

## **IMPACT OF THE CITES LISTING OF SEA HORSES ON THE STATUS OF THE SPECIES AND ON HUMAN WELL-BEING IN THE PHILIPPINES**

**A case study**



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*Cover photograph:* seahorses for sale in Cebu, Philippines. Courtesy of Malcolm C. Hiponia

## **IMPACT OF THE CITES LISTING OF SEA HORSES ON THE STATUS OF THE SPECIES AND ON HUMAN WELL-BEING IN THE PHILIPPINES**

### **A case study**

by

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## PREPARATION OF THIS DOCUMENT

This circular was prepared from outcomes of the “Case-study of the Impacts of the CITES Listing of Sea Horses on the Status of the Species and the Effects on Human Well-being in the Philippines” carried out in 2007. The main goal of the case study was to investigate the conservation, social and economic impacts of listing seahorses. The research was conducted by the School of Marine Affairs of the University of Washington, Seattle, the United States of America, in collaboration with Silliman University, Dumaguete City, the Philippines. The case study and the preparation of this paper were funded by the Japanese Trust Fund Project GCP/INT/987/JPN on “CITES and Commercially-exploited Aquatic Species, Including the Evaluation of Listing Proposals” project as part of activities aimed at improving capacity in member countries and regions in the implementation of CITES regulations for sustainable use of commercially exploited aquatic species that have been listed on CITES Appendices.

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### ABSTRACT

This study identifies the legal and socio-economic implications of the recent CITES Appendix II listing of seahorses in the Philippine context. Philippine national law bans the gathering and trade of Appendix II-listed species a more stringent but legitimate policy option within the CITES agreement. However, while technically illegal, seahorse gathering continues and may be increasing. This case study involved site visits, interviews, participant observation, and text analysis leading to a scientific evaluation. It demonstrates that unintended consequences resulted from the listing that should be rectified in the Philippine context and avoided in other contexts. While the Philippine case represents an example of what to avoid, the authors recognize that the listing of seahorses under CITES Appendix II may have a positive impact on generating monitoring and management mechanisms for international trade. This analysis provides important findings that can be used to improve the CITES and take steps to improve CITES implementation and seahorse conservation in and beyond the Philippines. The CITES and its partner institutions should invest more in the development of comprehensive and comparative studies that inform guidelines and improved practice.

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## ABBREVIATIONS AND ACRONYMS

<b>BFAR</b>	Philippine Bureau of Fisheries and Aquatic Resources
<b>CITES</b>	Convention on International Trade in Endangered Species of Wild Fauna and Flora
<b>CoP</b>	Conference of the Parties
<b>DA-</b>	Department of Agriculture - Philippine Bureau of Fisheries and Aquatic Resources
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>MPA</b>	Marine Protected Area
<b>NGO</b>	Non Governmental Organization
<b>PSF</b>	Project Seahorse Foundation
<b>RA</b>	Republic Act
<b>RPFAO</b>	Republic of the Philippines Fisheries Administrative Order
<b>TRAFFIC</b>	Wildlife Trade Monitoring Network

## EXECUTIVE SUMMARY

This study identifies the legal and socio-economic implications of the recent Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix II listing of seahorses (*Hippocampus* spp.) in the Philippine context. The case study, based on a literature and legal review and on interview research at the national and local levels, demonstrates that unintended consequences resulted from the listing that should be rectified in the Philippine context and avoided in other contexts. Philippine national law bans the gathering and trade of Appendix II-listed species, a more stringent but legitimate policy option within the CITES agreement. While technically illegal, seahorse gathering continues and may be increasing. Local officials are not interested in enforcing an unpopular ban, nor do they feel prepared to do so. Because local regulations cannot contradict national law, recent local ordinances intended to improve the sustainability of the seahorse fishery are unenforceable.

The Government of the Philippines is attempting to develop a feasible and comprehensive policy for CITES-listed species given its limited resources, the growing number of listed species and other policy challenges. Attempts to reform Philippine national fishery law have not been successful to date and divergent opinions among policy-makers and environmental groups may not allow for a simple legal solution. It is unclear that reforming the Philippine Fisheries Code for seahorses or to allow for the capture and trade of wild-caught Appendix II-listed marine species is the undoubtedly preferred policy solution. The majority of local policy-makers and seahorse gatherers oppose a ban on seahorse gathering. National policy-makers have mixed opinions, and those in favour of a ban cite the difficulty of implementing non-detrimental studies, monitoring and management by institutions that are understaffed and insufficiently funded.

Direct measurement of the impact of the de facto ban on seahorse populations and incomes is not possible because long-term data sets are not available and collecting catch or trade data on an illegal fishery is infeasible within the parameters of this study. It appears that significant negative impacts on seahorse-collector income are probably not very serious as the trade continues, and seahorse gatherers are involved in various economic activities. Nonetheless, few economic opportunities exist for these impoverished communities. Seahorse gatherers report a decline in seahorse abundance and attribute this primarily to an increase in the number of seahorse gatherers.

Perhaps one of the most problematic outcomes of this situation is the potential for such dynamics to undermine important and successful conservation efforts and erode non-governmental organization (NGO) and government-community shared governance. The process through which the listing occurred could have been improved. While some consultative workshops were held, the majority of respondents were ignorant about the CITES protocol and how it interacted with national and local laws. The Government of the Philippines seems to have been ambivalent about the listing. While participatory planning processes are complex and potentially time-consuming, resolving this suite of outcomes is also quite difficult.

The unique legal, social and ecological conditions in the Philippines and their interaction with the CITES policy regime resulted in these outcomes. While the CITES listing of seahorses may have had distinct, and more positive, outcomes in other countries, the examination of the so-called “negative case” is a valid exercise if the goal is to improve the CITES and fisheries management. The literature review reveals that the CITES has had unintended consequences before. Unfortunately, rarely are these local dynamics carefully analysed. Therefore, the CITES and its partner institutions should invest in the development of comprehensive and comparative studies that inform guidelines and improved practice. This case study suggests that the CITES and its partners should invest to improve capacity, the listing process, and response to inevitable local difficulties. Clear guidelines – based on empirical, multidisciplinary studies – would be helpful if the CITES is to reach its full potential and effectively consider the social, legal and ecological dimensions of species listings.

## 1. INTRODUCTION

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international accord among 175 countries with the purpose of ensuring that international trade in specimens of wild animals and plants does not threaten their survival. The species covered by the CITES are listed in three Appendices, according to the degree of protection they need. Appendix I includes species that are most endangered, and trade in these species is permitted only in exceptional circumstances. Appendix II includes species not currently endangered but at risk of becoming so if unregulated trade is not abated. Appendix III contains species that are subject to control by at least one country to prevent and restrict their exploitation.

In 2002, the CITES member countries resolved to list 32 species of seahorses on Appendix II of the Convention. The CITES listing was deferred to come into effect 18 months thereafter, or in May 2004. Seahorses were among the first marine fish species of commercial importance to be listed on the CITES. To quote the listing proposal, the intentions of listing seahorses in Appendix II are both admirable and optimistic:

### “3.4 Actual or potential trade impacts

A CITES Appendix-II listing for seahorses will contribute to a more accurate understanding of the global trade in seahorses due to permitting and reporting requirements. In addition, a CITES listing will improve the ability to obtain global trade data on a species level, which is critical for understanding the impact of fisheries on local and regional seahorse populations. The listing will clarify and should improve fishery management mechanisms undertaken by exporting countries, and could lead to potential revision of appropriate fishery legislation. Since source countries would have to justify no detriment findings and show that their export volumes are sustainable, an Appendix-II listing should result in more thorough field monitoring of the resource, collection of fishery-independent and fishery dependent data, and development of conservation programs at local and national levels. This would theoretically include bycatch fishery management to protect seahorses as non-targeted species. Given that many seahorse fisheries appear to be unsustainable (see Section 2.4), such improved management measures may result in reduced seahorse trade volumes in the near term.” (CITES, 2003).

Key international non-governmental organizations (NGOs), such as TRAFFIC (the wildlife trade monitoring network) and Project Seahorse, were supportive and, in the case of Project Seahorse, facilitated the listing by hosting various workshops and providing the scientific basis and policy recommendations.

“Recommendations formulated by participants at the Cebu workshop on implementation of an Appendix II-listing should be supported, particularly the recommended 18-month delay in implementation in accordance with the reasoning put forward by a number of participating range States. Furthermore, this delay would also enable consideration and implementation of other recommendations proposed by the participants of the workshop, including consultation amongst the 10 leading exporting Parties and FAO regarding, *inter alia*, fisheries management and bycatch issues relating to international trade in Hippocampus.

Recommendation: ACCEPT” (TRAFFIC, 2002).

“The CITES listing is the result of 10 years of work by Project Seahorse and Dr Amanda Vincent, the group’s co-founder and director ... Project Seahorse agreed that all seahorse species should be listed on CITES Appendix II at CoP12. This contrasted with our position in 2000 that an Appendix II listing was inappropriate for seahorses, because potential conservation costs then exceeded potential benefits. The evolution

of our position arises from enhanced knowledge about the species and management options for their fisheries, considerable geographic and quantitative expansion of the seahorse trade, improved dialogue and participatory planning among diverse stakeholder groups, and a recognition that government support is needed to help monitor and manage trade ...” (Project Seahorse, available at: <http://seahorse.fisheries.ubc.ca/>).

While the above are admirable goals and represent genuine commitment to a sustainable trade in seahorses, they did not predict the outcomes that are represented in this case study. Consideration of institutional limitations and plans to increasing human and institutional capacity are key considerations that require additional attention if CITES listings are to reach their stated goals of a sustainable trade. While the listing is primarily based on biological and seahorse population considerations (CITES, 2003), socio-economic, legal and institutional considerations are notably absent – terms such as “socio-economic impact” or “institutional capacity” are lacking from listing and advocacy documents.

### **1.1. Study objectives and rationale**

This study uses the Philippines as a case study to investigate the conservation, social and economic impacts of the listing of seahorses. Case study research has a long-standing position with the social sciences as a research methodology intended to provide detailed portrayals of localized phenomena (Patton, 2001; Yin, 2002). This case study involved site visits, interviews, participant observation, and text analysis leading to a scientific evaluation of whether the CITES listing: (i) has had or is likely to have a significant effect on the fishing mortality and/or status of seahorses; (ii) has had significant social and economic impacts on the local communities involved in capture and marketing of the species; and (iii) has had a significant impact on conservation strategies that were initiated prior to the listing.

The project has developed the following outputs:

- creation of literature database regarding the CITES, marine listings, and seahorse management;
- estimation of the impact of the CITES listing on fishing mortality and/or an assessment as to whether it is likely to in the future;
- analysis of how the CITES listing has affected collecting and marketing communities;
- analysis of how the CITES listing has affected conservation strategies;
- recommendations for improvements in implementation.

The unavailability of primary biological data limits the ability to estimate the impact of CITES listing on fishing mortality, although interviews strongly suggest likely outcomes.

The Philippines represents an important and appropriate case study site as it was officially, and remains unofficially, one of the most important seahorse source countries (CITES, 2003; Vincent, Marsden and Sumaila, 2005). Philippine seahorse populations are among the most studied in the world, perhaps owing to the historic abundance and diversity of these organisms in the country as well as their precipitous decline in recent decades. The original proposal to add seahorses to Appendix II repeatedly cites seahorse biological research and conservation efforts in the Philippines. A limited number of studies have explored seahorse gatherers’ preferences regarding conservation efforts (Meeuwig *et al.*, 2003). This is the first empirical study conducted on how CITES listings are affecting seahorse and human populations and important conservation efforts post-listing. The case study complements a recent review paper on globalization that “created hypotheses on how globalization might influence seahorse conservation and management”. It also responds to these authors’ invitation that “it would now be appropriate to test these predictions by examining the dynamics of specific seahorse fisheries and trades at a local scale, and how they change over time ...” (Vincent, Marsden and Sumaila, 2005; Reeve, 2006; Roe *et al.*, 2002 and Willock, 2002). These authors all identify the need for empirical work on the local and socio-economic impacts of the CITES.

In addition to improving the on-the-ground practice of resource management and international regime development, this issue and study provide an opportunity to examine broader topics such as:

- the role of international environmental regimes and organizations in developing countries;
- the articulation of such regimes and organizations with national policies and resource user communities;
- the implications of trade sanctions versus or in concert with incentive-based initiatives;
- the role and influence of science and scientists in priority setting.

A long-standing debate continues between proponent and critics of the ability the CITES to support sustainable resource management. Most of the discussion has centred on the implications of Appendix I listings, because these species are at great risk of extinction and because of the nature of outright trade bans. While not the intention, Appendix II listings may still disproportionately penalize source or range states (especially those in the global South) and encourage black-market trading. Swanson (Swanson, Bolton and Manning, 1993), an economist, criticizes the CITES for what he considers to be a system of perverse incentives that penalizes states with valuable resources rather than providing positive incentives to those developing sustainable extraction and trade mechanisms. Matthews (1996) is concerned that the choice of species to be listed is arbitrary, overly politicized, and not grounded in sufficient consideration and prioritization of the ecological role of species. Cooney and Jepson (2006) review the controversies associated with listings and the effects they may have on local conservation efforts and institutions. Unintended consequences, such as the loss of trust between institutions and resource users, are one risk of using broad-scale policy mechanisms.

Issues of economic dislocation, equity, and decision-making transparency are at the forefront of people's minds, especially the most marginalized. Proponents of the CITES state that, overall, it has been an effective mechanism that has improved the monitoring and evaluation of international trade in plants and animals, exposed unsustainable practices, and responded to the pernicious aspects of globalization (Ginsburg, 2002). If carefully implemented with appropriate support mechanisms, the CITES represents an important policy response to rapid globalization of trade. In short, as Ginsburg notes (2002), context matters, and the opinions over whether to list species and the debates between what he characterizes as pro-trade or pro-ban are currently unresolved.

This study provides a valuable case study of the listing of seahorses under the CITES. The intent is to provide a clear and objective review of this event and its ongoing impacts by a team of Philippine specialists not directly involved in seahorse conservation. The ultimate goal is to refine the CITES and provide some policy guidance to resolve some of the challenges identified through this study – an objective welcomed by the Government of the Philippines.

## 1.2. Background information

### 1.2.1. *Seahorse trade*

Some 24 million seahorses were traded among at least 77 countries in 2004 (Project Seahorse, undated); with Thailand, India, Mexico, the Philippines, and Viet Nam as the leading exporters of dried seahorses, and Indonesia, the Philippines, and Brazil as the leading exporters of live specimens (Vincent, Marsden and Sumaila, 2005). China, China, Hong Kong SAR, Taiwan Province of China, and Singapore are the leading importers of dried seahorses, most commonly used for traditional medicines (Vincent, Marsden and Sumaila, 2005). The international trade in seahorses is on the rise, and collecting is spreading to new areas as original sources are depleted (Baum and Vincent, 2005; McPherson and Vincent, 2004). Dried seahorses are sold for up to US\$1 200 per kilogram in retail outlets in China and in China, Hong Kong SAR (Vincent, Marsden and Sumaila, 2005).

An expert from the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) estimates that a significant number of Philippine fishers are engaged in seahorse gathering: "Fishers who are directly dependent on seahorse gathering are estimated to be around 1,500 individuals while those who catch

seahorses incidentally number around 2,000 ..." (Barut, 2005). In the Danajon Bank area of Bohol, an important gathering area and the focus of this study, Meeuwig *et al.* (2003) identified at least 200 fishers from 19 villages as seahorse fishers. They reported that some fishers generate up to 40 percent of their income from seahorses. Results presented below augment these findings based on interview data.

Limited information on the Philippine seahorse trade is available. Barut (2005) reports that the price of dried seahorses in the Philippines varies by size, with the average price at PHP8 per piece (US\$1 = PHP50 in 2004) and smaller seahorses sold at PHP3.50 per piece. Seahorse trader respondents in Cebu City, the Philippines, reported to the authors that these prices have increased significantly from about PHP10 in recent years to about PHP40 per piece today for the same size seahorse. Citing data from Project Seahorse (without reference information provided), Barut (2005) reports that the total Philippine 2001 and 2002 export of dried seahorse reached about 12.3 tonnes, or 4.2 million individual seahorses, before trade was curtailed in 2004. The proposal to list seahorses (CITES, 2003) reports that the Philippines exports to China, Hong Kong SAR were 6 520 kg in 1998, 7 189 kg in 1999, 5 874 kg in 2000, and that Taiwan Province of China imported about 898 kg in 2000. Barut (2005) reports that Philippine government records document 500 kg of dried seahorse exported to China, Hong Kong SAR in 2003, while unpublished TRAFFIC Asia records show imports of 4 421 kg by China, Hong Kong SAR from the Philippines for that year (Table 1). Such wide discrepancies in trade data are quite common (Blundell and Mascia, 2005).

The CITES trade database ([www.unep-wcmc.org/citestrade/trade.cfm](http://www.unep-wcmc.org/citestrade/trade.cfm)) was queried but the information was incomplete. The database only contained records for seahorse exports from the Philippines to European countries, lacking records for key import destinations such as China and China, Hong Kong SAR. Queries did not reveal any records of imports into China or China, Hong Kong SAR from the Philippines. The Government of the Philippines does not currently monitor seahorse gathering, and the CITES database shows no official trade from the Philippines for the most recent years on the database (2005 and 2006). However, the illicit trade continues and is examined below. Various seahorse traders were identified when Philippine researchers asked who purchased seahorses in the Cebu City market. Some traders acknowledged that they bought and sold seahorses domestically (which is allowed by the CITES but not by current Philippine law). Others denied their involvement despite signage to the contrary and assurances from other respondents. The cover page of this report is a photograph of seahorses for sale in Cebu City.

**Table 1**  
**Seahorse trade from the Philippines to China, Hong Kong SAR**

Year	Volume (kg)	Value (HK\$ 000)
1998	6 502	2 317
1999	7 189	2 853
2000	5 874	2 716
2001	4 512	1 844
2002	8 607	3 762
2003	4 421	2 462

Source: TRAFFIC Asia data compiled by Barut, 2005.

\*1 HK\$ = 0.13 US\$

Vincent, Marsden and Sumaila (2005) report that the trade patterns for these organisms are complex, with whole or processed seahorses possibly passing through various countries before reaching their final destination. Because Indonesia registered a reservation to the seahorse listing, meaning that it is not obligated to conform to CITES regulations and record-keeping for seahorses, the BFAR and other officials have suggested, as discussed below, that seahorse trade through the southern Philippine island of Mindanao through Indonesia or Malaysia is very likely.

### **1.2.2. General Philippine regulatory and institutional context**

The regulatory and institutional context is similarly complex with various challenges to effective CITES implementation. The BFAR is the CITES Management and Scientific Authority for aquatic resources of the Philippines, while NGOs such as Project Seahorse (<http://seahorse.fisheries.ubc.ca/>) and TRAFFIC ([www.traffic.org/Home.action](http://www.traffic.org/Home.action)) play influential roles in providing biological and trade data and educational materials. These groups also lobby international and domestic policy-making institutions to pass and implement regulations leading to seahorse conservation and CITES listing (Project Seahorse, undated). Project Seahorse hosted various planning events prior to the seahorse listing, and Project Seahorse Foundation (PSF), the Philippine branch of the Canada-based Project Seahorse, plays an important and appreciated role in local communities involved in seahorse gathering. Other international NGOs (e.g. World Wild Fund for Nature) and national NGOs (e.g. Haribon Foundation) have played important roles in the shaping of Philippine laws and policies that determine how CITES regulations will influence fisheries activities in the field. Predictably, these NGOs do not all agree on what and how species should be listed under the CITES and how domestic policies should balance preservation with community economic development. In general, the Government of the Philippines is in compliance with CITES regulations, although some of its national legislation, as discussed below, is stricter than CITES Appendix II minimum requirements. The Philippine agencies feel incapable of regularly collecting capture and trade data on the myriad of relevant species currently listed under the CITES. According to the CITES species database, there are currently 883 species of animals and 208 species of plants in the Philippines listed in CITES Appendices. Capable Philippine marine science academic institutions have prioritized other research over seahorse monitoring.

The Philippines, as a so-called “mega biodiverse” country with high rates of endemic species at risk and limited institutional resources and funding, is in a difficult and not unique situation. The Government of the Philippines is justifiably doubtful that it can conform to the expectation of the CITES and provide non-detrimental findings for all species listed under Appendix II. Willock (2002) emphasizes the significant demands to monitor Appendix II-listed species and generate non-detrimental finding prior to permitting import or export. Vincent, Marsden and Sumaila (2005) acknowledge these challenges in the Philippine context. Funding from the CITES, especially as an agreement reached prior to the United Nations Conference on Environment and Development (UNCED), lacks financial support for monitoring and capacity development partly because it cannot access funds from international monetary sources associated with the UNCED. These interrelated institutional and legal matters are explored in greater detail below.

### **1.2.3. History of seahorse CITES listing**

The conference proceedings from the International Workshop on CITES Implementation for Seahorse Conservation and Trade (Bruckner, Field and Daves, 2005) provide a concise portrayal of the process by which seahorses were listed under CITES:

“The United States and Australia submitted a discussion document to the Eleventh Meeting of the Conference of the Parties to CITES (CoP11; Nairobi, Kenya; April, 2000) on trade in seahorses and other members of the family Syngnathidae. With this document, the United States and Australia intended to accomplish the following for Syngnathid conservation: (i) establish dialogue between Parties, concerned scientists, interested industry members, and affected communities; (ii) further encourage continued research to clarify taxonomic discrepancies and compile species distribution and demographic data; and (iii) further encourage the collection of data on international trade, catches by species, and species conservation status; and (iv) promote actions to ensure the long-term viability of syngnathid populations.

As a result of this CoP11 discussion paper, the Parties adopted decisions directed to the CITES Animals Committee and to the Secretariat to *inter alia* convene a workshop on syngnathid trade, biology, and conservation and subsequently report their findings at CoP12.

With funding from a number of countries, non-governmental organizations and industry groups, the CITES Workshop on International Trade in seahorses was convened in May 2002 in Cebu, Philippines, as per Decision 11.153. After reviewing the workshop proceedings, the CITES Animals Committee determined that some species of seahorse met the biological criteria for a CITES Appendix-II listing and that others qualified for listing by similarity of appearance to the threatened species. The Committee determined that such a listing would be useful for seahorse conservation and management, while syngnathid bycatch should be addressed through expanded management programmes and continued capacity building in source countries.

Based on the Animals Committee's findings, the United States submitted a successful proposal to list all species of seahorses in Appendix II of CITES at CoP 12 (3–15 November 2002, Santiago, Chile). This listing, which uses systems to monitor and regulate the international trade in all *Hippocampus* species, had an 18-month delayed implementation that became effective on 15 May, 2004. The delay was intended to allow countries sufficient time to consider management approaches, monitoring programs, identification materials and size limits to ensure a legal and sustainable seahorse trade under CITES. Since seahorses are extremely vulnerable to overfishing, and may now be the most widely and voluminously traded CITES animal species, the listing requires significant work in source countries, the CITES Animals and Nomenclature Committees, academia, and the conservation community. Since most of the current seahorse exports are from developing countries, it was imperative to strengthen collaboration and cooperation between developed countries and these nations to establish management approaches that will help ensure this trade is not detrimental to wild seahorse populations.”

## 2. METHODS

This study employed a multidisciplinary, multimethod approach that triangulated findings from multiple sources to ensure their reliability (Miles and Huberman, 1994; Patton, 2001; Yin, 2002). This case study provides a detailed account of seahorse policy and trade for the Philippines at the national and at the local level for Danajon Bank, Bohol. These analyses were related to relevant international cases and policy discussions. Case studies provided rich descriptions and analyses, but they are not intended to be generalized to other contexts.

The researchers engaged in detailed fieldwork over a period of six months in 2007. One team of researchers reviewed the pertinent domestic policy and legal context and its interaction with the CITES. This legal review was complemented with in-depth interviews of three BFAR Region 7 (Central Philippines) monitoring and enforcement personnel, three BFAR central office personnel engaged in the legal and enforcement aspects of the CITES, four NGO personnel involved in CITES international negotiations and fisher organizing in the Philippines and three seahorse traders in Cebu City (Appendix 1). Project Seahorse and PSF personnel decided not to participate in this study as either co-investigators or as respondents despite invitations by the authors before research was conducted. Experts and the CITES secretariat were contacted to provide insight into ongoing programmes and refinements of the CITES.

To investigate the local dynamics of the seahorse fishery and trade, two island communities, in the municipalities of Getafe and Talibon in the Danajon Bank area of Bohol Island, were chosen as study sites. This is one of the most important seahorse-gathering areas in the Philippines. Communities were classified according to the presence of seahorse conservation efforts established by the PSF in order to help determine the impacts of CITES listing (and domestic legal interpretations of the listing) on ongoing seahorse conservation efforts. The communities where the PSF had activities involving seahorse conservation are referred to as “project sites” while those adjacent islands are referred to as “non-project sites”, where indirect impacts of conservation interventions could have been felt owing to their proximity. The projects sites are the village of Handumon on Jandayan Island in Getafe Municipality and the island of Cataban in Talibon Municipality. Project Seahorse and the PSF have worked in these communities since the mid-1990s to establish community-based marine protected areas (MPAs), seahorse-gathering regulations, and monitoring. The non-project sites are the village of Alumar in Mahanay Island in Getafe Municipality and the island of Nocnongan in Talibon Municipality (Figure 1).

Fifteen people from each community were interviewed in Visayan with a pre-tested interview guide for a total of 60 respondents (Appendix 2). A snowball technique was used to identify the respondents as there is no available list of seahorse fishers to sample randomly. Those already interviewed were asked to name other possible respondents until the quota for each site was completed. The survey was done by two research assistants using a structured questionnaire. This was complemented by semi-structured interviews of key respondents that included the municipal and *barangay* (village) officials and leaders of fisher associations. This study was reviewed and approved by the Human Subjects Division of the University of Washington and, therefore, all respondents for the legal and socio-economic study provided informed consent and names were not recorded on survey forms. Interview respondent identities will remain confidential.

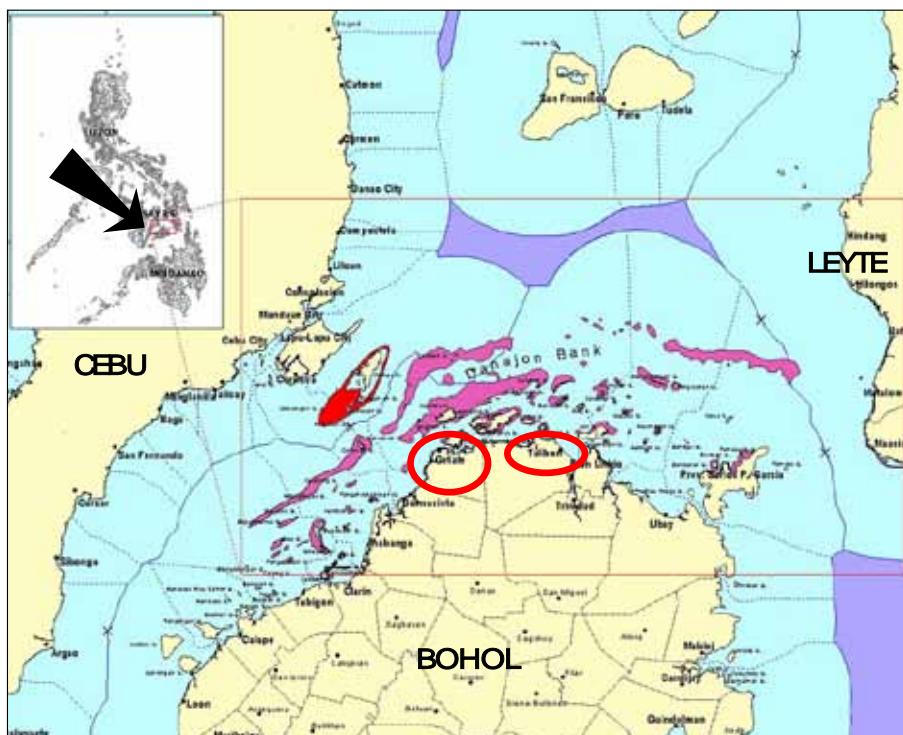
A detailed literature review using dozens of key words and accessing peer-reviewed and grey literature was conducted. An EndNote literature database of studies regarding seahorses, the CITES, and international environmental policy was created. The Philippine case study was related to other studies on CITES implementation to contextualize these findings in ongoing policy analyses and scholarship.

### 3. DANAJON BANK: BACKGROUND INFORMATION

The situation is reaching crisis proportions for Philippine coastal communities that depend on marine resources for protein and economic growth (World Bank, 2006). Various causes have been identified, including: poverty, overconsumption, ignorance, poor land management, destructive fishing, and overfishing. Fisheries catch per unit of effort is declining in most places (Barut, Santos and Garces, 2004; DA-BFAR, 2004). Coral reefs, mangroves and water quality are being degraded in many locations. Systemic conditions underlie these environmental trends and limit the options available to policy-makers. For example, the rising national Gini Index, at 46 out of 100 in 2003 and among the highest in the world, indicates that wealth is becoming increasingly concentrated in fewer hands. Poverty, now directly affecting about 40 percent of the Philippine populace, is still worsening. Natural resources are extracted at ever-increasing rates as the national population grows (now about 86 million people and increasing at 2.2 percent annually) and pressures mount to export commodities to service external debt (US\$58 billion or 3.8 times the annual national budget [CIA, 2007]).

Danajon Bank, located off the north of Bohol Island, is the only double barrier reef in the Philippines and one of only three such sites in the Indo-Pacific region (Christie *et al.*, 2006). The reef is spread across almost 130 km and consists of three large reefs; Caubiyán is the largest, covering about 143 km<sup>2</sup>. There are five smaller reefs in the northern outer region and one other large reef, Calitubas, in the inner region. The overall area of the Danajon Bank is 272 km<sup>2</sup> with an aggregate coastline of 699 km including 40 islands (Figure 1). The Danajon Bank makes up over 1 percent of the total area of coral reef of the Philippines (estimated at 27 000 km<sup>2</sup>).

Figure 1  
Map of the study area: Danajon Bank, Bohol Island



Note: Getafe and Talibon circled in red; coral reef in magenta.

Sources: Project FISH and Christie *et al.*, 2006.

Based on overall poverty indicators, Bohol is one of the poorest provinces in the country. According to the latest Annual Poverty Indicator Survey issued by the National Statistics Office, about 47 percent of Bohol families are under the country's official poverty threshold levels. The incidence of individuals living in poverty has increased by 10.5 percent since 1997 in Bohol. The average monthly family income is only about PHP4 745, or just over US\$100. About 51 percent of family income is spent on food while less than 1 percent is spent on medical care. Fishing communities are among the poorest and most marginalized in the Philippines (Plate 1). In 1997, the average monthly income from fishing was about PHP1 830 (US\$69 at 1997 exchange rates). While precise estimates are difficult to make, more than 60 percent of the coastal inhabitants lived below the poverty line of PHP6 000 per month for a family of 5–6 members in 1997 (Green *et al.*, 2003). Considering dwindling resources, it is almost certain that fishery-based incomes have declined.



**Plate 1**  
**Fishing community on Calituban Island, Danajon Bank.**

The lantern fishers of Bohol that collect seahorses and other marine animals on Danajon Bank are generally marginalized and poor. Their access to formal education is very limited according to Project Seahorse research:

“Formal education among lantern fishers was found to be very low, with the majority not having finished elementary school (81 percent). Twelve percent had finished elementary school, and the remaining 7 percent had achieved a higher level of formal education. Their wives on the other hand fared better in terms of education. Only 61 percent of them were not able to finish elementary education compared to the 81 percent of their husbands and 19 percent were also able to finish high school, 11 percent higher than for the lantern fishers.” (Barbon, 2005)

## 4. RESULTS AND DISCUSSION

The following section of this report is divided into two interrelated analyses: a legal analysis and a socio-economic impact assessment.

### 4.1. Legal analysis

The follow section focuses on the legal implications of listing seahorses under Appendix II. It presents an interpretation of Philippine law regarding fisheries and the CITES and quotations from respondents involved in legal reform.

#### 4.1.1. *A brief review of relevant laws and conventions*

One international convention, a Philippine national act, and a Philippine administrative order provide the basis for the current legal status of seahorse gathering in the Philippines and international trade.

##### a) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

As an international agreement, the CITES is legally-binding on the member countries or governments. This means that although implementation of the Convention is mandatory, it cannot take the place of national laws. Rather it provides a framework to be respected by each country, which is required to appropriately adopt its own domestic legislation to ensure that the CITES is implemented at the national level.

Article VIII of the CITES requires parties to the Convention to enforce its provisions and to prohibit trade in specimens in violation thereof, including measures to penalize trade in, or possession of, such specimens, or both; and to provide for the confiscation or return to the State of export of such specimens.

The level of international trade control of all listed species in the CITES is determined according to the degree of protection needed. There are three Appendices for species listing in the CITES. Appendix I includes all species that are threatened with extinction that are or may be affected by trade. Trade in specimens of these species must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival. The Conference of the Parties (CoP), which is the supreme decision-making body of the Convention and comprises all its member States, has agreed on a set of biological and trade criteria to help determine whether a species should be included in Appendices I or II. Finally, Appendix III contains species that are protected in at least one country that has asked other CITES Parties for assistance in controlling the trade. Changes to Appendix III follow a distinct procedure from changes to Appendices I and II, as each Party is entitled to make unilateral amendments to the said Appendix.

A specimen of a CITES-listed species may be imported into or exported (or re-exported) from a State party to the Convention only if the appropriate document has been obtained and presented for clearance at the port of entry or exit. The purpose is to ensure that trade in specimens of certain species will be brought under effective control by member countries.

The CITES listed 32 species of seahorses under Appendix II of the Convention in 2002, with regulations coming into effect on May 2004. The Animals Committee recommended that an Appendix II listing be deferred for 18 months to allow parties time to develop necessary measures for seahorse fisheries and trade management. According to a TRAFFIC and Project Seahorse briefing document to the twelfth meeting of the Conference of the Parties to the CITES, Santiago, Chile (2002), a number of countries (particularly the Philippines, a major exporting party) needed time to consider the implications of an Appendix II listing in light of domestic legislation (TRAFFIC, 2002).

The extension was also intended to allow parties to prepare mechanisms for trade data collection and enforcement. Following fundamental principles of the Convention, regulated trade in species of seahorses is permitted when certain requirements are complied with. In particular, Article IV (2) of the CITES requires prior presentation of either an export permit or a re-export certificate, which in effect allows trade in specimens of seahorse species subject to strict regulations.

b) Philippine Fisheries Code

Republic Act (RA) 8550, otherwise known as the Philippine Fisheries Code of 1998, was enacted for the development, management and conservation of the fisheries and aquatic resources of the country (DA-BFAR, 1998). The Philippine Fisheries Code of 1998 prohibits the taking of rare, threatened or endangered species as listed in the CITES and as determined by the Philippine Department of Agriculture. Section 97 thereof provides that “it is unlawful to fish or take rare, threatened or endangered species as listed in the CITES.” In other words, Section 97 imposes a blanket prohibition on the fishing or collecting of all CITES-listed species without any distinction between the three Appendices of the CITES. Similarly, the same statute, in particular Section 11, enjoins the Department of Agriculture to declare closed seasons and to take conservation and rehabilitation measures for rare, threatened and endangered species, as it may determine.

c) Fisheries Administrative Order 208

To implement Sections 11 and 97 of the Fisheries Code, Republic of the Philippines Fisheries Administrative Order (RPFAO) 208 promotes the conservation of rare, threatened and endangered fishery and aquatic species, and it lists particular species of gastropods and bivalves as rare species; certain gastropods and crabs as threatened species; and certain whales and dolphins, clams and sea snakes as endangered species. As RPFAO 208 was issued in May 2001, it did not name any species of seahorses in the list, but the order still pertains to species listed after 2001.

**4.1.2. Legal and implementation issues influencing seahorse management**

The following sections focus primarily on the issues at the national level that affect the implementation of the CITES in the Philippine context.

a) Policy conflicts between the CITES and Philippine fisheries laws

The CITES entered into force on 1 July 1975. The Philippines in turn ratified the Convention in 1981, and its entry into force came subsequently. When treaties have entered into force, member countries or parties to the Convention are obliged to follow under pain of sanction from the international legal system and community.

International environmental law application in the Philippines follows the constitutional guidelines found in Article II, Section 2 of the 1987 Constitution, which states: “The Philippines ... adopts the generally accepted principles of international law as part of the law of the land and adheres to the policy of peace, equity, justice, freedom, cooperation and amity with nations.” Further to that, Article VII, Section 21 of the Constitution provides that “no treaty or international agreement shall be valid and effective unless concurred in by at least two-thirds of all members of the Senate.” Thus, when international agreements such as the CITES are ratified and thereafter entered into force, these create specific legal obligations between states and become enforceable against party states. However, at the time when the CITES was ratified by the Philippines in 1981, the organic law in effect was the 1973 Constitution, which only requires a majority vote of the *Batasang Pambansa*, a unicameral assembly. This means that at least 101 out of 200 members of the *Batasang Pambansa* voted in favour of the CITES, thus making the Philippines the seventieth country to sign the Convention. The CITES entered into force on 16 November 1981 in the Philippines. Several legal rulings in the Philippines have affirmed the binding effect of international laws and agreements. In the case of *Santos III vs.*

*Northwest Orient Airlines* (210 Philippine Supreme Court Reports Annotated 256, 1992), the Philippine Supreme Court ruled that a convention, which is a treaty commitment voluntarily assumed by the Government of the Philippines, has the force and effect of law in the country.

Following the enactment of the Fisheries Code, and with the issuance of the implementing guidelines by virtue of RPFAO 208, the country has established a total prohibition on the fishing or taking of rare, threatened or endangered species as listed. Effectively, the selling, trading and exporting of all species listed in the CITES has been banned as well. Such a policy, which has been characterized as contradictory to the spirit of CITES Appendix II listings (Project Seahorse, undated), is, in fact, allowable under the CITES.

To harmonize provisions contained in an international convention and a domestic law, the prevailing doctrine upholds the right of nation States to self-determination and permanent sovereignty over natural resources. These are bedrock principles respecting the current international law system wherein nation states are the primary actors and objects in international law. Thus, this *sine qua non* rule evinces the systemic limitations of international agreements. In fact, this doctrine is supported by specific provisions of the CITES. Thus, it is stated under Article XIV (Effect on Domestic Legislation and International Conventions) (1) (a) that the provisions of the CITES shall not affect the right of State Parties to adopt stricter domestic measures regarding the conditions for trade, taking, possession or transport of specimens of species included in Appendices I, II and III, or the complete prohibition thereof.

On the other hand, international agreements such as the CITES create binding legal relations between parties. Once a treaty has entered into force, its provisions are enforceable against State Parties that are obliged to follow under pain of sanction. Moreover, in the Philippine case of *Tañada et al. vs. Angara et al.* (G.R. No. 118295. 2 May 1997. J. Panganiban. En Banc., 1997), the Philippine Supreme Court held that in the event that a treaty obligation (in this case the Philippine President's ratification of the Agreement establishing the World Trade Organization) conflicts with local legislation, such a State is "bound to make in its legislations such modifications as may be necessary to ensure the fulfillment of the obligations there under." Hence, adopting this position, the moves to amend Section 97 of RA 8550 are considered intrinsic obligations of the Philippines as a State Party to the CITES. Based on a review conducted as part of the CITES National Legislation Project ([www.unep.org/DEC/OnLineManual/Enforcement/NationalLawsRegulations/Resource/tabid/780/Default.aspx](http://www.unep.org/DEC/OnLineManual/Enforcement/NationalLawsRegulations/Resource/tabid/780/Default.aspx)) by the United Nations Environment Programme, the Philippines legislation falls into Category 2, defined as: "meets some, but not all, of the requirements for implementing CITES". According to CITES legal experts, this analysis was based principally on a review of RA 9147, the Wildlife Resources Conservation and Protection Act, rather than RA 8550. The underlying analysis will remain confidential unless the Philippine CITES Management Authority agrees to its disclosure.

Two House Bills have been proposed to amend RA 8550 Section 97. House Bill 896/2539, introduced in 2005 by Representative Salacnib F. Baterina, forwards the position of the aquaculture stakeholders and posits the "oppressive tendencies of Section 97 of RA 8550" as it will undermine attempts to propagate artificially a number of marine species such as seahorses, abalone and giant clams. This House Bill was proposed to amend Section 97 "in order not to discourage the interested businessmen from adopting aquaculture technologies or leave those who have invested in such culture bankrupt which are now many." Another House Bill, No. 4840, introduced in 2005 by Representative Roberto C. Cajes, seeks to amend Section 97 of RA 8550 as it does not distinguish between species that are listed on Appendix I and Appendix II of the CITES. It limits the coverage of the ban on catching, gathering, selling, purchasing, possessing, transporting and exporting of rare, threatened or endangered species to those listed in CITES Appendix I only. House Bill 4840 states that the resulting automatic ban on the collection or fishing of all listed species conflicts with the intention of the CITES, which is to encourage and manage sustainable trade. It further specifies that Section 97 limits the capacity of various government agencies to practise proactive resource management. It similarly asserts that the

de facto ban will penalize fishers unfairly who will either become criminals or transfer their fishing effort unnecessarily to other resources, many of which are already depleted. Finally, it maintains that although superficially advantageous to the recovery of the species, Section 97 is likely to promote illegal trade.

There are mixed reactions to these proposals. In a position paper by Project Seahorse (Project Seahorse, undated) on House Bill 896/2539, it states that “the proposed legislation supports the call of the aquaculture sector but does not allow fishing communities to harvest a wild resource, even if fishing can be proven to be not detrimental to the resource or that the resource is managed sustainably. It does not answer the needs of marginal fishers who depend on wild caught species for their economic and health needs.” It argues “Section 97 should be consistent with the CITES agreement, Philippines being a State Party to the Convention.” This position paper clearly articulates their position to regulate, not prohibit, the taking of seahorses.

Based on interviews, BFAR officials, those responsible for regulating CITES-listed fisheries species and involved in CoP meetings, are uncertain that Section 97 of RA 8550 should be altered and, if so, in the manner outlined in the Project Seahorse position paper. When asked why RA 8550 has banned all species listed in the CITES and whether an exception should be granted for seahorses, a BFAR lawyer answered:

“It is hard (to open up one species) because it is prone to abuse. Catch limitation? We cannot monitor. We need personnel and logistics. CITES enforcement staff is not full-time to CITES only because they have other responsibilities also ... How many people do we have there? Six for import/export (permitting) for the entire country. Actually, it’s only one person who is handling CITES. Although it is also part of another person’s duties for the Region. But the division under which that person heads only has two people on monitoring, control and surveillance but they work more on poaching ...”

Another BFAR employee felt that Section 97 should never have been included in RA 8550 and should be altered. He holds the Philippine NGO community and conservationists accountable for this inflexible and overly broad regulation, which may have been inserted late in the consultation and drafting of RA 8550:

“The Philippines has a total ban because of the formulation of the RA 8550. Anyone who was involved in the coming up of that provision in the law should explain why the statement was like that in Section 97 ... For sure there is an NGO or somebody telling to prohibit all that is found in the CITES ...”

The Philippines adopted a stricter domestic measure because, as one BFAR official said:

“I just assumed it is easier for enforcement. Isn’t it that in banning, it is all in the black and white. If there is a gray area in between, it’s more difficult.”

The BFAR’s policy regarding the proposed amendments is evolving and respondents had distinct opinions during the duration of this research effort. Some BFAR officials were concerned about House Bill 896 because they feel it would be difficult to monitor and differentiate cultured and wild caught specimens. Rearing seahorses through aquaculture is reportedly very difficult (CITES, 2003). The BFAR has yet to develop a formal and consistent policy position on these matters.

These reforming House Bills failed to pass. After failing the required three readings during the three regular sessions of the previous Congresses, the only option left is to reintroduce these bills again at the present Congress. As a general rule, if the House Bill does not pass into law within the three regular sessions of any three-year Congress, then the introduced law or amendment ceases.

Nonetheless, the debate over the wisdom of Section 97 of RA 8550 *vis-à-vis* the intention of the CITES and attempts to reform RA 8550 Section 97 will continue. It is unrealistic to expect unwavering support from the BFAR for such reforms. The BFAR is uncertain of the wisdom of reforming Section 97 in line with Project Seahorse's position or providing seahorses an exemption:

Interviewer: "Are you concerned about setting a precedent for Appendix 2 listings?"

BFAR official: "Yes, it will be a precedent because you cannot just open up one species. You cannot have management for one species only."

The BFAR may not feel compelled to support these reforms as they were not yet in favour of listing seahorses under Appendix II at CoP 12. When asked what their position was during the CoP in Chile, the BFAR representative said:

"For BFAR, the whale shark was the only one we proposed and actively supported at that time (CoP in Chile). We did not want the seahorse because the position of the country was not firmed up yet because we have not talked to the traders. We had not studied it yet so we thought 'not yet'; and we (Philippine representatives) also thought that they would not get the vote. But they campaigned already way before the CoP so it was very easy for them to get the vote."

The BFAR respondent stated that they did not play an active part in the CITES Appendix II listing of seahorses, thus:

"BFAR was against the inclusion because we knew that it cannot be cultured and because of Sec. 97. We knew that Sec. 97 would be hard to amend. On the manner of listing at CITES... it's a question of numbers (of votes). Sometimes national interest is not considered. At that time, it was not a matter of national interest to have seahorses listed under Appendix II. In fact, the Philippines did not vote for seahorses because we were against it."

Reportedly, the Philippines abstained on the CoP 12 vote to list seahorses. This outcome suggests, among other conclusions, that either there should have been more careful consultation with the Philippine delegation to the CITES, or that it is not reasonable to expect the CITES Management Authority, like the BFAR, to enthusiastically support domestic legislative reform that is catalyzed by a species listing they were not yet in favour of.

#### b) Implementation challenges

Officials of the BFAR are acutely aware that the default policy of a total seahorse ban also represents considerable challenges:

"Using the experience of Tridacna (giant clams), it has been easier to prosecute violations in other countries such as the US but in the Philippines, they are able to ship it out easily ... And studies have shown that an all-out ban also do not work because it only drives the trade underground. Although it's the only easy way out for the implementing agency especially since the government has been downsizing their workforce, budget, etc."

"Quarantine officers at each region are to meet at least once a year. For the past 3 years, there has been no meeting. The plan is to hold a meeting some time February. But we have a problem there—no personnel. We have no new staff."

Although the present ban exists on paper, enforcement operations are severely hampered by the inadequate resources. The CITES and its institutional partners do not provide such direct support beyond capacity-building workshops and educational materials. Because of these limitations, it is quite

clear that the illegal trade in seahorses continues. However, its extent is difficult to measure. A BFAR employee maintains that the main urban ports such as Manila and Cebu City are relatively well monitored and controlled. One trade pathway may be through the southern Philippine ports, an area in turmoil and where considerable smuggling is commonplace. According to a BFAR Region 7 employee:

“[o]ne of the problems is smuggling that happens ... We could say there is a “backdoor” thru Mindanao to Sabah or Malaysia. Also the seahorses in Visayas and in Luzon were transported there in Mindanao ... Probably you can not export this (seahorse) directly to Hong Kong but this can pass through the back door and will reach as far as Malaysia. In Malaysia, seahorse trading is regulated so they will just claim that the seahorse came from Malaysia and not the Philippines.”

Malaysia is a party to the CITES, but monitoring of the complex chain of re-exporting is an ongoing problem for CITES implementation. Indonesia may also be serving as a re-export country, considering its reservation status for the seahorse listing. The seahorses may be processed to reduce the likelihood of detection and eventually are traded mainly in China, Hong Kong SAR and/or Taiwan Province of China. The employee claimed:

“They bring them out of the country, usually those are crushed to powder already ... so it is easy to smuggle out. And their markets are usually Hong Kong and Taiwan which are considered as ‘Chinese markets’.”

China and Taiwan Province of China are at the centre of a vigorous international seahorse trade subject to certain conditions. *H. kelloggi* seahorses are listed under Category II of the Law of Wild Animal Protection of the People’s Republic of China. Exploitation and trade are allowed only with provincial government permits, although these are often easy to acquire according to Project Seahorse. *H. kelloggi* is listed as a Priority Fish Species (Grade B) in a national biodiversity action plan. Country regulations in China, Hong Kong SAR have also mandated customs monitoring of seahorse and pipefish trade since 1 January 1998. Taiwan Province of China maintains customs records on seahorse and pipefish trade. However, despite the continuing illegal trade and limited enforcement resources, the government has been pursuing violators:

“Yes, there was an incident where customs were able to apprehend last year in Zamboanga seahorses being transported in a container together with other fishery products bound for China but it was confiscated at North Harbor, Manila based on a tip ...”

The confiscation of a large quantity of dried seahorses in Zamboanga City, Mindanao, by Philippine government officials demonstrates at least some commitment by government officials and also suggests that illicit trade may be exiting the country in this manner for international markets (Garcia, 2007). However, such cases are rare. The Philippine borders are porous and violators can easily slip through. Little information is collected about this, and other, CITES-regulated trade. Another BFAR employee explained that they do not monitor and keep records on seahorse imports and exports because “this is not their priority commodity”:

“...We have not done research about (seahorse) population and production. We concentrate on the species like prawn and seaweeds.”

The regional BFAR field office also claims that they do not have enough technical personnel and funding to do so. However, a study may be done:

“The National Fisheries Research and Development Institute (NFRDI) – the research arm of the BFAR – will be conducting an independent assessment for all CITES listed species.”

c) Inconsistency between local and national regulations and irregular enforcement

Getafe, one of the study municipalities on the island of Bohol, passed a local ordinance regulating seahorse gathering and trading despite the present ban under RA 8550. The municipal government employees and elected officials, who were the authors of the ordinance, claimed that seahorse gathering was common in the area and that the national ban was not being implemented there. It was thought that regulating the capture would be a much better approach:

“In Getafe, seahorse fishing is very rampant and they gather even the small ones. I was thinking that if this goes on, the seahorses will be depleted. In Getafe, seahorse gathering is an old and existing livelihood for the fishers. We have the national law but there is no implementation. So, I was thinking regulation is better. This is the reason why I sponsored the municipal ordinance but unfortunately it is not in concurrence with the national law so it cannot be implemented. What we did also was... the *Sangguniang Bayan* (Municipal Council) of Getafe requested Congressman Cajes to amend section 97 of RA 8550. This is also due in part to the request of Project Seahorse, for us to request for amendment of Section 97 of RA 8550 ... and at the same time to make an ordinance for the regulation of seahorse gathering and trading.”

While the Philippine Local Government Code devolves considerable decision-making over coastal resources to municipal governments, such a municipal ordinance is not considered valid because it is a cardinal principle that the delegation of the power to make laws to local government units is subject to limitations such that they cannot allow and/or regulate an act that is prohibited by a national law. As discussed below, such local ordinances, even if loosely implemented, raise expectations and raise the potential for confusion about formal policy. Some mayors in Danajon maintain that they are implementing the ban although struggle with enforcement limitations:

“We are already enforcing the ban. But there are still violations because enforcement is difficult to undertake considering the number of islands ...”

Field officers involved in field implementation reveal that, in fact, the ban is not being implemented in the municipalities of Getafe and Talibon. The response to the question “Is your office enforcing the ban?” is consistent among fisheries officials:

Respondent 1 (Municipal fisheries officer): “Perhaps, in the future. I did not receive yet any ordinance as a basis to enforce the ban ...”

Respondent 2 (Municipal councillor): “For me, there is really no need to enforce the ban on seahorse gathering. How many are gathering seahorses here? Then you ban it. They are only gathering few seahorses, and seahorses are not that abundant here anymore.”

Respondent 3 (Municipal fisheries officer): “As of now, there is no enforcement of the ban against catching of seahorses whatsoever, especially here in our municipality. The seaborne patrol tries to be flexible with regards to this law particularly that we see that the catching of seahorses does not cause much damage.”

d) Diverse NGO response

Philippine environmental groups have diverse positions regarding the CITES, RA 8550 Section 97, and the seahorse ban. In a widely-distributed position paper, the PSF supports the efforts to amend Section 97 of the Fisheries Code to realign it with what it believes to be the intention of the CITES (Project Seahorse, undated). For the PSF, Section 97 should allow the regulated trade in Appendix II and III species and domestic laws should be amended to conform to this position. An environmental

advocate, belonging to another international conservation organization that lobbied for the Appendix II listing of whale sharks during CoP 12, felt that an Appendix II listing and subsequent ban had increased the level of protection for whale sharks in Philippine waters. This person was fully aware that the listing would result in a ban on collection:

“Section 97 of RA 8550 has benefited whale shark. So far there are no documented covert activities on whale shark trade. Although there have been anecdotal reports on high seas trade, there are no solid proof.”

Another organization involved heavily with implementation and reform of RA 8550 believes that:

“BFAR is very weak on regulating trading. And the question of illegal fisheries, including CITES listed species, will only stop if the market is stopped. It should be made a crime to buy illegally caught fish listed under the CITES, the same as it is a crime to take or fish CITES listed species ...”

There is no one clear and united stance on policy or strategy among the various environmental groups in the Philippines. Amending Section 97 may require considerable consultation and bargaining among these groups. It appears that the PSF has taken the lead in advocating a reform of RA 8550 Section 97 for seahorses and other Appendix II-listed marine species. The PSF claimed in their 2003 annual report that the amendment of Section 97 of the Philippines Fisheries Code (Republic Act 8550) was the central theme of its policy research and advocacy works in 2003. In the same report, the PSF reported its efforts to influence other Philippine organizations to adopt their position:

“At the local level, the Foundation convinced KAMADA (a federation of Bohol community leaders and fishers) to issue its own position statement supporting the moves to amend Section 97. And during the October National Consultative Workshop with Seahorse Traders and Exporters, the Foundation was able to convince the traders and exporters to issue a statement asking Congress to allow sustainable trade of seahorses by amending Section 97...” (PSF, 2003).

#### ***4.1.3. Reforming national laws***

The process of determining whether Philippine law is in accordance with international agreements and refining Philippine domestic law will be a lengthy one. The development of the Philippine Fisheries Code was a ten-year-long process before it was enacted in 1998. Changing its provisions will not be an easy task. One position argues that amending particular provisions of the Fisheries Code is not feasible because it will create unwarranted precedents, driven by the concerns associated with one group of animals, NGOs, and fishery. Another posits that amendment will harmonize the law with an international agreement that the Philippines has ratified. This report does not take a position on this matter. However, it is not clear that one position is necessarily superior to the other. As stated above, the Philippines is within its rights, according to Article XIV (1) (a) of the CITES, to adopt stricter domestic measures than the minimal standards established under Appendix II. While this may be technically true, Marceil Yeater, Chief of Legal Affairs and Trade Policy Unit within the CITES Secretariat, explains that there are expectations that the Government of the Philippines will rationalize the CITES and domestic legislation. Defining the “appropriateness” of domestic legislation, taking into consideration institutional capacity and financial feasibility, is open for interpretation:

“The Secretariat became aware in 2002 (at the time of the CITES workshop on seahorses) that Philippine legislation was much stricter than the Convention in relation to marine/fishery species. We advised the government that Section 97 of the Fisheries Code of 1998 (Philippine Republic Act 8550) seemed overbroad as it made unlawful any fishing or taking of rare, threatened or endangered species listed in CITES. One of the NGOs that actively lobbied for seahorses to be listed in Appendix II of CITES (Project Seahorse) expressed to us its regret that Philippine legislation did not allow for lawful sustainable trade in the species in accordance with

the Convention. We were informed in late 2004 by Project Seahorse that new legislation on marine species was under consideration by the Philippine legislature but we do not know the outcome of that process.

As you probably know, Parties have the right to adopt stricter domestic measures under Article XIV of the Convention. The Conference of the Parties, however, recently adopted Decision 14.19 (The Hague, 3–15 June 2007) which states that ‘Parties with stricter domestic measures and reservations should review them, as and when appropriate, in order to determine whether they are effective in order to achieve the objectives of the Convention to ensure that trade in wild fauna and flora species is not detrimental to their survival’. The background document that led to the adoption of this decision was prepared by the Secretariat at the request of the CITES Standing Committee (see document CoP14 Doc. 17).’ (Marceil Yeater, CITES Secretariat, e-mail, 30 August 2007).

While the House Bills intended to reform RA 8550 did not pass, they may be reintroduced. Another policy reform option would be to secure a Department of Justice Opinion, as suggested by some respondents from the BFAR. This may be more efficient than a Congressional amendment. Using this option, the BFAR or any entity with legal personality interested in pursuing this process can ask the Department of Justice to provide an interpretation of Section 97 of RA 8550 *vis-à-vis* the CITES specifically referring to seahorses only. However, this opinion can still be questioned before the Supreme Court before it achieves finality as a formal policy.

Yet another opportunity for reformation of domestic laws is the draft Implementing and Regulating Rules for the Philippines Wildlife Conservation Act (RA 9147 of 2001). The following interview quote suggests future possible policy developments in the Philippines, some which may still result in a strict ban on the collection of seahorses in the wild but allowance for trade of aquacultured marine species:

Interviewer: “What are the implications of the draft Implementing and Regulating Rules for the Wildlife Conservation Act *vis-à-vis* the CITES? The draft act seems to suggest that the Philippine government is thinking about eventually allowing the permitting of CITES listed organisms for export/import/re-export, is this right?”

BFAR central office official: “Yes, we will eventually allow the permitting of CITES listed organisms for export/import/re-export once it can be proven that these can be cultured and there are monitoring controls that can be in place. Right now, we are still on the strict implementation of CITES based on previous experiences on the difficulty of enforcing regulations compared to a ban and the fact that there are still no proper monitoring at the customs. But we are aware that based on CITES studies given to us, the ban only forces the trade to go underground. So right now we are opting for other solutions such as regulating the trade. Because for example for Tridacna (giant clam), we cannot control the market forces. The same also applies to seahorses. We’ll just have to provide incentives to the community and allow them self-policing. But to do this, we’ll have to notify CITES first.”

Interviewer: “Would this mean then that Sec. 97 needs to be amended?”

BFAR central office official: “Yes, there are already bills that were filed seeking to amend Sec. 97 in Congress. But we are only in favor of such amendment depending on the management regime that will be possible for particular species such as seahorses which can be cultured [through wildlife farms as stated in the wildlife act]. We do not want an all-out liberalization of the trade. For example, when we were at CITES for the whale shark listing, we told them that the only management regime possible for whale shark is ecotourism that is why we opted for an Appendix II listing.”

The government will be more effective in its campaign to curb illegal acts and to review conflicting policies if there is coordinated participation from the non-government, academic, and private sectors, including traders or exporters and the affected coastal communities. Policy analyses that weigh the trade-offs of the above options would be a worthwhile investment to avoid unintended consequences.

#### **4.2. Socio-economic impact of the CITES listing of seahorses**

The following portion of the study documents the socio-economic impacts of the regulations governing the seahorse fishery and marketing on households involved in the fishery. Specifically, it:

- relates the seahorse fishery and marketing to the various economic activities of these households;
- measures the perceptions of respondents about the conditions, yield and marketing of seahorses at the community level before and after 2004 (when the CITES listing of seahorses came into force);
- assesses respondents' knowledge about the regulations, enforcement and violations relative to the catching and marketing of seahorses;
- determines respondents' perceptions of regulatory impacts on their income and the corresponding compensatory strategies they employed;
- solicits respondents' opinions on how community residents and the government should pursue seahorse conservation.

##### ***4.2.1. Bohol study-site policy context***

For this study, research was conducted in the municipalities of Getafe and Talibon. Each of these municipalities has pursued distinct policies regarding seahorse-gathering regulation. In 2003, Getafe's legislative council passed Municipal Ordinance No. 22 to regulate seahorse gathering in municipal waters, which extend out to 15 km offshore. The ordinance calls for a ban on capture of seahorses that are shorter than 2 inches (slightly more than 5 cm and much less than the 10 cm minimum recommended by Project Seahorse in Foster and Vincent, 2005) and pregnant males. As discussed above, this municipal ordinance is unenforceable because it contradicts Philippine national policy encoded in RA 8550 Section 97 in its current form. The municipality then passed Resolution No. 208 (2003) supporting the bill by Congressman Cajes of Bohol calling for the amendment of Section 97 of RA 8550 to allow for sustainable harvesting of seahorses. These legislative activities by Getafe were staged during the 18-month period between the vote to list seahorses under Appendix II and full enforcement of these provisions. Meanwhile, Talibon's municipal government passed Municipal Ordinance No. C-004 (2005) to direct the sustainable management, development and conservation of the municipal waters and coastal resources. This ordinance does not mention seahorses in any of its provisions but they are presumed to be covered by Section 66 of Article 11, which states that "it is unlawful to fish or take rare, threatened or endangered species." This ordinance conforms with Section 97 of RA 8550. The decentralized nature of coastal and nearshore management in the Philippines, which, by the Local Government Code of 1991, grants municipal governments jurisdiction to 15 km offshore, commonly leads to distinct regulatory positions in nearby municipalities. Both municipal governments have, through their commitment to MPAs and passage of management ordinances, demonstrated their commitment to sustainable resource use. They also both face the challenge of balancing resource management and poverty alleviation with limited resources for enforcement, education, and alternative livelihood development. As such, seahorse gathering continues in both municipalities.

#### 4.2.2. Profile of fishers involved in seahorse fishing

This section provides information on the respondents involved in seahorse gathering (Table 2). All respondents to the survey, who admitted having engaged in seahorse fishing, are males. They are on average about 35 years old. Ninety-two percent are married while the average household size is six people. They have been living in the community with their respective households for an average of 18 years. The respondents in Talibon and non-project sites have larger household sizes and have been living there longer compared with those in Getafe and project sites. Many of the respondents' ancestors evacuated from nearby Cebu Island during the Second World War to escape from the hostilities (Labajo, 2004). An average of only four years of elementary education limits livelihood options. They have been catching seahorses for an average of 12 years. Respondents in Getafe have been gathering seahorses longer (17.3 years) than those in Talibon (6.9 years). Anecdotally, the islands of Getafe are known for their high abundance of seahorses.

Table 2

#### Profile of respondents, by municipality and site

Characteristics	Municipality		Site		Overall
	Getafe	Talibon	Project	Non-project	
Age (mean in years)	37	33	35	35	35
Civil status (%):					
Single	3	10	7	7	7
Married	93	90	93	90	92
Household size (mean)	5.5	6.1	5.1	6.5	5.8
Education (mean in years)	3.6	4.3	4.0	3.9	4.0
Residence as household (mean in years)	15.5	20.7	16.7	19.6	18.1
Engaged in seahorse fishing (mean in years)	17.3	6.9	11.0	13.1	12.1

Table 3 categorizes the livelihoods of respondents by municipality. Lamp or lantern fishing is the most important livelihood for respondents in Getafe and Talibon. These fishers capture fish, invertebrates and other marine resources at night by wading or diving without the use of compressed air. Seaweed farming is the second-most common livelihood for respondents in Getafe, while compressor fishing is commonly practised in Talibon. Air compressors are used to pump air to allow a diver to remain underwater with a speargun for extended periods of time (and at great personal risk). Getafe has already banned compressor fishing (in agreement with RA 8550) while it is still tolerated in Talibon. The ranking of the two major livelihoods has not changed since the CITES regulations came into force in 2004. There were about 21 percent more fishers that declared lamp fishing as their primary livelihood in project sites than in non-project sites in the two municipalities.

Table 3

#### Livelihoods of respondents, by municipality

Ranking of livelihoods	Before 2004			After 2004		
	Getafe	Talibon	Total	Getafe	Talibon	Total
1 Lamp fishing	25	18	43	27	19	46
2 Seaweed farming	17	1	18	17	1	18
3 Compressor fishing (diver)	0	16	16	0	17	17
4 Hook and line fishing	1	8	9	2	10	12
5 Fishery trading	3	4	7	3	4	7
6 Gillnet fishing (user)	0	5	5	0	3	3
7 Gleaning	2	3	5	2	3	5
8 Gillnet fishing (owner)	3	0	3	3	0	3
9 Compressor fishing (owner)	1	0	1	1	0	1
10 Fish trapping	0	1	1	0	1	1
11 Shell culture assistant	0	1	1	0	1	1
12 Construction work	0	0	0	0	1	1
Total	52	57	109	55	60	115

#### **4.2.3. Description of the seahorse fishery and marketing based on survey results**

Seahorses are not the exclusive, or even primary, target of lamp or spearfishers. Eighty-five percent of the respondents stated that seahorses are only caught when encountered during *panuga* (lamp or lantern fishing), an activity that is done in combination with *pamana* (spearfishing). The same is true for compressor fishers who target sea cucumbers and food fish. Seahorses are also gathered as bycatch of gillnet fishing. A greater proportion of the few fishers (12 percent) who focus their fishing efforts on seahorses come from the project sites than from the non-project sites. Husbands and sons are generally involved in seahorse fishing. Only one respondent reported that his wife was involved in this activity.

Key respondents claim that the cash value of seahorses is relatively low compared with other marine organisms at the time of the study. In agreement with results presented by Meeuwig *et al.* (2003), a village leader pointed out that “compressor fishers now target sea cucumbers which command a higher price ... the gathering of seahorse is only by chance.”

Ninety-eight percent of the respondents claim to catch seahorses primarily for sale. There is no live seahorse trading at present, but a key respondent recalled a buyer from Cebu that previously purchased live juvenile seahorses. Currently, 93 percent of the respondents sell fresh seahorses by piece to the buyers in the island (84 percent) or in the nearby island (16 percent) when the buying price is higher. Seahorse selling is conducted mainly by the husbands (63 percent of sales) and wives (17 percent). The local buyers dry the seahorses and sell them in bulk to their regular business contacts in Cebu.

While most seahorses are sold, about 28 percent of the respondents claim to use them personally to cure common ailments such as stomach aches and asthma. The seahorse is first roasted, then powdered and dissolved with hot water and taken as a drink. Key respondents also said that they keep pieces of seahorses inside bottles of alcoholic beverages and taken regularly as a cure for impotence. They felt these remedies were effective especially when pharmaceutical drugs were not available.

#### **4.2.4. Local buying price of seahorses**

While it is difficult to collect data on an illegal fishery, respondents report that the demand for seahorses has increased in the past two to three years. According to a BFAR employee:

“I think the demand is increasing considering the price. Imagine 30 pesos if you get 5 live seahorses and for dried it would be 150 pesos ...”

Ninety-seven percent of the community survey respondents claim that the local buying price of seahorse has increased from 2004 to the present. Only two respondents said that the price had remained the same. Respondents stated that 2004 prices on the Danajon islands ranged from PHP5–10 per individual wet seahorse, which has increased to PHP15–20 (US\$1 = PHP45). The price depends on the size of the seahorse and the number of seahorse buyers in a particular island. Respondents noted that, on the average, prices had increased 91 percent in Getafe and 74 percent in Talibon. These numbers should not be interpreted as precise estimates, but they probably reflect a real, but unknown, increase in price.

Table 4 reports what respondents feel are the reasons behind the increase in seahorse value at the community level. Most fishers, especially those in non-project sites, are convinced that the scarcity of seahorses is due to overfishing. Other considerations such as international markets and local restrictions are also believed to be driving up prices. This trend is linked to the number of fishers entering the seahorse fishery.

Table 4  
**Perceived reasons for increase in local seahorse prices**

Reasons	Project sites		Non-project sites		Total	
	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%
Scarcity of seahorses due to overfishing	12	40	20	71	32	55
There are several uses of seahorses	7	23	3	11	10	17
Buying price abroad has increased	5	17	1	4	6	10
Prices of commodities have also increased	3	10	1	4	4	7
Supply has decreased due to restrictions	3	10	1	4	4	7
Many buyers and they buy large seahorses	0	0	2	7	2	4
Total	30	100	28	28	58	100

<sup>1</sup> Number of respondents.

#### **4.2.5. Perceived change in number of seahorse fishers**

The majority of the respondents (72 percent) agree that the number of seahorse fishers has increased since 2004. Only 25 percent of respondents stated that the number of seahorse fishers had decreased, while 3 percent felt that the number has remained the same. The estimated increase in seahorse fishers ranged from 52 percent (for non-project sites) to 63 percent (for project sites). Sixty-five percent of the respondents who believe that the number of seahorse fishers is increasing reported that increased seahorse prices were the driving force behind this trend (Table 5). A significant number of respondents feel that young fishers are entering the fishery owing to narrowing work options, which may be linked to limited educational options and a declining resource base.

Table 5  
**Perceived reasons for increase in number of seahorse fishers**

Reasons	Project sites		Non-project sites		Total	
	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%
Higher local price for seahorses	15	63	13	68	28	65
Married young men have no better options	9	38	5	26	14	33
Presence of local buyers	0	0	1	5	1	2
Total	24	100	19	100	43	100

<sup>1</sup> Number of respondents.

Respondents who felt that the number of seahorse fishers had decreased attributed the decrease to other livelihood choices (seaweed farming and sea-cucumber gathering), declining seahorse populations, and fear of arrest (Table 6).

Table 6  
**Perceived reasons for decrease in the number of seahorse fishers**

Reasons	Project sites		Non-project sites		Total	
	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%
Shift to other livelihoods	0	0	7	70	7	47
Scarcity of seahorses and hard to find	3	60	2	20	5	33
Fear of arrest due to the ban	2	40	1	10	3	20
Total	5	100	10	100	15	100

<sup>1</sup> Number of respondents.

#### 4.2.6. Perceived condition of seahorse populations

The majority of respondents understand that the quality of seagrass and coral ecosystems influences seahorse populations. They are also aware of the life-history patterns of seahorses. In the absence of independently collected, time-series monitoring data, respondents were asked to quantify from 1 (lowest) to 10 (highest) their perceptions of the status of the seahorse population before and after 2004 and the amount of seahorses captured during different periods (Table 7).

Table 7

#### Perception ratings of the status of the seahorse population before and after 2004

Seahorse population	By municipality		t-test	By site		t-test
	Getafe	Talibon		Project	Non-project	
Before 2004	9.5	8.4	3.55, $p < .05$	9.0	8.9	0.40, $p > .05$
After 2004	4.6	4.4	0.44, $p > .05$	4.7	4.2	1.36, $p > .05$
t-test	18.55, $p < .05$	17.03, $p < .05$		15.27, $p < .05$	19.14, $p < .05$	
Catch						
Before 2004	8.9	7.3	3.96, $p < .05$	8.43	7.78	1.43, $p > .05$
After 2004	4.57	4.93	1.20, $p > .05$	4.77	4.53	0.49, $p > .05$
t-test	10.17, $p < .05$	4.30, $p < .05$		6.89, $p < .05$	5.94, $p < .05$	

The respondents from the project and non-project sites rated their nearby seahorse populations before 2004 the same (9.0). When classified by municipalities, the respondents from Getafe gave a significantly higher rating than those from Talibon pre-2004 (9.5 vs 8.4), supporting the anecdotal reports of greater seahorse abundance in Getafe. Getafe and Talibon respondents rated their seahorse population after 2004 very similarly (4.6 vs 4.4). Significant decreases in perceived catch rates are evident if the ratings by municipalities and sites are compared before and after 2004 – findings that are in agreement with Martin-Smith *et al.* (2004).

In agreement with Meeuwig *et al.* (2003), respondents feel that the declines in seahorse populations and catches are due to the increase in the number of seahorse fishers from both within and outside the communities (Table 8). The catching of pregnant and juvenile seahorses and illegal fishing methods, such as seining, are probably also important factors. One respondent insisted that seahorses were attracted to the local MPAs.

Table 8

#### Primary perceived reason for the decrease in seahorse population in surrounding waters

Reasons Cited	Project sites		Non-project sites		Total	
	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%
Increase in number of seahorse fishers	20	67	18	60	38	63
Indiscriminate catching of seahorses	6	20	8	27	14	23
Habitat destruction due to illegal fishing	1	3	3	10	4	7
Killed by chemicals used in seaweed bleaching	2	7	0	0	2	3
More seahorses are inside the sanctuaries	1	3	0	0	1	2
Presence of several local buyers	0	1	3	3	2	2
Total	30	100	30	100	60	100

<sup>1</sup> Number of respondents.

Information in Table 9 demonstrates that the vast majority of fishers (90 percent in project sites and 87 percent in non-project sites) feel that there has been a decline in their seahorse catches. Overfishing is the leading perceived reason for declining catches (in agreement with Meeuwig *et al.*, 2003). Almost none of the respondents say that the decrease is due to any restrictions in seahorse catching.

Table 9

**Reasons of respondents to the decrease in the number of seahorses captured**

Reasons cited	Project sites		Non-project sites		Total	
	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%
Decrease in population due to overfishing	23	85	22	85	45	45
Seahorse move farther from shallow waters	1	4	2	8	3	6
Due to the restrictions in catching seahorses	1	4	1	4	2	4
Destruction of seahorse habitats	1	4	0	0	1	2
Pregnant seahorses are also caught	1	4	0	0	1	2
Sea cucumbers are more expensive	0	0	1	4	1	2
Total	27	100	26	100	53	100

<sup>1</sup> Number of respondents.

The lack of field monitoring of seahorse capture rates and trade export data from the Philippines on the CITES database limits the ability to make any conclusions that could link perceived declining populations with increased fishing pressure and/or trade. However, reported increased prices for seahorses and a possible increase in trade prior to the imposition of a ban, as documented by Rivalan *et al.*, 2007 for other banned species, support this inference.

#### **4.2.7. Awareness of laws and specific regulations**

Knowledge of rules and regulations by local resource users is a strong predictor of the success of fisheries and coastal management programs and policies (World Bank, 2000). An understanding of regulations and international trade dynamics is a critical challenge for communities influenced by CITES listings (Roe *et al.*, 2002). Nonetheless, there is a general inattention to disseminating information about CITES listings (Roe *et al.*, 2002). Sixty percent of the Danajon respondents surveyed had no knowledge of either RA 8550 or the CITES. Thirty percent had heard of RA 8550, but only 7 percent had heard of the term “CITES”. Sixty-two percent of the 24 respondents who were familiar with both RA 8550 and the CITES cited the PSF as their main source of information. While some may not recognize regulation titles, they have knowledge of specific regulations, such as: the banning of fine-mesh nets, superlights (to attract fish), dynamite and cyanide; closed seasons for rabbitfish and blue crabs during spawning periods in Talibon; and the banning of commercial fishing vessels larger than 3 gross tons in municipal waters. Only 9 percent of the respondents were familiar with the seahorse collecting ban due to the CITES and RA 8550.

The PSF has introduced proposals for regulating marine resources in their project sites, and MPAs have been established in various communities. Just prior to the listing of seahorses under the CITES, the PSF facilitated various workshops and planning exercises, resulting most notably in Ordinance No. 22 in Getafe, intended to establish a licensing system, a minimum size limit, and prohibition of the capture of pregnant male seahorses. While such an ordinance cannot be enforced at present, there exists the impression within communities that these regulations are in place. Table 10 displays the local seahorse regulations known by respondents. Almost one-half (48 percent) of the respondents expressed knowledge of a prohibition on the capture of pregnant males and 39 percent are under the impression that the capture of small seahorses is prohibited. The percentages are consistent across sites. While these results may indicate that respondents are supplying answers that they feel are welcomed by interviewers, researchers received the impression during key respondent interviews that residents believed these regulations to be in place (and are, therefore, referred to in the below as local seahorse regulations). These results do not indicate whether these regulations are, in fact, implemented.

Table 10  
Local seahorse regulations known to respondents

Seahorse regulations	By municipalities				By sites				Overall	
	Getafe		Talibon		Project		Non-project			
	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%
Prohibition of catching of pregnant seahorses	19	50	12	46	17	46	14	52	31	48
Prohibition of catching of small seahorses	18	47	7	27	14	38	11	41	25	39
Total ban on catching of seahorses	1	3	5	19	4	11	2	7	6	9
Observance of quota on catching of seahorses	0	0	1	4	1	3	0	0	1	2
Observance of close and open seasons	0	0	1	4	1	3	0	0	1	2
Total	33	100	26	100	37	100	27	100	64	100

<sup>1</sup> Number of respondents.

Note: Multiple responses possible, n = 24.

Sixty-three percent of the respondents cited the PSF as their major source of information about seahorse fishing regulations. Village officials (for 16 percent of respondents), other fishers (12 percent), municipal officials (7 percent) and the television (2 percent) are secondary sources of information. The PSF has been active in the study sites since 1995 and very effective in information dissemination (Meeuwig *et al.*, 2003). In addition to regulatory information, many local respondents explained what they had learned about seahorse life history and the importance of conservation measures. These educational efforts may have encouraged local fishers to self-regulate their catching of juvenile and pregnant seahorses.

Knowledge and possible self-regulation may be the result of the use of participatory planning processes used for policy regulation (Christie *et al.*, 2005; Pollnac, Crawford and Gorospe, 2001). Sixty-five percent of the respondents in Getafe said that they were consulted in the formulation of the local seahorse regulations. This is in contrast to the 80 percent from Talibon who claimed not to have been consulted. Ninety-five percent of the respondents from Getafe expressed a satisfaction with the local regulations (Table 11). The reactions from Talibon respondents to local regulations varied from satisfied (35 percent) to unaware (35 percent), surprised (25 percent) and angry (5 percent). Respondents who resented regulations felt that they were an economic burden to those with low incomes. A few respondents expressed indifference to the regulations as they were not being formally enforced by local authorities.

Table 11  
Reactions of respondents to local seahorse regulations

Reactions	By municipality				By site				Total	
	Getafe		Talibon		Project		Non-project			
	No. <sup>1</sup>	%								
Satisfied	19	95	7	35	13	59	13	72	26	65
Unaware	0	0	7	35	3	14	4	22	7	18
Surprised	0	0	5	25	4	18	1	6	5	13
Angry	1	5	1	5	2	9	0	0	2	5
Total	20	100	20	100	22	100	18	100	40	100

<sup>1</sup> Number of respondents.

None of the project-site respondents reported enforcement actions against violators of the local seahorse regulations (or ban). Records from the police stations and key respondents in both Getafe and Talibon also showed no apprehensions or cases filed in court. Self-enforced compliance with regulations, changes in seahorse buyer demands, or a complete lack of enforcement are the best explanation for these results. As discussed above, local officials are not enforcing seahorse-specific local regulations as they are aware of the overriding influence of RA 8550 and the ban. The confusion

over what regulations are, in fact, in place is not uncommon in the Philippines and has been exacerbated in this case by unclear communication, changing regulations, and the unwillingness of local officials to antagonize their voting constituency by announcing unpopular regulations.

#### **4.2.8. Marine protected areas and seahorse conservation**

Confusion surrounding seahorse regulations may have unfortunate consequences for ongoing conservation in the area and the creation of strong collaborations between government agencies, NGOs, and resource users. No-take MPAs are generally the preferred coral-reef management tool in the Philippines (Martin-Smith *et al.*, 2004). Each of the study sites has one or more MPA, which vary in their effectiveness, community support, and enforcement. Using a ranking system developed by a Philippine NGO that employs biological and social metrics of success (such as improved fish density, community support, and consistent enforcement), the Handumon MPA in Getafe received 38 out of a possible total of 40 points, and the Cataban MPA in Talibon received 18 points during a recent assessment (Christie and White, 2007; Langjhar, 2006; CCEF, 2007). These sites are some of the best managed MPAs out of 19 surveyed in Danajon Bank. The success of MPA management is relevant as 100 percent of respondents from the project sites and 93 percent of respondents from the non-project sites believe that MPAs have improved seahorse populations. While the ordinances for these no-take MPAs do not regulate seahorse gathering in nearby waters, the connection between MPA establishment facilitated by the PSF and seahorse conservation efforts suggests that seahorse policies may affect MPA success in project sites.

#### **4.2.9. Perceived socio-economic impacts of seahorse regulations**

The response was mixed when informants were asked how regulations of seahorse capture (minimum size limits or restrictions on capture of pregnant males) would affect their income (Table 12). A small majority of the respondents (58 percent) claimed that they would not feel any negative socio-economic impacts from restrictions on seahorse fishing. There were no significant differences between municipalities or between project and non-project sites. Eighty percent of the 35 respondents who felt there would be no negative socio-economic impacts from regulations stated that seahorses were not their main source of cash income. Meanwhile, the remaining 20 percent of these respondents felt that the regulations would not change the quantity of their catch. However, policy-makers should keep in mind that seahorses provide a significant portion of income for some – especially the poorest with few alternatives (Meeuwig *et al.*, 2003). The respondents who expressed concern about the socio-economic impacts of the regulations were asked to rate the extent to which these would be felt, from 1 (lowest) to 10 (highest). The mean ratings of respondents from Getafe and Talibon are similar (4.33 vs 3.77,  $t$ -test = 0.59,  $p > 0.05$ ). The mean ratings of respondents from the project sites and the non-project sites do not differ significantly (4.69 vs 3.55,  $t$ -test = 1.21,  $p > 0.05$ ). The relative impact from regulations would be moderate in respondents' opinions. In general, these data suggest that the response to restrictions would be mixed and that offsetting mechanisms such as alternative livelihood programs may need to be initiated if regulation compliance is to be expected. At the very least, continuation of the consultation, educational, and monitoring efforts would be helpful to help ensure regulation effectiveness.

A high percentage of the 25 respondents who stated that they would be negatively affected by seahorse regulations would probably employ compensatory strategies against the loss of income from seahorses. Eighty-four percent stated that they would concentrate their effort on other fishing activities such as compressor, spear, crab, and hook and line fishing. Compressor fishers, usually from Talibon, target food fish and sea cucumbers while seahorses are caught opportunistically. Another 8 percent of the respondents felt that they would shift to non-fishing activities such as seaweed farming or running a small shop. The design and implementation of alternative and supplemental income programmes that do not result in increased overfishing of other stocks is challenging (Sievanen *et al.*, 2005).

Table 12

**Perceived socio-economic impacts of the regulations including minimum-size limits and restrictions on capture of pregnant males**

Responses	By municipality				By sites				Over-all	
	Getafe		Talibon		Project		Non-project		No. <sup>1</sup>	%
	No. <sup>1</sup>	%								
Have negative impacts	12	40	13	43	14	47	11	37	25	42
No negative impacts	18	60	17	57	16	53	19	63	35	58
Total	30	100	30	100	30	100	30	100	60	100

<sup>1</sup> Number of respondents.

**4.2.10. Respondent suggestions for seahorse policies**

Respondents expressed suggestions for local regulations. Sixty percent of the respondents felt that the community residents should not catch pregnant and small seahorses (Table 13). This preferred option is more common in the project sites (80 percent) than in the non-project sites (40 percent), indicating the influence of PSF. Interestingly, a higher proportion of the respondents from the non-project sites (37 percent) compared with the project sites (17 percent) suggested that community residents should abandon seahorse fishing. The higher willingness to abandon seahorse gathering in non-project sites may be reflect differences in seahorse abundance, varying alternative livelihood options, or the influence of the PSF. Few respondents identified protecting the MPA as an important responsibility for local residents – possibly because MPA enforcement in Bohol is commonly the responsibility of the municipal government or community officials and not the general public.

Table 13

**Suggestions for community residents for sustainable seahorse management**

Suggestion made	Project sites		Non-project sites		Total	
	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%
Abide by local regulations for seahorses	24	80	12	40	36	60
Abandon seahorse fishing	5	17	11	37	16	27
Help protect the sanctuary from intruders	1	3	4	13	5	8
Preserve the corals as seahorse habitat	0	0	1	3	1	2
Outsiders should not fish in the community	0	0	1	3	1	2
Nothing to suggest	0	0	1	3	1	2
Total	30	100	30	100	60	100

<sup>1</sup> Number of respondents.

Respondents also have recommendations for government officials regarding preferred seahorse regulations. A small majority of respondents (53 percent) would prefer regulation of seahorse capture over a complete ban on collecting (Table 14). Twenty-two percent of respondents would seem to accept a total ban enforced by the government. Other actions by the government such as improved enforcement would be welcomed by some. While not identified by respondents as a preferred action, the control of exporters may ultimately determine whether and how seahorses are gathered. One key respondent recalled that when there was the news of the total ban “the catching was minimized because there were no more buyers ... who feared to be apprehended.” This effect evidently declined as there are clearly buyers in the area and markets in Cebu and abroad.

Table 14

**Suggestions to the government for sustainable seahorse management**

<b>Suggestion cited</b>	<b>Project sites</b>		<b>Non-project sites</b>		<b>Total</b>	
	No. <sup>1</sup>	%	No. <sup>1</sup>	%	No. <sup>1</sup>	%
Regulate only seahorse fishing; not total ban	19	63	13	43	32	53
Enforce the ban on catching of seahorses	5	17	8	27	13	22
Effectively enforce and add the sanctuaries	3	10	2	7	5	8
Stop all illegal fishing activities	1	3	1	3	2	3
Prevent encroachment of outside fishers	0	0	2	7	2	3
Apprehend seahorse buyers	0	0	1	3	1	2
Provide alternatives to seahorse fishing	1	3	0	0	1	2
Nothing to suggest	1	3	3	10	4	7
Total	30	100	30	100	60	100

<sup>1</sup>Number of respondents.

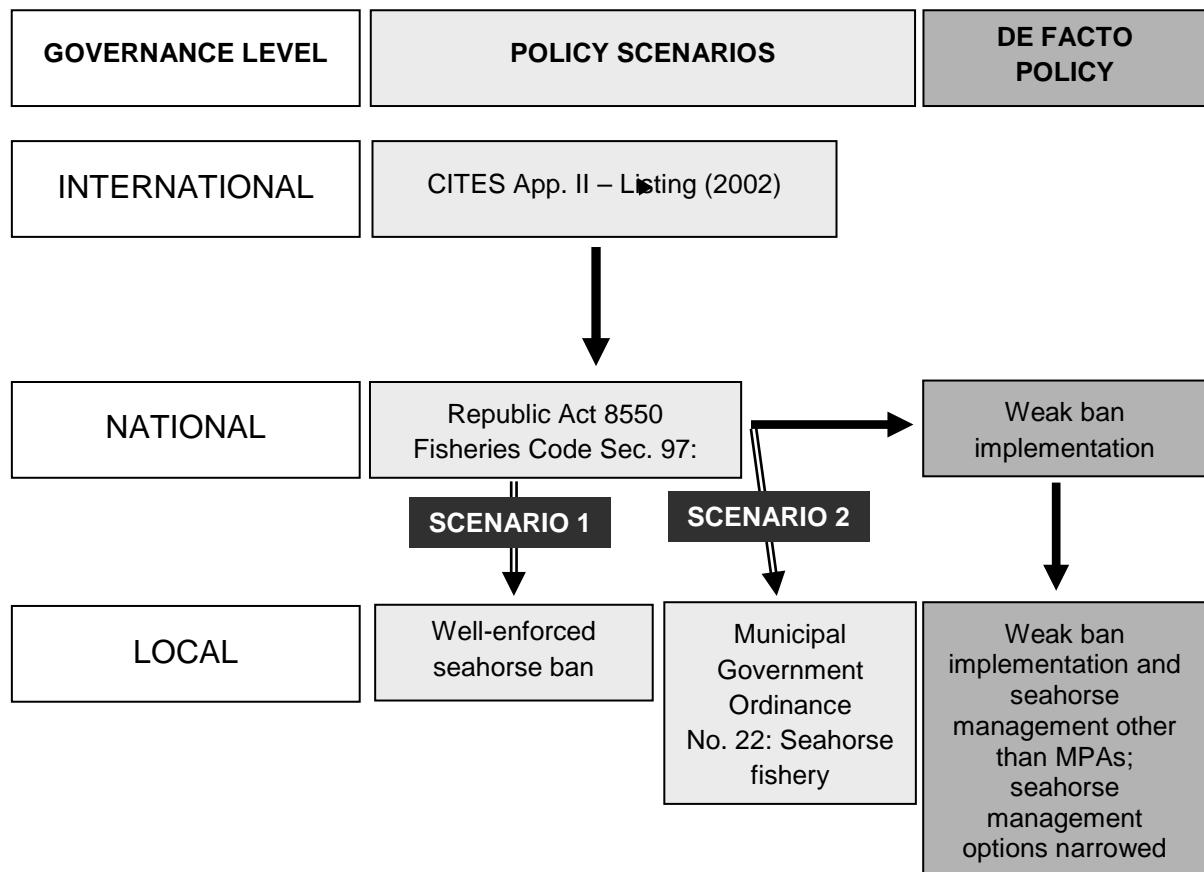
## 5. CONCLUSIONS

This analysis, while focused on the Philippines, provides important findings that can be used to improve the CITES and take steps to improve CITES implementation and seahorse conservation in and beyond the Philippines. The intentions of listing seahorses under CITES Appendix II were admirable and may, in the long term, result in improved seahorse management even in the Philippines, where the listing has not generated the anticipated results. Figure 2 summarizes two hypothetical policy tracks (non-solid arrows) resulting from the listing of seahorses under Appendix II given: (i) the current legal context (Scenario 1); or (ii) a legal reform to Section 97 of RA 8550 or development of new laws (Scenario 2). Both scenarios are predicated on sufficient institutional capacity and commitment at various levels of governance. In reality, however, the de facto policy track (with solid arrows) is in place in the Philippines. A formal ban has been declared at the national level, but there is little institutional capacity or commitment to implement this ban. As a result of the ban, local management options have been narrowed as local policies cannot contradict the formal ban.

The implications of the current situation are problematic not only for seahorses and reliant fishers, but also for the practice of fisheries and coastal management in general. Prices for seahorses appear to be rising, possibly as a result of black-market trading and growing demand. More fishers appear to be entering the seahorse fishery. The confusion surrounding resource policies has a tendency to undermine the legitimacy of government agencies and NGOs. The creation of trusting relationships between resource users and these institutions are fragile and require transparent and consistent policy-making. The practice of conservation and resource management, which has taken decades to establish in the area, could be eroded. This scenario has played itself out in other contexts (Cooney and Jepson, 2006), and signals the need for the CITES and its proponents to become more attuned to local implications of this potent international regime.

Figure 2

## Seahorse policy tracks post-CITES listing for the Philippines



The fact that various constituencies have distinct positions suggests that a multistakeholder process is necessary to resolve the interlinked issues. The BFAR has tended to support the ban policy, but is now considering a reform of RA 8550 Section 97, but not one that allows for the capture and international trade of wild seahorses. The PSF and local seahorse fishers would prefer a regulated seahorse fishery over a ban, but the majority of local seahorse fishers would probably have compensate for a loss of income if a ban were implemented. Various domestic and international NGOs have distinct opinions regarding reform of RA 8550, and many may not agree with the capture and trade of Appendix II-listed animals such as whale sharks. Finally, enforcement of, or compliance with, any regulations, most especially a ban, is very difficult and would require ongoing support and vigilance.

The conclusion that reform of the Philippine legal code is the key issue oversimplifies the situation and places the responsibility (and blame for this situation) primarily on the Government of the Philippines and the Philippine legal code. The Philippines is well within its rights, as stated in Section XIV of the CITES, to implement policies that are stricter than the minimum requirements set by the CITES. The Government of the Philippines, with public input, has the responsibility for deciding what monitoring and enforcement activities for the growing list of threatened species are feasible. Philippine society has established some of the most progressive coastal and ocean management policies in the world, as evidenced by the proliferation of MPAs in the country (World Bank, 2006), a vibrant NGO sector, and the embracing of integrated coastal management and ecosystem-based management principles (Christie *et al.*, 2007). The Philippine agencies have begun to explore legal options to allow a limited trade of cultured seahorses (and other marine species). Legislative reform is possible, but any policies that may affect various species and fisheries will take years to develop through the Philippine consultative and legal process.

On a positive note, this relatively minor policy crisis has provided the opportunity for all parties to review policies and practices and refine them. The BFAR is now reviewing the legal basis for various internationally traded marine species. It is hoped that consistent regulations, rather than species-tailored exemptions setting unwarranted precedents, will prevail. Environmental NGOs are recognizing the complexities of linking international with local resource-management efforts.

In this spirit, the CITES and its proponents should consider various reforms to avoid the scenarios described in this case study. The development of balanced impact assessments for listings that consider not only ecological impacts on organisms but also policy, legal and socio-economic implications in an integrated fashion would improve both understanding and practice. The process by which constituency groups are drawn into the process of research, listing, and implementation is clearly in need of improvement. Participatory planning processes and comanagement policy-making are the hallmark of Philippine coastal planning processes that should influence international regime development and implementation. The lack of understanding of CITES regulations and how they articulate with current policy, at all levels of Philippine society, is evidence that such processes were short-circuited. The CITES is designed to respond to global trade and, as such, its proponents may feel that consultative or participatory processes may become overly laborious. This may be true initially, but ignoring current regulatory practice and institutional capacity will result in similar scenarios, especially as more widely utilized fisheries species are listed. The lessons of tropical artisanal fisheries management need to inform CITES practice.

Ongoing investment in human capacity and institutions is needed throughout the developing world, especially as the primary source for many CITES-listed species marketed to affluent nations. The use of positive incentive structures that reward sustainable resource use are an essential complement to command and control mechanisms. These complementary policies must be applied equitably across the spectrum of nations. In short, the seahorse-consuming nations must become a serious party to reform if it is to work.

While the Philippine case represents an example of what to avoid, the authors recognize that the listing of seahorses under CITES Appendix II may have a positive impact on generating monitoring and management mechanisms for international trade. There remains considerable work ahead to understand how this policy intervention has evolved in other contexts and how to refine its implementation when needed.

## 6. REFERENCES

**Barbon, W.J.D.** 2005. *Socio-economic profile and fishing practices of lantern fishers in the Danajon Bank, Philippines*. Project Seahorse for Marine Conservation Foundation, Inc. Unpublished report.

**Barut, N.** 2005. National report – Philippines. In A.W. Bruckner, J.D. Field & N. Daves, eds. *The Proceedings of the International Workshop on CITES Implementation for Seahorse Conservation and Trade*, pp 84–88. NOAA Technical Memorandum NMFS-OPR-27. Silver Spring, USA.

**Barut, N.C., Santos, M.D. & Garces, L.R.** 2004. Overview of Philippine marine fisheries. In Department of Agriculture, Bureau of Fisheries and Aquatic Resources. *In turbulent seas: the status of Philippine marine fisheries*, pp. 22–31 Coastal Resource Management Project. Cebu City, Philippines.

**Baum, J.K. & Vincent, A.C.J.** 2005. Magnitude and inferred impacts of the seahorse trade in Latin America. *Environmental Conservation*, 32: 305–319.

**Blundell, A.G. & Mascia, M.B.** 2005. Discrepancies in reported levels of international wildlife trade. *Conservation Biology*, 19(6): 2020–2025.

**Bruckner, A.W., Field, J.D. & Daves, N., eds.** 2005. *The Proceedings of the International Workshop on CITES Implementation for Seahorse Conservation and Trade*. NOAA Technical Memorandum NMFS-OPR-27. Silver Spring, USA. 174 pp.

**Central Intelligence Agency (CIA).** 2006. *The world factbook* (available at [www.cia.gov/cia/publications/factbook](http://www.cia.gov/cia/publications/factbook)).

**Christie, P. & White, A.T.** 2007. Best practices for improved governance of coral reef marine protected areas. *Coral Reefs*, 26: 1047–1056.

**Christie, P., Armada, N., White, A.T., Gulayan, A. & Dios, H.** 2006. *Coastal environmental and fisheries profile, Danajon Bank, Bohol, Philippines*. Project Fisheries for Improved Harvest. Cebu City, Philippines, and USAID (available at [www.oneocean.org](http://www.oneocean.org)).

**Christie, P., Fluharty, D.L., White, A.T., Eisma-Osorio, R.L. & Jatulan, W.** 2007. Assessing the feasibility of ecosystem-based fisheries management in tropical contexts. *Marine Policy*, 31: 239–250.

**Christie, P., Lowry, K., White, A.T., Oracion, E.G., Sievanen, L., Pomeroy, R.S., Pollnac, R.B., Patlis, J. & Eisma, L.** 2005. Key findings from a multidisciplinary examination of integrated coastal management process sustainability. *Ocean and Coastal Management*, 48: 468–483.

**Coastal Conservation and Education Foundation (CCEF).** 2007. MPA database (available at [www.coast.ph/resource-center/mpa-database/](http://www.coast.ph/resource-center/mpa-database/)).

**Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).** 2003. *Proposals for amendment of Appendices I and II. Results. Twelfth meeting of the Conference of the Parties*. Geneva, Switzerland, CITES Secretariat (also available at [www.cites.org/eng/news/world/cop12\\_prop\\_results.pdf](http://www.cites.org/eng/news/world/cop12_prop_results.pdf)).

**Cooney, R. & Jepson, P.** 2006. The international wild bird trade: what's wrong with blanket bans? *Oryx*, 40: 1–6.

**Department of Agriculture, Bureau of Fisheries and Aquatic Resources (DA-BFAR).** 1998. *The Philippine Fisheries Code of 1998 (RA No 8550). Implementing Rules and Regulations*.

**Department of Agriculture, Bureau of Fisheries and Aquatic Resources (DA-BFAR).** 2004. *In turbulent seas: the status of Philippine marine fisheries*. Coastal Resource Management Project. Cebu City, Philippines.

**Foster, S.J. & Vincent, A.C.J.** 2005. Enhancing sustainability of the international trade in seahorses with a single minimum size limit. *Conservation Biology*, 19: 1044–1050.

**Garcia, B.** 2007. Protected marine species seized as Philippines' police raid warehouse. *UnderwaterTimes.com* (available at [www.underwatertimes.com/news.php?article\\_id=50108726413](http://www.underwatertimes.com/news.php?article_id=50108726413)).

**Ginsburg, J.** 2002. CITES at 30, or 40. *Conservation Biology*, 16: 1184–1191.

**Green, S.J., White, A.T., Flores, J.O., Carreon III, M.F. & Sia, A.E.** 2003. *Philippine fisheries in crisis: a framework for management*. Coastal Resource Management Project of the Department of Environment and Natural Resources. Cebu City, Philippines.

**Labajo, D.R.** 2004. The peopling of the Danajon Reef Bank. *Philippine Quarterly of Culture and Society*, 32: 230–236.

**Langjahr, K.K.** 2006. *Perceived factors for successful marine sanctuary management in the Danajon Bank ecosystem, Philippines*. University of Washington. (Masters thesis)

**Martin-Smith, K.M., Samoilys, M.A., Meeuwig, J.J. & Vincent, A.C.J.** 2004. Collaborative development of management options for an artisanal fishery for seahorses in the central Philippines. *Ocean and Coastal Management*, 47: 165–193.

**Matthews, P.** 1996. Problems related to the Convention on the International Trade in Endangered Species. *The International and Comparative Law Quarterly*, 45: 421–431.

**McPherson, J.M. & Vincent, A.C.J.** 2004. Assessing East African trade in seahorse species as a basis for conservation under international controls. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 14: 521–538.

**Meeuwig, J., Samoilys, M.A., Erediano, J. & Hall, H.** 2003. Fishers' perceptions on the seahorse fishery in Central Philippines: interactive approaches and an evaluation of results. In N. Haggan, C. Brignall and L. Wood, eds. *Putting Fishers' Knowledge to Work: Conference Proceedings, August 27–30, 2001*, pp. 208–223. Fisheries Centre Research Reports 11(1).

**Miles, M.B. & Huberman, A.M.** 1994. *Qualitative data analysis: an expanded sourcebook*. Second edition. London and Thousand Oaks, USA, Sage Publications. 352 pp.

**Patton, M.Q.** 2001. *Qualitative research and evaluation methods*. Third edition. Thousand Oaks, USA, Sage Publications. 688 pp.

**Pollnac, R.B., Crawford, B.R. & Gorospe, M.L.G.** 2001. Discovering factors influencing the success of community-based marine protected areas in the Visayas, Philippines. *Ocean and Coastal Management*, 44: 683–710.

**Project Seahorse.** Updated. *Regulating the international trade in seahorses. A Project Seahorse position statement and briefing paper* (available at [seahorse.fisheries.ubc.ca/Documents/PositionStatements/PSposition-CITES.pdf](http://seahorse.fisheries.ubc.ca/Documents/PositionStatements/PSposition-CITES.pdf)).

**Project Seahorse Foundation.** 2003. *Annual report*. Cebu City, Philippines (available at <http://seahorse.fisheries.ubc.ca/index.html>).

**Reeve, R.** 2006. Wildlife trade, sanctions and compliance: lessons from the CITES regime. *International Affairs*, 82: 881–897.

**Rivalan, P., Delmas, F., Angula, E., Bull, L.S., Hall, R.J., Rosser, A.M. & Leader-Williams, N.** 2007. Can bans stimulate wildlife trade? *Nature*, 447: 529–530.

**Roe, D., Mulliken, T., Milledge, S., Mremi, J., Moshia, S. & Greig-Gran, M.** 2002. *Making a killing or making a living? Wildlife trade, trade controls and rural livelihoods*. Biodiversity and Livelihoods Issues No. 6. International Institute for Environment and Development and TRAFFIC.

**Sievanen, L., Crawford, B., Pollnac, R.P. & Lowe, C.** 2005. Weeding through assumptions of livelihood approaches in ICM: seaweed farming in the Philippines and Indonesia. *Ocean and Coastal Management*, 48: 297–313.

**Swanson, T., Bolton, P. & Manning, A.** 1993. Regulating endangered species. *Economic Policy*, 8: 183–205.

**TRAFFIC.** 2002. *TRAFFIC recommendations on proposal to amend the appendices at the twelfth meeting of the conference of parties to CITES, Santiago, Chile, 3–15 November 2002*.

**Vincent, A.C.J., Marsden, A.D. & Sumaila, U.R.** 2005. *Possible contributions of globalization in creating and addressing seahorse conservation problems*. Working paper # 2005–04. Fisheries Centre, University of British Columbia (available at [www.fisheries.ubc.ca/publications/working/2005/series4.pdf](http://www.fisheries.ubc.ca/publications/working/2005/series4.pdf)). (Also available in W.W. Taylor, M.G. Schechter & L.G. Wolfson, eds. 2007. *Globalization: Effects on Fisheries Resources*, pp. 185–214. New York, USA, Cambridge University Press)

**Willock, A.** 2002. *Uncharted waters: implementation issues and potential benefits of listing toothfish in Appendix II of CITES*. TRAFFIC International.

**World Bank.** 2000. *Voices from the village: a comparative study of coastal resource management in the Pacific Islands*. Pacific Islands Discussion Paper Series No. 9. Washington, DC.

**World Bank.** 2006. *Philippines environment monitor: integrated coastal and marine resource management*. Washington, DC.

**Yin, R.K.** 2002. *Case study research: design and methods*. Third edition, Applied Social Research Methods Series, Vol. 5. Thousand Oaks, USA, Sage Publications. 200 pp.

## APPENDIX 1

### Principal legal questions and areas of inquiry

#### PRINCIPAL QUESTIONS OF THIS RESEARCH PROJECT

- § Has the listing of seahorse under CITES significantly affected the fishing mortality and/or status of sea horses?
- § Has CITES listing had significant social and economic impacts on the local communities involved in capture and marketing of the species?
- § Has CITES listing had a significant impact on conservation strategies that were initiated pre-listing?

#### POLICY ISSUES OF SEAHORSE CONSERVATION

- § What are the BFAR legislation (e.g. RPFAO, Admin Circular) relevant to seahorse conservation?
- § Why did the Philippines adopt a stricter domestic measure with regard to CITES?
- § Do you think that the enactment of PFC ensured that the seahorses are not over-exploited?
- § Or has it driven the fishery underground and thus cannot be monitored effectively?
- § Do you think that the prohibition includes or should include the ban on the trading of seahorses?
- § FOR BFAR leadership:
  - § Do you know the history of how seahorses were listed in the CITES?
  - § Were there consultations with BFAR regarding the CITES Appendix II listing of seahorses?
  - § Was BFAR an active part in having seahorses listed in Appendix II?
  - § Were there consultations with BFAR regarding the revision of PFC in order to harmonize with CITES Appendix II?
  - § Is there any chance of amendment for Sec. 97, PFC? How long do you think will this take? What is the proper mechanism?
  - § Are you concerned about setting a precedent for appendix 2 listings?
  - § Why has the Philippines taken the position that appendix 2 listings are banned?

#### IMPLEMENTATION ISSUES OF PFC PROVISION

- § What are the specific measures taken by BFAR/your organization to implement the PFC provision?
- § Does BFAR have any programs on rare, threatened and endangered species?
- § Are there existing monitoring or records at BFAR of seahorse imports or exports?
- § Are there any efforts by BFAR/your organization to monitor catches and populations of seahorses and/or to improve data collection?
- § Are there any efforts by BFAR/your organization to monitor and keep records on seahorse imports and exports?
- § Are there existing data at BFAR on the catches and populations of seahorses?
- § If yes to the previous question, what and where is the primary or sole source of seahorses?
- § Has there been a directive or any form of technical inputs from the national office to regional office regarding the implementation of this PFC provision? Why or why not?
- § Do you think that there is adequate enforcement of the PFC provision on the ban of taking rare, threatened and endangered species? If not, what are the limitations?
- § Are steps taken towards the revision of the PFC to harmonize its provision with the CITES Appendix II listing of seahorses? Is BFAR/your organization supportive of these steps? How so? (Provide examples)
- § Are there any difficulties to the enforcement of the PFC Provision in view of the CITES Appendix II listing of seahorses? What are these in particular?
- § What are your recommendations in view of the PFC provision and CITES Appendix II listing of seahorses?

#### ON THE EXPORT OF APPENDIX II LISTED SPECIES

- § Aside from seahorses, what are the species covered by CITES Appendix II? (Copy and collect any relevant documents. )
- § The export of any specimen of a species included in Appendix II shall require the prior grant and presentation of an export permit. What are the types of export permits that BFAR issues at present?
- § Are there seahorse exporters that you know in Cebu and Manila, Philippines (although not allowed per se) (depending on status of trade)

- § To what country are they exporting these? Are they selling it domestically?
- § Are these exported live or dried? (Percentages of each)
- § How about the demand for seahorses, has it increased or decreased in the past 2-3 years?
- Has the price of seahorses also increased or decreased? (Get estimates)
- § Is it becoming more difficult to obtain seahorses?

**FOR TRADITIONAL CHINESE MEDICINE (TCM) TRADERS OR EXPORTERS**

- § Are there seahorse exporters that you know in Cebu and Manila, Philippines (although not allowed per se) (depending on status of trade) (try to get names and contacts)
- § How long have they been at the trade as TCM traders?
- § Are they also exporters of seahorses? Are they selling it domestically?
- § What is their primary or sole source of seahorses?
- § What are the uses of seahorses?
- § Aphrodisiacs
- § Treatment for impotence
- § Curious or gifts (e.g. keychains)
- § Popular general tonics
- § Asthma
- § To what country are they exporting these?
- § How many species of seahorses are sold or exported?
- § Are these exported live or dried?
- § How about the demand for seahorses, has it increased or decreased in the past 2-3 years?
- Has the price of seahorses also increased or decreased?
- § Is it becoming more difficult to obtain seahorses?
- § Has there been any program undertaken with you or your group with the government concerning the conservation of seahorses?
- § Has support for conserving seahorses actively sought directly from the TCM community?
- § Are they amenable to a permit system for seahorses in international trade?
- § What should be done to improve the trade while ensuring that it is sustainable?

## APPENDIX 2

### Socio-economic survey instrument

#### **A CASE STUDY ON THE SOCIO-ECONOMIC IMPACTS OF SEAHORSE CONSERVATION IN THE DANAON BANK, CENTRAL PHILIPPINES**

INTRODUCTION TO THE RESPONDENT (include only those engaged in catching or trading seahorses):

*Good morning/afternoon. I'm \_\_\_\_\_ and a member of a team from Silliman University who are here to conduct a study, in collaboration with the School of Marine Affairs of the University of Washington, Seattle, USA, about the capture and marketing of seahorses specifically regarding how these activities are affected by existing regulations. We would like to know also how you respond to these situations. Your honest answers will make this study successful. Rest assured that your answers will be treated with utmost confidentiality. Thank you very much for your trust and cooperation.*

#### **1.00. BASIC INFORMATION**

1.01. Respondent Number \_\_\_\_\_

1.02. Age: \_\_\_\_\_

1.03. Sex: \_\_\_\_\_

1.04. Civil Status: \_\_\_\_\_

1.05. Educational Attainment (IN TERMS OF YEAR LEVELS): \_\_\_\_\_

1.06. Household size (INCLUDE ALL CURRENTLY RESIDING IN THE HOUSEHOLD): \_\_\_\_\_

1.07. Number of years the household resides in the community: \_\_\_\_\_

1.08. a). Which of the following are the sources of food/income of your household *before* and *after* 2004 up to the present? (READ THOSE LISTED BELOW AND LET R SELECT. ALLOW MULTIPLE RESPONSES), b). Which of these were *before* 2004? c). Which of these were still done *after* 2004 up to the present? d). Rank those sources *after* 2004 up to the present from 1 (highest) to the last item (lowest rank) according to how much they contribute to your present household food/income.

	(a) Sources of Food/Income		(b) Before 2004		(c) After 2004 up to present		(d) Rank	
1	net fishing (owner)	1 Yes	2 No		1 Yes	2 No		
2	net fishing (worker)	1 Yes	2 No		1 Yes	2 No		
3	hookah fishing (owner)	1 Yes	2 No		1 Yes	2 No		
4	hookah fishing (worker)	1 Yes	2 No		1 Yes	2 No		
5	hook and line fishing	1 Yes	2 No		1 Yes	2 No		
6	spear fishing	1 Yes	2 No		1 Yes	2 No		
7	lantern fishing	1 Yes	2 No		1 Yes	2 No		
8	shell gathering	1 Yes	2 No		1 Yes	2 No		
9	seaweed growing	1 Yes	2 No		1 Yes	2 No		
10	fish buying and selling	1 Yes	2 No		1 Yes	2 No		
11	seahorse capturing	1 Yes	2 No		1 Yes	2 No		
12	seahorse buying	1 Yes	2 No		1 Yes	2 No		
13	sari-sari store	1 Yes	2 No		1 Yes	2 No		
14	selling <i>bahalina</i>	1 Yes	2 No		1 Yes	2 No		
15	pig raising	1 Yes	2 No		1 Yes	2 No		
16	chicken raising	1 Yes	2 No		1 Yes	2 No		
17	others (SPECIFY)	1 Yes	2 No		1 Yes	2 No		
	_____	1 Yes	2 No		1 Yes	2 No		
	_____	1 Yes	2 No		1 Yes	2 No		
	_____	1 Yes	2 No		1 Yes	2 No		
	_____	1 Yes	2 No		1 Yes	2 No		

## 2.00. CAPTURE AND MARKETING OF SEAHORSES

2.01. How many years have your household gathered seahorses? \_\_\_\_\_ years

2.02. Who among your household members are involved in capturing seahorses? (ALLOW MULTIPLE RESPONSES)

- 1      husband
- 2      wife
- 3      son/s
- 4      daughter/s
- 5      others (SPECIFY) \_\_\_\_\_

2.03. Which of the following describes your mode of capturing seahorses? (ALLOW MULTIPLE RESPONSES)

- 1      purposively look for and catch seahorses
- 2      catch seahorses only when they are found while fishing
- 3      as bycatch of fish nets
- 4      others (SPECIFY) \_\_\_\_\_

2.04. What do you do with the seahorses? (ALLOW MULTIPLE RESPONSES)

- 1      used in the family as medicine for ailments (ASK Q2.04)
- 2      sold to seahorse buyers (SKIP TO Q2.05)
- 3      made as decoration at home
- 4      made as toys for my children
- 5      kept in aquarium at home
- 6      others (SPECIFY) \_\_\_\_\_

2.05. (IF USED AS MEDICINE) a). What are the ailments you observed to have been cured with the use of seahorse?

b). How is it applied? (ALLOW MULTIPLE RESPONSES)

(a) Ailments

(b) How Applied?

- 1      stomachache \_\_\_\_\_
- 2      asthma \_\_\_\_\_
- 3      fever \_\_\_\_\_
- 4      impotency \_\_\_\_\_
- 5      Others (SPECIFY) \_\_\_\_\_

2.06. (IF FOR SALE) Where does your household go to sell seahorses? (ALLOW MULTIPLE RESPONSES)

- 1      in the same island community
- 2      in another island community
- 3      in the mainland (town proper)
- 4      in another town
- 5      in Cebu City
- 6      in Mactan

2.07. What form of seahorses do you usually sell? (READ LIST ALOUD)

- 1      still alive

- 2 already dried
- 3 dead but not dried or fresh seahorses

2.08. Who among your household members are involved in selling seahorses? (ALLOW MULTIPLE RESPONSES)

- 1 husband
- 2 wife
- 3 son/s
- 4 daughter/s
- 5 others (SPECIFY) \_\_\_\_\_

2.09. How do you compare the buying price of seahorses between *before* 2004 and *after* 2004 up to the present?

- 1 decrease (SK Q2 AND 2.11)
- 2 increase (ASK Q2.12 AND Q2.13)
- 3 same (ASK Q2.14)

2.10. If had decreased, what percent is the decrease?

\_\_\_\_\_

2.11. Why?

\_\_\_\_\_

2.12. If had increase, what percent is the increase?

\_\_\_\_\_

2.13. Why?

2.14. How do you compare the number of community residents you observed who were engaged in the capture of seahorses between *before* 2004 and *after* 2004 up to the present?

- 1 decrease (ASK Q2.15 AND Q2.16)
- 2 increase (ASK Q2.17 AND Q2.18)
- 3 SAME (ASK Q3.01)

2.15. If had decreased, how many percent is the decrease? \_\_\_\_\_-

\_\_\_\_\_

2.16. Why?

\_\_\_\_\_

2.17. If had increase, how many percent is the increase?

\_\_\_\_\_

2.18. Why?

### **3.00. PERCEIVED CONDITIONS OF SEAHORSES OVER TIME**

3.01. Where in the surrounding seas of the island do you observe that the seahorses live?

- 1 sea grasses
- 2 corals
- 3 others (SPECIFY) \_\_\_\_\_

3.02. In a scale of 1 (lowest) to 10 (highest), how do you rate the condition of the supply of seahorses in the seas surrounding the island *before* 2004?

1      2      3      4      5      6      7      8      9      10

3.03. In a scale of 1 (lowest) to 10 (highest), how do you rate the condition of the supply of seahorses in the seas surrounding the island *after* 2004 up to the present?

1      2      3      4      5      6      7      8      9      10

3.04. (IF THERE IS ANY NOTED DECREASE) Why is there a decrease in the supply of seahorses in the seas surrounding the island?

---

3.05. (IF THERE IS ANY NOTED INCREASE) Why is there an increase in the supply of seahorses in the seas surrounding the island?

---

3.06. In a scale of 1 (lowest) to 10 (highest), how do you rate the amount of seahorses captured in the seas surrounding the island *before* 2004?

1      2      3      4      5      6      7      8      9      10

3.07. In a scale of 1 (lowest) to 10 (highest), how do you rate the amount of seahorses captured in the seas surrounding the island *after* 2004 up to the present?

1      2      3      4      5      6      7      8      9      10

3.08. (IF THERE IS ANY NOTED DECREASE) Why is there a decrease in the amount of seahorses captured in the seas surrounding the island?

---

3.09. (IF THERE IS ANY NOTED INCREASE) Why is there an increase in the amount of seahorses captured in the seas surrounding the island?

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#### **4.00. KNOWLEDGE ABOUT REGULATIONS, ENFORCEMENT AND VIOLATIONS**

4.01. Which of the following you are familiar with? (ALLOW MULTIPLE RESPONSES)

- 1      CITES (Convention on International Trade of Endangered Species)
- 2      PFC (Philippine Fisheries Code of 1998 or RA 8550)
- 3      Not familiar with the above (SKIP TO 4.03)

4.02. From whom/where do you learn about them? (ALLOW MULTIPLE RESPONSES)

- 1      Project Seahorse
- 2      Municipal officials
- 3      Barangay officials
- 4      Radio broadcast
- 5      Television broadcast

4.03. What regulation/s do you know at present regarding the capture and marketing of seahorses? (ALLOW MULTIPLE RESPONSES)

- 1      prohibition in the capture and marketing of small seahorses (below 10 cm in size)
- 2      prohibition in the capture and marketing of pregnant seahorses
- 3      total prohibition in the capture and marketing of all kinds of seahorses

- 4 setting a quota on seahorses to be captured during a given period
- 5 observance of open and close season for capturing seahorses
- 6 others (SPECIFY)

4.04. What do you understand about the purpose of a particular regulation? (REFER TO THOSE ANSWERS IN Q4.01)

## Regulation

- 1 Regulation
- 2 Regulation
- 3 Regulation
- 4 Regulation
- 5 Regulation
- 6 Regulation

4.05. Were you consulted about the making of these regulations?

1 Yes 2 No

4.06. How do you feel or react to the regulation/s in the capture and marketing of seahorses?

1 happy (ASK: Why?)

---

2 surprised (ASK: Why?)

---

3 indifferent (ASK: Why?)

---

4 angry (ASK: Why?)

---

5 others (SPECIFY AND ASK: Why?)

#### 4.07. Do you find the regulation/s justifiable?

1 Yes (ASK Q4.08) 2 No (SKIP TO Q4.09)

4.08. (IF YES) Why do you find the regulation/s justifiable?

4.09. (IF NO) Why do you *not* find the regulation/s justifiable?

4.10. What agency or organization is informing the community about the regulation/s in the capture and marketing of seahorses? (ALLOW MULTIPLE RESPONSES)

0      None (SKIP TO Q4.12)  
1      Project Seahorse  
2      municipal (SPECIFY POSITION OF OFFICIALS) \_\_\_\_\_

3 barangay (SPECIFY POSITION OF OFFICIALS)

---

4 others (SPECIFY)

---

4.11. How do you know about the regulation/s in the capture and marketing of seahorses? (ALLOW MULTIPLE RESPONSES)

- 1 barangay assembly/meetings
- 2 trainings and seminars
- 3 posters and reading materials
- 4 heard over the radio
- 5 heard from neighbors and friends
- 6 others (SPECIFY) \_\_\_\_\_

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4.12. What agency or organization is enforcing the regulation/s in the capture and marketing of seahorses? (ALLOW MULTIPLE RESPONSES)

- 1 Project Seahorse
- 2 municipal (SPECIFY POSITION OF OFFICIALS)
- 3 barangay (SPECIFY POSITION OF OFFICIALS)
- 4 others (SPECIFY)

---

4.13. Do you know of community residents being apprehended because of capturing seahorses?

- 1 Yes (ASK Q4.14)
- 2 No (SKIP TO Q4.17)

4.14. (IF YES) Were they punished?

- 1 Yes (ASK Q4.15)
- 2 No (SKIP TO Q4.16)

4.15. (IF YES) How were they punished?

---

4.16. (IF NO) Why were they not punished?

---

4.17. Do you know of community residents being apprehended because of marketing seahorses?

- 1 Yes (ASK Q4.18)
- 2 No (SKIP TO Q4.21)

4.18. (IF YES) Were they punished?

- 1 Yes (ASK Q4.19)
- 2 No (SKIP TO Q4.20)

4.19. (IF YES) How were they punished?

---

4.20. (IF NO) Why were they not punished?

---

4.21. Do you know of community residents being apprehended because of buying seahorses?

- 1 Yes (ASK Q4.22)
- 2 No (SKIP TO Q4.25)

4.22. (IF YES) Were they punished?

1 Yes (ASK Q4.23)      2 No (SKIP TO Q4.24)

4.23. (IF YES) How were they punished?

---

4.24. (IF NO) Why were they not punished?

---

4.25. a). What proposed changes in the regulation/s in the capture of seahorses do you know about? (ALLOW MULTIPLE RESPONSES), b). Do you favor to this proposal?

	(a) Proposed Changes	(b) Favor?		
0	did not hear any proposed changes			
1	prohibition in the capture and marketing of small seahorses (below 10 cm in size)	1	Yes	2
No				
2	prohibition in the capture and marketing of pregnant seahorses	1	Yes	2
No				
3	setting a quota on seahorses to be captured	1	Yes	2
No				
4	observance of open and close seasons for capturing seahorses	1	Yes	2
No				
5	others (SPECIFY) _____	1	Yes	2
No				

4.26. Which of the following statements do you agree most? (ALLOW ONLY ONE ANSWER)

1 the marine sanctuary does not help in protecting the seahorses (ASK Q4.27)  
 2 the marine sanctuary was primarily built for the protection of seahorses (SKIP TO Q4.28)  
 3 the marine sanctuary was built to protect also the seahorses (SKIP TO Q4.28)

4.27. Why do you think the marine sanctuary does not help in protecting the seahorses? (THEN SKIP TO Q4.29)

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4.28. How does the marine sanctuary help in protecting the seahorses?

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4.29. How do the regulations in the capture and marketing of seahorses affect community's support in implementing and enforcing the marine sanctuary?

1 increases community's support (ASK: Why?) \_\_\_\_\_  
 2 decreases community's support (ASK: Why?) \_\_\_\_\_  
 3 does not change community's support (ASK: Why?) \_\_\_\_\_

## 5.00.socio-economic IMPACTS AND COMPENSATORY STRATEGIES

5.01. Do you consider the regulation/s in the capture and marketing of seahorses to have negatively affected your total household's income?

1 Yes (ASK Q5.02)      2 No (SKIP TO Q5.04)

5.02. (IF YES) In a scale of 1 (lowest) to 10 (highest), to what extent that your income from seahorses has been reduced because of the enforcement of regulation/s about seahorse capture and marketing?

1      2      3      4      5      6      7      8      9      10

5.03. What does your household do in order to compensate the reduction of your income from seahorses? (ALLOW MULTIPLE RESPONSES)

1      increase more effort in other fishing activities (SPECIFY WHAT)

2      engage in other non-fishing activities (SPECIFY WHAT)

3      borrow money within the community (SPECIFY FROM WHOM)

4      ask monetary assistance from outside (SPECIFY FROM WHOM)

5      others (SPECIFY)

5.04. (IF NO IN Q5.01) Why the regulations in the capture and marketing of seahorses do not negatively affect your household's income?

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5.05. Do you observe some conflicts in the community because of the regulations in the capture and marketing of seahorses?

1      Yes (ASK Q5.06)      2      No (SKIP TO Q5.07)

5.06. (IF YES) a). What were the reasons behind these conflicts? b). Who were involved? c). Were these resolved? d). How were they resolved?

(a) Reasons Behind Conflicts      (b) Who Were Involved?      (d) How Resolved?      (c) If Resolved?

1	_____	_____	_____	1	Yes	2	No
2	_____	_____	_____	1	Yes	2	No
3	_____	_____	_____	1	Yes	2	No
4	_____	_____	_____	1	Yes	2	No
5	_____	_____	_____	1	Yes	2	No
	....						

5.07. What will you suggest that community members should do in order to sustain the supply of sea horses in the seas surrounding the island?

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5.08. What programs will you suggest that the government should pursue in order to protect the population of seahorses that are not disadvantageous to the poor fishers? \_\_\_\_\_

5.09. Should Project Seahorse continue with their project in your island?

1      Yes (SKIP Q5.10)      2      No (SKIP TO Q5.11)

5.10. (IF YES) Why?

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5.11. (IF NO) Why?

IMPORTANT: REASSURE THE RESPONDENT THAT ALL THIS INFORMATION IS CONFIDENTIAL. EXPLAIN THAT WE ARE USING THIS INFORMATION TO IMPROVE SEAHORSE MANAGEMENT AND UNDERSTAND THE IMPACTS OF REGULATIONS ON PEOPLE IN THE COMMUNITIES.

**6.0. THANK THE RESPONDENTS POLITELY AND SINCERELY AND ANSWER THE FOLLOWING QUESTIONS AWAY FROM THE RESPONDENT.**

6.01. Where did you conduct the interview? Alone?  With other people around?

1	inside respondent's house	1	Yes	2	No	1	Yes	2	No
2	outside respondent's house	1	Yes	2	No	1	Yes	2	No
3	neighbor's house	1	Yes	2	No	1	Yes	2	No
4	others (SPECIFY) _____	1	Yes	2	No	1	Yes	2	No

6.02. How do you generally describe the reactions/behavior of this respondent during the interview?

1 suspicious and hesitant to discuss sensitive issues  
2 clarified questions first before answering  
3 very accommodating and open to sensitive issues  
4 others (SPECIFY) \_\_\_\_\_



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