



The Value and Conservation of Surfing Resources and Marine Ecotourism

Qualifying Report and Academic Review for
Ph.D. in Environmental Management

Part II: Post-Defense Supplemental Topics

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LIST OF VALUATION ACRONYMS

CBA	Cost-Benefit Analysis
CVM	Contingent Valuation Method
DCA	Damage Costs Avoided
EOP	Effect on Production
ITCM	Individual Travel Cost Method
MAE	Mitigative or Avertive Expenditures
MCA	Multiple Criteria Analysis
MP	Market Price
NM-CVM	Non-Market CVM
OC	Opportunity Cost
RCM	Replacement Cost Methods
TCM	Travel Cost Method
TEV	Total Economic Value

INTRODUCTION TO THE POST-DEFENSE SUPPLEMENTAL TOPICS

In fulfillment of the requirements for the Qualifying Examination as set forth by the Faculty of Environmental Management Ph.D. Committee, Prince of Songkla University, Hat Yai Campus, on September 29th, 2011, the following *Post-Defense Supplemental Topics* are presented in three sections:

- (1) Environmental management terms of governance;
- (2) Thailand standards for marine ecotourism locations; and
- (3) The quantification methodologies for the economic valuation of surfing locales.

This document serves as a supplement to the original and previously submitted qualifying exam by the researcher (See Martin (2011) *The Value and Conservation of Surfing Resources and Marine Ecotourism*, Qualifying Report and Academic Review for Ph.D. in Environmental Management, +144 pp.) . The purpose of this *post-defense* report is to complement the existing research by the researcher of to offer further detail and clarification of the assigned topics.

TOPIC 1

ENVIRONMENTAL MANAGEMENT TERMS AND CRITERIA FOR GOVERNANCE OF PARTICULAR AREAS

Broadhurst (2001) asks, “If we designate a place as special, does that mean that other places are not special?” Planners have used designations as a way of signifying value and directing development in relation to the environment for some time, especially when environmental management decisions could lead to the erosion of environmental capital (ibid.). Whereas one particular area may be resistant to various human or natural impacts that evoke environmental change, another area may be highly susceptible. Thus the designations of environmental zones need to be site-specific and take into account any number of criteria. For example, Barrow (2005: 162) notes that while ‘resistance’ is the ability of an area to withstand certain exposures, the term ‘resilience’ is the ability to recover from them. The natural capital of a given area, when placed in the context of protection or conservation, must account for such sensitivities which may determine the design or structure of the management plan. Although there are many aspects surrounding environmental protection and planning schema, the following discussion offers seven general terms in order to set the stage for future discussion environmental and coastal governance. They include conservation, reserves, national park, protected area, and marine protected area (MPA), world heritage site, and surfing reserves.

1.1 Conservation

The concept of conservation often includes stakeholder use and community involvement with an ultimate aim of maintaining biodiversity. Conservation can be linked to tangible benefits as well as to those less apparent, such as a forest reserve may lock up atmospheric carbon, counter global warming, or protect a natural catchment mechanism of fresh water (Barrow, 2005: 106). Key to the concept and implementation to conservation ideals is ‘proactive management’ through the use of various coastal planning approaches (Kay & Alder, 2005: 19). Essentially, conservation is the official supervision of forests, rivers, and other natural resources in order to preserve and protect them through prudent management; it is the careful utilization of natural resources in order to prevent depletion (Random House, 1987).

1.2 Reserve

The concept of a ‘reserve’ in the context of land or coastal management may include areas set aside for wildlife, hunting, tourism, or other uses. More explicitly, a ‘nature reserve’ is generally a protected area of importance for wildlife, flora, fauna or features of geological or other special interest.

Parks and reserves have different meanings in different cultures, the former suggesting some return of benefit to the user, the latter being concerned more with conserving the potential to provide a return for future generations (Broadhurst, 2001:146). Therein, the concept of ‘reserve’ may indicate ‘preserve’, comparable to putting a pickle in a jar in order to preserve it, and this concept is in contrast to ‘conservation’ which favors human use and interaction as significant to the sustainability of a given area. Kay & Alder (2005: 40) assert that the ability of reserves to meet the multiple-use demands of coastal users and provide for conservation is questioned by environmental preservationists who seek multiple-use as only a trade-off between economic development and preservation.

1.3 National Park

The IUCN (1969) identifies a national park to be large area with particular defining characteristics where one or several ecosystems are not significantly altered by human exploitation and occupation. Administered at a national level for any given country, visitors are allowed to enter, under special conditions such as for inspirational, educative, cultural, and recreational purposes. Essentially, a national park is an area of scenic beauty, national importance, or the like, owned and maintained by a national government for the use of the people (Random House, 1987).

1.4 Protected Area

A protected area is “an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means” (IUCN, 1994). Protected areas are defined in a number of different ways relevant to the objectives and values for which they are managed as outlined by the ICUN into six categories:

Category I

An area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species available primarily for research and/or environmental

monitoring. A wilderness area is a large area of unmodified or slightly modified land and/or sea retaining its natural character and influence without permanent or significant habitation which is protected and managed so as to preserve its natural condition.

Category II

A natural area of land and/or sea designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations; (b) exclude exploitation or occupation inimical to the purposes of the area; and (c) provide foundation for spiritual, scientific, educational, recreational, and visitor opportunities all of which must be environmentally and culturally compatible.

Category III

An area containing one or more specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.

Category IV

An area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

Category V

An area with coast and sea, as appropriate, where the interaction of people and nature over time has produced an area with significant aesthetic, ecological and/or cultural value and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

Category VI

An area containing predominantly unmodified natural systems managed to ensure long term protection and maintenance of biological diversity while providing at the same time a sustainable flow of natural products and services to meet community needs.

WCPA (1998: 4)

1.5 Marine Protected Area (MPA)

Eagles, McCool, and Haynes (2002) note that MPAs may include terrestrial lands as well as reefs, seagrass beds, shipwrecks, archaeological sites, tidal lagoons, mudflats, salt marshes, mangroves, and rock platforms. Jessen et al (2011: 5) identify that sustaining ocean health requires ecosystem-based approaches to management and that marine protected areas (MPAs) are a central tool in an ecosystem-based approach. Dimmock (2007: 134) describes marine protected areas as any area of coastal zone or ocean conferred at a level of protection for the purpose of managing use of resources and ocean space, or protecting vulnerable or threatened habitats or species.

The IUCN (1999) defined an MPA as, “any area of intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment.” Jessen et al (2011) note that in 2008 the IUCN updated their approach to make it clear that the purpose of such protected areas needs to be conservation-focused, adopting a more general definition that applies to marine, terrestrial and freshwater environments: “A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (Dudley, 2008). Within this general definition, the strictness of protection can vary extensively from one MPA to another, and among zones of an individual MPA (Jessen et al, 2011). MPAs or zones from which extractive activities are strictly prohibited are generally referred to as no-take reserves (ibid.).

1.6 World Heritage Site

World heritage sites refer to those areas under protection of UNESCO and combine the conservation of natural and cultural sites in an internationally recognized context. Therein, the UNESCO World Heritage model links the concepts of nature conservation and the preservation of cultural properties in a way that allows mankind interact with these areas while at the same time distinguishing the fundamental need to preserve the balance between the two (UNESCO, 1972).

1.7 Surfing Reserve

In recent years, ‘surfing reserves’ have been created to manage and protect surfing areas. As aforementioned in the researcher’s original Qualifying Exam (Martin, 2011), the conservation of natural surfing resources has emerged in Australia with research including that of Hugues-Dit-Ciles *et al.* (2005), which explored the

development and management of surf tourism in wilderness areas and its potential impacts on the natural environment. Farmer and Short (2007) put forth *Australian National Surfing Reserves - Rationale and Process for Recognizing Iconic Surfing Locations*, which provided background and examination for an Australian surfing reserve system based on the premise of surfing as an Australian cultural heritage and a means to long-term preservation of world-class surfing sites as a coastal resource. As a course of action, World Surfing Reserves (WSR) (2011) was founded in 2009 by an international group of surfers, scientists & environmentalists led by not-for-profit organizations *Save The Waves Coalition* and *National Surfing Reserves* (NSR Australia) to create a global model for proactive surf break protection and stewardship. The organization provides dialogue in five key areas:

- The aesthetic, historic and cultural value of waves;
- The economic value of waves;
- Coastal laws, public policy and politics;
- Management and conservation of natural surfing resources;
- The sport of surfing, its core organizations and how they can help protect waves: opportunities and challenges.

worldsurfingreserves.org

In line with various definitions as proposed by Garrod, Wilson and Bruce (2002) on marine ecotourism, the mission statement of World Surfing Reserves includes the proactive identification, designation and preservation outstanding marine environments, but with a special focus on waves, surf zones and their surrounding environments around the world: —“The program serves as a global model for preserving wave breaks and their surrounding areas by recognizing the positive environmental, cultural, economic and community benefits of surfing areas” (worldsurfingreserves.org).

1.8 Conclusion to Topic 1

The terminology applied to the protection of a given area is inherently tied to natural capital and socio-political context. Essentially, environmental governance is the means by which policies are implemented and monitored through administration, policy making and the rule of law (Barrow, 2005: 234). The fundamental tone behind the terms discussed herein is environmentalism, or the planned intervention to secure improvement in environmental quality (ibid.).

TOPIC 2

THAI GUIDELINES AND STANDARDS FOR MARINE ECOTOURISM LOCATIONS

The following is an introduction to ecotourism guidelines in Thailand and is focused toward marine ecotourism. An overview is provided of ecotourism in the Thai context, ecotourism guidelines, and ecotourism standards for specific activities and locations. The review moves to explore the conception of marine ecotourism and conservation of the sea zone as tourism site in Thailand, including the management of human populations and marine protected areas.

According to the International Ecotourism Society (in Liebich, 2005), the purpose and benefits of allowing marine ecotourism may include:

- Building environmental and cultural awareness and respect
- Providing positive experiences for both visitors and hosts
- Providing direct financial benefits for conservation
- Providing financial benefits and empowerment for local people
- Raising sensitivity to host countries' political, environmental, and social climate
- Supporting international human rights and labor agreements

2.1 Ecotourism in the Thai Context

Although a number of definitional terms have been offered in the researcher's original qualifying exam for ecotourism in general, the following description is offered by the Tourism Authority of Thailand (1997):

Ecotourism is responsible travel in areas containing natural resources that possess endemic characteristics and cultural or historical resources that are integrated into the area's ecological system. Its purpose is to create an awareness among all concerned parties of the need for and the measures used to conserve ecosystems and as such is oriented towards community participation as well as the provision of a joint learning experience in sustainable tourism and environmental management.

Tourism Authority of Thailand (1997)

Thailand Ecotourism Information Center (2011) notes that ecotourism is seen as a symbiotic relationship between tourism and nature conservation. The criteria that the ecotourism development should meet are:

- The activity must be nature based. It does not imply that the setting must be pristine or unmodified. It does not exclude settings that include exotic species or are substantially or totally comprised of introduced species. It does not imply any specific level of physical activity. It means that the motivation for undertaking the activity in a particular setting is provided by expectations of satisfaction that are directly related to the natural qualities of the setting.
- The activity must be environmentally sustainable. It is this criterion that supports the contention that ecotourism is better understood as a process rather than a product. To ensure environmental impacts of tourism activities are sustainable it is necessary to have a process for monitoring environmental impacts and the ability (and willingness) to limit or mitigate the impacts of tourism and recreation within the limits of acceptable change.
- The activity must make a contribution to nature conservation. The contribution to conservation may be measured by the degree to which the impact of local communities is reduced or it may be made directly by the tourism related activities, or indirectly by facilities provided with the funds generated from ecotourism.

Thailand Ecotourism Information Center (2011)

2.2 Thailand Ecotourism Management Guidelines

Management guidelines, as set forth by the Tourism Authority of Thailand (1997) and listed by the Thailand Ecotourism Information Center (2011) are as follows:

Management

Guidelines for the management of tourism areas, and the conservation of the environment:

- Considering the management of the tourism area by dividing it into different administrative sections in order to separate the activities of the tourism section from those of the conservation section.
- Considering measures to seriously limit the number of tourist in environmentally fragile areas.

- Clearly indicating the role of TAT in the conservation of environmentally fragile areas.
- Considering regulations/rules of behavior imposed on tourists.

Education

Guidelines for communicating and giving educational services:

- Producing tourism media in terms of nature, culture, and history.
- Considering allocating a budget for producing tourism media to the parties involved.
- Considering upgrading knowledgeable local people to the position of qualified and eligible specialist tour-guides; together with the development of a tourism curriculum to correspond with the recommendations for development.

Community Participation

Guidelines for encouraging participation from the local people and giving benefits to them:

- All the organizations concerned have to promote education by disseminating information and understanding in ecotourism through various media, both inside and outside the formal education system to the youth, people in general, and community leaders.
- Local tourism enterprises may be organized into the form of a club, an organization, or a co-op to collaborate in mapping the recommendations of development and conservation, as well as to strengthen the power in marketing negotiations. This will result in the sustainability of local enterprises. Private development organizations and academicians may be involved as advisors in management.
- In proceeding with any recommendation, all the local resources should be primarily taken into consideration, whether they are personnel, raw materials, folk wisdom, or local heritage.

Prevention

Guidelines for the prevention of the negative impact on culture:

- Setting limits for tourists and business operators, realizing the impact on culture; for instance, avoiding to cause cultural disintegration by behaving in accordance with the local culture (not interfering with personal rights; not behaving in the way to offend

local people, or treating them as inferior, but being polite and in accordance with the principles of equality and human rights).

- Being aware of the fact that any change may cause an impact on the way of life and culture of local areas, study carefully and keep respect for the local culture and folk wisdom.
- In presenting the genuine culture to tourists, being aware of accurate knowledge, approval of the local community, and particular rules of behavior within the culture and rites; in addition, inappropriateness in the change of the culture and rites to suit the marketing directions, or only to please tourists.

Marketing

- To promote an idea of ecotourism among the youth and visitors in general both the Thais and the foreigners.
- To set the standards of ecotourism management, putting more emphasis on quality than quantity of tourism arrivals.
- To enhance the active role of tour operators in the ecotourism.
- To promote, boost and facilitate the organizing of international conferences in connection with the ecotourism.
- To produce and disseminate audio visual materials for the promotion of the ecotourism.

Forestry Department (1997)

Thailand Ecotourism Information Center (2011)

2.2.1 APO Suggested Policy and Guidelines for Thai Ecotourism

APO Policy Overview

The Asian Productivity Organization (APO) suggested policy course of action for Thailand's developing ecotourism market sector are outlined by Sriphomya (2000). Sriphomya (ibid.) identifies that the TAT has developed an ecotourism strategy as a part of a sustainable tourism policy which provides an operating framework and 10 suggested guidelines as follows:

- Ecotourism development must manage resources in order to retain their original condition as far as possible, and to avoid or to abstain from using sensitive areas which are easily adversely affected and are difficult to rehabilitate;
- Ecotourism management must take the character and potential of existing resources into consideration in order to determine the

appropriate activities to be carried out in the area (and this should include avoiding being in serious conflict with other forms of tourism);

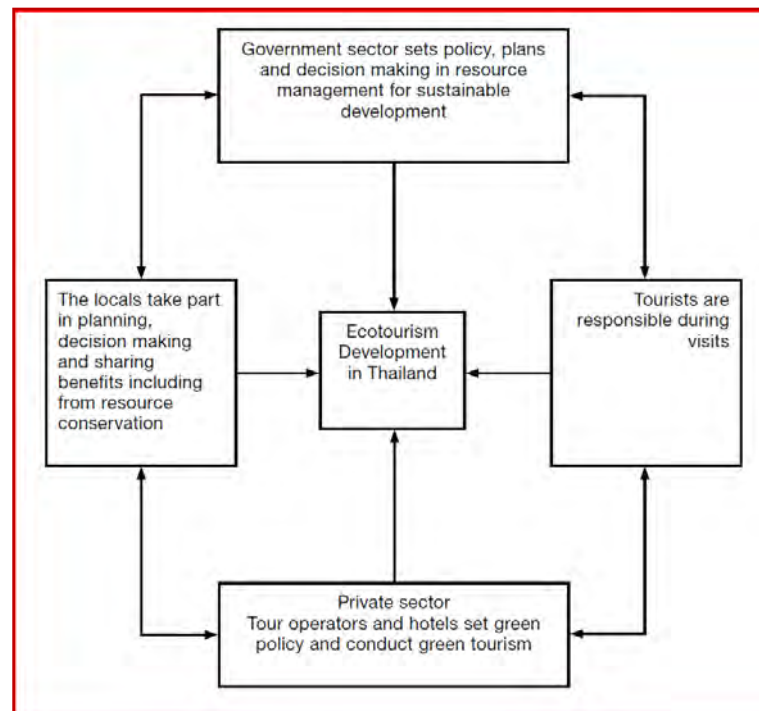
- The benefits of ecotourism should flow to the wider tourism industry; development must promote educational development and the creation of awareness of the community and the industry to jointly maintain the ecosystem of the area, rather than focus only on economic growth and income generation;
- Ecotourism management must facilitate the involvement of the local people and local organizations in the development process, particularly in the management of the resources, services, and programs designed to transfer knowledge and community culture (and this should include their participation in formulating development plans), and opportunities should be created for their representatives to become members of joint-committees at every level;
- In developing sustainable tourism, it is essential to give priority to ecotourism and to give appropriate organizations clear roles in promoting it, which can be done through a sufficient budget, personnel provision, and management system design;
- An ecotourism development plan should be incorporated into general development plans at all levels, namely district development plans, provincial development plans and regional development plans, along with a budget allocation and distribution to facilitate implementation;
- The development objectives should be supported by research which analyses and assesses all aspects of tourism so as to determine or adjust the management guidelines, to solve any problems which arise, and to improve the plans step by step;
- The law should be used strictly to maintain the environmental condition of tourism resources by focusing on providing advice and warnings along with cultivating discipline among tourists; and
- Operating guidelines, or a code of conduct, should be provided for relevant persons in order to facilitate proper involvement in ecotourism development.

Sriphnomya (2000: 238)

APO Guidelines Overview

The APO's suggested guidelines for Thailand's ecotourism are based on the right of local people to protect their resources, traditions, and culture as well as to share in the benefits from the utilization of resources and management. The recommended framework incorporates the global lessons in ecotourism with extant Thai policy, particularly those outlined in the *8th Plan of National Socio-economic Developments* and the TAT Policy of Sustainable Tourism (Wanichanugorn, 2000). In this context, Wanichanugorn (ibid.) proposes that as protected areas (national parks, forest parks, wildlife sanctuaries etc.) and water catchments cover a large area of the Thai provinces, there should be regional and provincial master plans, formulated by all interested parties, including local people. Taking into account the role of all sectors for ecotourism planning in Thailand, Figure 2.1 provides a framework for ecotourism planning in Thailand:

Figure 2.1 Framework for Ecotourism Planning in Thailand



Wanichanugorn (2000)

Thai Ecotourism Standards

In Thailand, various standards are offered outdoor activities, such a rafting, hiking, climbing, bird watching, and diving. As well, attraction standards include those for natural attractions and for ecotourism. The Thai government, through the Office of Tourism Development, Ministry of Sport and Tourism offer a handbook for

the evaluation standard of quality for ecotourism sites, including marine ecotourism. According to Parichart (2011), the four key components for Thai marine-ecotourism are:

- Ecotourism
- Sustainable use
- Awareness-raising
- Local Participation

Ecotourism Policy in Thailand

Chettamart (2003: 10) notes that Thailand's protected area legislation and regulation is somewhat antiquated (mainly the National Park Act of 1961, National Reserved Forest Act of 1964, and the Wild Animals Preservation and Protection Act of 1992), and given that ecotourism is a relatively new phenomena to Thailand, these laws may not be in keeping up with the changing and contemporary situation. However, the National Park Act has provided guidance and thus national parks are the front-runners for protected areas and "True ecotourism destinations"; also the Tourism Authority of Thailand has promoted eco-based activities in recent years, including the National Ecotourism Action Plan completed in 2001 (ibid.).

The Thai Ecotourism and Adventure Travel Association (TEATA, 2011), released a final draft of the *sustainable Thai tour operator standard, informed by the global sustainable tourism criteria* (GSTC) which provides Thai tour operators with the required standards for operation (See Appendix I). The plan is endorsed by various ecotourism including TEATA, Green leaf Foundation (Green Leaf standard for ASEAN), The Thailand Community Based Tourism Institute (CBT-I) and the European Centre for Eco Agro Tourism (ECEAT).

2.3 Marine Ecotourism in Thailand

The following review is focused on the concept of marine ecotourism—particularly the conservation of the sea zone as tourism site, and the activity, participation, and management of human populations, including aspects of zoning, especially in the context of the marine protected area.

Thailand is widely conceived as a coastal tourism destination. With 2,614.4 kilometers of coastline (the Andaman Coast is 739.6 kilometers and the Gulf of Thailand is 1,874.8 kilometers) and some 500 islands (which together account for another 500km of coastline (Tridech, Simcharoen & Chongprasith, 2000)), marine ecotourism in Thailand is already eminent and growth already imminent.

2.3.1 Categories and Functions of Protected Areas in Thailand

In Thailand, different protected area categories serve various functions pending their enabling legislation, management objectives, and ecosystem capabilities. Protected areas in Thailand vary greatly in size, habitat type, and condition, and they are not seen as independent from each other, rather they reinforce each other in terms of conservation, utilization and management (Chettamart, 2003: 4).

National Parks, Forest Parks, Wildlife Sanctuaries, and Non-Hunting Areas in Thailand

These protected area systems are currently being administered and managed by the Ministry of Natural resources and Environment's Department of National Parks, Wildlife and Plant (DNP). The DNP comprises 3 major offices: (1) Office of National Parks; (2) Wildlife Conservation; and (3) Watershed Conservation. Additionally, the Office of National Parks have administrative divisions dealing with recreation and nature interpretation, visitor facility development, and natural resources management, all of which are essential to ecotourism development Chettamart, 2003: 9).

Marine National Parks in Thailand

Sudara (2002) notes that there are two types of MPAs in Thailand, Navy restricted areas and Marine Parks, and these MPAs can be considered in being the major function in conserving Thailand marine habitats. In the case of Navy restricted areas, strict regulations and regular patrols curb anthropogenic activities that cause destruction to the environment. In contrast, Marine Parks administered by the Royal Forestry Department face increasing management challenges required to reinforce regulations due to the lack of resources needed to patrol areas and prevent illegal encroachments and anthropogenic change (ibid). Conceivably, although Marine National Parks have their own administrative boundaries, a significant aspect is the potential for free flow and function as one ecosystem (i.e. eco-corridors), especially for large marine species, such as dugongs, dolphins, whale sharks, and sea turtles (Chettamart, 2003: 6)

Marine National Parks in Thailand were first conceived in 1966 with the formation of *Khao Sam Roi Yot* National Park in Prachuap Khiri Khan in the northwestern area of the Gulf of Thailand followed by Tarutao National Park in 1976 in Satun, Thailand's southern-most Andaman coast province. From these early conceptions, Marine National Parks have been added to include a total of 11 provinces. According to the ICEM (2003a: 64), there are 21 designated Marine

National Parks, comprising six archipelagos, ten coastal parks (encompassing stretches of beach), a coastal site (protecting a diverse range of wetland ecosystems) and a forested site. These areas collectively encompass 5,810.23 sq km (or 1.13 percent of the country). A further six marine national parks are proposed. Table 2.1 provides a complete listing of Marine National Parks in Thailand, providing a timeline and spatial overview. Adopted from Sethapun (2000), the researcher has added provinces and rounded off the numbers for the total and marine areas given in square kilometers. Additionally, 5 proposed Marine National Parks are listed in Table 2.2.

Table 2.1 Marine National Parks in Thailand

NO.	Park Name	Province	Year Inscribed	Total Areas (Km ²)	Marine Areas (Km ²)
1	Khao Sam Roi Yot	Prachuap Khiri Khan	1966	98	20
2	Tarutao	Satun	1976	1,490	1,264
3	Thaleban	Satun	1980	196	2
4	Mu Ko Ang Thong	Suratthani	1980	102	84
5	Ao Phangnga	Phangnga	1981	400	347
6	Mu Ko Surin	Phangnga	1981	135	102
7	Sirinath	Phuket	1981	90	68
8	Khao Leam Ya-Mu Ko Samet	Rayong	1981	131	123
9	Had Chao Mai	Trang	1981	230	137
10	Mu Ko Similan	Phangnga	1982	140	124
11	Mu Ko Chang	Trat	1982	650	458
12	Laemson	Ranong	1983	315	267
13	Had Nopparatthara-Mu Ko Phi Phi	Krabi	1983	387	325
14	Mu Ko Preta	Satun	1984	494	468
15	Khao Lam Pee – Had Thai Muang	Phangnga	1986	72	0
16	Mu Ko Lanta	Krabi	1990	134	109
17	Khao Lak-Lam Ru	Phangnga	1991	125	0
18	Had Vanakorn	Prachuap Khiri Khan	1992	38	15
19	Tarn Boke Koranee	Krabi	1998	104	0
20	Mu Ko Chumphon	Chumphon	1999	317	265
21	Lam Nam Kraburi	Ranong	1999	160	64
Total areas				5,810	4,245

Source: Modified from Sethapun (2000)

Table 2.2 Proposed Marine National Parks

	Park Name	Province	Status
1	Tharnsadet	Suratthani (Ko Phangan)	Proposed
2	Mu Ko Phayam	Ranong	Proposed
3	Had Khanom	Nakhon Si Thammarat	Proposed
4	Ko Ra-Ko Pra Thong	Phangnga	Surveying
5	Ao Manao-Khao Tanyong	Narathiwat	Surveying

Source: Modified from Sethapun (2000)

Marine Protected Areas (MPAs) in Thailand

In the wide sense, Marine Protected Areas (MPAs) are the underwater equivalent of National Parks. More clearly defined they are: “Any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein” (Liebich, 2005). Resulting from the increased awareness and management following the 2004 Indian Ocean tsunami, marine protected areas were conceived in various Andaman provinces. Following the international classification of protected areas as outlined by the IUCN (see Topic 1.4 in this report), Table 2.3 offers a listing of the types of MPAs in Thailand alongside the number of sites of each type and the total area protected for each types of site.

Table 2.3 MPAs in Thailand

MPA	MPA type (IUCN designation)	Area size (km ²)	Number of sites
Marine sanctuary	Ia	166	56
Wild-life non hunting area	IV	447	1
National marine park	II	4,246	21
Mangrove	IV	2,527	
Coral reef	IV	160	
Seagrass bed	IV	155	
Fisheries control area	IV	52,241	9
Marine archeological protected area	V	27	1
Environmental protected area	VI	12,190	6

Source: Adapted from Phonsuwan (2009)

Characteristics of MPA Development and Management in Thailand

There are several types of MPAs in Thailand and these areas may overlap in terms of the type or classification of areas as well as the governing bodies involved in the establishment and responsibility of these areas.

- Dept. of Fisheries
- Dept. of Forestry
- Dept. of National Park, Wildlife and Plant Conservation
- Dept. of Marine and Coastal Resources
- Department of Environmental Control

Phonsuwan (2009)

MPA Network Development

Phonsuwan (2009) notes that at an international level, cooperative research programs may collaborate in information sharing, such as current agreements with Global Coral Disease Database (GCDD) which research various aspects of coral disease. Another example includes a monsoon onset monitoring program set up for the Andaman Sea. While at the national level networks among a number of government organizations exist, at the local level, networks among local government organizations and agencies, NGOs, and local communities provide collaborative linkages. Among these are:

- Local & central governmental organizations and local communities
- Public participation, public hearing, and public committee
- Several ecological networks in each area (such as those for coral reefs, seagrass beds, and mangrove forests)

Phonsuwan (2009)

Strengthening Andaman Marine Protected Areas Networks (SAMPAN)

An example of the NGO sector in MPA development in Thailand is *Strengthening Andaman Marine Protected Areas Networks* (SAMPAN) led by the Royal Thai Government, with support from the Agence Française de Développement (AFD), the Fonds Français pour l'Environnement Mondial (FFEM or French Global Environment Facility) and WWF Thailand (WWF, 2008). The project aims to restore, conserve and develop natural environment and resources sustainably, and to reduce impacts to these areas of unique biological value through the collaboration between diverse stakeholders (ibid.).

In a feasibility study conducted by SAMPAN coordinators, Dunbar (personal communications, 2009) notes that the status and threats to National Protected Areas (PA) Systems included:

- Absence of legislation harmonization on the coastal zone.
- Competition between administrations and public offices leading to lack of clear responsibility sharing.
- Weakness in budget allocations for coastal zone management and protected areas on the coastal zone respecting their specificity compared to land based PA

Comparably, Dunbar (ibid) sites that inadequacies were found in the National Marine Protected Area (MPA) System and highlighted as follows:

- Interest of tourism sector and municipalities for MPAs as tourism development opportunity and lack of co-management and participative system.
- Old management plans or management plans not implemented or with low investments of MPAs.

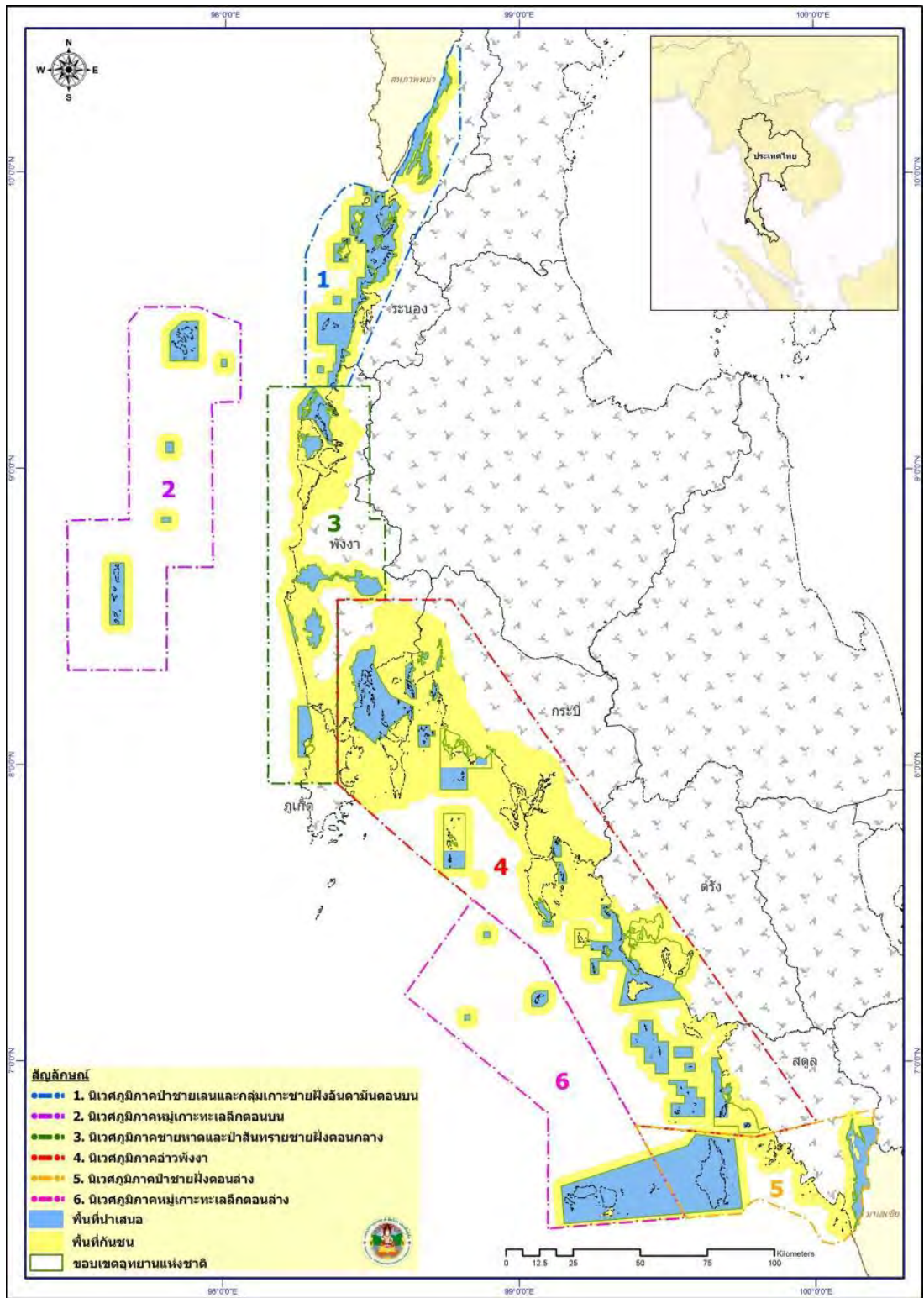
With a goal to support biodiversity conservation, sustainable coastal management and sustainable economical activities on Thailand Andaman Coast of Thailand, the SAMPAN project seeks to shore up sustainable tourism development by targeting the private sectors who are ‘willing’ to introduce environmental issues and concerns in economical development planning, and therein the program will support private initiatives for reconstruction or renovation on the condition that environmentally sound actions are developed by the operator (ibid).

In order to reduce tourism impacts, SAMPAN assists the tourism sector in developing and implementing ‘best practices’ and codes of conduct that reduce environmental impacts, including initiatives and renewed regulations which protect the environment. Overall, the MPA management boards are strengthened in their co-management process while the development of new licenses for tourism operators and guided tours to access the parks become based on set environmental criteria and training sessions (ibid).

MPA and World Heritage Site Development in Thailand

At the time of writing the proposal for new sites of *World Heritage* (see topic 1.6) in the Andaman Sea comprise of variety of ecological habitats, including coral reefs, seagrass beds, mangroves, beach forests, sand dune forests, coastal forests, islands, and bays. Figure 2.2 shows the potential MPA Networks on the Andaman Coast in the context of future World Heritage designation.

Figure 2.2 Potential World Heritage MPA Networks on the Andaman Coast



Source: Pongsuwan (2009)

2.3.2 Surfing Areas in Marine Parks of Thailand

As surfing areas have yet to be recognized in Thailand's coastal management planning, Table 2.4 identifies to what extent surfing areas are tangentially afforded protection under existing NP and MPA policies. Table 2.4 identifies the total number of surfing areas (based on early estimates by Martin (2010a,b)) for each Andaman province in correlation with NP, MPA, and the proposed coastal management strategy, 'Biosphere Reserve'. As all of the National Parks with surfing areas are also under MPA status, they form a single category.

Table 2.4 Thai Surfing Areas within National Park Jurisdiction

Province	Total number of surfing areas	National Park (NP) / Marine Protected Area (MPA)	Proposed Biosphere Reserve
Ranong	3	3	1
Phang Nga	18	3	0
Phuket	29	6	0
Krabi	4	2	0
Trang	3	3	0
Satun	4	4	0
Total	61	21	1

Source: Martin (2010a,b)

Table 2.4 identifies that potentially, 21 surfing areas are under NP and MPA protection, and the premier surfing area of the province, Ko Phayam, is under the additional schema of the proposed Biosphere Reserve. In contrast, only three sites in Phang Nga province are under protection as NP/MPA. Phuket has six areas afforded NP/MPA protection (in the Sirinat National Park) which encompass Nai Yang Beach. Of particular consideration, all of the surfing areas located in insular Krabi, Trang, and Satun are within NP/MPA jurisdiction. Overall, approximately one-third out of 61 surfing areas are indirectly afforded NP/MPA governance.

2.4 Concluding Thoughts on Marine Ecotourism in Thailand

In Thailand, ecotourism may prove beneficial for marine environments—and coupling ecotourism with MPAs may help to generate necessary funds for maintaining the MPA system (i.e. ecotourism is a potential alternative to other extractive environmental practices). Essentially, in a forward-thinking context, MPAs and ecotourism in Thailand offer a strategy of hope in providing a stable balance between local business and habitat protection with long term economic gain for

stakeholders. Thus MPAs are vital to the protection of marine ecosystems and the conservation of biodiversity.

In review, the benefits of developing marine ecotourism in the National Park and Marine Protected Areas include a potential increase in cultural awareness, the development of sustainable sources of income, opportunities to minimize impacts through participatory behaviors, and likelihood to protect biodiversity. However, negative aspects include any number of scenarios, including: an increase in noise which may disrupt an otherwise quiet communities; pollution related to travel; increases in garbage and marine debris; interferences from human activities and infringements; damages, such as coral mining and boat anchorage; development of other aspects of tourism including long term residency in a given area; and the potentials of *greenwashing* (the misrepresentation of ecotourism). Overall, negative impacts have to be measured against other practices or altogether non-action. Specific to the topic of coastal surfing resources in Thailand, unique and iconic surfing areas have yet to be recognized by decision makers; they are therefore only afforded limited conservation, tangentially and indirectly, in areas lying with National parks or marine protected areas. Surfing resources outside of national parks and marine protected areas are much less protected.

TOPIC 3

QUANTIFICATION METHODS FOR ENVIRONMENTAL VALUATION OF SURFING AREAS

The following section serves as an overview of environmental valuation techniques with a focus on overall methods for valuing natural areas, such as parks and protected areas. The review moves to target the specific approaches for valuing coastal surfing resources. Particular focus is placed on identifying quantitative methods.

Introduction to valuation

Barrow (2005: 207) suggests environmental valuation is far from precise and may rely on indirect indicators, such as the value of property (contingent valuation). This type of preference-based valuation often uses methods such as questionnaires or focus groups to determine what people actually value.

Environmental decision-making

Robinson (2001) identifies that —Decision-making with respect to the management of environmental or ecosystem services is complex, commonly involving multiple objectives which could be competing and conflicting. As a result, appropriate evaluation tools or techniques [such as determining economic values] to assist decision-making will be limited to those that have the capacity to incorporate information from a number of disciplines and that can identify an outcome that offers a compromise solution.”

Environmental accounting

In terms of environmental accounting, Barrow (2005: 206) notes that environmental knowledge is incomplete and environmental, social, political and economic interactions are particularly complex. If indeed problems are identified it is challenging to prove causation, estimate costs of solutions and compare these with the likely expense of inaction (ibid).

Total Economic Value (TEV)

The total economic value (TEV) of an environmental resource includes use benefits as well as non-use benefits. Market and non-market valuations will be examined throughout this report and TEV will be discussed further in the section on the value of surfing. The following definition is offered by Robinson (2001):

User benefits include both direct and indirect uses. Direct use values accrue from the physical use of the good, such as fishing in a river, visiting a national park or production of forestry products. Indirect use values include the service provided by an environmental resource such as water purification, reduced soil degradation, and reduced flood damage. Non-use benefits may be obtained from environmental resources without actually using them. These include existence value, option value, bequest value and vicarious value. Market information measures the value of goods and services which are used: it does not measure the value of potential use so that market information provides incomplete information about the economic value. This notion of an apparent failure of the market to account for non-use values of environmental services has led to a proliferation of studies to develop appropriate techniques to estimate a TEV for environmental resources.

Robinson (2001:2)

Cost-Benefit Analysis (CBA)

Cost-Benefit Analysis (CBA) is the standard tool used by economists to establish the economic efficiency of investment. Robinson (2001) notes that CBA provides a theoretically sound and consistent approach to evaluate investment decisions using the sole criterion of economic efficiency: “In essence, CBA requires all of the costs and benefits associated with a proposed project or policy to be identified and valued in monetary terms. A cash flow of the estimated monetary value of all costs and benefits resulting from a project over the expected life of the project is constructed.”

Furthermore Robinson (ibid.) explores Multiple Criteria Analysis (MCA) as a tool to complement CBA, arguing that MCA seeks to incorporate social dimensions, providing a more holistic approach to valuation: MCA is “Particularly appropriate for decision-making for natural resource management where it is important to consider environmental, social as well as economic factors. MCA is promoted as a process approach to project evaluation that facilitates a transparent iterative and interactive approach to evaluation, incorporating information from a number of disciplines. In essence, this approach requires project options to be evaluated against a number of criteria, including economic, environmental and social criteria (ibid.).

3.1 Valuation Methods for Protected Areas (PAs)

The International Centre for Environmental Management (ICEM, 2003) suggests that –A better understanding of the value of PA economic benefits costs has many practical applications. Valuing PAs underlines the fact that they constitute far more than a static biological reserve. They form a stock of natural capital, which if managed sustainably can yield in perpetuity a wide range of direct and indirect economic benefits to human populations.

According to ICEN (2003), seven key approaches which can be employed for valuing Protected Area (PA) goods and services. These are Market Prices (MP); Effect On Production (EOP); Replacement Cost Methods (RCM); Damage Costs Avoided; Mitigative or Avertive Expenditures (MAE); Travel Cost Methods (TCM); Contingent Valuation Methods (CVM) and Non-Market CVM (NM-CVM); and measuring Opportunity Costs (OC). The following summaries provide examples of the methods employed without reference to the individual case studies (ICEM, 2003: 65):

Market Prices (MP)

The simplest and most straightforward way of valuing Protected Area (PA) goods and services is to look at their market prices: what they cost to buy or what they are worth to sell (however, in many cases biodiversity has no market).

Example: goods can be quantified and values ascribed according to prevailing commodity prices.

Effect on Production (EOP)

Economic processes often rely on PA resources as inputs, or on the essential life support provided by biodiversity services. Where PA goods and services have a market, it is possible to assess their value to the output or income of these initiatives.

Example: annual rates of soil loss resulting from deforestation and forest encroachment can be calculated and related to the decline in downstream tourism, fisheries, agricultural and hydro-electric production and the resulting foregone income (Emerton, 1998).

Replacement Cost Methods (RCM)

Even where PA goods and services have no market, alternatives or substitutes can often be bought and sold. These replacement costs can be proxies for PA resource and ecosystem values, although they usually represent only partial estimates, or underestimates.

Example: safeguarding a catchment area which feeds a hydro-electric development. The value of such services can be calculated by estimating the cost of replacing hydro-electricity with petrol-based power generation (such additional expenditure are a minimum estimate of the value of the forest's catchment protection services (McNeely, 1989).

Damage Costs Avoided

The reduction or loss of PA goods and services frequently incurs costs in terms of damage to, or reduction of, other economic activities. These costs represent the economic losses foregone by conserving PAs.

Example: the market price of agricultural output lost to pests in the absence of services provided by the natural pest-predator can be calculated in order to assess its value in terms of damage costs avoided (Narain & Fisher, 1994).

Mitigative or Avertive Expenditures (MAE)

It is almost always necessary to take action to mitigate or avert the negative effects of the loss of PA goods and services, so as to avoid economic damage. These mitigative or avertive costs can be used as indicators of the value of conserving PAs in terms of expenditures avoided.

Example: coastal marshes and mangroves serve in shoreline stabilization, erosion control, flood and storm protection. The value associated with these functions can be calculated by applying a preventive expenditure approach, whereby in the absence of wetlands services it would be necessary to construct groynes and flood barriers to offset or mitigate coastal erosion and damage to infrastructure, the cost of which can be used as a proxy for the value of coastal marsh and mangrove services (Emerton, 1997).

Travel Cost Methods (TCM)

PAs typically hold a high value as a recreational resource or destination. Although in many cases no charge is made to view or enjoy natural ecosystems and species, people still spend time and money to reach PAs. This spending — for transport, food, equipment, accommodation, time, etc. — can be calculated, and a visitation rates can be compared to expenditures. These travel costs reflect the value that people place on leisure, recreational or tourism aspects of PAs.

Example: a visitor questionnaire may collect data on origin, distance travelled, income and expenses. Demand curves can be constructed using regression analysis to describe the relationship between travel costs and number of visits, yielding information on willingness to pay per visitor (Hecht, 1999).

Contingent Valuation Methods (CVM) and Non-Market CVM (NM-CVM)

Even where PA goods and services have no market price, and no close replacements or substitutes, they frequently have a high value to people. Contingent valuation techniques infer the value that people place on goods and services by asking them their willingness to pay for them (or willingness to accept compensation for their loss) under the hypothetical scenario that they would be available for purchase. Contingent valuation techniques are one of the few methods that can be used to assess option and existence values.

Example: contingent valuation can be used to estimate the value of a conservation effort, such as through surveys administered to visitors to major national parks and lodges asking such questions as “Would you be willing to pay \$100 (or more, or less) to contribute towards a specific aspect of conservation?” and “How much would the cost of your visitation have to be reduced by if the resources was depleted by 50%?”. Tourist consumer surplus accruing from experiencing the resource can be calculated (Brown & Henry, 1989).

Opportunity Costs (OC)

The cost occurring with missed opportunity (trading one opportunity for another).

3.2 Revealed and Stated Preference Techniques

The following synopsis is adapted from Robinson (2001) and reviews the travel cost technique estimates to gauge values for the environment (such as a national parks) by measuring the cost of using the asset as a surrogate estimate of the willingness to pay (WTP) or willingness to accept compensation (WTA). Such approaches may involve determining the cost of environmental impacts on production capabilities or, alternatively, the effectiveness of implementing preventative regulations or policy.

Revealed preference techniques for valuing the environment

The travel cost technique estimates a value for the environment (such as a national park) by measuring the cost of using the asset as a surrogate estimate of the willingness to pay (WTP). Costs of using the resource included items such as cost of travel, entrance fees, and boat hire. For the most part, this method does not attempt to measure the value of a change in the quantity or quality of a specific resource; it

simply estimates the direct use value of the resource in its entirety as a demand function.

Zonal travel-cost models are more sophisticated forms of travel cost models, which relate the demand for the recreational area (expressed as visits per unit of population per zone of origin) to a vector of variables including the admission price and socio-economic characteristics (income, age etc) of the residents in each zone. The demand function is commonly expressed as:

$$V_{ij}/N_i = f(TC_{ij}, T_{ij}, Y_i, S_i, Q_j, A_k)$$

Where

V_{ij} = trips from zone I to site j

N_i = population of zone i

TC_{ij} = travel costs from zone I to K sites

T_{ij} = travel time from zone I to site j

Y_i = average income in zone i

S_i = socio-economic characteristics of zone i

Q_j = recreation quality at site j

A_k = measure of the cost and quality of substitute site k

Stated Preference Techniques

Stated preference techniques are characterized by the use of surveys which estimate stakeholder preferences by directly asking individual stakeholders about their preferences. These techniques include contingent valuation, contingent rating, contingent ranking and choice modeling. Contingent rating, contingent ranking and choice modeling are forms of conjoint analysis, a survey technique more commonly used for market research but more recently acknowledged as a technique which could be utilized for resource management.

The Contingent Valuation Method (CV)

$$WTP_i = f(A_i, E_i, Y_i, M_i, S_i)$$

Where WTP_i = the willingness to pay for environmental resource $_i$

A_i = the age of the respondents

E_i = the level of education of respondents

Y_i = the income level of respondents

M_i = the level of environmental awareness of respondents

S_i = the availability of substitutes

Robinson (2001: 6)

3.3 Valuation Methods for Surfing Locales

Lazarow (2010) notes that globally, only a handful of studies have previously investigated the economic impact of recreational surfing in any detail. Furthermore, the focus of these studies has been on the projected benefit to local economies if artificial surf breaks are constructed and there is very little consistency across studies, making comparisons difficult. Martin and Assenov (2011) note that there are a number of economic impact studies tied to surfing competitions, but these studies are mostly commissioned or conducted internally by surfwear corporations and are not available for public or academic review. Surf contests are only one aspect of the estimating market values and they are essentially marketing strategies to sell clothing and related products. Buckley (2003) notes that the “The big money is in selling surf-branded clothing and accessories to non-surfers,” thus non-surfers are linked to the value of surfing industry. Methodologies for valuing the surf industry and surfing areas are only recently being developed, and market and non-market approaches represent key areas.

Market and Non-market Data

Global market and non-market data related to surfing are somewhat ambiguous, yet market data is conceivably straightforward in appraisal when compared to non-market values. Lazarow (2010) notes there are currently no global datasets for the market values of surfing material culture products. Aspects to consider include:

- Surfwear sales

- Equipment sales
- Surf Industry Manufacturers Association (SIMA)
- Sales distribution of major surfwear companies (such as Quiksilver, Billabong, and Rip Curl)

At the human user level, Lazarow (2010) notes that in an effort to identify the overall value of the surfing industry, three general approaches include:

- Estimation of the number of surfers in the world
- Estimation of surfer visitation to specific sites (or in a given area)
- Lifeguard data

Components of the surfing industry are wide-ranging when exploring market and non-market values. Table 3.1 offers some components of the surfing industry.

Table 3.1 Components of the Surfing Industry

Market values	Non-market values
Surfwear sales	Cultural value
Gear and equipment sales	Social importance
Travel	Image value
Multiplier effect	Health and fitness aspects
Impact on general tourism	Injuries
Impact on real estate	Surf quality
Surf schools	Existence value of surf breaks
Surfing events	Bequeathment value of surf breaks
	Vicarious value of surf breaks

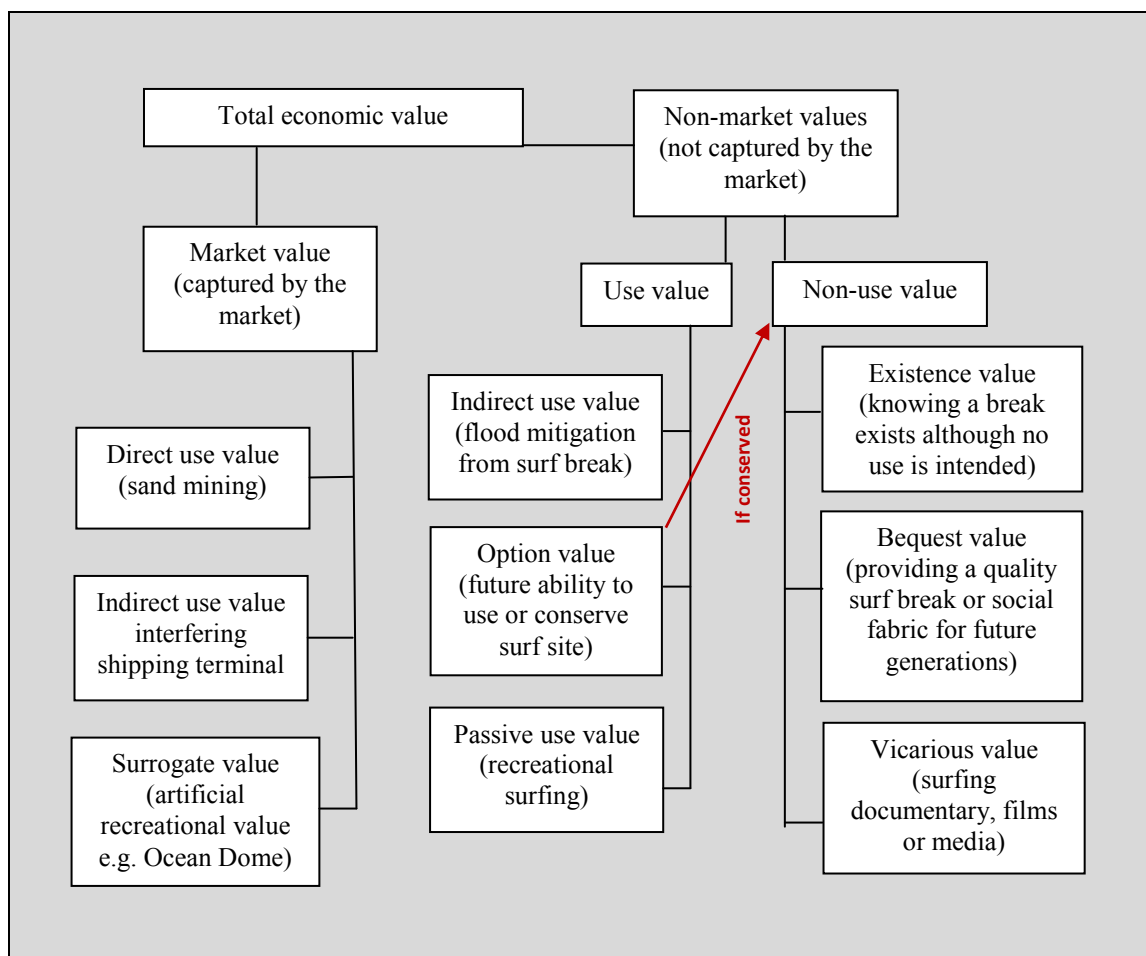
Source: Lazarow (2010: 232)

Surfing Valuation Research

Lazarow et al (2008:150) identify that there has been little formal research on the economic and social benefits that surfing provides to specific locales. Unlike other sports, such as recreational fishing, surfing has not been able to use the weight of economic or social welfare evidence to argue for the maintenance of or improvement to surfing amenity. Pendleton and Rooke (2006, in Lazarow et al. 2008: 151) note that —The quantification of economic impacts associated with recreational *surfing* is complicated by the fact that these activities generate both market and non-market impacts. The market impact of *surfing* usually is assessed by examining how much money *surfers* contribute to the local economy through spending related to access, equipment and goods and services. Commonly, the focus of market based studies is on gross expenditures.”

Nonmarket valuations are generally collected in two ways. The first is through what are referred to as ‘revealed preference’ models and the second method is referred to as ‘stated preference’ models. Revealed preference models rely on behavior or activities that have already taken place (i.e., what people spent while undertaking a particular activity). Stated preference (or contingent valuation) models are opinion based (i.e., they rely on stated rather than a revealed preference). This means that contingent valuation studies are able to capture both use and nonuse values, such as the ‘existence value’ of a particular surfbreak; however, this type of research has also been criticized (Lazarow et al, 2008: 151). Nelsen (2008) identifies a number of challenges related to surveying surfers and therefore employed both face-to-face and an internet based survey instrument can be employed in order to capture overall non-market expenditures. Figure 3.1 explores the total economic value of surfing.

Figure 3.1 Total Economic Value of Surfing



Adapted from Lazarow et al. (2008: 150); Lazarow (2010: 60)

Lazarow et al (2008: 152) prepared a table of valuation studies in various countries (Figure 3.2) which identify studies estimating the value of specific surfing areas. From a methodological perspective, most studies listed in Figure 3.2 were market-based, using estimated expenditures based on socioeconomic surveys with the exception of a mitigation settlement for the loss of a surfbreak from corporate coastal development. Non-market studies included *travel cost* and *willingness to pay* methodologies. One study was simply based on construction costs of building an artificial wave at a surf park.

Figure 3.2 Estimates of the Value of Surfing at Specific Locales

Year/Location	Type of Study	Value ^a	Context
1973, Oahu, Hawaii, USA	Market	US\$13 million	Estimated expenditure on surfing equipment (includes medical expenses but excludes transportation)
1984–1998, El Segundo Reef, California, USA	Market	US\$300,000	Mitigation settlement for loss of nearby surf break (funds used to construct world's first artificial surfing reef)
1990–1999, Los Angeles & Orange Counties, California, USA	Nonmarket (travel cost)	US\$16 million (value of all recreational across region)	Final settlement for loss of all recreation opportunities for a period of up to 34 days due to "American Trader" oil spill from Alamos Bay in Los Angeles County to Crystal Cove State Beach in Orange County
1999, Mount Maunganui, New Zealand	Nonmarket (willingness to pay)	NZ\$500,000 p/a	An estimated 50 surfers per surfable day was expected as a result of the construction of an artificial reef
2001, Pleasure Point, California, USA	Nonmarket (travel cost)	US\$6.2 million consumer surplus (US\$8.3 million total)	Travel cost study conducted at Pleasure Point as part of university course
2001, Cornwall, UK	Market	£21 million p/a	User survey to estimate value of surfing to Cornwall region
2004, Geraldton, Western Australia, Australia	Market	AUD\$1.3 million p/a	Estimated value of proposed artificial surf break to town
2006, Costa Rica	Market	US\$400 million p/a	Survey of total expenditure of surf related visitors
2006–2007, South Stradbroke Island, Queensland, Australia	Market	AUD\$20 million p/a	Estimated annual expenditure by surfers at South Stradbroke Island (includes equipment)
2006–2007, Trestles, California, USA	Market	US\$8–13 million	Estimated annual economic benefit to City of San Clemente from surfers visiting Trestles
2008, RonJon Surfpark, Florida, USA	Construction cost	US\$12 million + land + permits	Construction cost for the RonJon Surfpark

Source: Lazarow et al (2008: 152)

3.4 Valuation Case Study: Mavericks, California

Coffman & Burnett (2009), in a study commissioned by the NGO ‘Save the Waves Coalition’, determined the value of the Mavericks surf area (a big wave surfing destination in California which hosts annual competitions) to the local community and beyond. A summary of the research is as follows:

The survey data collected was used to build an Individual Travel Cost Model (ITCM) to estimate the annual welfare accrued by visitors to the Mavericks surf area. The average visitor is estimated to receive \$56.7 in consumer surplus per trip to the Mavericks surf area. With an estimated 421,431 visitors annually, the total annual net economic value to Mavericks visitors is estimated at \$23.8 million. In addition, surfers are estimated to visit the area nearly five times more often than non-surfers and thus accrue more value from the area.

Coffman & Burnett (2009: 3)

Valuation techniques employed in the study followed the ‘willingness to pay model’. There are three basic components of value where an individual’s total willingness to pay is composed of willingness to pay for (1) ‘use value’, (2) ‘option value’, and (3) ‘intrinsic value’ (*Total Willingness to Pay = use value + option value + intrinsic value*) (Coffman & Burnett, 2009: 4). ‘Use value’ is the direct benefit derived from consumption; ‘option value’ is the benefit derived from having the choice to consume (i.e. the possibility of use in the future); and ‘intrinsic value’, also known as ‘existence value’, is the benefit from knowing a good exists (Coffman & Burnett, 2009 cite Tietenberg, 2007).

Methodology, expressed by equation, has been summarized in order to identify the valuation approach in quantifiable terms. Results of the study are not included here as the qualifying exam serves as an overview of the quantized study methods:

General Equation

A general equation describing annual trips to the Mavericks region is given in Equation (1).

$$AnnualTrips_i = \beta_0 + \beta_1(TC_i) + \beta_2(X_i) + \beta_3(reasons_i)$$

$AnnualTrips_i$ is the number of trips made by visitor I in one year, TC_i is travel cost of visitor I , X_i is a vector of demographic variables describing individual I , and $reasons_i$ is a vector of reasons individual I visited the Mavericks surf region.

Individual Travel Cost Model Equation

The final specification of our individual travel cost model is given in Equation (2).

$$lannualTrips_i = \beta_0 + \beta_1(TC_i) + \beta_2(Age_i) + \beta_3(Income_i) + \beta_4(Gender_i) + \beta_5(SeeWaves_i) + \beta_6(WatchSurf_i) + \beta_7(Surf_i) + \beta_8(FamFrnd_i)$$

Where $lannualTrips_i$ is the natural log of the number of trips made by visitor I in one year, Age_i is an indicator variable representing individual i 's age category, $Income_i$ is an indicator variable representing individual I 's income category⁷, $Gender_i$ is an indicator variable representing individual i 's genders, $SeeWaves_i$ is a dummy variable indicating whether individual I visited Mavericks to see the waves, $WatchSurf_i$ is a dummy variable indicating whether individual I visited Mavericks to watch other people surfing, $Surf_i$ is a dummy variable indicating whether individual I visited Mavericks to surf, and $FamFrnd_i$ is a dummy variable indicating whether individual I visited Mavericks to see family and friends.

Population Projection Estimate Equation

The ratio of survey participants to people on the beach was calculated and normalized by the number of hours the survey was conducted each day. This ratio was taken for each survey day. The average number of survey participants each hour was then multiplied by the average participant-to-population ratio, multiplied by 365 days per year and 8 hours per day.

$$V = \frac{\sum_{i=1, \dots, d} P}{d * t_i} * \frac{\sum_{i=1, \dots, d} \frac{H_i}{P_i}}{d} * \frac{days}{year} * \frac{hours}{day}$$

Where V is total annual visitors (includes double-counting); I is the respective survey day $1, \dots, d$ where d is the number of total survey days; t is the amount of time

spent surveying on each day I in hours; H is the headcount taken on each survey day I ; and P is the survey participants on each survey day i .

Methods, Terminology and Subordination of Approach

In summary of the research methods employed by Coffman & Burnett (2009), an *Individual Travel Cost Method* (ITCM) was constructed in order to estimate the value (welfare) accrued to the users of the Mavericks surf area. In the context of *Stated Preference Techniques*, a non-market approach utilized a *Contingent Valuation Method* by employing a *Minimum Willingness to Pay* assessment through a *Zonal Travel Cost* approach to *Individual Travel Cost Modeling*.

In order to gain clarification of the approaches and methodologies employed by Coffman & Burnett, the researcher has generated Figure 3.3, which offers the outline lexis of subordination of terminology:

Figure 3.3. Methods, Terms and Subordination of Approach

Stated preference techniques
Non-market approach
Contingent valuation method
Minimum willingness to pay assessment
Zonal travel cost approach
Individual travel cost model

Source: Author

For a template on surf contest valuation, see Appendix II: *Template for evaluating the economic benefit of a surf contest*.

3.5 Concluding Thoughts on Surf Area Valuation

There has been relatively scant research which investigates the value of surfing areas, whether it is in the context of the individual, society, or focused on management of the natural environment. Although there have been any number of surf contest economic impact studies carried out by corporate interests, these studies and their finding are rarely ever made available to the public. Overall, studies have been for the most part market-based, using estimated expenditures based on socioeconomic surveys with the exception of a mitigation settlement for the loss of a surfbreak from corporate coastal development. Non-market studies included *travel cost* and *willingness to pay* methodologies, while one study was based on the construction and artificial wave at a surf park. Overall, key methods employed in

assessing the value of surfing resources include face to face survey; interviews with key stakeholders; third party data (such as governmental reports); and the case study method.

As a relatively new area of environmental management, understanding and quantifying the value of surfing areas has yet to develop to a level which benefits the myriad stakeholders of the coastal zone. While in recent years, significant progress has been made in applying time-honored environmental valuation methodologies to the context of surfing areas (i.e. not reinventing the wheel), we are left with a somewhat subjective and qualitative approach to recognizing and evaluating coastal surfing resources. Notably, there has been very little work in terms of the ecological value of surfing areas. For example, healthy surfing reefs provide not only recreational opportunities, they provide natural coastal protection.

In approaching the quantitative value of surfing areas, two paradigms coexist, the global value perspective of the surfing industry alongside the value attributed to a specific surfing location. The enormous global surfwear and equipment sales and the increase in the number of surfers in the world contribute significantly to surfer visitation to specific sites and encompass travel and tourism, surfing schools and events, and raise any number of non-market aspects and values, include those of cultural, social, health, and image. Particularly difficult to quantify are the existence and bequeathment values of surfing areas — indeed, in a numerical context, what are the quantitative values of a surfing areas in terms of human and environmental significance?

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APPENDIX I

**SUSTAINABLE THAI TOUR OPERATOR STANDARD, INFORMED BY
THE GLOBAL SUSTAINABLE TOURISM CRITERIA (GSTC)**

(FINAL DRAFT)

**THE THAI ECOTOURISM AND ADVENTURE TRAVEL ASSOCIATION
(TEATA)**

	Sustainable Thai Tour Operator Standard	Minimum Standard	Advanced Standard
1.	Sustainable and Effective Service and Management		
1.1	The tour operator has a sustainable tourism policy	x	
1.2	The tour operator complies with the ethics of TEATA	x	
1.3	The tour operator has a customer satisfaction and loyalty management system	x	
1.4	Tour operators are implementing a process which encourages employee involvement at all levels in order to drive their organization towards sustainability	x	
1.5	Tour operators conduct human resource development within the framework of sustainable tourism. E.g. by organizing training for employees to develop their understanding of sustainable tourism, with fair, systematic monitoring and evaluation	x	
1.6	Tour operators staff have the capacity to entertain guests in ways which are appropriate according to the tour content , the situation and the types of tourists	x	
1.7	Tour operators must define employment structures and staff responsibilities in their organization and prepare employee manuals for employees at all levels		x
1.8	Tour operators must hold a legal, valid tour operating license	x	
1.9	Information provided to tourists must be honest and accurate and tour operators must not promise anything which they cannot deliver in reality	x	
1.10	Tour operators use trained eco tourist guides as much as possible, and support their tourist guides to receive training and be up to standard	x	
1.11	Prioritize safety of customers and staff (minimum of insurance and first aid training)	x	
1.12	Select environmentally friendly furniture and other materials for the office	x	
1.13	Select partners in local supply chains who comply with the law and operate according to sustainable tourism standards and ethics	x	
1.14	Tour operators have policies to cooperate with their supply chains in order to improve the standard of products and services and bring them to a common level		x

1.15	Tour operators undertake ongoing development of tourism products and services together with commitment to the continual improvement of their in-depth knowledge	x	
1.16	Know about consumer protection legislation relevant to each customer group	x	
1.17	Have a policy to operate a strong business with effective marketing strategies	x	
1.18	Guests are informed about economy, society, nature, culture and environment	x	
1.19	Guests are orientated about the company's Code of Conduct / Do's and Don'ts	x	
1.20	The number of tourists are managed and controlled according to carrying capacity of the area	x	
1.21	The tour operator raises awareness about cultural and environmental conservation among employees	x	
1.22	Builds disciplined punctuality	x	
2.	Maximum Benefits for Society and Economy of Local Communities	x	
2.1	Tour operators have in-depth knowledge about the economic and social structures of local communities where they operate	x	
2.2	Provide opportunities for community members to get involved in tourism management in the community, in order to distribute income fairly	x	
2.3	Organize tourism activities which create benefits for the local community such as cultural exchange or cultural performances	x	
2.4	(integrate a code of conduct) The operator supports the development of a code of conduct or ethics for tourists to ensure they behave in an appropriate way.	x	
2.5	Employ local staff where opportunities exist	x	
2.6	Buy environmentally friendly local products and services (e.g. restaurants, souvenirs, raw materials, local activities)	x	
2.7	Have a policy to support Fair Trade	x	
2.8	Comply with labor law, e.g. laws for child labor and for migrant workers	x	
2.9	The company has implemented a policy in compliance with Thai Laws and International agreement on human, child and woman's rights.	x	
2.10	Provide services and arrange infrastructure which does create problems for nearby communities such as water, electricity, energy supplies (e.g. golf course)	x	
2.11	Initiates a project to return profits back to the community such as scholarships and funds		x
3.	Maximum Benefits for Cultural Heritage	x	
3.1	Accurate, broad, deep knowledge of the local cultural heritage in all dimensions	x	
3.2	Follow guidelines / rules for conducting tourism in fragile cultural or historical sites	x	

3.3	Impressive cultural presentation and interpretation skills	x	
3.4	Do not support antique trade	x	
3.5	Supports the conservation of historic and archeological property, culture, wisdom and local beliefs	x	
3.6	Uses elements of local artistic, architectural and cultural heritage in the business with respect to the intellectual property rights of local communities.	x	
3.7	Uses media publicity and public relations to promote cultural heritage		x
3.8	Raises awareness among community members especially youth, which encourages them to love and protect their cultures	x	
4.	Maximum Benefits for the Environment	x	
4.1	Procurement policies emphasize purchase of environmentally friendly products	x	
4.2	Control and reduce the use of products that are not biodegradable	x	
4.3	Measures are in place to reduce overall power and energy use and try to use alternative energy sources	x	
4.4	Measures are in place to reduce water use and have effective waste water management and treatment		x
4.5	Produce as little waste as possible, establish a recycling policy and establish measures for waste management		x
4.6	Do not support activities that affect the biological diversity of wildlife, ecosystems and landscapes such as the possession of restricted or protected wild animals	x	
4.7	Support community environmental protection initiatives such as the usage of biodegradable goods, waste separation or collecting waste from water sources	x	
4.8	Support environmental awareness raising in the community, especially for youth	x	
4.9	Support the use of natural energy to substitute unsustainable energy, for example pedaling a bike to produce electricity or producing gas from animal waste		x
4.10	Support the local community to have occupations and run projects that are environmentally friendly		x
4.11	Prepare an operations manual on environmental conservation and environmental damage reduction for all stakeholders		x
4.12	Promote commitment and discipline with regard to environmental issues	x	
4.13	Choose suppliers which operate according to environmental rules and do not waste resources	x	

APPENDIX II
TEMPLATE FOR EVALUATING THE ECONOMIC BENEFIT
OF A SURF CONTEST
Coffman and Burnett (2009)

This template applies the simpler Zonal Travel Cost Approach to estimating the economic benefit of a one-time surfing event. The zonal travel cost method is applied by collecting information on the number of visits to the site from different distances. Because the travel and time costs will increase with distance, this information allows the researcher to calculate the number of visits “purchased” at different “prices.” This information is used to construct the demand function for the contest, and estimate the consumer surplus, or economic benefits, for the event.

Step 1: Define zones

The easiest way to define zones is by zip codes surrounding the contest site. This will facilitate the calculation of distance to the site later in the analysis. Determine how far people are likely to travel to the contest, and make a chronological list of those zip codes. Group zip codes into “zones” organized by concentric circles around the contest location.

Step 2: Visitors per zone

The second step is to collect information on the number of visitors from each zone. This is best accomplished by having as many volunteers as possible stand at the entrance of a contest site with the chronological list of those zip codes. They can survey visitors about their zip code, making tick marks by the appropriate zip code to be compiled later. Another option is to have volunteers walk around the contest and collect this information. Be sure that visitors do not respond twice to avoid double counting.

Step 3: Travel cost

Step 3 is to calculate the average round-trip travel distance and travel time to the site for each zone. People in Zone 1 will have the lowest travel cost, with all other zones having increasing travel costs. Next, using average cost per mile, one can calculate the travel cost per trip. A standard cost per mile for operating an automobile is available from AAA or other sources.

Step 4: Regression analysis

The fourth step is to estimate, using regression analysis, the equation that relates the number of event spectators to travel costs and other important variables. From this, one can estimate the demand function for the average visitor/spectator. The analysis might include demographic variables, such as age, income, gender, and education levels, using the average values for each zone. The simplest model includes only travel cost and spectators, i.e., $\text{Spectators} = \text{Constant} - \text{Coefficient} * (\text{Travel Cost})$.

Step 5: Demand equation

The fifth step is to construct the demand function for visits to the contest, using the results of the regression analysis. The first point on the demand curve is the total visitors to the site at current access costs (assuming there is no entry fee for the contest). The other points are found by estimating the number of visitors with different hypothetical entrance fees.

Step 6: Consumer surplus

The final step is to estimate the total economic benefit of the site to visitors by calculating the consumer surplus, or the area under the demand curve.