extensively developed dive tourism to pursue a different role through conservation. Tourism development had been increasingly linked with a decentralized coastal resource management, institutionalized in the Philippines with the passing of various policies.

Amid the backdrop of national, regional and local thrusts toward tourism growth as a vital engine of development, Mabini’s dive tourism industry expanded rapidly over the past three decades from its humbler roots. Due to its location, clear waters, and rich marine biodiversity, Mabini has attracted a host of domestic and foreign tourists that resulted in a corresponding expansion in the provision of tourist infrastructure. From a total count of 10 in the late 1980s, the number of dive, picnic and private resorts ballooned to 74 in 2005 (AdMU 2002; CRMB 2005). Most of the more upscale dive and private resorts are owned by Manila-based investors (some of whom are divers themselves), with a few locals owning the smaller picnic beach resorts.

Next only to the industrial sector, tourism is the second biggest contributor to municipal revenue (CRMB 2005). Income-wise, the tourism sector in 2002 accounted for an estimated 34% of total household income, second only to overseas Filipino worker (OFW) remittances (AdMU 2002). The entry of dive and other resorts also allowed for increased employment opportunities for the local population as caretakers, boatmen, and resort staff, with an estimated 10% of the municipal labor force engaged in the sector during peak season (AdMU 2002).
The Mabini local government unit (or LGU) sees the revenue- and employment-generating potentials of tourism to be in line with national and international attempts to protect biodiversity and manage the use of the coastal environment. Coastal resource management has emerged as the preferred decentralized, integrated and multi-actor management mechanism that is complementary to tourism development and that relies on public and private sector collaboration (White et al. 2006). More than a hundred local government units in the Philippines, representing a 3,000-km stretch of coastline, have adopted some form of CRM (White et al. 2006).

Departing from a centralized management of coastal resources, the Philippine state passed a series of laws in the 1990s that set the stage for decentralized CRM (Eisma, Hershman and Christie 2003) (see Table 1). The Local Government Code (LGC) of 1991 gave LGUs primary powers and responsibilities for coastal management and planning within municipal waters, and fiscal autonomy by levying fees and taxes within their territories (DENR, BFAR and DILG 2001; Huttche, White and Flores 2002). Reinforcing the LGC, the Fisheries Code of 1998 granted LGUs rights to propose and enact ordinances related to all fishery resources within municipal waters, and to create fishery refuges, reserves and sanctuaries, thus providing the LGUs the rights to limit access to resources (DENR, BFAR and DILG 2001).

Originally a function of the central state, CRM is now considered a basic service of the local government (Lowry, White, and Courtney 2005). Tourism has entered the picture as an avenue to both increase revenue and involve businesses and NGOs in CRM ef-
forts through public-private collaboration. The sector has also become central to the management of the MPAs with revenue-generating opportunities provided by the devolution of rights and responsibilities to the LGUs.

These legislations paved the way for the synergy of tourism and coastal resource management interests. Tourism contributes to coastal conservation in Mabini either indirectly through the establishment of conservation or dive fees or directly through the contributions of resort owners in the creation and maintenance of marine protected areas or MPAs.

**MPAs and Conservation Fee in Mabini**

The first seeds of local coastal management in Mabini were sown in the late 1980s with the entry of an environmental NGO which, along with the local barangays and the municipal government, established three marine protected areas off the Balayan Bay coast. Informed by the theory that once open access to a resource is reduced or totally removed, ecological conditions, fish abundance, and therefore fish yields, will improve (de Guzman 2004), Municipal Ordinance No. 11-91 delineated the entire waters 700 meters off Mabini’s southwestern barangays as a marine reserve. The ordinance identified three restricted fish sanctuaries within the reserve: Arthur’s Rock and Cathedral Rock in Bagalangit, and Twin Rocks in San Teodoro. The original ordinance prohibited fishing using any gear, gathering of corals and other marine life, and diving/snorkeling within the sanctuary. The 2006 amendment extended prohibitions to include other activities that cause disturbance, but allowed diving with certain restrictions. Fishing using traditional gears is permitted within the reserve but remains prohibited inside the sanctuary.

The formation and eventual management of the MPAs are closely linked with dive tourism. The NGO’s implementation of its community-based coastal management project beginning in 1989 resulted in the establishment of a community-based management system of the MPAs through a fisherfolk organization. However, dive tourism’s role in the design and consequent implementation of the MPA ordinances became more prominent in time. Partly due to the departure of the NGO and other internal problems, the fisherfolk organization fell into inactivity in the late 1990s. As new dive resorts have sprung up near the Twin Rocks, Arthur’s Rock and Cathedral Rock, resort owners assumed a more direct role in sanctuary management (Archiaga 1996). One resort, for instance, took a highly proactive role in maintaining Twin Rocks since 2000 due to its proximity. The owner claimed:

> My investment here is that I watch over it physically. I have eyes on the sanctuary. I have had eyes on the sanctuary for 7 years now, 24 hours a day. (James, dive resort owner)

Diving within sanctuaries has been a central point of contention between fishers and divers since the activity continued despite clear provisions against it. While the no-fishing provision of the 1991 ordinance was strictly monitored at the expense of fisherfolk access, tourism activities like diving and snorkeling carried on inside

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<th>Some Devolved Coastal Resource Management Functions to the Local Government</th>
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<td>Local Government Code (RA 7160)</td>
<td>1991</td>
<td>- Management and planning responsibility of coastal waters between 0-15 km from shore</td>
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<td></td>
<td></td>
<td>- Fiscal autonomy through fees and taxes</td>
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<tr>
<td>Fisheries Code (RA 7586)</td>
<td>1998</td>
<td>- Rights to propose fishery ordinances</td>
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<tr>
<td></td>
<td></td>
<td>- Fishery resource management</td>
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<td></td>
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<td>- Create marine reserves and sanctuaries</td>
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the sanctuaries with no regulation. Dive tourism’s active management of the three sanctuaries had cemented the legitimacy of its access to these areas. As a resort owner puts it, for a long time diving was an ‘unwritten violation,’ in a sense that it was prohibited by the local ordinance but widely practiced and tolerated.

Dive resort owners argued that through their direct management of sanctuaries, coral conditions and fish biomass have improved. Since 1993, MPAs recorded better fish abundance, diversity and biomass than non-MPA sites, suggesting the comparatively better management within sanctuaries (White et al. 2005). Mean species richness and target species abundance in Twin Rocks and Arthur’s Rock, for example, were significantly higher in 2001 and 2005 than in the 1990s (Christie et al. 2003; White et al. 2005). A finding noting coral reef improvement in Balayan Bay waters from 33% to 48% in eight years is likewise supported by WWF-Philippines surveys (WWF, 2004). Since 1993 in Twin Rocks, observed hard coral cover and abundance of target reef species have also increased consistently, with target fish density the highest among surveyed reefs in Mabini (White et al. 2001; White et al. 2005). These findings are supported by observations and perceptions from San Teodoro fisherfolk, who believed the stock of reef species is high inside Twin Rocks.

Christie et al.’s paper (2003) and the observations of an NGO worker both suggested that further improvements in sanctuary conditions occurred during the period of resort management. However, continued resort control of what was once a community-based form of management has contributed to a sentiment among fisherfolk that dive resorts and boat operators benefit more from these MPAs, especially since the impacts on fish catch through the expected spillover effects still remain uncertain (Oracion, Miller and Christie 2005). A 2006 amendment was passed to alter the no-diving provision of the earlier ordinances and legitimize diving within sanctuaries (with diver fees and volume restrictions), with the goal of sustaining tourism still the primary consideration.

If it’s prohibited, then it’s prohibited. The thing is it is unfair to the fisherfolk that they are prohibited to fish. Diving is prohibited, but divers dive anyway. That is why during our meetings, we changed it from prohibiting diving to allowing diving, but with fees. (Jerry, San Teodoro fisher)

Of course, like here in Twin Rocks, I think it is well-known around the world as an excellent dive spot, so we cannot avoid diving, even up to now it really is open to divers. However it violated the old ordinance...Of course, we saw the increase in the number of tourists, local and foreign, of course I argued that if all activities are prohibited, tourism will be affected. So we agreed on setting up limitations on diving within the sanctuary. (Lucio, barangay official)

Management of the MPAs was subsequently subsumed under a broader, municipal-scale coastal resource management board or CRMB in the early 2000s. Carrying the new mandates that were created by the LGC and Fisheries Code, the multi-stakeholder CRMB was tasked to formulate and implement the municipality’s CRM Plan in both its Balayan and Batangas coasts. One of the key programs of the CRMB is the conservation fee system, a mechanism designed to sustainably fund CRM. Implemented beginning in 2003, it harnessed the revenue-generating mandate of the LGU by requiring divers to pay a user fee for every dive within Mabini’s municipal waters. 85% of the conservation fund is used for CRM programs and activities, while 15% goes to the LGU’s fund.

Because of the user fee system, CRM functions and projects have been oriented primarily toward marine conservation and dive tourism interests. It can be argued that the dive tourism sector and its concerns exert a considerable influence in the trajectories of CRM in Mabini. Divers and resort owners, for instance, are able to constantly lobby the Board in various matters concerning their interest, such as the reduction of the amount of user fee and the issue of for-
malizing diving within the sanctuaries. The increased efforts of transparency of the CRMB in funding matters are attempts to assure divers of proper disbursement of user fee fund.

Mabini’s history of coastal management has shown the significance of tourism as a driving force in the conservation of resources. Informants argued that if not for dive tourism, conservation will never have taken flight in the area. Apart from tourism, however, another development activity in the form of port-oriented industrialization is competing and conflicting with the municipal fisheries over the use of coastal resources.

**NIC Ambitions and Bay Realities**

With ambitions toward attaining a newly industrialized country (NIC) status, the Philippines have stressed the importance of rapid industrialization in providing impetus for economic growth. A 1990 national development plan, for example, suggested that “industry development is crucial in our quest to bring this country to Newly Industrialized Country status by the year 2000 and to create jobs that will help alleviate poverty” (NEDA 1990, 84). Following the model of the newly industrialized countries, notably South Korea and Taiwan, the Philippines embarked on a massive promotion of the strategy of economic development via rapid, export-led industrialization centered particularly within industrial enclaves (Bello 1992).

The CALABARZON plan, completed in 1991, came at the heels of a renewed effort to decentralize industrialization. Considered as the most ambitious industrial dispersal project in the country’s history, the 20-year project set out to industrialize five provinces of southern Luzon. As a development model for other Philippine regions, it sought to attract development away from Metro Manila while continuing to contribute to increased national industrial growth. Emphasizing further growth in production of exports within large-scale industries, the project set out to modernize the industrial sector and make it globally competitive (DTI 1991). Regional economic growth, employment generation and poverty reduction were expected to be the result or the co-requisite of the project’s success.

Set in the midst of this emphasis on export-led industrialization is Batangas Bay. Given its natural (200 km average depth) and locational (close proximity to Metro Manila) advantages for port development, the bay has been able to host a high density of industries along its 470-km coastline. The CALABARZON Plan designated the Batangas Bay as the site for heavy and port-oriented industries (Canlas 1990; DTI 1991). The CALABARZON Project also accorded significant attention to the development of ports, with the port of Batangas City providing infrastructural support for the industrial establishments located along the Batangas Bay. The recent upgrading of the port to international status placed greater significance on its role in the regional and national economy, and in mediating CALABARZON export industrialization. In 2001 and 2003, for instance, more than half of total national exports moved via the Batangas City port (NSCB 2005).

The 30 industrial establishments located along the coast range in type from petroleum refineries to bulk depot, shipyards, chemical manufacturing industries, and agro-based processing plants. The private ports of these firms are used primarily to export and import raw materials and processed goods. The high density of port-oriented and heavy industries, together with rapid urbanization, impacted the water quality of the bay through the regular release of industrial effluents (La Vina 2001). Given the immense volume of sea-based traffic in the bay and the presence of large refineries in the area, oil spills and leaks continue to be major threats to the marine environment. Dumping of used oil and wastes by ships have been noted in the bay, which is expected to become more frequent as passenger and cargo vessel traffic increases with the full completion of the Batangas International Port and with the continued emphasis on port-oriented industrialization (Province of Batangas, 2003).

Significant industrial development in Mabini began in the early 1990s, when five firms es-
tablished plants in the municipality as spillover from nearby industrial towns. Occupying only 2% of land use in Mabini, industries contribute a significant amount to municipal revenues. In 1999, it was estimated that real estate and business taxes from this sector was enough to provide 42% of Mabini’s budgetary requirements (CRMB 2005). It is no surprise, therefore, that continued emphasis on attracting industrial investments in the municipality is a prime strategy of the local government. The LGU proposed to increase the industrial land use to 10% of total area by 2020. Currently, there are six operating industrial establishments (see Table 2).

One of the seven northeastern barangays designated as industrial by the land use plans is Calamias, a small village facing Batangas Bay. From small fishing villages, Calamias and its neighboring barangays have been transformed in less than two decades with the operation of four port-oriented industries. Two of these industries are petroleum depots, one is a grain terminal and another is a flour manufacturing facility. These industrial activities are oriented toward sea transport, and therefore necessitated the construction of wharves to accommodate the docking ships that carry raw materials. The northeastern coast of Mabini provides great advantages for industrial location due to its naturally deep harbor, its calm, sheltered waters, and its proximity to the Batangas International Port. Vessels that moor on the wharf of a grain terminal are usually domestic but are also occasionally foreign.

One of the heralded benefits of attracting industries is the generation of employment for residents of nearby communities. This has proven to be true in Calamias up to a certain point. Employment in the industrial establishments is minimal (only 248 people in 1998) since these, with the exception of the grain terminal, are not labor-intensive (Sharma 1998; CRMB 2005). Labor provided by the grain terminal, for instance, can be in the form of stevedores, who are hired to manually transport bags of grains from the vessels to the trucks, unload or rebag them in the warehouses, and load them in trucks for distribution within Luzon. They are hired on a contractual basis and are paid per sack carried (roughly P50 or $1).

Although managers of the grain terminal resolved to hire only local labor, most of those who work as stevedores are actually recent migrants to the barangay, attracted by the industrial labor opportunities. The 6% annual population growth of Calamias since 1990 can be attributed to high levels of in-migration of laborers from the Visayas and Bicol region. Most of the migrants are temporary, highly mobile and subject to mistrust by the locals. Because of these, unless they marry into a local family, they remain socially and spatially segregated from the rest of the barangay.

Of course, you lose trust with the new migrants, especially if they do not have any other relations to the residents here except as baggers of wheat and soya. (Tonyo, barangay official)

While recent forms of cooperation have developed between the village and the industrial establishments, such as an agreement on hiring village labor and the donation of backfill for vil-

<table>
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<tr>
<th>Industry</th>
<th>Location</th>
<th>Nature of Activity</th>
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<td>San Miguel Foods, Inc.</td>
<td>Bulacan</td>
<td>Flow Base Products</td>
</tr>
<tr>
<td>Suntrak Corporation</td>
<td>Mainaga</td>
<td>Grain Terminal</td>
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<tr>
<td>CKU Steel Corporation</td>
<td>Mainaga</td>
<td>Steel Fabrication</td>
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<tr>
<td>PNOC Exploration Corp.</td>
<td>Mainaga</td>
<td>Warehouse</td>
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<tr>
<td>Petron Corporation</td>
<td>Mainaga</td>
<td>Industrial</td>
</tr>
<tr>
<td>Bulk Handlers, Inc.</td>
<td>San Francisco/Calamias</td>
<td>Grain Terminal</td>
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Source: Revised from Municipality of Mabini (2003)
Village reclamation, community-industry conflicts were common in the past. One major point of conflict was the loss of village access to the highway due to the construction of industrial structures. Respondents also note events of massive air pollution when dust from the industries is blown by wind over the village. The most significant concerns of fisherfolk, however, relate to the consequences of industrial development in Mabini and Batangas Bay on the changing conditions of coastal and marine environments. The construction of ports and wharves entailed some form of destruction of the existing reef system, which decimated reef fishing in the area. Liquid wastes, chemicals and crude oil from industries both along Mabini’s coast and on the other side of the bay, have been noted by fisherfolk to have impacts on the presence of target fish species. Oil slicks from petroleum-related industries and passing vessels are perceived as the biggest threats to the marine environment and fishing livelihoods. These events, while occasional and minor, have had major impacts on fishing.

Increased shipping traffic within the bay also brought increased risks of physical conflicts with fisherfolk. Cases of incoming and outgoing vessels colliding with fishing equipment occur in moderate frequency. Damage happens when newly set nets get entangled with the propellers of passing large vessels. Two fisherfolk interviewed reported first-hand experiences, and their claims were almost unanimously seconded by observations from other respondents. In cases of collision with outgoing foreign vessels, fisherfolk have almost no chance of getting financial compensation for damaged equipment. With an incoming vessel, payment can usually...
be solicited with the intervention of the barangay officials.

Because when our nets are sometimes run over, we are not compensated, especially those foreign vessels, they give us nothing. I experienced losing all of my brand new net and I was not paid. How can I fight that? Sometimes the foreign vessels that dock here feel sympathetic to us and give us compensation. But it really affects us. When your nets get damaged, you lose your means of livelihood in the sea. (Elias, Calamias fisher)

The transformations brought about by tourism, conservation and industrial expansion have various impacts on how fisherfolk maintain their livelihoods. The next section discusses the strategies that they employ to make ends meet amid changes in Mabini’s coastal environment.

Livelihoods at the Interface of Tourism, Conservation and Industries

Perceived to be declining in importance, the municipal fisheries of Mabini still employ a significant number of marine-dependent families. Despite the rise of other opportunities, fishing remains a vital source of livelihood for at least 10% of the municipal population (CRMB 2005; Hamoy-Obusan 2004; Oracion 2003). In the two fishing villages of San Teodoro and Calamias, this figure rises to 30% (unpublished MAO statistics). Half of respondents on both barangays own their fishing boats, which are usually small motorized bancas. The other half is engaged in a share-tenancy system wherein fishers get 60% of the earnings, while the boat owner receives the remainder. Those who engage in such a system tend to be less well-off, while wealthier fishers, usually those receiving remittance money, tend to invest in more than one boat.

Fishing patterns in both barangays follow the onset of monsoon, with the period of rough waters signaling the off-peak season. This occurs during the southwest monsoon on the Balayan Bay side (July-September) and northeast monsoon on the Batangas Bay side (December-February). In San Teodoro, hook and line, and nets are the primary gears used to catch both pelagic and reef fishes including round scad, skipjack tuna, frigate tuna, Spanish mackerel, caesio, grouper, threadfin bream, squid and anchovies. In Calamias, fishers use a variety of nets to catch mainly pelagic fish particularly Indian sardines, and to a lesser extent round scad, Indo-Pacific mackerel and skipjack tuna. Fishing practices and use of gears depend on the appearance of target species, which varies seasonally and annually. Fishing trips are usually done during early mornings and late afternoons to early evenings, but can also depend on fishing gear, boat type, target species and season. Fishing grounds are usually within municipal waters and fisherfolk follow wherever fish appears.

The average volume of catch mentioned by respondents is highly variable, ranging from zero on bad days, to averages of 2-3 kg, to records of 60 kg in one trip. In San Teodoro, when volume of catch is greater than 20 kg, fish is landed in the municipal market through the village casas or transporters. If catch is less than 10 kg, fish is usually sold within the barangay, and a catch of less than 3 kg is usually reserved for household consumption. In Calamias, the continued dominance of Indian sardines, a small, low-value fish, at the expense of higher-value pelagic species have led to a different commodity chain. Fresh Indian sardine is considered unpalatable and sells poorly within the municipal market. However, when transported and processed as smoked fish in Dalahican Port, 3-4 hours away, the fish’s value increases by as much as ten-fold.

Researchers and fisherfolk respondents point to the overextraction of fish resources, rampant destructive fishing and intrusion of commercial fishing as the primary reasons for declining fish productivity particularly in the 1990s (Hamoy-Obusan 2004; CRMB 2005). The catch per unit effort data indicate the problems of fisherfolk who fish longer hours and consume greater capital, yet catch remains low.

Saguin, Kristian
PhD Candidate, Texas A&M University
spondents claim fishing using sodium cyanide and dynamite were once extensive and caused considerable damage to coral cover and fish catch. The 1998 Fisheries Code effectively banned commercial fishing in Mabini’s municipal waters, although occasional reports of intrusion still surface. These larger and more efficient fishing vessels that use bag nets, trawl nets and seine nets originate from neighboring coastal towns and compete with smaller fishers.

During those days, we could not catch round scad because of the entry of bag net vessels...and before there were many trawling vessels here, but they were eventually prohibited, that’s why sometimes we could catch fish for subsistence, and we earn something, so it is not too difficult. (Joey, San Teodoro fisher)

We suffered because of them. We were lucky if we caught one kilo. They take everything, nothing remains for us....They are big and they use machines to drag the nets....[When they disappeared,] fish became plenty again...In our fishing, we depend on where we set our nets, we cannot see the fish below. Those vessels, meanwhile, seek stocks before they throw the nets since they have radar. They can see the fish undersea so they can take everything. (Noel, Calamias fisher)

National policies and local ordinances, and strengthened marine law enforcement through the Bantay Dagat limited commercial fishing in municipal waters, which resulted in notable improvements in fish yields according to fisherfolk and NGO workers. In spite of this, fishing livelihoods continue to be characterized by high levels of unpredictability and seasonality. This variability has been intensified by declining fish catch over recent years. Increasing costs of fuel inputs further aggravate the situation leading to days when fishing becomes unprofitable. Respondents attest to the livelihood consequences of trips made of long hours yielding zero catch.

Sometimes when we go out to sea, we spend 200 pesos for gasoline. If we catch nothing, then we lose money. The bait that we buy, anchovies, sometimes costs 145 per kilo...There are times, like earlier today, we went out fishing at 6 AM and we returned at 1 PM...we only caught 2 kilos. (Allan, San Teodoro fisher)

With the damage to yields caused by the recurring intrusion of commercial fishing, Calamias fisherfolk had to rely on the Indian sardines, the species speculated to have a higher tolerance for the degraded water conditions of Batangas Bay. The abundance of Indian sardines, despite its obvious positive financial implications to fishers, poses constraints to fishing livelihoods. Its incredibly low value - the lowest of any major fish caught in Batangas - and the lack of local demand both dilute the benefits derived from its massive catch volume. Fishers take advantage of the greater demand in the Dalahican port and transport the fish to where it fetches a higher value. The dominance of Indian sardines (rarely consumed for daily consumption) and the reduced catch of preferred target species (fish for household consumption) decrease the subsistence role of fishery in providing food for fisherfolk households. Residents of Calamias, a fishing village, are engaged in the ironic situation of having to buy fish in other markets because of a lack of diversity in their own fish catch.

**Tourism, Conservation and Livelihoods in San Teodoro**

A lot of the people who were fishing using hook and line in front [of my resort] while we were constructing, I swam out and hired them for construction. Some of them retired even after just five years....Anybody I saw fishing here, I would hire ....The pay is more guaranteed. They don’t have to risk spending the whole day catching nothing. They can go home in the afternoon and have P250. (James, dive resort owner)
The quote above shows how construction work has become one of the several employment opportunities available to fisherfolk and residents of San Teodoro with the boom in tourism. Several fishing boats have been converted to dive boats, and some villagers are now employed in the resorts as staff members. In spite of this, fishing continues to be a major source of livelihood even to those who work in the tourism sector. As many respondents have noted, they will continue to fish as long as there is fish left to catch.

In light of the conservation efforts partly aimed at restoring stocks and increasing catch, majority of the respondents (60%) still perceive income derived from fishing is far from enough to support household expenditures. Despite improvements in the coral conditions and fish abundance within the sanctuaries, expected spillover effects on target species yield remain undocumented (Christie et al. 2003). It is thus often necessary for fishers to take on other jobs or to rely on household contributions to augment the seasonal and variable incomes from fishing. In San Teodoro, all but one respondent reported other sources of livelihood, most of which were either in the tourism or construction sectors.

There are months when we really catch nothing. If you do not seek employment in construction and you just rely on the sea, nothing will happen ... Fishing is fit only for a bachelor’s life. It is not possible for fishing alone to support a wife and three children. (Rodel, San Teodoro fisher)

Some fisherfolk engage in operating dive boats in the resorts during weekends, especially on peak months. Boating presents several advantages over fishing. When divers are present, it provides a more secure source of income, unlike fishing wherein the risk of returning home with no catch is always high. Boating is also less strenuous and involves less effort compared with the long hours spent hauling nets or setting up handlines.

Being a boatman is better ... because it is easier on the body, it is easier to earn money, and you are assured of an income. (Jason, San Teodoro fisher)

However, like fishing, boating is seasonal. It depends largely on the arrival of tourists, which usually peaks during a few months. When employed in a resort, they also have to wait their turns, and the earnings must be shared with the resort if the latter owns the diving boats. Total incomes may not necessarily prove to be higher than fishing, especially for those who do not have their own dive boats. Thus, for economic and cultural reasons, many boatmen have not abandoned fishing. Since they usually fish in early mornings and late afternoons, it is common for them to combine both boating and fishing within the same day.

Even people who work for me, when they go home at 4, they still get on their boats, just be in the water, not necessary catch anything, just be on the water, [out of habit]. (James, dive resort owner)

The development of tourism on the Balayan Bay side brought a boom in the construction industry in Mabini and several fisherfolk occasionally work when labor is needed. Construction work outside of Mabini, particularly in Manila, has always been an option. A fourth of respondents claimed to have worked part time as carpenters.

Sometimes I enter [construction work] whenever there is nothing, when both boating and fishing are slow. It is harder work. (Jason, San Teodoro fisher)

Support from other household members who are also employed in the tourism sector is significant in making ends meet. Four daughters of Santiago, for instance, work as staff on a nearby resort to help augment income from his fishing operations. Melchor’s sons help him operate his dive boats, which were funded through the remittance of his wife who works as a domestic helper in Italy.
Ah, my children too, that is our livelihood here now, to ferry tourists. If for two days we can earn P1000, then we feel better off ... we carry tourists here in this resort, if there are too many visitors there, my nephew calls me. (Melchor, San Teodoro fisher)

Gina and Tomas augment their earnings and cushion the impacts of the variability of incomes generated from full-time fishing through the small “junkshop” business they started in 2004. Every two months, they would hire a truck to bring used items such as glass bottles, plastic bottles and scrap metals, and sell them in Anilao, where they could earn as much as a P2,000 profit from one delivery trip. While Tomas engages in fishing in the mornings and evenings, Gina, on top of her household work, spends her day buying and collecting bottles within San Teodoro and nearby barangays before washing them with soapy water at home.

After I have cleaned the house, I go around San Teodoro and buy bottles, plastics. If I have enough, we clean them ... When we have enough bottles, we clean them to increase their prices to earn more profit. (Gina, San Teodoro fisher wife)

The junkshop business is one of the ways in which the household deals with the changes in fishing incomes. What was once a profitable source of livelihood which had supported them and their children’s education had become unreliable.

[Before], the income we earned from fishing was very good. During those months, we would earn P1,000 every time [my husband] goes off to fish. But now, there really is nothing. We bear with the little earnings. It is hard now. (Gina, San Teodoro fisher wife)

Tourism likewise brought direct impacts on their livelihood options. Aside from one of their sons occasionally being employed as a boatman in a nearby dive resort, she also buys used items from the kitchens of the nearby resorts. To further augment incomes, she also receives occasional laundry jobs from a resort. Gina and Tomas’ story provides a profile of the livelihood diversification that is employed by fisherfolk households to make ends meet with the changing coastal conditions and emerging opportunities.

**Industries, Shipping Vessels and Livelihoods in Calamias**

In 1965, fish was really abundant. As the number of piers increased, our shoreline was reclaimed with materials from the hills. Of course, we could not catch reef fishes near the shore anymore, so we depend only on Indian sardines, which are farther out at sea. There are no other fishes. With Indian sardines, it is difficult. It is very cheap and you are not always assured of a catch. In those days, you just set out to sea, and you can sell fish. Now, if you want to consume other fishes, you have to buy in the market or else you’ll get tired of eating Indian sardines. You can perhaps work in the industries or work abroad, those are the options. But if you depend solely on fishing, you just stay here, it is enough only for own consumption - to buy fish or rice. You cannot even plant vegetables here since that hill over there has been bought by the industries, although they have yet to construct. (Nestor, Calamias fisher)

Nestor’s quote summarizes the dynamics of dependence on fishing in an industrializing environment. Fishing livelihoods are fickle and, together with the damage caused by entry of commercial fishing vessels and the increased threats of contamination from industries and passing vessels, call for more diversified and adequate sources of livelihood support.

Industrial development further intensifies the increasingly common situations wherein fisherfolk experience periods of zero yields. Oil slicks are particularly viewed as a major culprit
in the disappearance of fish. Basilio observes, “That is one reason for the decline in our catch, when those oil slicks from the other side of the bay are washed ashore.” Conflicts with passing vessels also have consequences on livelihoods. Destruction of equipment such as nets indicates great financial loss for fisherfolk, especially since compensation is not always certain.

As with San Teodoro, Calamias fisherfolk find it necessary to employ other means of making a living. Industrial work serves as the most immediately apparent option given the nearby demand for labor. Fishers sometimes combine industrial work with fishing. Since fishing is done in the late afternoons or early mornings, hours in between can be spent in casual or regular employment in the industries. Almost all of the fisherfolk respondents who are engaged in shared tenancy also work in the industrial establishments primarily because they earn much less.

After working in the grain terminal, I fish. I work in the grain terminal during most of the day then go out to sea in the afternoon. That is the situation when you do not own your boat, you combine two occupations. When you have your own, you can send your children to school. (Ricardo, Calamias fisher)

There is however a general trend of fisherfolk aversion toward work in nearby industrial firms. Respondents who have been employed in the grain terminal complain of extremely heavy labor, low wages and delays in distributing pay. Jeric, a young fisherfolk claims, “I have tried it once, but I could not stand it, I never did it again.” Heavy loads have also discouraged older and less able fishers from engaging in industrial employment. Labor opportunities in the grain terminal as stevedores are also seasonal and highly dependent on the arrival of vessels, with an average of less than 15 days of work per month. Allocation of labor is also an issue, given that there is competition with new migrants who are perceived to be more willing and less complaining workers. In this case, fishers reporting that work is not as physically demanding, and payment is immediate, despite it being unpredictable.

Other livelihood support options in the absence of agricultural or livestock activities are usually limited to construction, driving, and local government work. Household contributions also ensure support. It is not uncommon to find fisherfolk wives who work in fishing-related occupation such as delivery and retail. Calamias fisherfolk, particularly the older ones, depend on their children both in the provision of financial support and in assistance in fishing operations. Respondents attest to the importance of relatives abroad during times of financial difficulties.

In both San Teodoro and Calamias, regular remittances from family members working overseas balance out the fluctuating incomes from fishing. Remittances also present opportunities to invest in fishing or dive boats, which can be lent to tenants. The housing boom associated with remittance money also created employment opportunities in the construction sector for many fisherfolk. A number of fishers in both barangays had also engaged in overseas work even as some fishers’ efforts to apply were unsuccessful. Berto, a fisher, returned from working abroad and invested part of his earnings in fishing operations.

Before, I used to fish. I had three boats. Aside from one that I use, I also lent the other two that I own. But those to whom I contracted the use of my boats went overseas - to Saudi, Italy, Hong Kong, Malaysia...because they earn more there. Fishing does not guarantee you enough income to buy, say, a television or an owner jeep. You won’t be able to buy if you don’t go abroad. Like these tricycles here, you cannot buy them from fishing alone. So the ones who stay here and fish are those that were not lucky enough to go overseas. Sometimes, there are those who retire from abroad and then return to fishing. (Berto, Calamias fisher and barangay official)
Conclusion

This paper attempted to link local livelihoods with extra-local decisions and actors. It found that through a pattern of cross-scalar connections, higher-level plans, policies and programs are experienced by fisherfolk through socioecological changes. Tourism development in Mabini eventually became anchored on the needs of coastal management, and the resulting mechanisms for coastal conservation brought improved conditions to the marine resources even as it restricted access by fisherfolk. Industrialization in Batangas Bay, fueled by an ambitious regional development plan, brought not only economic and financial rewards to the area at various scales, but also marine environment deterioration resulting from industrial pollution, vessel traffic and port development that are most felt by fisherfolk at the local scale.

Figure 4 provides a graphical summary of the conflicts and collaborations that exist among different actors and sectors involved in the use of the coastal environment of Mabini. Both tourism-driven conservation and port-oriented industrialization continue to be primary components of the state’s sometimes conflicting goals of economic growth and ecological sustainability. Decision-makers in the government expect traditional forms of resource use in the area, such as fishing, to eventually take a secondary backseat role.

Fisherfolk, like most other rural producers, see the necessity of change and adaptations in livelihoods to ensure survival (Ellis 2001). Fish-erfolk responses to these development activities and their attendant environmental modifications include employing a host of strategies to ensure survival amid high uncertainty and variability, reconfiguring and mobilizing some of their assets with the accompanied loss of other assets (Bebbington 1999). Fishing incomes are supplemented by other occupations, household support, and extra-local flows. The emergence of tourism and industries extended the available options for diversification. Fisherfolk negotiate with these changes using an assortment of strategies that incorporate the opportunities created by the development activities to take advantage of the benefits and lessen the costs produced by their continued expansion.
Figure 6. Actor interactions in coastal use and management in Mabini.
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