

Tourist Perspectives on a Marine Protected Area in Nha Trang, Viet Nam:

Implications of Cultural Differences

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Abstract

The Khanh Hoa Province People's Committee, the Ministry of Fisheries, and the World Conservation Union (IUCN) are working to implement Viet Nam's first marine protected area (MPA) in Nha Trang Bay. The MPA plan calls for restriction of fishing and other extractive activities, control of pollution, and restrictions on uses of the area other than tourism and research. The plan also identifies tourism fees as the key element of a sustainable financing strategy. Depending on their magnitude and the demand for services, tourism fees potentially could limit the development of the industry, which in turn, would limit revenues needed to offset the decline of extractive industries. It is critical, therefore, to evaluate tourists' opinions regarding perceived environmental problems in the proposed MPA, tradeoffs among policy objectives, and their willingness to pay for the MPA, including their preferences for different payment mechanisms.

This paper reports the results of a survey of local, other Vietnamese, and foreign tourists to islands that will be included in the MPA. The majority of respondents (74 percent) thought garbage on the beaches, water pollution, or vendors were a problem, and 55 percent thought the MPA was a good idea. Foreign tourists were significantly more likely to perceive environmental problems than were Vietnamese tourists, and persons who agreed there were environmental problems were significantly more likely to support the concept of an MPA, despite the potential for possible economic effects with distributive consequences. Willingness to pay was positively correlated with income. Although foreign tourists were on average willing to pay more, a larger proportion of Vietnamese tourists were willing to pay some amount to support the MPA. Higher proportions of tourists preferred fees on boats and tourist attractions than fees on hotels and restaurants. Preferences for payment mechanisms were not dependent on citizenship. Instead, some evidence of a strategic pattern of preferences emerged, with wealthier individuals more likely to support user fees on tourist activities, and intensive users of tourist services more inclined to support new taxes.

The results of this analysis are both encouraging and cautionary. The need for an MPA is clearly recognized by most tourists, especially foreign tourists, and most tourists are willing to pay modest fees to support the MPA. Given that education has significant impacts on both perceptions of problems and willingness to pay, educational programs may be an effective management strategy. It is unclear, however, whether willingness to pay for the MPA will be adequate for the many purposes that will require financial support. With careful planning, the needs and concerns of native and foreign tourists can be addressed and tourism can play a successful role in the implementation of the MPA.

Willingness to Pay for a Marine Protected Area in Nha Trang, Viet Nam: Implications of Cultural Differences Among Tourists

Introduction

Protected area status frequently is proposed as a solution to the problem of how to manage environmentally significant commons. Proposals for protected areas generally are accompanied by recommendations for development of tourism as a way to mitigate the effects of new limitations on extractive uses and as a way to finance protection programs. Tourism must be carefully planned, however, to avoid fees that hamper development, unrealistic revenue projections, and, especially in lesser-developed countries, cultural conflicts that may accompany rapid change. Public participation in the processes of creating protected areas and developing tourism is recommended as a means of planning for and mitigating these potential consequences. Surveys are one of many methods of obtaining information from tourists about their perspectives, priorities, and preferences. Although surveys have a long history of use in tourism-related research, they increasingly are focusing on the willingness of tourists to make trade-offs related to alternatives for development. In particular, contingent valuation (CV) surveys are being used to explore the willingness of tourists to pay for management and protection programs. Planners can use results from these surveys to inform policy choices, design protection programs, and address practical problems related to segmentation of the tourism market, including differences between ecotourists and native mass tourists.

This paper explores the implications of a CV survey of native and foreign tourists for management of a proposed marine protected area (MPA) in Nha Trang, Viet Nam. The paper begins with a brief review of the tourism life cycle and issues in management of protected areas. Following descriptions of the proposed MPA and the methods used in the survey, the paper then presents a set of econometric analyses of the survey results. These analyses focus on cultural differences between local and non-local tourists, and between native and foreign tourists, in perceptions of problems in the MPA, willingness to make policy tradeoffs, willingness to pay for protection programs, and preferences for payment methods. The paper concludes with discussions of the implications of the findings for development of the MPA and, more generally, the role of tourism in protected area management.

Tourism and Management of Protected Areas

Tourism, especially ecotourism, is widely seen as one of the most promising approaches to sustainable development and protection of important environmental resources in lesser developed nations (Honey 1999; Hall and Lew 1998; Mowforth and Munt 1998; Weaver 1998; Wahab and Pigram 1997; Cater and Lowman 1994; Munasinghe and McNeely 1994; Richter 1989). The reasons for this viewpoint

are straightforward. Tourism promises economic benefits, but, because it is not inherently extractive, potentially may be developed without degrading natural resources or the environment. Tourism, however, can exacerbate problems if not well planned. The potential for tourism can be overestimated, resulting in unrealistic revenue projections and inadequate funding for needed management programs. To avoid these problems, planners must be mindful of factors that affect tourist use and the ways in which the tourism market evolves over time. In particular, it is necessary to understand how individuals who comprise different segments of the market think about and value environmental conditions and services.

The tourism product or life cycle is a useful framework for examining some of these issues. This framework, which is described in various forms in the literature, hypothesizes that the tourism industry in any given location moves through four standard phases: emergence (involvement), growth (development), saturation (consolidation), and decline (Cooper 1997; Prosser 1994). As the tourism industry matures, the number and type of tourists change, local and native tourists are dominated by foreign mass tourists, and local control over the tourism industry diminishes (Prosser 1994). For example, early foreign visitors to new ecotourist locations typically are infrequent and often consist of adventurers and explorers, students perhaps, who accept or revel in relatively primitive conditions. As the industry grows, wealthy elites and foreign tourists are attracted, bringing with them higher expectations for western amenities. When the industry matures, the market is larger and dominated by foreign mass tourists who demand western amenities. As the market grows and its demographics change, the potential for tourist-related impacts on the environment also changes. Larger numbers of tourists obviously create the potential for more impacts. In addition, individuals in different market segments may view problems differently and be more or less supportive of environmental interventions. The potential for tourism to provide for protection rests on the hope that foreign tourists will behave in ways that do not damage the environment and be wealthy enough and willing to pay for protection programs.

Development of tourism also introduces the potential for socio-cultural conflicts. Factors that increase potential for conflict include “imposition of elite, alien value systems, displacement of local cultures with parks, and erosion of local control” (Weaver 1998, p. 21). Weaver (p. 28) describes the potential problem succinctly:

...Those opposed to ecotourism, for any reason, may try to eliminate ecotourism by displaying direct antagonistic behaviour toward the ecotourist ... In their turn, the tourists may express open disapproval toward the local practices that are deemed incompatible with their environmentalist ideology and with their own “quality” ecotourism experience.

Although this example refers primarily to conflicts associated with ecotourism, similar conflicts may occur with mass tourism that emerges in the growth phase and dominates in the consolidation phase of the tourism life cycle.

Major influences on tourism development through the product cycle include increasingly knowledgeable and demanding consumers and pressures for responsible tourism development. Because misguided assumptions about tourists can lead to failure, understanding of consumer behavior is essential (Prentice 1997). For example, proposals for protected areas often identify user fees as a way of paying for management programs (Smith 1997; Cater 1994). Smith (1997, p. 152) argues that “Governments sometimes view tourism as an easy target for tax increases. They incorrectly perceive visitors as being price-insensitive or as a politically safe target for excessive taxation ...” To avoid problems caused by naïve assumptions about demand, especially in the early phases of emergence and growth, managers must understand tourist preferences, educate tourists, and work to build behaviors compatible with protection objectives (Cooper 1997).

The objective of strategic planning, therefore, is to guide the industry profitably through the phases of development, maintaining the resource base, minimizing socio-cultural conflict, and avoiding eventual decline. However, managers of tourism destinations and enterprises that trade on pristine and attractive environments face difficult tradeoffs and complex sets of incentives. Many of these tradeoffs involve conflicting or incommensurate objectives (Smith 1997). It has been argued that it is in the best interest of tourism enterprises to be good stewards and husband common resources, but in many places, especially when local control has been diminished, incentives for over-exploitation have proven difficult to resist (Wahab and Pigram 1998). To increase the probability of long term success, experts typically recommend that opportunities for local participation and control, including participation by tourists and other users, be structured into planning processes (Kelleher and Recchia 1998; Mowforth and Munt 1998, p. 238; Chua, Thia-Eng 1996). Planners use many different techniques for public participation (Wight 1998), and sophisticated survey techniques exist for learning about attitudes, beliefs, behavior, and preferences. Although these survey techniques typically suffer “the disadvantage of being conducted, administered, promoted, and publicized by persons outside the local community affected by a tourism development ... There is little doubt that ... they can increase the likelihood of sustained success of schemes” (Mowforth and Munt, p. 244-5).

With respect to problems in managing protected areas, surveys can provide a variety of useful data. In the early stages of tourism development, they can provide useful baseline information, including information about people’s perceptions of the services provided by the protected area. Surveys can provide information about tourists’ policy priorities and their willingness to make tradeoffs, including their willingness to pay for services and protection programs. These surveys also can provide insight into cultural and other factors that affect preferences. As the market evolves and increasingly is dominated by foreign tourists, managers can use survey results to help design interventions that will increase the likelihood that protection programs will be successful in the long run.

The Hon Mun Marine Protected Area Pilot Project

Viet Nam faces severe challenges in economic development and environmental management, including management of coastal and marine resources. During forty years of war and their aftermath, Viet Nam's economy and environment suffered tremendously. In 1998, the United Nations ranked Viet Nam 122 of 174 countries on the Human Development Index, its composite measure of the status of development (UNDP 1999). Since Doi Moi in the mid-1980s, Viet Nam has begun to open its economy. Officials view tourism as a key economic sector and they are now "actively encouraging and catering for an influx of tourists" (Pigram and Wahab 1998, p. 23). With support from international donor and development organizations, Viet Nam has established a framework for environmental management that includes its National Plan for Sustainable Development (1991), the Law on the Environment (1994), and its National Biodiversity Plan (1995) (UNDP 1995a, 1995b, World Bank 1995, Tran 1996, Mercker and Vu 1997). Water quality standards for coastal waters have been promulgated under the Law on Environmental Protection, but no statutes specifically regulate the coastal area, and integrated coastal management programs have not been implemented (Bui Quoc Khanh 1997; Dang Viet Khoa 1997; Nguyen Chu Hoi, Bui Quoc Khanh, and Watson 1998; ESSA Technologies, Ltd. and NEA 1994; Nguyen Tac An et al. 1995; Marine Hydrometeorologica Center 1996). The National Biodiversity Plan calls for, among other items, creation of a system of marine protected areas (Government of Viet Nam and GEF 1994).

Scientists have documented threats to fisheries and areas of coral reef and surveyed and assessed potential sites for MPAs (Vo Si Tuan and Nguyen, Huy Yet 1995). These threats include increasing rates of exploitation; dynamite and other destructive fishing practices; pollution from soil erosion, untreated sewage, oil spills, aquaculture, and other sources; harvesting of coral for use in construction; the aquarium and shell trades; careless use by tourists; and, more generally, increasing population density along the coast. (Dang Ngoc Thanh 1995; Vo Si Tuan and Truong Si Ky 1997; Nguyen Tac An 1997; Hua Chien Thang 1998; Nguyen Van Chiem 1998; Bui Hong Long 1998; Hoang Van Thang et al. 1998). Obstacles to creation of MPAs also have been identified. These obstacles include rapid economic development, a growing population with low environmental awareness, financial constraints on government budgets, opposition from people who fear the loss of livelihood, unforeseen, perverse effects of ill-advised regulation, limited socio-economic data, and an unresponsive, poorly trained bureaucracy (Vo Si Tuan 1998).

In 1998-1999, several Vietnamese agencies and international non-governmental organizations developed a collaborative proposal to create the nation's first MPA in Nha Trang Bay in Khanh Hoa Province. The Hon Mun site in Nha Trang Bay was selected from seven potential sites in Viet Nam according to criteria in Viet Nam's Biodiversity Action Plan and other established criteria such as

diversity, significance of reef species, tourism value, and value for scientific research. (Government of Viet Nam and GEF 1994; MOF, PPC, and IUCN 1999). Hon Mun is one of a group of semiarid and relatively infertile islands and rocky outcroppings located within 15 kilometers of the mainland in Nha Trang Bay (MOF, PPC, and IUCN 1999). The islands are characterized by rocky hills, cliffs, both sand and cobblestone beaches, and areas of mangrove forest. Fringing coral reefs and beds of sea grass are offshore. The reef systems are among the most diverse in Viet Nam, although coral coverage (34 percent) is low relative to other sites considered for Viet Nam's first MPA (Vo Si Tuan and Nguyen, Huy Yet 1995). Approximately 44 genera and 98 species of hard coral have been identified, as have 170 species of reef fish and 112 species of mollusks. The quality of the coastal waters generally is good (Dang Viet Khoa 1997), although monitoring results from the Bay suggest that COD, nitrates, arsenic, hydrocarbons and other pollutants often have exceeded standards (Pham Van Thom and Vo Si Tuan 1997; Hoang Trung Du 1998; Vo Van Lanh 1998) and that concentrations of heavy metals in marine sediments sometimes exceed critical values (Le Thi Vinh 1998). Sea transparency exceeds 20 meters (MOF, PPC, and IUCN 1999),

The city of Nha Trang (population 300,000) in Khanh Hoa Province (population 993,500) is an important fishing center and one of the most important vacation destinations in Viet Nam. More than 2,350 fishing boats operate in the Nha Trang watershed, employing more than 6,300 persons (Bui Hong Long 1998). Total harvest of sea products in Khanh Hoa Province in 1997 was estimated at 50,800 tons; an additional 1800 tons of shrimp and fish were produced in aquaculture operations (Statistical Publishing House 1998). Catches in the Nha Trang watershed are reported to be decreasing by 8-10 percent per year (Bui Hong Long 1998). Approximately 15,000 people live on the islands and earn meager, subsistence livings from the sea (MOF, PPC, and IUCN 1999). About 150 fishermen operate standing nets for tuna and mackerel. Average educational achievement for the islanders is grade 3. Few islanders are employed in the small number of businesses that serve tourists.

Provincial and municipal government officials and entrepreneurs view tourism as a key economic development strategy. Approximately 80 hotels and 60 tourist boats now operate in Nha Trang (MOF, PPC, and IUCN 1999). The number of hotel rooms in Nha Trang increased from 1543 in 1993 to 3143 in 1998 (Khanh Hoa Province 1997, 1998) The estimated number of tourists in Nha Trang fluctuated between 1993 and 1998, ranging from a low of 260,000 in 1994 to a high of 390,000 in 1996, with foreign tourists accounting for 15 percent to one-third of all tourists annually during this period (Figure 1). Citizens of France (28 percent), America (10 percent), and Germany (10 percent) accounted for almost half of the foreign tourists. Officials hope to double the number of hotel rooms in Nha Trang by 2020 and to attract 1.2 million and 1.8 million tourists by 2010 and 2020, respectively, with foreign tourists accounting for 55 percent and 63 percent of these targets (Khanh Hoa Province 1995).

Figure 1 about here

Estimates of the number of tourists who visit the project site vary from approximately 100,000, 40 percent of whom are foreigners (MOF, PPC, and IUCN 1999), to more than 200,000 to the Tri Nguyen aquarium alone, 20 percent of whom are foreigners (Pham Quoc Hung 1999). The latter estimate, an extrapolation of reported average daily visitation (550 people) to the aquarium on Tri Nguyen, one of the islands to be included in the MPA, includes residents of Nha Trang and the surrounding area. Aquarium attendance typically exceeds 1000 on Sundays, the only day off for most Vietnamese, but reportedly may reach as high as 5000 on Tet and other holidays.

The MPA Proposal

Efforts to protect the area around Hon Mun have evolved over several years. The Provincial People's Committee (PPC) of Khanh Hoa Province approved creation of a protected area around Hon Mun in 1996, but money never was appropriated, and the project was not implemented (MOF, PPC, and IUCN 1999). In 1998-1999, the IUCN, the Ministry of Fisheries (MOF), and the Khanh Hoa PPC developed a more comprehensive plan for a broader MPA. This planning process included a comprehensive social assessment with stakeholder involvement consistent with World Bank guidelines for participatory rural appraisal. IUCN representatives and Vietnamese experts completed 54 interviews with islanders, local officials, and entrepreneurs, collected information from islanders at a series of public meetings, and completed a small, ad hoc survey of tourists at hotels and on some tourist boats. The results of the survey indicated that tourists may be willing to pay "up to US\$1 for Vietnamese and US\$2 for foreigners" to visit an MPA at the project site (MOF, PPC, and IUCN 1999, p. 12).

Project planners submitted the new proposal to the World Bank for Global Environmental Facility funding. The Global Environmental Facility (GEF), administered jointly by the World Bank, the UNDP, and the UNEP, is a mechanism for funding the incremental costs of actions to protect resources of international significance that are beyond those a nation would take only in its own interests. (Tran Nguyen Anh Thu 1998; Hough 1998). The goal of the MPA proposal is to "conserve a representative example of internationally significant and threatened biodiversity" (MOF, PPC, and IUCN 1999, p.1). The primary project development objective is to "enable local stakeholders to effectively protect and manage the marine biodiversity at Hon Mun as a replicable model for MPA management in Vietnam" (IBID, p. 1). The proposal calls for creation of a Provincial MPA Management Unit that will report directly to a Steering Committee appointed by the PPC (MOF, PPC, and IUCN 1999). The Steering Committee, which will be headed by the Vice-Chair of the province and include representatives from a number of stakeholder organizations, is considered a highly innovative approach.

Maps 1 and 4 show areas in Nha Trang Bay that will be included in the MPA, including four different designated use zones, and major tourist areas (MOF, PPC, and IUCN 1999). A set of principles

such as requirements for removal of non-biodegradable garbage and prohibitions on pumping of bilge water will apply throughout the MPA. The largest zone, the Protected Area, also is referred to as a general use zone because all activities other than those proscribed by general principles will be allowed. The Protected Area outside the Biodiversity Zone is supposed to function as a buffer for more sensitive areas. Additional restrictions on the harvesting of species for the aquarium trade, aquaculture, and on anchorage of large ships will apply in the Biodiversity Zone. The Aquaculture Zone will include additional restrictions on use and anchorage and support only culturing of locally-derived species. The Sanctuary Zone will include prohibitions on all extractive activity and anchorage, with exceptions for research activities and tourist boats on moorings.

Maps 1 and 4 about here

GEF funding will be used to support four broad outputs, including participatory planning and management, alternative income generating (AIG) activities, capacity building, and monitoring and evaluation of both environmental (biophysical) and socioeconomic changes. The proposal includes preliminary lists of "project impact indicators" such as "adoption of commercially viable AIG pilot projects that promote the MPA goals" and "effective stakeholder participation in management." Means for tracking progress towards these indicators also are proposed. Key steps in implementation include development and staffing of the management unit and development of a sustainable financing strategy, including new sources of revenues to fund the staff. The MPA proposal identifies tourism as one source of alternative income for people whose livelihoods will be disrupted and proposes a tourism user charge as the source of revenues for management of the MPA. The proposal is not specific, however, about the type of charge that may be used or how the charge would be collected. Because financing is crucial to the MPA, it is important that planners and decision-makers understand factors that potentially could affect the success of a user charge system, including whether tourists support the objectives of the MPA and are willing to pay for programs to achieve them. Whether tourists support the MPA may depend on whether they perceive problems, their use of the services of the MPA, and their opinions about the merits of particular interventions. Given the anticipated shift in the market from one dominated by Vietnamese tourists to one dominated by foreign tourists, it also is important to understand differences between them.

A Survey of Vietnamese Tourists

A survey of tourists was undertaken to obtain additional information for planning and managing the MPA. We analyze the results of the survey to address important issues related to the anticipated change in the market from one dominated by Vietnamese tourists to one dominated by foreign tourists.

We test four hypotheses:

1. foreign tourists are more likely than native tourists to perceive environmental problems;
2. foreign tourists are more likely than native tourists to support marine protection programs;

3. foreign tourists, on average, will be willing to pay more than native tourists for protection programs; and
4. foreign tourists will prefer financial mechanisms that rely on general taxes rather than user fees specifically targeted to tourists.

Methods

A survey of tourists was undertaken to obtain additional information for planning and managing the MPA. The survey was written, translated into Vietnamese, used in a large field experiment on June 6, 1999, revised to clarify three questions, and administered again on June 13 and 20, 1999. The survey was administered at one location in Nha Trang and on three islands in Nha Trang Bay that will be included in the MPA (Map 1):

- ? Cau Da, a peninsula that serves as port of departure for most tourist boats to the islands;
- ? Hon Mieu or Tri Nguyen, an island immediately southeast of the port that is the site of Tri Nguyen Aquarium, a popular tourist destination, and a relatively undeveloped beach;
- ? Hon Tam, an island southeast of Tri Nguyen that has the largest developed beach among the three islands, including facilities for jet skis and other intensive recreation; and
- ? Hon Mun, an island approximately 45 minutes southeast of Cau Da that has the most diverse coral reefs in the Bay and one small developed tourist area.

The interviewers were nine members of the faculty of the National Fisheries University in Nha Trang, six of whom were bilingual. Working in teams of two or three, interviewers approached tourists and asked them to complete the printed survey. Versions in Vietnamese and English were available. Team members answered questions and clarified questions in the questionnaire but did not read each question to each tourist. Team members attempted to survey all tourists they encountered each survey day. The hours of the survey were from approximately 7:30 a.m. to 3:00 p.m., although the starting and ending times on each island varied because the same charter boat was used to take interviewers to their survey locations. The survey was administered on Sundays because tourist use is heaviest on Sundays and because Sunday was the only free day for the faculty who served as interviewers.

The questionnaire included information about the proposed MPA and 28 questions. Three questions concerned tourist destinations, activities and citizenship. Seven questions asked tourists from outside Nha Trang and Khanh Hoa Province about the reasons for their visit, their length of stay, lodging, and mode of travel. Ten questions concerned tourists' perspectives on protection and different ways of paying for programs to fund the MPA. A short choice context introduced three willingness to pay (WTP) questions. This scenario described issues related to formation of the MPA and reminded people that they would have less to spend on food and souvenirs if they paid more for protection. The WTP question was a dichotomous choice that asked people, "Would you be willing to pay a new user fee each time you visit

the islands to help fund new programs to manage the Marine Protected Area?" People who answered yes were asked to circle a number on a payment card, a matrix of preprinted values. People who answered no were asked why they were not willing to pay. In the June 6 version, values on the payment card ranged from U.S. \$0.50 (7,000 Vietnamese Dong - VND) to U.S. \$5.00 (70,000 VND). Interviewers said some people complained the lower value was too high, so lower values were added to the card for the June 13 and 20 dates. The range was expanded to include U.S. \$0.07 (1,000 VND), \$0.15 (2,000 VND), and \$0.35 (5,000 VND). This change was found to have a statistically insignificant effect on average WTP in the analyses that follow.

The survey team obtained 571 completed questionnaires. Approximately two thirds of the questionnaires were completed on the islands, including 39 percent on Hon Tam, 17 percent on Hon Mun, and 10 percent on Tri Nguyen. Slightly more than one-third was completed at the Port. Approximately 91 percent of the questionnaires were completed in Vietnamese, and about 89 percent of the questionnaires were completed by Vietnamese citizens. Of the questionnaires completed by Vietnamese citizens, half were completed by residents of Nha Trang and Khanh Hoa Province and half were completed by residents from other provinces in Viet Nam.

Definitions of all dependent and independent variables used in the econometric analyses are provided in Table 1. Survey responses were used to construct the following dependent variables:

- ? Perceptions of Problems. Three dummy variables were constructed from responses on likert-type scales as measures of the extent to which tourists agree that the MPA is suffering from degradation. Separate variables were created for perceptions of garbage and litter on beaches, pollution in the sea, and encroachment by vendors and beggars.
- ? Support for Protection Programs. Two dummy variables were constructed as measures of tourists' willingness to trade-off protection and other equity-related objectives. These variables measure support for the MPA even if access for the poor is reduced, and support for a ban on fishing even if fishers must find new jobs.
- ? Willingness to Pay. A continuous measure of willingness to pay was constructed from respondents' choices on a payment card.
- ? Payment Mechanism. A dummy variable was constructed from a set of answer categories to reflect whether respondents thought the best way to finance the MPA was through user fees or new general taxes.

Table 1 about here

Sociodemographic variables include gender, foreign status, and local status. Socioeconomic class is measured by education and income. For most analyses, because class is culturally normed, we define both variables relative to the group (foreign, native) of the respondent. In our definition, a Vietnamese is

considered to have “high income” (or high education) if his or her income (or education) was above the sample median for Vietnamese. Similarly, a foreign national is considered to have high income (or education) if his or her income (or education) was above the norm for foreign persons in the sample. We depart from this definition in our analyses of WTP because we believe that WTP depends on one’s absolute rather than relative income level. In the WTP analyses, variables are normed relative to the entire sample. Five variables, representing different categories of recreational activities available to tourists, were also constructed. These include swimming and other in-water activities; activities such as picnicking conducted on the shore; activities like boating that occur on the water; fishing; and visits to commercial attractions. Other activities variables are used individually rather than categorically.

Descriptive statistics are produced for perceptions of problems, support for protection programs, WTP, and preferred financing mechanisms (see Table 2). Multivariate analyses are conducted to address our specific hypotheses. Because our measures of perceptions of problems, support for protection programs, and preferred financing mechanisms are dummy variables, standard regression analyses are inappropriate, and we use probit analyses instead. Unlike standard regression coefficients, probit coefficients are not equal to the marginal effects of the independent variables on the probability of agreeing with a particular statement. The sign of each coefficient does, however, represent the sign of the marginal probability. The statistical significance of the effect can be evaluated using standard t-tests. Although the WTP measure does not have a binary structure, it is characterized by a large number of zero responses, which also make standard regression techniques inappropriate. We therefore use Tobit analyses to evaluate WTP relationships (Greene 1993). The same caveats regarding interpretation of probit coefficients apply to interpretation of coefficients in Tobit models.

Results

Forty-seven percent of the questionnaires was completed by females. The median highest grade completed for Vietnamese nationals was some college but no degree; the median educational achievement for foreign citizens was a college degree. The median monthly household income for a Vietnamese respondent was between 400,000 and 600,000 VND (approximately U.S. \$29-\$43). Vietnamese tourists from outside Khanh Hoa Province reported significantly higher incomes. For example, only 10 percent of local residents reported monthly incomes greater than one million VND (approximately U.S. \$72 per month); the comparable figure for non-local Vietnamese was 27 percent. The median household income for citizens of other nations was between U.S. \$2001 and \$3000.

Tourist Destinations and Activities. Foreign and non-local Vietnamese tourists to Nha Trang (i.e., non-residents of Nha Trang or Khanh Hoa Province) report different reasons for visiting Nha Trang and participate in different activities. Fifty eight percent of all tourists said they visited Nha Trang specifically to visit the islands. A significantly higher proportion of foreign tourists (75 percent) than Vietnamese

non-local tourists (55 percent) said they were in Nha Trang for vacation (chi-squared test; $p=.029$). More Vietnamese tourists than foreign tourists said they were in Nha Trang for work, study and research, or other reasons. Most foreign tourists said that they would visit the municipal beach in Nha Trang almost every day. Reported visitation to different islands in and near the proposed MPA also varied. Approximately two-thirds of all people surveyed (including local Vietnamese citizens) said that they had been to or would visit Tri Nguyen (68 percent), site of the aquarium, and 64 percent said that they had been to or would visit Hon Tam, the island with the most developed recreational facilities. Approximately 40 percent said they had been to or would visit Hon Mun, the most pristine island. Fewer than 25 percent said that they had or planned to visit any of the other islands identified in the questionnaire. As noted, specific recreational activities were combined into categories to facilitate analyses. Approximately 78 percent of all tourists said they participate in on shore activities, 65 percent said they visit tourist attractions like the Tri Nguyen Aquarium, and almost 63 percent said they swim, snorkel, or scuba. Only about 17 percent of the tourists said that they fish.

Perceptions of problems in the MPA. Tourists were asked about problems associated with garbage and litter, pollution in the sea, and interactions with vendors and beggars. Vietnamese citizens (53 percent) were less likely than foreign tourists (65 percent) to agree or strongly agree with the statement that "the amount of garbage and litter on the beaches on the islands makes them unpleasant." Foreign citizens were more likely than Vietnamese citizens to agree or agree strongly that the "sea around the islands is polluted" and that "there are so many people selling souvenirs and food on the islands that they are not pleasant places to visit."

Tradeoffs Between Policy Objectives. Tourists also were asked two questions about potential tradeoffs associated with creation of the MPA. Seventeen percent more Vietnamese than foreign citizens agreed or strongly agreed with the statement that "fishing around the islands should be banned to restore fisheries and biodiversity even if means that people who live on the islands will have to find new jobs." The proportions of Vietnamese and foreign citizens who agreed that "it is a good idea to create the MPA even if it means that it will cost too much for some poor people to visit the islands" were similar, but a high percentage of Vietnamese disagreed strongly with this statement.

Willingness to Pay for Protection. Vietnamese citizens were more likely than citizens of other nations to say that they would be willing to pay a new user fee each time they visit and use the islands, but their mean willingness to pay (WTP) was lower than foreign citizens' (Table 2). Overall 81 percent of all people surveyed said they would be willing to pay some positive amount to support the MPA, including 83 percent of Vietnamese citizens and 72 percent of foreign citizens. Mean WTP was approximately \$0.61 with mean WTP among foreign citizens approximately three times mean WTP for Vietnamese citizens. Median WTP was lower: \$0.35 for Vietnamese citizens and \$1.00 for non-residents.

Although stated WTP among Vietnamese citizens was lower, their WTP represents higher proportions of their incomes.

Table 2 about here

The main reasons people said they were not willing to pay were that it costs too much already to use the islands and that those people and businesses that pollute should pay. Eighteen percent of those who said they were not willing to pay said they did not have enough information.

Preferences for Payment Vehicles. Vietnamese and foreign citizens had similar opinions on ways of paying for programs to manage the MPA. Approximately 71 percent and 61 percent of foreign and Vietnamese citizens, respectively, agreed or agreed strongly that fees on tourist attractions like the Tri Nguyen aquarium were a good way to pay for the MPA. Slightly smaller proportions of each group (64 percent and 60 percent, respectively) agreed or agreed strongly that "people who ride on tourist boats that visit the islands should pay fees for programs to manage the MPA. Fewer than half of the foreign and Vietnamese citizens agreed or agreed strongly that hotel fees should be used to manage the MPA, and only about one-third of each group agreed that fees on tourist restaurants should pay fees. In response to a separate question about the one best way to pay for programs to manage the MPA, user fees were preferred to new taxes by a ratio of 2.3 to 1.

Multivariate Analyses

We present here a set of econometric analyses that test each of the hypotheses listed above. Specifically, we test whether, after controlling for confounding factors, foreign tourists are more likely than native tourists to (1) perceive environmental problems; (2) support marine protection programs; (3) be willing to pay (on average) higher amounts for protection programs; and (4) prefer payment mechanisms such as new taxes to which they are less exposed than user fees on tourist activities in which they participate. The results of all multivariate analyses are presented in Table 3.

What affects perceptions of problems?

We hypothesize that perceptions of problems will be correlated positively with foreign citizenship, class (education and income), and use of the MPA. The first three columns of Table 3 present the results of probit models of factors that affect whether tourists agree that garbage and litter, pollution in the sea, and vendors and beggars are problems that diminish the experience of using the area. The factors that are correlated with perceptions of problems are consistent across models, with a few exceptions. Foreign citizens were significantly more likely to perceive environmental problems than were Vietnamese nationals, thus supporting our first hypothesis. There was no significant difference between local and non-local Vietnamese.

The only other variable that was significant across all three equations was education. Tourists with more education were significantly more likely than tourists with less education to perceive

environmental problems. With the sole exception of fishing, which had only a marginally significant impact, none of the activity variables had significant effects on perceptions of problems. Although men were significantly more likely than women to perceive that pollution in the sea was a problem, they were not more likely to perceive that garbage and litter or vendors and beggars were problems that make use of the beaches unpleasant. Income also had significant effects on perceptions of problems associated with pollution and vendors and beggars, but the direction of the effect with respect to pollution was opposite that which was expected. We have no explanation for this result.

What affects willingness to trade-off policy objectives?

We hypothesize that support for the MPA and a ban on fishing will correlate positively with perceptions of problems (i.e., the dependent variables from the preceding equations), foreign citizenship, class, and recreational use of the area. Columns 4 and 5 in Table 3 present the results of two probit models of factors that affect whether tourists agree with policy tradeoffs between protection of and access to the MPA, and a ban on fishing and a loss of jobs among fishers in the MPA. In contrast to the results for the models of problem perceptions, foreign citizenship had no significant impact on support for either the MPA or the fishing ban. However, support for the MPA and the fishing ban was significantly correlated with perceptions of problems. Thus, the effect of citizenship was indirect: foreign nationals were more likely to support protection programs because they were more likely to perceive environmental problems. Class, activity, and other variables generally were found to have no significant or only marginally significant effects on support for these policies.

What affects willingness to pay for protection programs?

We hypothesize that WTP to visit and use the MPA will correlate with citizenship, income, education, perceptions of problems, and recreational use of the area. Results from the tobit model are presented in column six of Table 3. Foreign tourists were, on average, willing to pay significantly more to support the MPA than were Vietnamese tourists. These results thus support our third hypothesis. Class variables – income and education – had clearly significant impacts on WTP ($p < .05$), both with the expected sign. Respondent gender and two activities (shore and attractions) had marginally significant impacts ($p < .10$). The variable NEWDATE had no significant effect on WTP, indicating that the differences in the payment cards on the two instruments was of minor consequence.

What affects preferences for payment mechanisms?

We hypothesize that tourists' preferences for user charges (versus new taxes) will depend on citizenship, income, education, and the specific types of activities in which tourists participate. The problem and policy variables are not included in this model because they were not significant in the model of WTP. Results from the probit model are presented in column seven of Table 3. As with our second hypothesis, we found no direct, significant impact of nationality on preferences for payment

mechanisms. Among the demographic variables, only income was significantly correlated with preferences for charges rather than taxes. The only other significant variable was HOTEL, which indicates whether the tourist was staying in a hotel or guesthouse. This variable may be serving as a proxy for the intensity of use by tourists since day-visitors, who would not be staying in hotels, would use the area less intensively than longer-term tourists. If so, then the sign of the effect may reflect the desire of people who use facilities intensively to avoid associated user fees.

Discussion

To establish a sustainable financing strategy and achieve the objectives of the MPA, it is necessary to understand how tourists use and view the area, what they think about the proposed programs, and factors that affect their WTP for protection programs. Vietnamese and foreign tourists use the area of the proposed MPA differently. We hypothesized that foreign citizens would be more likely to perceive problems, that they would show greater support for the MPA and be willing to pay for it, and that they would have different preferences for payment mechanisms. Our models suggest, however, that there are similarities as well as differences between foreign and Vietnamese tourists: only two of our hypotheses were supported directly and indirect evidence was found for a third.

Citizenship affects perceptions of problems and WTP directly. Foreign tourists are more likely to perceive garbage and litter, pollution, and interactions with vendors and beggars as factors that diminish the recreational experience, and are willing to pay more to support an MPA. Citizenship has no direct effects on willingness to trade-off policy objectives. Although a higher proportion of Vietnamese than foreign tourists agree that fishing should be banned even if fishers must find new jobs, the effect of citizenship is not significant after the effects of class – education and income – have been controlled. However, because support for the MPA and the fishing ban both correlate with perceptions of problems, which are a function of nationality, citizenship may have indirect effects. Citizenship has neither direct nor indirect effects on preferences for payment mechanisms. Vietnamese and foreign citizens alike concur that user fees are preferable to taxes.

Although their effects varied somewhat across models, education and income – the two indicators of class – were the most important factors overall. Education had significant effects on perceptions of problems, belief that the MPA was a good idea, and WTP. Education did not have significant effects on agreement with a ban on fishing or on preferences for payment vehicles. Income similarly had significant effects on perceptions of problems and WTP, but it had no significant effect in either model of agreement with policy tradeoff. In contrast to education, income did have a significant effect on preferences for user fees. With one or two exceptions, tourist use of the area had no effects on the dependent variables.

In sum, citizenship, the proxy for culture, and class, have effects on perceptions of problems, but activity variables do not. Perceptions of problems, in turn, along with education affect willingness to

trade-off potentially conflicting policy objectives. Citizenship has no direct effects, however, on agreement about tradeoffs among policy objectives. Perceptions of problems do not have significant effects on WTP, which is primarily a function of income, education, and citizenship. Preferences for user fees over taxes are primarily a function of income – they are preferred by the wealthy. Some evidence exists that intensive users of the area may prefer taxes, but this finding needs corroboration with additional research.

These findings have a number of limitations. None of the equations explains more than about 20% of the variation in the dependent variables, and most explain less. Hence, even though we have identified a number of significant variables, much of the variation in perceptions, priorities, and preferences remains unexplained. Some of the variables used in our analyses are relatively crude constructs, in part because of the significant differences between the foreign and Vietnamese populations. More refined measures may improve model fit or lead to identification of additional significant relationships. Finally, due to constraints on timing and finances (the study was self-financed), the sample was collected over three consecutive Sundays and thus may not be representative of the current population of tourists in the Nha Trang Bay area. This sample would have been problematic if our objective had been to evaluate the average willingness to pay for an MPA among the current tourist population. Our primary purpose, however, was to evaluate the relationship between tourist characteristics and attitudes to issues surrounding the MPA, and we believe the sample is adequate for such an analysis.

Implications and Conclusions

These results have a number of implications for management of the MPA and, more generally, illustrate some of the issues associated with tourism development as a strategy for mitigating the effects of and for financing protection of significant resources. The protection programs proposed within the MPA will be established over a complex set of existing uses of the area, including a sizable tourism industry that, despite little growth over the past several years, is projected to grow significantly over the next two decades. Important issues in management of the MPA include problems related to preventing degradation of environmental resources, managing tourist and local interactions, making tradeoffs in equity, efficiency, and protection, and financing of the MPA.

These data illustrate there is potential for both cultural conflict and consensus on management approaches. Foreign tourists, the market segment that tourism officials count on most for growth, view the problems of garbage, litter, pollution, vendors, and beggars more seriously than do Vietnamese tourists. Hence, these data provide warning that these stresses must be addressed. Because perceptions of problems are significantly correlated with education, educational programs must be a management priority. Educational programs for both tourists and tourism providers clearly are needed and are one

potential approach that may help in the short run. Educational programs also may affect support for difficult decisions made with respect to tradeoffs among policy objectives.

The majority of tourists, foreign and Vietnamese alike, appear willing to support the MPA or a ban on fishing even if implementation requires tradeoffs such as reduced access for the poor or dislocation of local fishers. However, the fact that large proportions of tourists support these policies does not mean that everyone does, and the concerns of others must be addressed. Identification of policies to address these potential effects must be a priority. These findings underscore the need for the alternative income generating activities to help mitigate the adverse impact of environmental protection programs.

These results also indicate that tourists are willing to pay some fees to achieve the objectives of the MPA. Mean and median WTP were small, about \$0.61 and \$0.35, respectively, per visit. To place these fees in perspective, in 1999 when the survey was taken, the typical fee for a tourist for a boat trip to three islands, including lunch, was approximately \$7.00. Hence, a surcharge equivalent to median WTP would represent an increase of approximately five percent. There is, however, increasing evidence that answers to hypothetical WTP questions in contingent valuation studies are higher than WTP as measured by donations or other actual measures. Care therefore must be taken not to view tourists as unlimited sources of revenue and to consider the elasticity of demand. Despite this caution, tourists clearly have positive WTP, and there appears to be potential to generate limited revenues with fees. Given that foreign tourists are generally willing to pay more than native tourists to support an MPA, and that foreign tourists are anticipated to constitute a larger portion of all tourists visiting Nha Trang Bay in the future, the ability of the tourist industry to support an MPA should increase over time.

The descriptive results suggest that tourists prefer user fees the closer they are tied to tourist related activities: higher proportions of both foreign and Vietnamese preferred fees on boats trips and tourist attractions to fees on restaurants and hotels. The multivariate analyses, however, provide some evidence of strategic preferences: income had significant effects on preferences for user fees, while staying in a hotel, a possible indicator of intensive use of tourist services, was inversely correlated with preferences for them. Further research is needed to ascertain how financing mechanisms may impact the mix of tourists, and the development of the tourist industry, that might support an MPA.

More generally, these results illustrate the importance of public participation in strategic planning for protected areas, especially during the emergence and growth stages of tourism development when patterns for cultural interaction and use of resources are being established. Although the survey is not a participation mechanism that devolves decision making authority, it is an approach that provides information which otherwise would not be available, illuminates issues, and informs potential paths of action. In this case, the results provide pragmatic information about potential problems, perspectives on

tradeoffs between protection and other policy objectives, WTP, and preferences for payment mechanisms. Although differences among foreign and Vietnamese tourists exist, with careful planning these differences can be addressed, and tourism can play a successful role in implementation of the MPA.

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Figure 1 Historic and Projected Tourists in Nha Trang

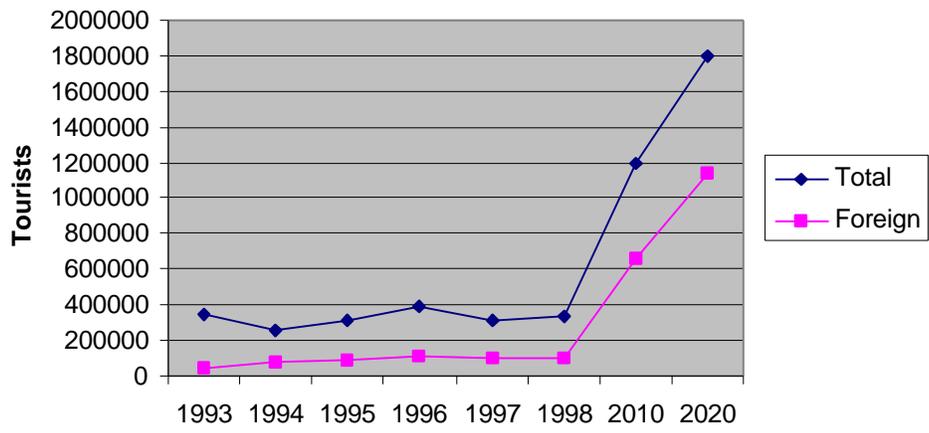


Table 1. Variable Definitions.	
Variable	Measure and Interpretation
<i>Problem Dummy Variables: 1 if strongly agree or agree with statement ...; 0 otherwise:</i>	
GARBAGE	“The amount of garbage and litter on the beaches makes them unpleasant.”
POLLUTION	“The water in the sea around the islands is polluted.”
VENDORS	There are so many people selling souvenirs and food on the islands that they are not pleasant to visit.”
<i>Policy Variables: 1 if strongly agree or agree with statemen...; 0 otherwise:</i>	
MPAGOOD	“It is a good idea to create the Marine Protected Area even if it means that it will cost too much for some poor people to visit the islands.”
FISHBAN	“Fishing around the islands should be banned to restore fisheries and protect biodiversity, even if it means that people who live on the islands will have to find new jobs.”
<i>Payment Variables</i>	
WTP	“Would you be willing to pay a new user fee each time you visit and use the islands to help fund new programs to manage the Marine Protected Area?” If yes, “What is the highest user fee that you would be willing to pay for new programs to manage the Marine Protected Area?” Values in U.S. dollars.
NEWDATE	1 = June 13 or June 20 (lower minimum value on payment card); 0 = June 6
<i>Payment Mechanism Variables</i>	
USERFEE	1 = selected one of six different fees as ONE best way to pay; 0 otherwise
<i>Citizenship and Demographic Variables</i>	
SEX	1 = female; 2 = male
FOREIGN	1 = foreign (non-Vietnamese) citizen; 0 otherwise
NONLOCAL	1 = non-local Vietnamese citizen (not living in Nha Trang or Khanh Hoa Province; 0 otherwise
EDUCATION	1 = upper half of educational achievement, normalized by relevant reference group
INCOME	1 = upper half of income, normalized by relevant reference group
<i>Activity Variables: 1 if participate in ...; 0 otherwise</i>	
SWIM2	swimming, snorkeling, or scuba; 0 otherwise
SHORE	beaches/sunbathe, camping/picnicking, just visit, relax/look at scenery
ATTRACTION	visit aquarium at Tri Nguyen or eat seafood
ONWATER2	Boating/sailing or jetski
FISH	Fishing
HOTEL	reported staying in hotel or guesthouse while in Nha Trang
BOAT	Boating
EAT	eating seafood at islands
AQUARIUM	visited aquarium at Tri Nguyen

Table 2. Willingness to pay to manage the MPA.			
	Vietnamese Citizens	Foreign Citizens	All Respondents
Willing to pay user fee (n=533)	83%	72%	81%
Mean WTP (n=521)	\$0.51	\$1.48	\$0.61
Median WTP	\$0.35	\$1.00	\$0.35
Main reason not willing to pay (n=91):			
? Do not care about MPA	4%	7%	4%
? MPA not needed	1%	--	1%
? Costs too much already	27%	7%	24%
? Money would be wasted	12%	--	10%
? Am too poor	6%	7%	7%
? Others who pollute should pay	23%	29%	24%
? Programs created anyway	13%	7%	12%
? Not enough information	13%	43%	18%

Table 3. Models of perceptions of problems, policy trade-offs, WTP, and preferences for payment mechanisms.

Variable	Perceptions of Problems			Policy Tradeoffs		WTP Pro V (n)
	GARBAGE (n=428)	POLLUTION (n=425)	VENDORS (n=429)	MPAGOOD (n=412)	FISHBAN (n=407)	
GARBAGE	--	--	--	.343**	.135	.
POLLUTION	--	--	--	.267*	.703**	-
VENDORS	--	--	--	.285**	.600**	.
SEX	-.051	.352**	.184	.035	-.085	-. 1.
FOREIGN	.586**	.750**	.967**	.010	-.325	1.
NONLOCAL	-.004	-.072	.216	.184	-.264*	.
EDUCATION	.330**	.288**	.377**	-.260*	-.144	.2
INCOME	.003	-.280**	.264**	-.158	.070	.3
NEWDATE	--	--	--	--	--	-
SWIM2	.163	.009	.074	.001	-.166	-
SHORE	-.017	.121	.075	-.064	-.188	2.
ATTRACTION	.133	-.151	.057	-.172	.114	2.
ONWATER2	-.159	.100	-.116	-.260	.146	-
FISH	-.066	.268	.339*	-.266	.305	-
BOAT	--	--	--	--	--	
EAT	--	--	--	--	--	
AQUARIUM	--	--	--	--	--	
HOTEL	--	--	--	--	--	
Constant	-.171	-.950**	-1.33**	.101	-.313	.
CU R ²	.05	.09	.13	.11	.20	

*p<.10

** p<.05