



Journal of Marine and Island Cultures

www.sciencedirect.com



Ecosystem services of coastal and fisheries resources: Perspectives of high school students in Municipality of Panukulan, Polillo Island, Quezon, Philippines

Arthur J. Lagbas^{a,b,c,*}, Consuelo Dl. Habito^{a,1}

^a Faculty of Management and Development Studies, University of the Philippines Open University, Los Baños, Laguna, Philippines

^b Integrated Research and Training Center, Technological University of the Philippines, Ayala Boulevard corner San Marcelino Street, Manila, Philippines

^c College of Arts, Sciences and Technology, De La Salle Araneta University, Malabon City, Philippines

Received 23 April 2016; accepted 20 September 2016

KEYWORDS

Awareness;
Attitude;
Coastal ecosystem;
Fisheries resources;
Knowledge;
Ecosystem services;
Polillo Island;
Panukulan

Abstract The study was conducted among three hundred thirty-one (331) high school students (representing 83.59% of the total registered high school students) of Libo National High School in Barangay Libo, Municipality of Panukulan, Polillo Island, Quezon, Philippines, to assess their perception and understanding on the ecosystem functions and services, causes of degradation and destruction, and socio-economic importance of mangroves, seagrasses and coral reefs. Their perception, level of concern, and attitude on local environmental condition, socio-economic, and environmental issues were also determined. Results showed that the students were most knowledgeable on habitat, nursery and breeding ground function of seagrasses and coral reefs, and coastal protection function of mangroves. Majority of the students identified illegal fishing practices, uncontrolled wood harvesting and reclamation as major causes of degradation of coral reefs, mangroves and seagrasses, respectively. However, the students seem to be not familiar or less knowledgeable on the impact of climate change and upland anthropogenic activities to coastal ecosystems. This showed that the students were not able to reflect on the interconnectedness of upland and coastal ecosystems. The study also showed that the students were highly concerned about the quality of water in their traditional drinking wells and springs, degradation of mangroves due to uncontrolled wood cutting, and destruction of coral reef cover due to dynamite fishing. Furthermore, this study showed that the students have a positive environmental attitude, as well as

* Corresponding author at: Integrated Research and Training Center, Technological University of the Philippines, Ayala Boulevard corner San Marcelino Street, Manila 1000, Philippines. College of Arts, Science and Technology, De La Salle Araneta University, Malabon City, Philippines. E-mail addresses: ajlagbas@up.edu.ph, arthur09lagbas@gmail.com (A.J. Lagbas).

¹ Co-author.

Peer review under responsibility of Mokpo National University.

<http://dx.doi.org/10.1016/j.imic.2016.09.005>

2212-6821 © 2016 Institution for Marine and Island Cultures, Mokpo National University. Publishing services by Elsevier B.V.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article in press as: Lagbas, A.J., Dl. Habito, C. Ecosystem services of coastal and fisheries resources: Perspectives of high school students in Municipality of Panukulan, Polillo Island, Quezon, Philippines. Journal of Marine and Island Cultures (2016), <http://dx.doi.org/10.1016/j.imic.2016.09.005>

awareness on social and environmental responsibility, and that they will likely participate in coastal resources management activities.

© 2016 Institution for Marine and Island Cultures, Mokpo National University. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

The ecosystem goods and services of upland forest and marine resources including mangroves, seagrasses and coral reefs are critically important to the livelihood of many isolated island communities, most especially the fishing communities living close to these resources. The coastal environment where mangroves, seagrasses and coral reefs are located is a highly productive and biologically complex ecosystem (Cabili and Cuevas, 2016; Sinfuego and Buot, 2014; Cabili and Cuevas, 2011, 2010). As a productive ecosystem, it sustains many biological communities including many coastal human communities by providing a range of services namely provisioning services (food, fisheries catch, water, timber and fiber), regulating services (regulation of climate, protection from storm, shoreline protection, control of diseases, wastes processing, water and air quality maintenance), cultural services (recreational, aesthetic, and spiritual) and supporting services (soil formation, photosynthesis, nutrient cycling) (UNEP, 2006; UNEP-WCMC, 2006). These benefits that people derive from coastal and marine ecosystems are recognized by the 2005 Millennium Ecosystem Assessment (MEA) as ecosystem goods and services (UNEP, 2006).

Despite their important contributions to human welfare, the coastal ecosystems have suffered from irreversible damage at an alarming rate mainly due to unsustainable anthropogenic activities and previous policies on economic development priorities. The important drivers of coastal ecosystem degradation and loss according to MEA are population growth, land use change and habitat loss, overfishing and destructive fishing methods, illegal fishing, invasive species, climate change, subsidies, eutrophication, pollution, technology change, globalization, increased demand for food, and a shift in food preferences.

On the other hand, while economic development is perceived as beneficial to human well-being, harmonizing economic activities while sustaining ecosystem integrity remains a challenge. Past government economic policy instruments and management interventions failed to balance conservation and development goals but instead created justifications for maximizing economic gains and underestimated environmental preservation. For instance, the Fisheries Act 4003 granted municipal government the authority to grant exclusive privilege of erecting fish corrals, constructing and operating fishponds or oyster culture beds, taking or catching *bangus* fry or fry of other species. Another law which served as the backbone of Philippine fisheries legislation (up to early 1998) is the Fisheries Decree of 1975 which promoted maximum economic utilization of fishery production and strengthened fish products exportation as a national development strategy (Batongbacal, 2002). These fisheries legislation created favorable economic policies to commercial fishing operators and granted subsidies, incentives, tax exemptions and low tariff rates that resulted in more intense fishing pressure using

production efficient fishing technologies, overexploitation of nearshore and offshore fisheries resources. All these resulted in the reduction of population of juvenile fish stock and conversion of coastal habitats into aquaculture and fish ponds. The depletion of our fishery resources is exacerbated by inefficient and market driven development strategy and poor post-harvest facilities contributing to intensified poverty among municipal fishermen, social conflict, inequitable distribution of the benefits and further degradation of unexploited fisheries resources (Aliño et al., 2004).

Over the past decades, the upland forest, wetlands, and fisheries resources of Polillo Island have been altered due to population growth, unsustainable resource utilization, and inequitable and inefficient economic policies. For instance, during the late 1960s to the late 1970s, logging companies were allowed to conduct logging operations to harvest hardwood trees in the lowland forests of Polillo Island (Polillo Islands Biodiversity Conservation Foundation Inc., 2012, 2010). In addition, population congestion consequently led to competition for scarce resources such as space for human settlement, agricultural production, and productive fishing grounds. Moreover, because of high resource dependence, seasonality of traditional occupation, and absence of alternative livelihood opportunities, local people are left with no choice but to make fishing and resource harvesting as profitable as possible by using cheap but destructive technology, more frequent resource harvesting, and non-compliance to environmental laws. These unsustainable activities have negative impact to the biodiversity and environmental quality of Polillo Island.

Assessing the resource users' level of ecological knowledge, perception on local environmental condition, concern on local environmental issues, and attitude on socio-economic and environmental issues living adjacent to upland forest, coastal and fisheries resources is imperative because they can act as local environmental stewards or efficient agents of environmental degradation. Moreover, the ecological knowledge and attitudinal characteristics of local resource users, most especially the younger generation, can provide useful information that can be integrated in the current environmental management strategies and in the development of future environmental management strategies. The younger generation (in this study, they were the students in the high school level) who will become adults of the future must be informed, educated and recruited as environmental stewards to instill appreciation of their coastal and marine environment, secure the continuous flow of benefits of the ecosystem goods and services, and to ensure the welfare of future generations. In this study, we hypothesized that the knowledge and familiarity of students to their coastal and fisheries resources were due to their direct experiences and activities such as swimming, boating and gathering of marine organisms in the coastal zone. Furthermore, their guardians and parents, who are mostly fishers, are important source of traditional ecological knowledge.

Download English Version:

<https://daneshyari.com/en/article/7535128>

Download Persian Version:

<https://daneshyari.com/article/7535128>

[Daneshyari.com](https://daneshyari.com)