World Heritage papers 28

Navigating the Future of Marine World Heritage

Results from the first World Heritage Marine Site Managers Meeting
Honolulu, Hawaii, 1-3 December 2010

United Nations
Educational, Scientific and
Cultural Organization

World
Heritage
Convention

Navigating the Future of Marine World Heritage

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Honolulu, Hawaii, 1-3 December 2010

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Foreword

The *Convention concerning the Protection of the World's Cultural and Natural Heritage* – adopted in 1972 and commonly known as the *World Heritage Convention* – was founded on the premise that certain places on Earth are of outstanding universal value and as such should form part of the common heritage of humanity. On a planet where more than 95 per cent of all living space is located in the ocean, a vast amount of heritage can be found in marine areas.

Over the past 20 years, 43 marine sites have been inscribed on the World Heritage List, covering about 1.4 million km^2 of the ocean surface – an area about the size of the Gulf of Mexico. Each of these forty-three sites represents exceptional features in the ocean – features that are recognized by the international community for their outstanding natural beauty, extraordinary biodiversity, or unique ecological, biological and geological processes.

Sadly, the growing industrialization of the world's oceans and the persistent demand for marine resources is increasingly threatening the conservation of these exceptional places. In recognition of this mounting reality, UNESCO's World Heritage Marine Programme[1] decided to bring, for the first time, all 43 site managers together in Hawaii, United States of America (1–3 December 2010) to discuss ways of strengthening the conservation of the 'Crown Jewels of the Ocean'.

The key message of the meeting was clear. Rather than being a loose collection of forty-three sites each speaking for itself, World Heritage marine site managers want to harness their power as representatives of the world's marine protected areas with the highest internationally recognized status of conservation: inscription on the World Heritage List. The meeting indicated the power this community could have when speaking with one voice at regional and international fora in ways that could ultimately lead to improved conservation of their irreplaceable sites. At the same time, ongoing help is needed to ensure that each of these sites has access to basic management needs, including the best available science, and can fulfill essential marine conservation responsibilities.

The meeting also provided an excellent boost towards stronger cooperation among sites. Cooperation on migratory birds between The Wadden Sea and Banc d'Arguin National Park, for example, or a potential nomination of Ponta do Ouro as World Heritage, which would highly benefit the conservation of iSimangaliso, already inscribed on the World Heritage List. A potential partnership between Glacier Bay and the West Norwegian Fjords on the common problem of reducing the effects of cruise ships is another example of the many commitments that were made by site managers. The successful 'sister site' arrangement that currently exists between Papahānaumokuākea and the Phoenix Islands Protected Area can serve as a model for future cooperation between sites.

1. http://whc.unesco.org/en/marine-programme

The organizers also took the opportunity to conduct an informal capacity-building survey among all World Heritage marine site managers. The results of the survey are reflected in this report and will improve understanding about key conservation threats and priority management gaps. The rich discussions at the meeting, as well as the survey results, have laid the foundation for building a more solid World Heritage Marine Programme – developed with, by and for World Heritage marine sites and the communities that live within and around them.

The meeting of site managers was co-organized by the UNESCO World Heritage Centre and the Office of National Marine Sanctuaries of the US National Oceanic and Atmospheric Administration (NOAA) and financed by the 'Tides of Time' partners Jaeger-LeCoultre and the *International Herald Tribune*, in addition to ten other donors, including UNESCO's Intergovernmental Oceanographic Commission, NOAA's Office of National Marine Sanctuaries, the Coral Reef Conservation Program, the International Program Office of the National Ocean Service, the US National Park Service, the governments of Flanders (Belgium) and the Netherlands, the French Marine Protected Area Agency, the Walton Family Foundation, Conservation International, Battelle Memorial Institute, the National Geographic Society, and the Center for Ocean Solutions at Stanford University.

I thank all the people in these organizations for their dedication and enthusiasm to protect the planet's most precious marine places so that future generations can continue to enjoy them.

Kishore Rao
Director
UNESCO World Heritage Centre

Introduction

This report summarizes the conclusions and recommended actions from the first meeting of World Heritage marine site managers held in Honolulu, Hawaii (United States), from 1 to 3 December 2010. The World Heritage Marine Programme organized the meeting, in cooperation with the United States National Oceanic and Atmospheric Administration. It was the first time that all World Heritage marine site managers had been invited to discuss the uture of Marine World Heritage. The meeting focused in particular on the exchange of success stories, providing the basis for a stronger community of site managers, and the capacity needed to deal with the increasing complexity of conserving World Heritage marine sites. Close to 80 per cent of all marine site managers or their representatives attended the three-day meeting.

However, to place the meeting in context, this report provides background information on the evolution of marine World Heritage from the first listing of marine sites in the early 1980s until the 2010 inscription of Phoenix Islands Protected Area (Kiribati) and Papahānaumokuākea (United States) that more than doubled the marine area protected under the World Heritage Convention. While the World Heritage Convention can be used to protect special marine areas and conserve marine resources, its potential has not been fully realized. Its far-reaching authority and many of its key concepts are unknown to many leaders in the global marine conservation community. For example, World Heritage sites are listed for their outstanding universal value (OUV), but the applicability of the concept to the marine environment is little understood, including the criteria for determining OUV. One of the purposes of this report is to inform marine conservation leaders and their organizations about the potential of the World Heritage Convention to make a difference.

Even though 43 marine sites have been listed, some marine regions remain under-represented on the World Heritage List. For example, no marine sites have been listed in the Antarctic or North West Atlantic region. Six other regions have only one marine site listed. Almost half of the existing marine sites focus on coral reef ecosystems while other marine ecosystem types are under-represented. Over the past years, several workshops have been organized by the World Heritage Centre and/or the International Union for Conservation of Nature (IUCN) to identify new candidate sites for nomination. While these efforts were not discussed in Hawaii, they will continue into the near future.

The first part of the report focuses on background to Marine World Heritage. The second part concentrates on the Marine Site Managers Meeting and its results, that lay the foundation for navigating a new future for Marine World Heritage.

Fanny Douvere
Coordinator World Heritage Marine Programme

Contents

1

Introducing Marine World Heritage

Komodo National Park © Tim Laman, National Geographic Stock

Tubbataha Reefs Natural Park © Lene and Claus Topp

The Convention concerning the Protection of the World's Cultural and Natural Heritage – adopted in 1972 and commonly known as the World Heritage Convention – was founded on the premise that certain places on Earth are of outstanding universal value (OUV) and as such should form part of the common heritage of humanity.

World Heritage Convention and marine ecosystems

UNESCO has been working with countries around the world to identify World Heritage sites and ensure their safe-keeping for future generations.

Today, the World Heritage List contains 911 terrestrial and marine sites including 704 cultural, 180 natural, and 27 'mixed' properties, recognized for their universal cultural and/or natural values, in 151 countries (Figure 1).

The World Heritage natural sites protect over 2,420,000 km² of the planet's land and marine waters, including 643,000 km² of inland lands (27 per cent) and 385,000 km² of coastal and island lands (16 per cent). About 1,380,000 km² are located in marine waters (57 per cent), an area roughly the size of the entire Gulf of Mexico (Figure 2).

Marine World Heritage was first recognized with the inscription of Australia's Great Barrier Reef in 1981. Currently, out of the 207 World Heritage natural and mixed sites, 43 have now been identified as 'marine sites'. These 43 marine sites cover 1,524,000 km² of land and marine waters – 144,000 km² of coastal or island land (9 per cent) and about 1,380,000 km² of marine waters (91 per cent).

Figure 1. Percentage of World Heritage sites by category

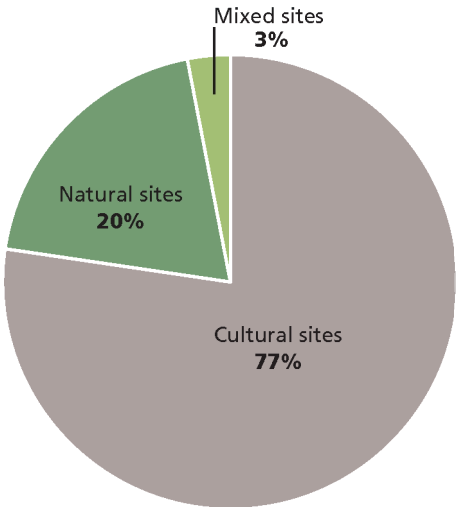
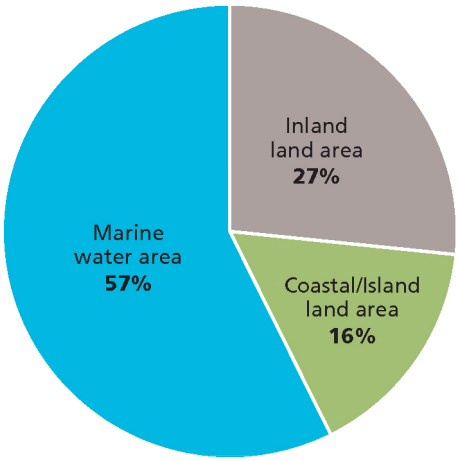


Figure 2. Surface area covered by all natural World Heritage sites



Identifying World Heritage marine sites

Nomination of a site for consideration of its listing as World Heritage is decided by a determination of its OUV, which is the central construct of the World Heritage Convention (see for example Box 1). The following definitions are relevant:

Outstanding

For sites to be of OUV they should be exceptional. IUCN (International Union for Conservation of Nature) has noted in several expert meetings that 'the World Heritage Convention sets out to define the *geography of the superlative* – the most outstanding natural and cultural places on Earth'.

Universal

The scope of the World Heritage Convention is global in relation to the significance of the properties to be protected as well as *its importance to all people of the world*. By definition sites cannot be considered for OUV from only a national or regional perspective.

Value

What makes a site outstanding and universal is its 'value' which implies clearly defining the worth of a property, ranking its importance based on clear and consistent standards, including the recognition and assessment of its integrity.

OUV for marine sites are achieved when a site both:

1. contains necessary attributes that contribute to meeting at least one out of the four natural World Heritage inscription criteria (Box 1); and

2. meets conditions of 'integrity'. The condition of integrity is a measure of the wholeness and intactness of the heritage of the site and its attributes that are established when an adequate and long-term protection and management system is in place to ensure its safeguarding.

It is not enough for a site to meet the World Heritage criteria only. A site must also meet the conditions of 'integrity' and/or 'authenticity' and *must have an adequate protection and management system to ensure its safeguarding*. Thus, the conditions of integrity and/or authenticity are an integral element when considering the concept and application of OUV and without both having been met a site should not be listed.

Box 1. Inscription criteria for natural World Heritage sites

Six inscription criteria relate to cultural heritage (i–vi) and four relate to natural heritage (vii–x). World Heritage marine sites need to comply with at least one of the natural criteria.

vii. Contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

viii. Be outstanding examples representing major stages of Earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;

ix. Be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

x. Contain the most important and significant natural habitats for in situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

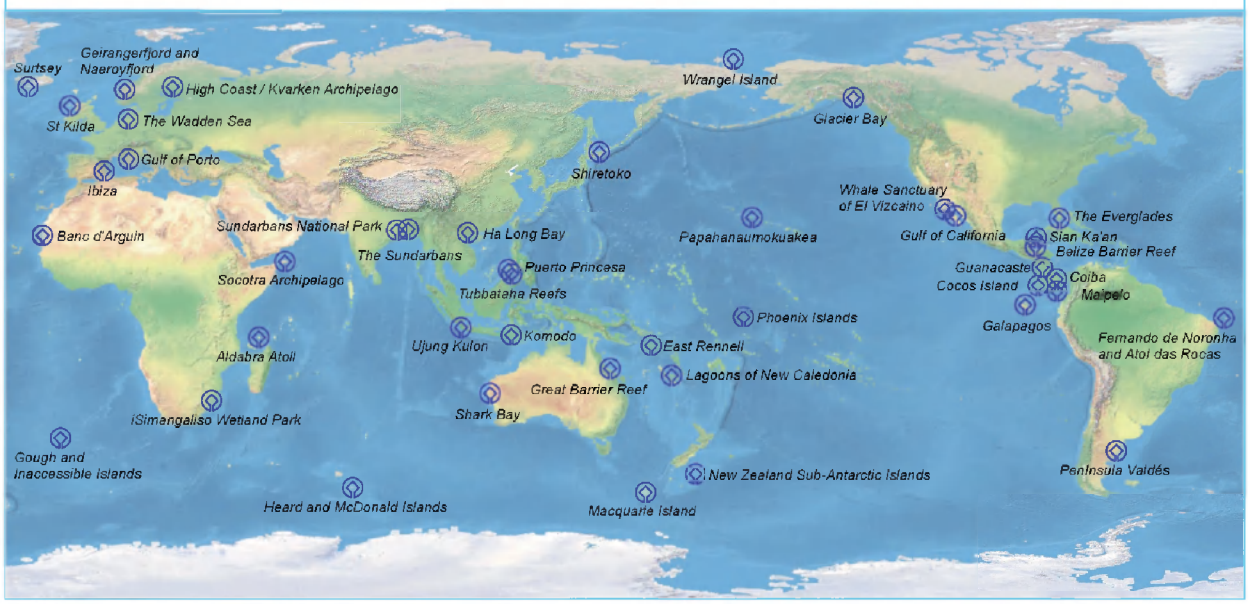
Lagoons of New Caledonia: Reef Diversity and Associated Ecosystems © Destinations Iles Loyaute

Box 2. A marine site example of OUV

The tropical lagoons and coral reefs of New Caledonia are an outstanding example of high-diversity coral reef ecosystems and form one of the three most extensive reef systems in the world. They are the location of the world's most diverse concentration of reef structures, with an exceptional diversity of coral and fish species and a continuum of habitats from mangroves to sea grasses and a wide range of reef forms, extending over important oceanic gradients. They still display intact ecosystems, with healthy populations of major predators and a great number and diversity of large fish. They are of exceptional natural beauty, and contain diverse reefs of varying age from living reefs through to ancient fossil reefs, providing an important source of information on the natural history of Oceania.

Lagoons of New Caledonia: Reef Diversity and Associated Ecosystems (France)		
Criterion vii	**Exceptional natural beauty**	The tropical lagoons and coral reefs of New Caledonia are considered to be some of the most beautiful reef systems in the world due to their wide variety of shapes and forms within a comparatively small area. This ranges from extensive double barrier systems, offshore reefs and coral islands, to the near-shore reticulate reef formations in the west coast zone. The richness and diversity of landscapes and coastal backdrops gives a distinctive aesthetic appeal of exceptional quality. This beauty continues below the surface with dramatic displays of coral diversity, massive coral structures, together with arches, caves, and major fissures in the reefs.
Criterion viii	**Geological processes**	*The site is not listed for this criterion.*
Criterion ix	**Ecological and biological processes**	The reef complex within this site is globally unique in that it is "free-standing" in the ocean and encircles the island of New Caledonia, providing a variety of different kinds of oceanographic exposure, including both warm and cold currents. The coral reef complex has a great diversity of forms including all the major reef types from fringing reefs to atolls, as well as associated ecosystems in both coastal and oceanic situations. Extending over important oceanic gradients, it is one of the planet's best examples of the ecological and biological processes underlying tropical lagoon and coral reef ecosystems, themselves one of the most ancient and complex ecosystem types.
Criterion x	**Important habitats and threatened species**	The site has exceptional diversity with a continuum of habitats from mangroves to seagrasses and a wide range of reef forms. The barrier reefs and atolls form one of the three most extensive reef systems in the world, and together with the reefs of Fiji, are the most significant coral reefs in Oceania. They are the location for the world's most diverse concentration of reef structures, 146 types based on a global classification system, and they equal or even surpass the much larger Great Barrier Reef in coral and fish diversity. They provide habitat to a number of threatened fish, turtles, and marine mammals, including the third largest population of dugongs in the world.

Figure 3. Marine sites on the World Heritage List



Source: Martin Lange

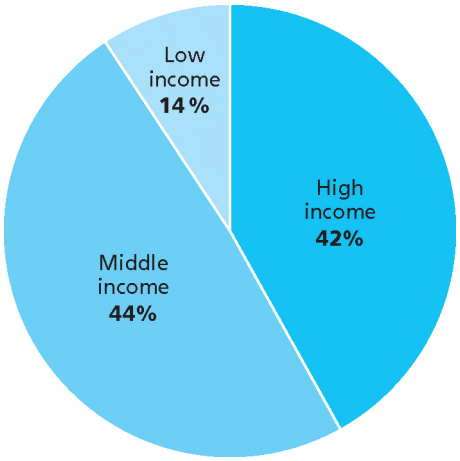
Marine sites on the World Heritage List

Currently, 43 World Heritage sites are inscribed for their marine values (Figure 3). With the 2010 inscription of Phoenix Islands Protected Area (Kiribati) and Papahānaumokuākea (United States), marine areas protected under the World Heritage Convention more than doubled and now include five of the ten largest marine protected areas on the planet.[2]

About 80 per cent of the 43 marine sites are inscribed for their habitat values, thirty sites (70 per cent) for their ecological values, 24 sites (56 per cent) for their natural beauty, and 12 sites (28 per cent) for their geological values (Table 1).

The 43 marine sites differ widely in many ways, including their socio-economic context (Figure 4). While 42 per cent of the marine sites are in 'high income' countries (eighteen sites in 14 countries), 44 per cent of the sites are in 'middle income' countries (19 sites in 15 countries)[3], and 14 per cent in 'low income' countries (six sites in four countries).

Figure 4. World Heritage marine sites by World Bank per capita income country categories



2. These include Phoenix Islands Protected Area (Kiribati), Papahānaumokuākea (United States), Galápagos Islands (Ecuador), Macquarie Island (Australia), and the Great Barrier Reef (Australia).

3. These categories are defined and used by the World Bank. See website: data.worldbank.org/about/country-classifications/world-bank-atlas-method. Economies are divided according to their 2009 gross national income (GNI) per capita, calculated using the 'World Bank Atlas method'. The groups are: low income (US$995 or less); middle lower income (US$996–US$3,945); upper middle income (US$3,946–US$12,195); and high income (US$12,196 or more).

Table 1. World Heritage marine sites by inscription criteria					
NAME OF MARINE SITE	Year of inscription	Beauty	Geology	Ecology	Habitat
Great Barrier Reef	1981	●	●	●	●
Shark Bay	1991	●	●	●	●
Kluane / Wrangell-St Elias/Glacier Bay/Tashenshini-Alsek	1979	●	●	●	●
Galápagos Islands	1978	●	●	●	●
Papahanaumokuakea	2010	●		●	●
Lagoons of New Caledonia: Reef Diversity and Associated Ecosystems	1983	●		●	●
Islands and Protected Areas of the Gulf of California	2005	●		●	●
Tubbataha Reefs Natural Park	1993	●		●	●
Belize Barrier Reef Reserve System	1996	●		●	●
Brazilian Atlantic Islands: Fernando de Noronha and Atol das Rocas Reserves	2001	●		●	●
Aldabra Atoll	1982	●		●	●
iSimangaliso Wetland Park	1999	●		●	●
St Kilda	1986	●		●	●
Sundarbans	1997			●	●
Area de Conservación Guanacaste	1999			●	●
Cocos Island National Park	1997			●	●
Coiba National Park and its Special Zone of Marine Protection	2005			●	●
Ibiza, Biodiversity and Culture	1999			●	●
Natural System of Wrangel Island Reserve	2004			●	●
Shiretoko	2005			●	●
Banc d'Arguin National Park	1989			●	●
New Zealand Sub-Antarctic Islands	1998			●	●
Sundarbans National Park	1997			●	●
The Wadden Sea	2009		●	●	●
Everglades National Park	1979		●	●	●
Gulf of Porto: Calanche of Piana, Gulf of Girolata, Scandola Reserve	2008	●	●		●
Peninsula Valdés	1999				●
Whale Sanctuary of El Vizcaino	1987				●
Socotra Archipelago	2008				●
Puerto-Princesa Subterranean River National Park	1999	●			●
Gough and Inaccessible Islands	1995	●			●
Sian Ka'an	1993	●			●
Ujung Kulon National Park	1987	●			●
Komodo National Park	1991	●			●
Ha Long Bay	1994	●	●		
West Norwegian Fjords – Geirangerfjord and Nærøyfjord	2005	●	●		
Macquarie Island	1991	●	●		
Malpelo Fauna and Flora Sanctuary	2006	●		●	
Phoenix Islands Protected Area	2010	●		●	
Surtsey	2008			●	
East Rennell	1998			●	
Heard & McDonald Islands	1997		●	●	
High Coast / Kvarken Archipelago	2000		●		
Total sites by each criterion		24	12	30	34

Conservation of World Heritage sites

The protection and conservation of World Heritage sites are the responsibility of States Parties[4] to the Convention that, when nominating a site, must demonstrate that appropriate policy, legal, scientific, technical, administrative and financial measures are in place, or proposed, to protect the site. In addition to deciding on listing of World Heritage sites, the World Heritage Committee carries out regular monitoring of listed World Heritage sites through a range of different processes, and also may provide international assistance under the World Heritage Fund.

The Committee is also responsible for the List of World Heritage in Danger – a list of World Heritage properties threatened by serious or specific dangers, such as the threat of disappearance caused by accelerated deterioration, large-scale public or private projects, or rapid urban or tourist development projects. The Committee may inscribe a site on the Danger List when it considers that focused attention on addressing pressing conservation matters is required. Two marine sites, the Belize Barrier Reef Reserve System (Belize) and the Everglades National Park (United States), are currently on the Danger List.

The proponents of projects within, or near, World Heritage sites are required to demonstrate that the OUV of the site will not be negatively affected by the project. The processes of the World Heritage Committee are specified in the *Operational Guidelines for the Implementation of the World Heritage Convention* (UNESCO, 2008), and extensive, additional information is provided on the website of the UNESCO World Heritage Centre. States are also required to notify the Committee, through the Secretariat, of their intention to undertake or authorize major restorations or new constructions that may affect the OUV of the property. Notice should be given as soon as possible (for example, before drafting basic documents for specific projects) and before making any decisions that would be difficult to reverse, so that the World Heritage Committee may assist in seeking appropriate solutions to ensure that the OUV of the property is fully preserved.

Legal recognition and protection by national governments is a requirement for World Heritage sites. World Heritage sites also have direct recognition in international law that states that activities must not negatively affect the OUV of sites. As such, the World Heritage Committee has adopted a policy of zero tolerance of mining and hydrocarbon exploration and exploitation within World Heritage sites. World Heritage sites have a high profile both in terms of the attention they are given by the international community through the World Heritage Convention, and through the monitoring processes operated by UNESCO and IUCN. Additionally, sites also attract considerable attention from the public both locally and internationally, and threats to them normally attract significant publicity.

The conservation of World Heritage marine sites is becoming increasingly complex, in part due to the ongoing industrialization of the ocean. Despite the fact that these sites are irreplaceable, several of them are facing major threats while some are on the brink of irreversibly losing their core values. A more detailed analysis of current threats posed to World Heritage marine sites is provided in Chapter 3 of this report.

What makes World Heritage marine sites special?

Of the 6,000 marine protected areas in the world, only 43 have received the highest internationally recognized status of conservation: World Heritage listing. This is roughly one World Heritage marine site for every 140 MPA. Every marine site has been listed for at least one OUV; some have the attributes for meeting the inscription criteria for listing under all four natural heritage categories of OUV. Three marine sites also meet some of the inscription criteria for cultural heritage and are known as 'mixed sites' (Table 2).

Three of the sites are international, transboundary sites: Kluane / Wrangell-St Elias / Glacier Bay / Tatshenshini-Alsek (Canada and the United States), The Wadden Sea (Germany and the Netherlands) and the High Coast / Kvarken Archipelago (Finland and Sweden).

Three of the marine sites are mixed sites: St Kilda (United Kingdom), Ibiza, Biodiversity and Culture (Spain) and Papahānaumokuākea (United States) and are recognized for both their natural and cultural OUV.

The World Heritage Convention is not applicable to areas beyond national jurisdiction, about 60 per cent of the surface area of the world's ocean or over 40 per cent of the planet. Therefore, no marine sites are located in waters beyond national jurisdiction or the 'high seas' (Box 3).

4. 'States Parties' are countries that have signed the World Heritage Convention. They agree to identify and nominate properties on their national territory to be considered for inscription on the World Heritage List. When a State Party nominates a property, it gives details of how it is protected and provides a management plan for its upkeep. States Parties are also expected to protect the World Heritage values of the properties inscribed and are encouraged to report periodically on their condition. See whc.unesco.org/en/statesparties. As of 10 June 2010, 187 countries are States Parties.

Table 2. Comparison between characteristics of all marine protected areas and World Heritage marine sites

	All MPAs	WH marine sites	Comment
Number of sites	5,878	43	Only 1 in 140 MPAs listed as WH site
Total area (km²)	4.2 million	1.4 million	WH marine sites cover 33% of all MPA areas
% area of world ocean covered	1.2% of world ocean	0.4% of world ocean	
% area of world Exclusive Economic Zone covered	3% of world EEZs	1% of world EEZs	
Mean size (km²)	741	27,900	WH marine sites are about 40 times larger than average MPA
Median size (km²)	1.6	1,200	WH marine sites are about 750 times larger than median MPA

Box 3. The high seas: a special case

About 60 per cent of the ocean (219 million km²) lies in the high seas, a vast area that cannot be claimed by any nation, but is the common property of all humanity. While it belongs to all, its effective protection has yet to be achieved, and nations must still agree on how this may best be done. No existing mechanism has the legal power to protect effectively the enormous expanse with its rich biodiversity. Nevertheless, the high seas are home to the great whales, sea turtles, seabirds, tuna and deep-dwelling fishes and other animals that lead long, slow-motion lives in the eternal dark. Muddy plains, coral-capped seamounts and vents all give rise to unique marine life found nowhere else on the planet. We already know about some amazing places on the high seas that deserve protection, but there is far more to be discovered with many areas as yet unexplored and unmapped.

Why is World Heritage listing the highest international standard of marine conservation?

The World Heritage Convention is the leading international legal instrument in natural heritage and biological diversity conservation due to its recognition of OUV and the merit of the focus on 'flagship' sites, a tried and proven intergovernmental legal framework, a rigorous deliberative process, and systematic evaluations against established criteria and high standards. World Heritage marine sites are nominated by national governments (States Parties), evaluated by IUCN, and approved and listed by the World Heritage Committee. The listing process takes years to complete.

What are the benefits of World Heritage listing?

Once a marine site is inscribed on the World Heritage List, it joins an international community that values and appreciates outstanding examples of natural wealth. Today the World Heritage concept is so well understood that sites on the list are a magnet for international cooperation and receive financial assistance for conservation projects from a variety of sources. Finally, inscription of a marine site on the World Heritage List brings an increase in public awareness of the site and its OUV and can lead to increased tourist activities at the site. When tourism is well planned and organized around sustainable tourism principles, it can bring important funds to the site and the local economy. The prestige that comes from having sites inscribed on the World Heritage List often serves as a catalyst to raising awareness for conserving marine natural heritage for future generations.

2

Building a system of World Heritage marine sites

Islands and Protected Areas of the Gulf of California
© Annie Griffiths, National Geographic Stock

Ha Long Bay © Bill Hatcher, National Geographic Stock

World Heritage Marine Programme[5]

'A "system" is a set of elements or parts that is coherently organized and interconnected in a pattern or structure that produces behaviors, often classified as its "purpose".'

Donella H. Meadows, *Thinking in Systems*, 2008

Although the World Heritage Committee has listed marine sites since 1981, the World Heritage Marine Programme, developed between 2002 and 2005, was officially approved at the 29th Session of the World Heritage Committee in July 2005. The programme had been called for at the Hanoi World Heritage Biodiversity Workshop in 2002 (Hillary et al., 2003), the World Parks Congress in 2003 (Patry, 2005), and a World Heritage Marine Policy Workshop held in 2004. All these events suggested a strategic approach to address the 'marine gap' in the World Heritage List. The World Heritage Marine Programme is now one of six 'thematic programmes' run by the World Heritage Centre.

The mission of the World Heritage Marine Programme is to establish effective conservation of existing and potential marine areas of OUV and ensure they will be maintained and thrive for generations. To achieve this mission, the programme has three major goals (Table 3).

Through these goals, the World Heritage Marine Programme supports the World Heritage Committee's five strategic objectives that guide the implementation of the World Heritage Convention (the '5 Cs'):

1. **Credibility**: to contribute to the implementation of the Global Strategy in addressing presentation of under-represented regions and to promote serial and trans-boundary marine nominations to better embrace the interconnected nature of marine ecosystems and to respond to conditions of integrity.

2. **Conservation**: to develop, raise funds, and implement projects that support management of existing properties and to promote use of 'best practice' for management of World Heritage marine properties.

3. **Capacity-building**: to promote networking and joint learning among marine site managers through the establishment of a network of marine site managers and to international learning opportunities.

4. **Communication**: to raise awareness of the World Heritage Convention as a marine conservation instrument among public, partner organizations and institutions as well as the private sector, and through website development for the Marine Programme.

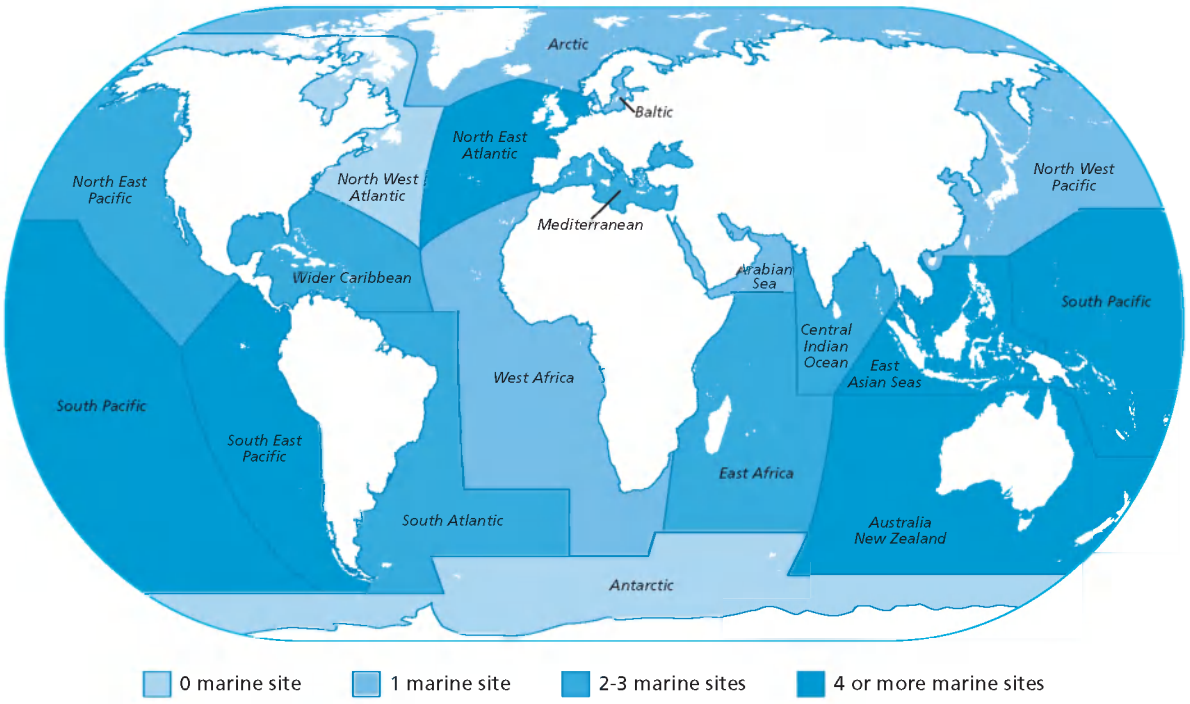
5. **Communities**: to enhance the role of communities in the implementation of the World Heritage Convention.

Table 3. Main goals of the World Heritage Marine Programme

Strengthen **credibility** World Heritage List	Strengthen **capacity-building & conservation** World Heritage sites	Strengthen **outreach & communication** World Heritage Convention
A key goal of the World Heritage Marine Programme is assisting States Parties (national governments) to nominate marine areas that are potentially of OUV.	An essential part of the World Heritage Marine Programme's work therefore focuses on developing capacity-building and training initiatives for site managers to support them in their efforts to conserve the core values for which the sites were initially inscribed on the World Heritage List.	Although the World Heritage Convention provides a uniquely powerful protection framework, its potential to protect key marine ecosystems and places is little known. As a result, the Convention has not been applied anywhere near its full potential in marine ecosystems. Therefore, the World Heritage Marine Programme promotes the Convention and raises awareness of its value to global marine conservation.

5. Excerpted primarily from United Nations Educational, Scientific and Cultural Organization Convention Concerning the Protection of the World Cultural and Natural Heritage, World Heritage Committee Twenty-ninth Session, Durban, South Africa, 10-17 July 2005, World Heritage 29 COM, WHC-05/29.COM/5, Paris, 15 June 2005.

Figure 5. Marine sites in IUCN marine regions on the World Heritage List, 2011



Adapted from Kelleher et al. (1995).

Strengthening the credibility of the World Heritage List

Since the inception of the World Heritage Marine Programme in 2005, eleven new marine sites have been inscribed on the World Heritage List, an increase of 25 per cent.[6] Of crucial importance, however, is not the amount of sites, but ensuring a balanced representation of the various marine ecosystems with OUV across all marine regions on the World Heritage List.

While 43 marine sites have been inscribed on the World Heritage List, several marine regions remain under-represented (Figure 5). For example, no marine sites have been listed in the Antarctic region, or in the North West Atlantic region. The Arctic region, the Baltic, West Africa, the Arabian Sea and the North West Pacific each have only one site. The Mediterranean, the Central Indian Ocean and East Africa each have only two sites. The other marine regions have three to five sites.

In 2002, sixty-two coastal and marine scientific experts attended the World Heritage marine biodiversity workshop: Filling Critical Gaps and Promoting Multi-Site Approaches to New Nominations of Tropical Coastal, Marine and Small Island Ecosystems, held in Hanoi, Viet Nam (Hillary et al., 2003). Workshop participants gathered to assess the marine biodiversity of the tropical realm and identify opportunities to expand World Heritage coverage of marine areas of OUV. The primary objectives of the workshop were to:

- reach expert consensus on tropical coastal, marine, and small island ecosystems for potential nomination as World Heritage sites; and
- identify innovative opportunities for applying a multi-site approach (serial and transboundary nominations) to test one or more World Heritage site nominations.

During the workshop, internationally and regionally recognized experts worked together to develop a consensus global list of areas with potential OUV for marine biodiversity for further consideration by States Parties to the World Heritage Convention for nominations on the World Heritage List. A list of tropical marine, coastal and small island areas of potential OUV for biodiversity was provided for consideration by States Parties to aid in identifying sites that could be nominated to the World Heritage List. Eight of these marine sites have now been inscribed on the World Heritage List; 29 of the marine sites are now on the Tentative List.

6. World Heritage marine sites listed since 2005: Islands and Protected Areas of the Gulf of California (Mexico, 2005), Shiretoko (Japan, 2005), Coiba National Park and its Special Zone of Marine Protection (Panama, 2005), West Norwegian Fjords – Geirangerfjord and Nærøyfjord (Norway, 2005), Malpelo Fauna and Flora Sanctuary (Colombia, 2006), Socotra Archipelago (Yemen, 2008), Lagoons of New Caledonia: Reef Diversity and Associated Ecosystems (France, 2008), Surtsey (Iceland, 2008), The Wadden Sea (Germany/Netherlands, 2009), Phoenix Islands Protected Area (Kiribati, 2010), Papahānaumokuākea (United States, 2010).

Second, a regional workshop, organized by IUCN in 2009 in Bahrain (Laffoley and Langley, 2010), concluded that while regional representation is important, attention should also be given to a properly balanced approach to different types of marine ecosystems under the World Heritage Convention. This would ensure that in addition to coral reefs (that now form about 40 per cent of the inscribed World Heritage marine sites) the World Heritage List also reflects the most outstanding examples of other types of marine ecosystems, such as kelp forests, seamounts and rocky reefs, among others. Nations need help to achieve this and there is a clear need for better guidance. To address this concern, IUCN is currently developing a thematic study that will provide better advice and help to address major gaps relating to marine World Heritage. The study will lay the scientific foundation for a well-balanced and representative set of World Heritage marine sites that will help to inform choices when nominating or inscribing sites relating to key marine regions or ecosystem types that are over-, under-, or not at all represented. This work began in 2010; final results will be presented to the World Heritage Committee in mid 2011.

Box 4. World Heritage marine sites by IUCN marine region

1 Antarctic Ocean (0)

2 Arctic Ocean (1)
- Wrangel Island (Russian Federation)

3 Mediterranean (2)
- Ibiza (Spain)
- Scandola (France)

4 North West Atlantic (0)

5 North East Atlantic (4)
- Wadden Sea (Germany / Netherlands)
- Surtsey Island (Iceland)
- St Kilda (United Kingdom)
- West Norwegian Fjords (Norway)

6 Baltic (1)
- High Coast/Kvarken Archipelago (Finland/Sweden)

7 Wider Caribbean (3)
- Belize Barrier Reef (Belize)
- Everglades National Park (United States)
- Sian Kaan (Mexico)

8 West Africa (1)
- Banc d'Arguin (Mauritania)

9 South Atlantic (3)
- Gough & Inaccessible Islands (United Kingdom)
- Brazilian Atlantic Islands (Brazil)
- Peninsula Valdes (Argentina)

10 Central Indian Ocean (2)
- The Sundarbans (Bangladesh)
- Sundarbans National Park (India)

11 Arabian Sea (1)
- Socotra Archipeligo (Yemen)

12 East Africa (2)
- iSimangaliso (South Africa)
- Aldabra Atoll (Seychelles)

13 East Asian Seas (5)
- Ha Long Bay (Viet Nam)
- Komodo National Park (Indonesia)
- Ujung Kulon National Park (Indonesia)
- Tubbataha Marine Park (Philippines)
- Puerto-Princesa Subterranean River National Park (Philippines)

14 South Pacific (4)
- Lagoons of New Caledonia (France)
- East Rennel (Solomon Islands)
- Phoenix Islands Protected Area (Kiribati)
- Papahānaumokuākea (United States)

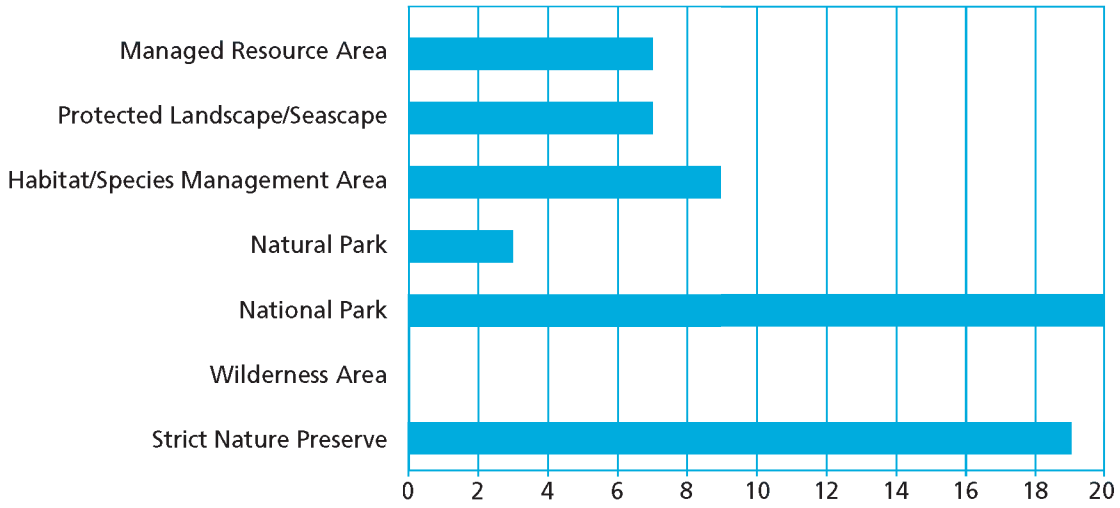
15 North East Pacific (3)
- Islands of Gulf of California (Mexico)
- Whale Sanctuary of El Viscaino (Mexico)
- Kluane/Wrangell-St Elias/Glacier Bay/ Tatshenshini-Alsek (Canada/United States)

16 North West Pacific (1)
- Shiretoko (Japan)

17 South East Pacific (5)
- Galapagos Islands (Ecuador)
- Malpelo Sanctuary (Colombia)
- Coiba National Park (Panama)
- Cocos Island National Park (Costa Rica)
- Guanacaste (Costa Rica)

18 Australia/New Zealand (5)
- Great Barrier Reef (Australia)
- Shark Bay (Australia)
- Macquarie Island (Australia)
- Heard and McDonald Islands (Australia)
- Sub-Antarctic Islands (New Zealand)

Figure 6. Number of World Heritage marine sites by IUCN protected area management category



Representation of World Heritage marine sites by management objectives

While World Heritage marine sites have many similar characteristics, their management goals and objectives often differ greatly. IUCN has defined a series of six protected area management categories based on the primary objective of the site (Table 4). Figure 6 shows the distribution of World Heritage marine sites by IUCN protected area management categories for 40 of the 43 marine sites (three sites do not have IUCN management categories assigned). Sites can have more than one IUCN management category. For example, Shark Bay is managed under five categories (1a, 2, 3, 4, 6).

About half of the World Heritage marine sites have been specified as either Strict Nature Preserves, managed mainly for science (nineteen of forty sites) or National Parks, managed for ecosystem protection and recreation (twenty of forty-one sites). Nine of 40 sites (23 per cent) are managed as a Habitat/Species Management Area, managed mainly for conservation, and 18 per cent as either a Protected Seascape, managed for seascape conservation and recreation, or Managed Resource Protected Area, managed for sustainable use. No marine sites have been specified as a Wilderness Area. Three marine sites have no assigned IUCN protected area management category (Table A3, Annex 2).

Strengthening capacity-building and conservation in World Heritage marine sites

Inscription on the World Heritage List is only one step towards safeguarding exceptional marine sites. Even though their disappearance would be an irreplaceable loss to humanity, various World Heritage marine sites are on the brink of losing their core values.

Multiple stressors are threatening the conservation of World Heritage marine sites. Climate change, habitat destruction, marine pollution, among other factors, all increasingly challenge the sustainability of marine World Heritage. While some site managers have established good practices and are successfully conserving the core values of their sites, others lack the capacity to do so. Additionally, almost all marine sites are suffering from threats outside their boundaries and would benefit from an ecosystem-based approach to management.

The World Heritage Marine Programme's goal is to increase the capacity toward a better protection of World Heritage marine sites. Chapter 3 of this report provides an in-depth overview of how this goal is implemented.

Box 5: Private sector support to increase visibility and conservation of World Heritage marine sites

In 2008 the Swiss luxury watch manufacturer, Jaeger LeCoultre, and the *International Herald Tribune* joined forces with the UNESCO World Heritage Centre to provide core financial resources to the World Heritage Marine Programme. The initial three-year partnership (2009–2011) provides both funding for the coordination and development of the World Heritage Marine Programme and a media campaign in the printed and online editions of the *International Herald Tribune*. Through its monthly publications, the partnership offers international visibility for World Heritage marine sites while the financial contribution has served as a catalyst for attracting other financial resources and new partnerships.

The media campaign covered 20 World Heritage marine sites. An additional 24 sites will be covered from 2011 to 2014. All articles and associated short videos are available online in the Tides of Time Archive at the Marine Programme website: whc.unesco.org/en/marine-programme.

Strengthening outreach and communication about the World Heritage Convention

Although the World Heritage Convention provides a uniquely powerful protection framework, its potential to protect key marine ecosystems and places is little known. As a result, the Convention has not been applied anywhere near its full potential in marine ecosystems. A central part of the World Heritage Marine Programme is to promote the World Heritage Convention and raise the understanding and perception of the Convention to help ensure conservation of the ocean's most valuable places.

Box 6: Roadmap for capacity-building in World Heritage marine sites

In 2010, and as part of a larger trust fund, the Flemish Government (Belgium), agreed to support the future development of the World Heritage Marine Programme. Part of the work package includes the development of a baseline assessment of management effectiveness in World Heritage marine sites that will inform the World Heritage Marine Programme strategy towards training/ capacity-building initiatives during the period 2012–2015. The groundwork for this strategy was done through a survey among managers during the first World Heritage marine site managers meeting in Hawaii, 1–3 December 2010. The results of the assessment are integrated in Chapter 3 of this report. In addition, the work package includes support to the identification of new potential marine areas with outstanding universal value and the development of an annotated outline for guidance on ecosystem-based management in World Heritage marine sites.

More information is available at:
http://whc.unesco.org/en/news/695
http://www.facebook.com/marineworldheritage
http://twitter.com/marine_world

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Table 4. IUCN protected area management categories and definitions	
Category 1a	**Strict Nature Preserve**: protected area managed mainly for science
Definition	Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.
Category 1b	**Wilderness Area**: protected area managed mainly for wilderness protection
Definition	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 2	**National Park**: protected area managed mainly for ecosystem protection and recreation
Definition	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 designation of the area; and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.
Category 3	**Natural Monument**: protected area managed mainly for conservation of specific natural features
Definition	Area containing one, or more, specific natural or natural/cultural feature that is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.
Category 4	**Habitat/Species Management Area**: protected area managed mainly for conservation through management intervention
Definition	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 5	**Protected Landscape/Seascape**: protected area managed mainly for landscape/seascape conservation and recreation
Definition	Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character 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 6	**Managed Resource Protected Area**: protected area managed mainly for the sustainable use of natural ecosystems
Definition	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.

Phoenix Islands Protected Area © Cat Holloway

Connecting World Heritage marine sites

'Systems often have the property of self-organization – the ability to structure themselves, to create new structure, to learn, and diversify ...'

Donella H. Meadows, *Thinking in Systems*, 2008

Beginning in the early 1980s with the listing of Australia's Great Barrier Reef, 43 sites have been added to the World Heritage List – each for their own OUV. Together, these sites are the 'Crown Jewels of the Ocean', including some of the most pristine marine areas on the planet. Collectively, these sites represent a tremendous reservoir of expertise and experience. Considering the great challenges that lie ahead in protecting these special marine places, it is key to bring that potential together, to form a 'system' of World Heritage sites rather than a loose collection of 43 sites – a system that is more than the sum of the individual parts.

Despite the differences in size and socio-economic conditions, as outlined earlier, many World Heritage marine sites have common interests and concerns, and can benefit from working together. These early examples of real working connections among sites are excellent starting blocks towards building a global system of World Heritage marine sites (Box 7).

The following pages give four early examples of the connections and common concerns between World Heritage marine sites.

Box 7. Benefits of cooperation between World Heritage marine sites

- Sharing knowledge and experience leads to improved, more effective and efficient management outcomes for the respective sites;
- Sharing the data and research findings that leads to improved understanding of ecological functions and responses to threats, which can assist in the development of adaptive management strategies;
- Collaboration reduces the potential for duplication of effort in research and development of similar management initiatives;
- Cooperation provides opportunities to share in the design, development and use of innovative technologies, research and monitoring approaches, and management initiatives;
- Building on-the-ground relationships with peers leads to international networking and increased staff expertise; and
- Cooperation leads to better outcomes for terrestrial, shallow and deeper water ecosystems, and for the people of the respective local communities who hold these places in trust for future generations.

Adapted from: Cooperative exchange between Papahānaumokuākea (USA) and Phoenix Islands Protected Area (Kiribati)

Sister site management cooperation between two large World Heritage marine sites: Papahānaumokuākea and Phoenix Islands Protected Area

In September 2009 the two largest World Heritage marine sites announced a historic alliance establishing a 'sister site' cooperation agreement to enhance the management and protection of almost 800,000 km² of the Pacific Ocean. The partnership is designed to enhance management knowledge and practices for these tropical and subtropical marine and terrestrial island ecosystems.

> ***'By partnering, we hope to collaborate on innovative initiatives highlighting not only the ecological connections we share, but also Pacific heritage and cultural connections we have as island people across Oceania.'***
>
> Aulani Wilhelm, Superintendent,
> Papahanaumokuakea Marine National Monument

Removed from most human activity, both areas serve as global 'sentinel sites' by providing potential early warning and a comparative baseline of understanding of how natural, less-disturbed systems react to changing climate conditions and external influences. Although geographically distant from their respective local population centres, both sites are supported by and rely on involvement of local and indigenous communities to develop successful management regimes.

Areas for cooperation, identified as providing significant, mutual benefit include:

- **Large-scale conservation and biodiversity**, including research and data sharing on site characterization, connectivity and biogeographical assessments.
- **Global impacts, threats assessment and reduction**, including management strategy development for global climate change impacts.
- **Remote archipelago management and enforcement**, including development and integration of enforcement and compliance strategies.
- **Role of culture and community**, including the integration indigenous knowledge and local practices into research design and implementation, monitoring and evaluation.
- **Evaluation of effectiveness and adaptive management**, including evaluation strategies, methods and metrics to assess the effectiveness of management efforts.

Regional World Heritage marine network: Eastern Tropical Pacific

The Panama Bight, the islands and the waters surrounding them in the east central Pacific of Ecuador, Colombia, Panama and Costa Rica are some of the most productive areas of the Eastern Tropical Pacific and belong to one of the world's most biological diverse geographical provinces. The area has a high degree of ecological interconnection and complex oceanographic characteristics, mainly due to the convergence of major marine currents, that facilitate the dispersal of marine larvae (e.g. from corals, crustaceans, molluscs, fishes) and affect the migrations, movements and distribution of many species of regional and global significance.

The seascape harbours unique and vulnerable habitats that support a rich biological diversity, including species that are endemic, in danger of extinction and/or have ecological, economic and aesthetic importance. Some of the more prominent large animals are endangered, including great whales and sea turtles, tuna, sharks, rays, billfishes and seabirds. In addition, the islands of this region have some of the few coral reefs in the Eastern Tropical Pacific.

Across the seascape there are a number of common, major threats to the marine ecosystem:

- Over-fishing, especially of sharks; reflecting the massive worldwide problem of over-fishing.
- By-catch of sea turtles, sharks, rays, seabirds, cetaceans, etc.
- Illegal fishing (protected species, fishing out of season, ignoring size restrictions etc.)
- Pollution (oil spills and land-based pollution of coastal waters); maritime transport and tourism contribute to the pollution problem.

A three-year project by the UNESCO World Heritage Centre and Conservation International, with financing from the UN Foundation and Global Conservation Fund, promoted the long-term management and conservation of five marine protected areas within the Eastern Tropical Pacific through the World Heritage Convention (Figure 7).

The project supported the World Heritage nomination process for sites that had not yet been listed. It also promoted regional collaboration on key marine conservation issues contributing to the integrity of World Heritage marine sites and their surrounding waters in the Eastern Tropical Pacific, as well as promoting increased application of relevant international conventions and environmental laws through capacity-building. The World Heritage Centre and Conservation International collaborated with several national partner organizations to undertake the activities at

Figure 7. World Heritage marine sites in the Eastern Tropical Pacific

site level. The activities at sites focused on strengthening management through capacity-building and providing technical assistance for protection measures as well as shared learning and networking among sites.

The region now has four listed World Heritage marine sites: Galápagos Islands and Marine Reserve (Ecuador); Cocos Island National Park (Costa Rica); Coiba National Park and its Special Zone of Marine Protection (Panama); and Malpelo Fauna and Flora Sanctuary (Colombia). The governments of the region have taken important steps to promote regional collaboration, especially with the 'San José Declaration', signed in April 2004 by representatives of the Costa Rican, Panamanian, Colombian and Ecuadorian governments. The declaration formally establishes the Marine Conservation Corridor of the Eastern Tropical Pacific among the islands of Cocos, Galápagos, Malpelo and Coiba as an instrument for the conservation and sustainable use of the biological diversity of the Eastern Tropical Pacific region.

There are two reasons for approaching marine conservation and sustainable development challenge at the regional level. The first is the reality of ecological interdependence (Figure 8). The interconnectedness of the marine ecosystem makes it impossible for one country to maintain a healthy, thriving marine ecosystem, while neighbouring exclusive economic zones (EEZs) are degraded. This is most obvious in the case of wide-ranging species, such as sea turtles, sharks, cetaceans, tuna and billfish that constitute some of the key values of these existing and potential World Heritage sites of the region. However, long-distance dispersal of larvae means that there may be many more levels of interdependence than the obvious ones involving large animals. The second reason for a regional approach is that the countries face common problems, can see joint opportunities, and have complementary experiences and skills to share.

Figure 8. Ecological connections among World Heritage sites in Eastern Tropical Pacific

Banc d'Arguin National Park © M. Broquere S. Nancy

Box 8. Conservation of the East Atlantic Flyway: The Wadden Sea and Banc d'Arguin National Park

Direct connections exist among World Heritage marine sites located in different regions. A good example of such a link exists between the The Wadden Sea and Banc d´Arguin National Park.

The Wadden Sea, shared by Germany and the Netherlands, is the largest unbroken system of intertidal sand and mud flats in the world, with natural processes undisturbed throughout most of its area. It encompasses a multitude of transitional zones between land, sea, and freshwater environments, and is rich in species specially adapted to demanding environmental conditions. It is considered one of the most important areas for migratory birds in the world, and is connected to a network of other key sites for migratory birds. It is the single most important staging and moulting area, and an important wintering area for waterbirds on the East Atlantic Flyway from the Arctic to South Africa. Its importance is not only in the context of the East Atlantic Flyway but also in the critical role it plays in the conservation of African-Eurasian migratory waterbirds. In The Wadden Sea around 6 million birds can be present at the same time, and an average of 10–12 million pass through it each year.

Banc d´Arguin National Park in Mauritania is one of the most important areas in the world for nesting birds and Palearctic migratory waders. Located along the Atlantic coast, this marine site is formed of sand dunes, areas of coastal swamps, small islands and shallow coastal waters. Of the estimated 7 million wading birds that use the East Atlantic Flyway, approximately 30 per cent winter at Banc d'Arguin, that hosts the largest concentration of wintering waders in the world and one of the most diversified communities of nesting piscivorous (fish-feeder) birds in the world. At least 108 bird species have been recorded, representing both the Palearctic and Afrotropical realms. Wintering shorebirds number over 3 million and include hundreds of thousands of black tern and flamingo, ringed plover, grey plover, knot, redshank and bar-tailed godwit.

Doñana National Park (Andalusia, Spain), located in the estuary of the Guadalquivir River on the Atlantic Ocean, is another important World Heritage site on the East Atlantic Flyway. Although not a marine site, it is the most important wintering site for waterfowl in Spain, receiving hundreds of thousands of visitors annually, and is a major stopover on the route to and from Africa for migrating Palearctic migrants.

The Wadden Sea, Banc d´Arguin – and Doñana – are the most critical sites for migratory birds on the East Atlantic Flyway and therefore, intimately interconnected. The continued existence of *global* migratory bird species is very much dependent on the protection and management of those areas. The protection and management of the individual sites are directly linked to the other sites and it is therefore essential that protection objectives and management efforts are aligned.

The East Atlantic Flyway (World Wildlife Fund)

When The Wadden Sea was placed on the World Heritage List, the World Heritage Committee, taking into account the important international role of The Wadden Sea, requested the *States Parties of Germany and the Netherlands to strengthen cooperation on management and research activities with States Parties on the African Eurasian Flyways, which play a significant role in conserving migratory species along these flyways*. In spring 2011 an international workshop was held in the context of Wadden Sea Cooperation to evaluate current monitoring. The workshop will be followed by a flyway programme that covers the themes, policy and governance, monitoring and research, training and education and public awareness. Banc d´Arguin, The Wadden Sea and Doñana will play a critical role in future flyway cooperation and management.

Jens Enemark, Secretary, Wadden Sea Secretariat

The Wadden Sea © Jan Van de Kam

Common conservation challenges from cruise ships: Kluane / Wrangell-St Elias / Glacier Bay / Tatshenshini-Alsek (Canada/United States) and West Norwegian Fjords – Geirangerfjord and Nærøyfjord (Norway)

Pressure from tourism in both Glacier Bay and the West Norwegian Fjords comes largely from cruise traffic, with 225 and 174 cruise ship entries respectively in 2010. Both sites illustrate striking similarities. For example, both sites are large, remote, steep glacial fjords, and when cruise ships enter the sites during air inversions, common during the summer, haze and air contaminants from emissions can cause significant air pollution. Both sites struggle with balancing the benefits that cruise tourism provides via access/visitation with potential impacts of cruise tourism to the biological and socio-cultural processes.

However, one prominent difference between the two sites is the level of information and history of research and monitoring. Glacier Bay has a long and diverse research and monitoring programme focusing specifically on the myriad impacts of cruise tourism to better understand and manage cruise visitation with effective mitigation and management measures. For example, to address concerns over wildlife disturbance, including to marine mammals, the US National Park Service has placed observers aboard cruise ships for the past five years, the largest ship-based study carried out worldwide (Glacier Bay has specific legislation that allows funds from cruise passengers – a steady stream of funding – to study the effects of cruise ships in the park). The goal of the initiative is to better manage cruise ship traffic while minimizing disturbance to marine wildlife such as humpback whales and harbor seals, two species that have been intensively monitored for more than a decade. Research from the whale observer programme is testing performance of specific management strategies that can be employed elsewhere, such as the effectiveness of reducing ship speed in reducing deleterious interactions between cruise ships and whales. Collaborations are also set up with universities to evaluate conditions under which cruise ships affect air quality, the role of cruise ship visitation to visitor experience, and a suite of long-term monitoring efforts such as the underwater 'soundscape', including measurement of the acoustic signature of cruise ships. These efforts provide an exceptional opportunity to share and apply research results, monitoring techniques, and effective management actions to the West Norwegian Fjords – Geirangerfjord and Nærøyfjord that has only recently designated as a World Heritage marine site and is addressing similar concerns.

Both sites are now exploring how to strengthen their cooperation and establish a concrete and sustainable partnership in which research results can be communicated, shared, and applied in their respective sites. The cooperation will also enable other marine sites with similar challenges to benefit from this exchange.

Box 9. Seeing the 'big picture': ecosystem-based management and marine spatial planning

Marine spatial planning (MSP) is an idea whose time has come. Originally started as a management approach to nature conservation in the Great Barrier Reef Marine Park over 30 years ago, it has been used in the last ten years in the more crowded seas of Western European countries as an effective process for achieving multiple objectives. Almost 20 countries are now using MSP to achieve both economic and environmental objectives. When applied at an ecosystem level, it is a practical approach that moves towards ecosystem-based management of marine areas. MSP is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process (Ehler and Douvere, 2007).

Large World Heritage marine sites, including the Great Barrier Reef Marine Park and the Galápagos Marine Reserve, have used MSP within their boundaries to identify zones for different levels of natural resource conservation. The Galápagos Marine Reserve uses a three-zone approach including a multiple use zone, a port zone, and a limited use zone that includes sub-zones that further restrict human uses to protect environments and resources that are sensitive to alteration. As importantly, MSP can be used outside the boundaries of any World Heritage marine site to reduce the risks and effects of threats that originate beyond the boundaries of marine sites. Despite best efforts to date, some of the marine sites face significant challenges when it comes to maintaining their values. Several are subject to threats and various forms of pressure resulting from human activities such as marine pollution, illegal and unregulated fisheries, habitat loss and climate change. Such threats put the preservation of the OUV of marine sites at risk. Already two marine sites, the Belize Barrier Reef Reserve System and Everglades National Park, are listed as World Heritage in Danger.

So how can we deal with these threats and strengthen the capacity of the site managers who are confronted with them? Part of the answer lies in determining where such threats occur and how their cumulative impact affects the preservation of the site. For some sites the biggest impact does not necessarily originate within their boundaries but from human activities adjacent to the site. Other pressures, such as ocean acidification or climate change, are either regional or global in scope, and in many cases they cannot be dealt with effectively at the site level. In such semi-enclosed seas as the North Sea (Europe) or the Gulf of Mexico, site-level conservation eventually depends on the quality of management measures taken for the region as a whole.

To address the threats to the conservation of World Heritage marine sites properly, the 'big picture' must be considered, for example, by applying a more ecosystem-based approach to the management of World Heritage marine sites. Such an approach, which is already well established within the marine science community, is also embedded in the World Heritage Centre's strategy for natural heritage. This approach focuses on the functioning and dynamics of the area in its entirety and in the full range of activities affecting it, allowing the level at which management actions will be most effective to be identified. Now that the tools are available to visualize where and how activities affect the conservation of protected areas, such as VMS (vessel monitoring systems), GIS (geographic information systems), GPS (global positioning systems), it is easier, for example, to track illegal fishing or map the migration routes of marine species. Developing the skills that will allow more ecosystem-based management to be applied to World Heritage marine sites is one of the key priorities of the World Heritage Marine Programme in the years to come.

For more information on how marine spatial planning can be used to begin an ecosystem-based approach to managing marine areas see the website of UNESCO's Intergovernmental Oceanographic Commission at ioc3.unesco.org/marinesp.

Connecting the management of World Heritage marine sites with the management of the surrounding marine area

If managed in isolation, World Heritage marine sites are vulnerable to coastal and marine resource development and exploitation occurring outside their boundaries, especially overfishing, habitat loss, marine pollution, invasive species and climate change. In general, many marine protected areas fail because of the degradation of the unprotected surrounding ecosystems (Agardy et al., 2011). Therefore, protection of World Heritage marine sites should be integrated into spatial development processes and plans for the surrounding marine area. A strategic approach that fully uses the strengths of effective marine site management, while avoiding the pitfalls, can succeed by integrating marine site management into broader marine spatial management efforts (Box 9).

'Almost all marine sites suffer from threats outside the boundaries of their site and would benefit from an ecosystem approach to their management.'

Dr Larry Robinson, Assistant Secretary of Commerce for Oceans and Atmosphere, NOAA

3

Navigating toward a new future

Coiba National Park © Tim Laman, National Geographic Stock

Area de Conservacion Guanacaste © James Forte, National Geographic Stock

Participants at the Site Managers Meeting, Honolulu © NOAA

Introduction

Faced with the growing threat of industrialization of the oceans and the persistent rush for marine resources, managers from the 43 marine sites on UNESCO's World Heritage List met from 1 to 3 December in Honolulu, Hawaii, to explore ways of strengthening conservation of the 'Crown Jewels of the Ocean'.[7]

This first meeting of World Heritage marine site managers charted the way for a stronger community of site managers who collectively can play a bigger role in tackling the challenges of ocean conservation. Renowned ocean explorer and marine conservationist Jean-Michel Cousteau; Nainoa Thompson, President of the Polynesian Voyaging Society; and Greg Stone, senior Vice-President and chief scientist for oceans at Conservation International, gave keynote addresses at the meeting.

The key message of the meeting was clear. Rather than being a loose collection of 43 sites, World Heritage marine site managers want to harness their power as representatives of the world's marine protected areas with the highest internationally recognized status of conservation – inscription on the World Heritage List. The meeting indicated the power this community could have when speaking with one voice at regional and international fora in ways that could ultimately lead to improved conservation of their irreplaceable sites. At the same time, ongoing help is needed to ensure each of these sites has access to basic management needs and can fulfill essential marine conservation responsibilities.

The Marine Programme of UNESCO's World Heritage Centre is now six years old, although for about half that time it was becalmed and leaderless. With new funding from Jaeger-LeCoultre, the *International Herald Tribune*, and the government of Flanders (Belgium), the Marine Programme has been able to position itself more strongly and develop a strategy that addresses three essential questions: (1) where are we now; (2) where do we want to be; and (3) how do we get there?

The Marine Programme wants to use the knowledge and experience of the managers of its forty-three marine sites to navigate a new future as a 'system' or 'community' of marine sites. It is embarking on this new journey on a course plotted by site managers, with the help of site managers, and for site managers.

A majority of the baseline information was gathered at the first World Heritage marine Site Managers meeting.

The meeting was organized in cooperation with the Office of National Marine Sanctuaries of the National Oceanic and Atmospheric Administration (NOAA), assisted locally by the staff of the Papahānaumokuākea Marine National Monument in Honolulu. Thirty-three site managers or their representatives (almost 80 per cent of marine sites) attended the meeting (see list of participants and meeting agenda in Annexes).

'We want to figure out jointly where we want to be in five or ten years – and how we can get there – together.'

Fanny Douvere, Coordinator,
World Heritage Marine Programme, UNESCO

7. Before the World Heritage Marine Programme was approved in 2005, a small meeting of marine site managers was held at the World Parks Congress in Durban (South Africa), in September 2003. Five presentations were made from the Great Barrier Reef, the Belize Barrier Reef Reserve System, Tubbataha Reefs Natural Park, Ha Long Bay, and Cocos Island National Park (Patry, 2005).

Where are we now? Establishing a baseline

Survey of marine site managers

In preparation for the December 2010 meeting of World Heritage marine site managers, the World Heritage Marine Programme designed a short, informal survey to elicit information about perceived threats to the OUV and management challenges from the individual marine sites, management issues, and basic information about the site (Casier, 2011). The survey was distributed to marine site managers at the meeting in Honolulu. Twenty-five of the sites completed the survey during the meeting; another 14 sites have since completed it, giving a response rate of 90 per cent. Most surveys were completed by the director, deputy director, superintendant, regional manager, park manager or chief executive officer at each World Heritage marine site – all persons with management responsibilities. Only four marine sites did not complete the survey.

Results of survey of marine site managers

The World Heritage Marine Programme's survey of marine site managers comprised three parts: (1) basic information about the site, including staffing, budget, funding sources and contact information; (2) key threats and effects of the five most important threats to the site, including existing and future threats; and (3) information on management challenges at each site.

Basic information.

The request for basic information about World Heritage marine sites annual budgets and staffing produced interesting results that showed significant differences in resources available to individual sites. For example, annual marine site budgets varied between US$50 million and US$0. For sites in high income countries (HIC), annual budgets varied between US$50 million and US$10,000 – with an average annual budget of US$9.5 million. For sites in non-HIC countries, annual budgets varied between US$2.5 million and US$0 – with an average annual budget of US$860,000. Sites in HIC have annual budgets that are ten times larger than the annual budget in a non-HIC. For all marine sites, most funding is provided by national governments. On average, sites in non-HIC receive about 15 per cent of their funding from non-governmental organizations; sites in HIC receive about 5 per cent of their funding, on average, from non-governmental organizations (Table 5).

Staffing at marine sites (36 sites responded to this question in the survey) varied from 350 people to one person – with an average of 75 permanent and temporary staff and volunteers (Table 6).

Table 5. Sources of annual budget

	Average annual budget (US$)	Government	Foundations	Non-governmental organizations	Other
Non-HIC	860,000	70%	7%	15%	8%
HIC	9,500,000	83%	6%	5%	6%

Table 6. Number of staff at World Heritage marine sites

	Average total staff	Average permanent staff	Average temporary staff	Average volunteers
Non-HIC	75	51	16	8
HIC	76	43	11	8

Lagoons of New Caledonia: Reef Diversity and Associated Ecosystems © Christian Grondin

Threats to World Heritage marine sites

In 1998, at the start of the United Nations International Year of the Ocean, more than 1,600 marine scientists and conservation biologists from 65 countries issued an unprecedented warning to the world's governments and citizens that the seas are in trouble.[8] Today most areas of the ocean, including World Heritage marine sites, continue to be pressured by common threats. Of these, the most important are:

1. habitat loss;
2. overfishing;
3. marine pollution (including excess nutrients, toxic chemicals, bacterial contamination, oil, marine debris),
4. invasive species; and
5. climate change (including sea level change, change in sea temperature, ocean acidification, and melting of sea ice).

Results of the survey show that habitat loss was the highest-rated threat, closely followed by climate change, marine pollution, and overfishing (Table 7). Climate change and invasive species were identified as the biggest future threats. Overfishing was felt to be less of a problem in the future – sadly but likely because there will be less fish to catch.

Table 7. Percentage of marine sites affected by threat categories

Threat	All sites affected by threat	Sites in HIC	Sites in Non-HIC	All sites where threat is increasing
Habitat Loss	64%	63%	65%	36%
Climate Change	62%	75%	52%	87%
Overfishing	54%	38%	65%	45%
Marine Pollution	54%	50%	57%	52%
Invasive Species	38%	44%	35%	72%

8. 'Troubled Waters: A Call for Action' Campaign, 1998: http://www.mcbi.org/twaters/statement.html.

Habitat loss

Productive marine habitats are often lost to destructive fishing practices, poor land use practices, tourism, and inappropriate coastal development. Such practices can reduce fishery productivity, create erosion and sedimentation, reduce coastal ecosystem health, and eventually limit human livelihoods.

About two-thirds of the World Heritage marine sites appear to be affected by habitat loss from coastal development, land reclamation, and dredging, poor land use practices, and tourism. While habitat loss is clearly a current threat, over 36 per cent of the marine site managers indicate it as an increasing problem.

Box 10. Socotra: an example of habitat loss

In the twentieth century, Socotra (Yemen) was hidden from the eyes of most of the world and from the effects of human activities. After an airport opened in 1999, developers, tour operators, investors, traders and tourists from mainland Yemen and abroad could easily access the archipelago. Development projects mushroomed. Currently 50,000 people inhabit the archipelago.

Recent projects that have resulted in habitat loss include construction of paved roads (with ongoing works on a controversial ring road), a new port jetty, fuel storage facilities, new schools and a hospital. Unsustainable management of rangeland, use of pesticides and other chemicals, uncontrolled tourism, and poor waste management practices have further exacerbated the problem.

Socotra has one of the highest percentages of endemism in the world. The number of species endemic to Socotra continues to increase; new species are added yearly. Currently there are 192 species of bird, 730 fish, 283 coral and 300 species of lobster, crab and shrimp.

The current development boom has significantly affected this rich biodiversity, e.g. the recent mangrove cutting on the southern part of the main island and the construction of a ring road (Van Damme and Banfield, 2010). Tourism is also booming and has risen from 140 tourists in 2000 towards 4,000 in 2008 (Scholte et al., in press) – almost one-tenth of the total population of Socotra. This increase has placed additional pressure on natural resources.

In the last ten years, however, and especially since the site's inscription on the World Heritage List in 2008, the awareness of the value of marine biodiversity has increased. However, the level of protection outside of the site remains constrained by very limited enforcement capacity. This poses a challenge in view of the growing demand for fishing of marine resources in Socotra and the wider Indian Ocean. Increased exploitation of Socotra's marine resources, together with increased tourism, raises serious concern about long-term sustainability.

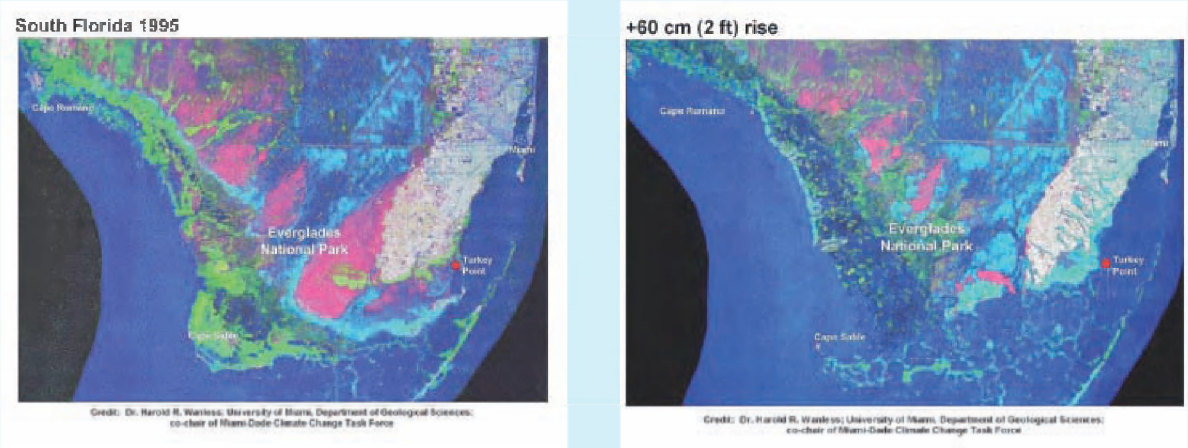
Sources: http://www.socotraisland.org/ and http://www.socotraproject.org/index.php; Van Damme and Banfield (2010); Scholte et al. (in press).

Climate change

Many marine areas have already experienced strong effects of ocean warming, changes in ocean circulation, and abrupt shifts in precipitation patterns. The bleaching and subsequent deaths of reef-building corals caused by warm water pulses have destroyed coral reef ecosystems. Some ocean areas have already acidified to levels known in laboratory studies to cause harm to ocean life. The rates of current environmental change far outpace anything seen in human history, and are likely to accelerate in the near future. Many low-lying areas may become uninhabitable due to sea level rise, including some areas within World Heritage marine sites.

About two-thirds of all World Heritage marine sites seem to be currently affected by climate change, specifically as a result of changing sea temperature and sea level, ocean acidification, and melting sea ice. Climate change is clearly perceived as the most important future threat. About 20 per cent of the site managers indicated that a rise in sea level would threaten their site. Climate change clearly implies different threats at different sites. Changes in sea temperature and rising sea level were seen as the biggest threats. For the eighteen marine sites that have corals within their boundaries, changes in sea temperature and ocean acidification were identified as the biggest threats. For the twenty marine sites that do not have corals, rising sea levels and melting sea ice were the biggest threats.

Box 11. Sea level rise and Everglades National Park



Potential effects on a +60 cm rise in sea level in Everglades National Park (Credit: Harold Wanless, University of Miami)

By 2100, the best available science indicates that south Florida seas will be approximately 50 cm higher than they were in 1990. There is even a 5 percent chance that the sea will rise by as much as 90 cm. Rising seas may cause the Everglades system to drain more sluggishly. Saltwater may move up rivers and into aquifers, contaminating freshwater ecosystems and groundwater. Mangroves may spread inland and invade formerly freshwater marshes. Rising sea levels in conjunction with storms are likely to increase coastal flooding and erosion, causing more particulate matter, dissolved organic matter, and nutrients to flow into bay waters, affecting animal and plant life in the bays and coral reefs.

Looking beyond the next century, researchers at the United States Environmental Protection Agency estimate that the sea in south Florida probably will rise more than 75 cm above 1990 levels by the year 2150. At those levels, most of the Everglades National Park could essentially become an extension of Florida Bay.

Overfishing

Worldwide, commercial fishing has some of the greatest effects on both the marine environment and society. Unsustainable fishing practices reduce fish stocks, limit fish catches, and often cause ecological shifts that further reduce biodiversity and productivity. By-catch further reduces fish stocks. Artisanal and recreational fishing suffer when local needs outstrip local supply, causing displacement of fishing activity, reduced income, and insecure food supply. Habitat destruction exacerbates overfishing by reducing fishable areas and productivity. For example, more than 60 per cent of the world's coral reefs are under immediate and direct threat from local sources, such as overfishing and destructive fishing (affecting 55 per cent of all reefs, coastal development and land-based pollution (affecting 25 per cent of all reefs), and marine-based pollution, e.g. marine transport (affecting 10 per cent of all reefs). And when local threats are combined with thermal stress, reflecting the recent effects of rising sea temperature, linked to the widespread weakening and mortality of corals due to mass coral bleaching, approximately 75 per cent of the world's coral reefs are rated as threatened (Burke et al., 2011).

About half of the World Heritage marine sites were affected by overfishing, including IUU (illegal, unregulated, unreported) fishing, industrial fishing, recreational fishing, 'ghost fishing'[9] the aquarium trade and artisanal fishing. According to the survey results, IUU fishing is by far the most significant cause of overfishing. About a quarter of the sites are affected by overfishing. Almost all sites indicated that overfishing was a current threat.

Box 12. Belize: a national ban on bottom trawling

The Belize Barrier Reef Reserve System, inscribed in 1996 on the World Heritage List, has the largest barrier reef in the Northern Hemisphere and is home to many threatened species. Commercial fishing was one of the most important causes of habitat loss in marine waters in the last decade. Bottom trawling was one of the reasons why Belize Barrier Reef was placed on the World Heritage List in Danger in 2009.

The effects of trawling are significant. For example in 2007 shrimp trawlers in Belize landed only 19 metric tons of shrimp (FAO), but are reported to have discarded about 76–190 metric tons of other marine life. The discards from bottom trawlers in Belize are probably a third of total spiny lobster landings for the same year (Oceana, 2010).

Bottom trawling can also harm coral reefs, sharks, and sea turtles that attract valuable tourism to Belize. The majority of international tourists come to Belize to participate in ocean-related activities such as snorkeling, diving or sport fishing, bringing hundreds of millions of Belize dollars each year to the economy (Richardson, 2007).

In 2010, the government of Belize banned all forms of trawling in the marine waters of Belize including its exclusive economic zone. The ban went into effect in January 2011, making Belize the third country in the world to ban bottom trawling completely.

Sources:
- http://na.oceana.org/sites/default/files/reports/Trawling_BZ_10may10_toAudrey.pdf
- http://belizean.com/news/belize-bans-fish-trawling/

Box 13. Scandola: a response to overfishing

Inscribed in 1983 on the World Heritage List, the natural reserve of Scandola (part of the Gulf of Porto) was the first reserve in France that not only protected terrestrial but also marine areas.

Historically, groupers were heavily fished in the Mediterranean and divers near Scandola remember that in the 1970s almost no groupers could be seen on a regular dive. France protected grouper populations through a ban on spear fishing in 1993 and since then the population of groupers had by 2010 increased tenfold in the Scandola Reserve. Also the average size has increased, which is very important as shown by recent scientific research that found that a female grouper of 31 years has a reproductive capacity equal to the egg production of 200 female groupers with an age of 5 to 8 years (Dominici presentation, 2010). The GEM (Groupe d'Étude du Merou) has calculated that in twenty years, a grouper can be seen by 20,000 divers, which gives this population a sustainable economic use, i.e. ecotourism instead of a fishery. Catches made by professional artisanal fishers have increased in the last fifty years, with higher catches and smaller fish efforts (Corsica delegation at meeting in Calanques, 2010).

Sources:
- http://www.airesmarines.org/reseau/membres.asp?id=3#
- http://www.corsematin.com/article/culture-et-loisirs/a-scandola-la-population-de-merous-augmente-de-maniere-exponentielle

9. Ghost fishing is the term used for lost or abandoned fishing gear that continues to catch fish. It is environmentally detrimental and the fish caught are wasted.

Marine debris on a Hawaiian beach © NOAA

Marine pollution

More than half of the marine sites responded that they were affected by marine pollution. Excess nutrients (eutrophication), oil and marine debris each affects about 25 per cent of the marine sites. Toxic chemicals and bacterial contamination were seen as less of a threat, perhaps due to the distance from human population and industrial centres of most World Heritage marine sites. About half of the sites indicated that the effects of marine pollution were increasing.

Box 14. Marine debris, a special concern to many World Heritage marine sites

Marine debris, including derelict fishing gear, is a growing global problem. The increased reliance on manufactured items (i.e. plastics) that can float, are persistent in the environment, and are frequently improperly disposed, has led to an abundance of these materials in the oceans. Marine debris has significant ecological impacts, creates navigational hazards and degrades the aesthetic value of ocean and coastal environments. Derelict fishing gear can kill fragile corals and pose a deadly entanglement hazard for marine life. Smaller marine debris is ingested by albatross while foraging for food. Marine debris also acts as a vector for the accelerated introduction of alien or invasive species. The currents of the North Pacific collect and trap an enormous amount of marine debris each year. In the Northwestern Hawaiian Islands an estimated 52 metric tons of marine debris are deposited annually on beaches and highly productive coral reefs (Dameron et al., 2007).

In addition to the effects on marine animals and habitats, marine debris has a negative effect on the aesthetics of marine sites and a related negative effect on tourism.

The Papahānaumokuākea Marine National Monument has an ongoing marine debris clean-up programme that has removed over 568 tons (515 metric tons) of marine debris from the property over the past 10 years. This programme could be a model for other World Heritage marine sites threatened by marine debris.

For further information: http:marinedebris.noaa.gov

Invasive species

Marine invasive (non-indigenous) species can adversely affect the habitats they move into both ecologically and economically. Invasive species compete with other species for habitat and food and can induce disease; already stressed habitats are more prone to invasions. Invasive species can, in fact, alter the functions of entire ecosystems. For example, the lionfish *Pterois volitans*, a native of the Western Pacific Ocean, is a predator that is now flourishing in coastal waters of the south-eastern United States and the Caribbean (Schofield, 2009).

About 38 per cent of the sites indicated that invasive species were a current threat; marine transportation was identified as its most important source.

Box 15. Peninsula Valdés and an invasive algae

Península Valdés (Patagonia, Argentina) is a site of global significance for the conservation of marine mammals. It is home to an important breeding population of the endangered southern right whale, as well as important breeding populations of southern elephant seals and southern sea lions. The orcas (killer whales) in this area have developed a unique hunting strategy to adapt to local coastal conditions. Peninsula Valdés was inscribed on the World Heritage List in 1999.

One of the most important threats to this site is the reduction of native species by invasive species. The accidental introduction of the algae *Undaria pinnatifida*, one of the five most dangerous invasive seaweed species due to its ecological and economic impact (Nyberg and Wallentinus, 2005), is changing the ecosystem from the Golfo Neuvo to the Golfo San Jose.

This algae was probably brought in ballast water from ships that visited the Argentine coast around 1992 and since has colonized different sites over 700 km of coast, forming dense seasonal forests in waters from 0 m to 15 m in depth. In the spring it is common for plants of *Undaria* to break away from the substrate and be transported by sea currents. As *Undaria* moves onto reefs, it has the potential to reduce habitat quality for reef fish by physically obstructing refuges. Its invasive nature can reduce native algae species and can affect species living on the seafloor, fisheries and tourism (Irigoyen et al., 2011).

Management issues at World Heritage marine sites

A third part of the survey focused on management issues. Site managers were also asked to identify the most important management issues they faced (Table 8). Unsurprisingly, financial resources and staff, equipment and facilities were singled out by a wide majority of site managers. In fact, these two management issues were the only ones identified by the majority of sites as 'poor'. Science and information, monitoring and evaluation, and the regulation of outside influences were the other management issues identified by many sites.

The survey questions were largely based on a management cycle from the WCPA (IUCN World Commission on Protected Areas) Framework for Assessing Management Effectiveness.[10]

Relevant management questions were gathered from several sources and the questions that were considered in practically all of those sources were selected (Table 8).

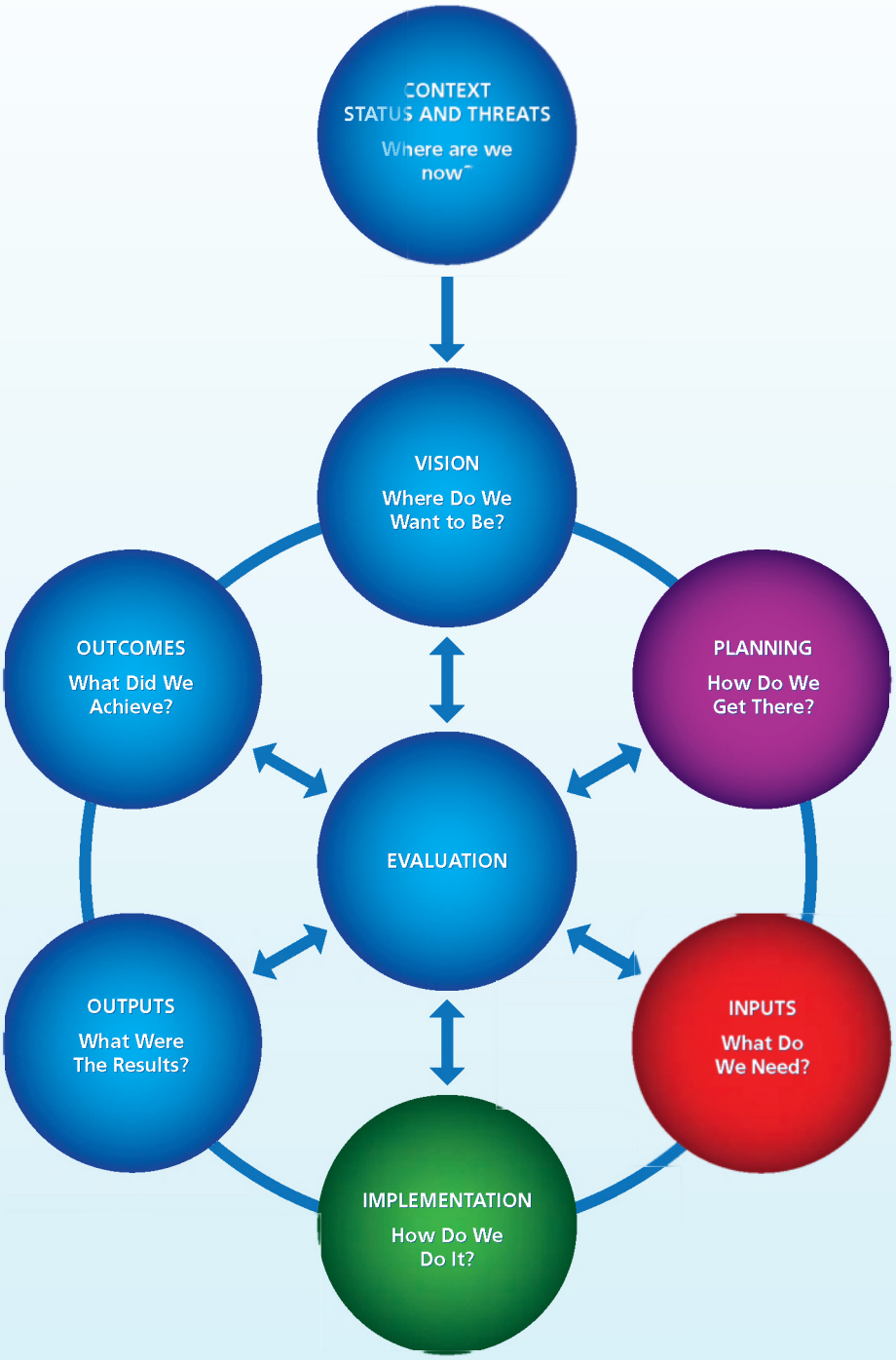
Overall, site managers rated management of World Heritage marine sites positively. Stakeholder participation and the regulation of human activities (indicated by the 'Planning' and 'Implementation' boxes in Figure 9) within the marine sites were rated 'very good' by the site managers. Other management issues scored as 'good' included knowledge of threats, management objectives and analysis of future conditions (both 'Planning'), and management plan revision ('Evaluation'). Seven of the eleven management issues were scored as 'good' by over 70 per cent of the site managers (Figure 10). Lack of financing and staffing ('Inputs' above) was identified as the principal constraint on management effectiveness.

Table 8. Questions on management issues asked in the survey of site managers

Context		
1	Knowledge and threats	What is the understanding of the key OUV of the WH site and the threats that challenge their conservation?
Planning		
2	Science and information	Is the management plan based on adequate information (database, maps, …) and relevant information (biophysical, social, and economic information)?
3	Management objectives	Are a range of clear, achievable, and measurable objectives (including ecological, social, and economic objectives) defined for the WH site?
4	Future conditions	Has the site made projections about the future impacts of threats? Are responses to these projections incorporated in management plans?
Inputs		
5	Staff, equipment and facilities	Are the available facilities (GPS, accommodation, vessels, etc.) suitable for the management of the site?
6	Financial resources	Are there sufficient financial resources to carry out the activities required for the management of the site?
7	Stakeholder participation	Were stakeholders directly involved in the development of the management plan?
Management process		
8	Regulation of activities within WH sites	Are human activities within the WH site regulated effectively to achieve management objectives?
9	Regulation of outside Influences	Are there management measures to regulate outside influences that affect the values of the WH site?
Outcome		
10	Monitoring and evaluation	Are the outcomes of management actions monitored and evaluated against performance?
11	Management plan revision	Is the management plan often updated and on what are the updates based?

10. Hockings M. et al. (2008).

Figure 9. Relative effectiveness of elements of the management cycle ranked by site managers



Adapted from: Hockings et al. (2008)

Interesting differences were apparent between responses from marine sites in high-income countries (HIC) and those from lower-income countries. For example, the responses to the question about the need for staff, equipment and facilities were almost contradictory between the two groups. Almost all the sites in the lower income countries said that they had clear, well-defined, achievable and measurable management objectives, while less than two-thirds of the responses from HIC said that they had well-specified management objectives. This difference might be explained by an unclear distinction between the definition of management goals that are written as general statements and objectives that should be, but rarely are, written as specific, measurable statements in site management plans.

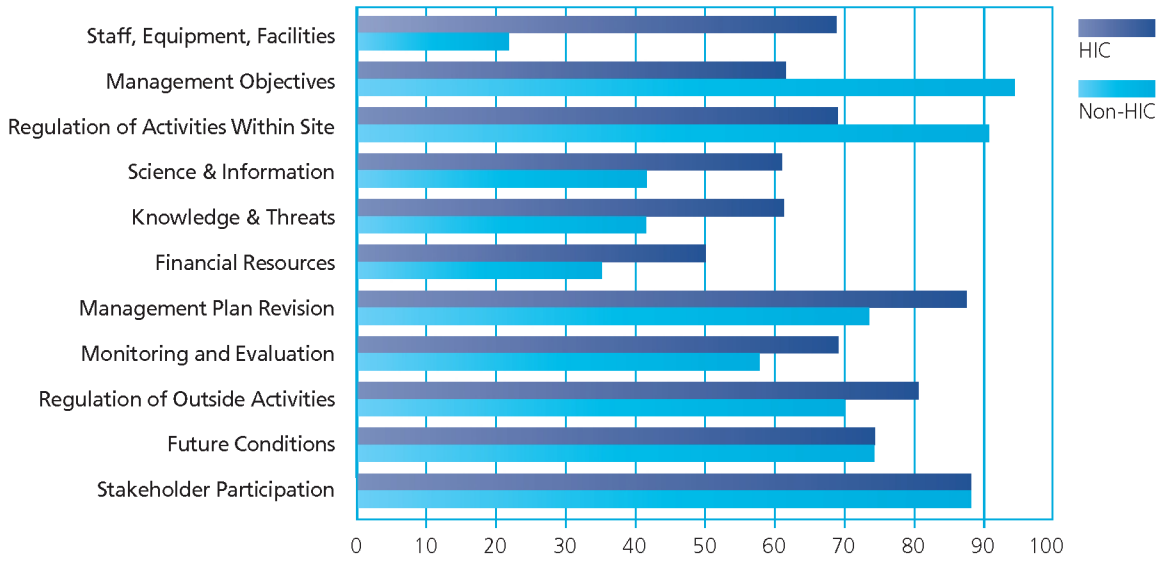
This clearly positive picture of World Heritage marine site management should be kept in perspective. Only site managers were surveyed. No one from other government agencies, non-governmental organizations, academia or the private sector was surveyed. These external stakeholders could have a different perspective on the effectiveness of management of the marine sites. Stakeholder participation, for example, was evaluated as good in a very high percentage (87 per cent) of sites in both HIC and non-HIC, while participation is almost always cited as a problem in protected area management. Some inconsistencies in the survey results raise other questions. For example, most sites claim that measurable management objectives have been defined, although a similar number of sites say that there is a lack of adequate scientific information to define them. Lack of financing and staffing was cited as the most important constraint on management, but planning, implementation and monitoring were rated as 'good'. Clearly additional work has to be done to determine a more complete and accurate picture of management effectiveness.

Comparing the survey results with existing World Heritage documentation

In preparation for the survey of site managers, a review of official documents from marine sites in the files of the World Heritage Centre was made for each site. All documents published after 2001 were examined for information on threats and management issues. No documents were submitted in the last ten years for five sites. If no information existed, the most recent document submitted before 2001 was examined. In most cases, this was the IUCN Advisory Body evaluation of the nomination dossier.[11]

According to a review of official World Heritage Centre documentation, the largest threat to marine sites is habitat loss – almost 90 per cent of sites cited it as a concern – followed by overfishing, marine pollution, invasive species and, lastly, climate change, mentioned in documents from about a third of the sites. Tourism was cited as the most important cause of habitat loss. Except for the low ranking of climate change as an important threat and the relatively low ranking of invasive species, most of the results of the analysis of threats from the survey of site managers and existing documentation are similar. Obviously the state of knowledge about the effects on climate change on the marine areas and resources has advanced over the past decade.

Figure 10. Percentage of sites rating effectiveness of management issue as 'good '



11. Advisory Body evaluations, prepared by IUCN, for each marine site nomination are available at the World Heritage Centre website: http://whc.unesco.org/en/advisorybodies.

Where do we want to be? Defining the vision

'This is the very first meeting that defines a need to be unified … to come together as forty-three sites but with one voice.'

Nainoa Thompson, Navigator,
Polynesian Voyaging Society

Introduction

While the mandate of the World Heritage Marine Programme is three-fold, an obvious priority is to focus on improving the capacity to manage sites effectively and to ensure that the OUV's of each site is conserved for future generations. As discussed previously, the World Heritage marine Site Managers Meeting, together with the survey provides the foundation to develop a proper strategy towards improved capacity. However, building a strong community of World Heritage site managers needs to be guided by shared values.

Values shared by marine sites

The meeting of marine site managers identified many values that the sites have in common:

World Heritage marine sites are exceptional

According to UNEP's World Conservation Monitoring Centre in Cambridge (United Kingdom), by 2010 almost 6,000 marine protected areas had been designated throughout the world. However, only 43 of these marine sites have been placed on the World Heritage List for their outstanding universal value. Only one in 140 marine protected areas in the world is a World Heritage marine site.

'You are not just any marine protected areas. You are World Heritage marine sites. This meeting is about your opportunity to find your voice … how you can tell the world about what is happening at your site … and what it means for the world. It's about owning something that is the World Heritage marine system point of view. You have been more important than any one else who speaks about marine conservation. It's not only about what your site should be in five years; it's about what the WH marine system should be in five years.'

Dan Basta, Director,
Office of National Marine Sanctuaries, NOAA

Every World Heritage marine site has been listed for at least one OUV; some have the attributes for meeting the inscription criteria for listing under all four natural heritage categories of OUV. Three marine sites also meet some of the inscription criteria for cultural heritage and are known as 'mixed sites' (see Table A2 in Annex 1).

World Heritage marine sites have achieved the highest international recognition

The World Heritage Convention is the leading international legal instrument in natural heritage and biological diversity conservation due to its recognition of OUV and its focus on 'flagship' sites, a tried and proven intergovernmental legal framework (the World Heritage Convention), a lengthy deliberative process, and systematic evaluations against established criteria and high standards. World Heritage marine sites are nominated by national governments (States Parties), evaluated by the IUCN, and approved for listing by the World Heritage Committee.

World Heritage marine sites are diverse

The marine sites of the World Heritage system are very diverse in:

- **Purpose**: while many marine sites are inscribed for biological or ecological reasons, a significant number of sites are inscribed for geological or landscape reasons (management issues are often different across sites);
- **Objectives**: some sites are multiple-use marine parks, others are strictly protected marine reserves;
- **Scale**: some are several hundred thousands of square kilometres in area, others are tens of square kilometres in area;
- **Remoteness**: many sites are relatively remote from people, others are next to millions of people;
- **Maturity**: some have been World Heritage sites for 25 years, others have just been listed recently;
- **Resources**: some sites have annual budgets of millions of dollars, others have budgets of tens of thousands of dollars; some have staffs of hundreds of people, others have less than ten; and
- **Knowledge base**: some sites have access to a robust knowledge base, others have critical needs for additional knowledge and information.

Discussions during a breakout session at the site managers meeting © UNESCO / Casier

World Heritage marine sites share one exceptional common characteristic

Despite the differences among World Heritage marine sites, they all share one exceptional characteristic – international recognition of OUV at each of the sites.

World Heritage marine sites share many common threats

Marine sites share common threats to protecting and maintaining their OUV, including habitat destruction, overfishing, invasive species, pollution – and most ominously, climate change.

World Heritage marine sites share common management challenges

Marine sites share common challenges to their effective management including lack of public awareness, lack of political support, inadequate funding, inadequate staffing, equipment and facilities, poor institutional coordination, the effectiveness of management plans, monitoring and evaluation, and the regulation of human activities both within and outside of marine site boundaries.

World Heritage marine sites have many common needs

Marine sites share common challenges to improve the effectiveness of their management including improving the scientific basis for planning and decision-making, expanding the options for financing, improving stakeholder participation in management, improving performance monitoring and evaluation, and applying ecosystem-based approaches to management. The latter challenge is particularly important – integrating marine protected area planning into broader marine spatial planning efforts (Agardy et al., 2011) – a direction that can lead to true ecosystem-based management.

World Heritage marine sites are more than the sum of their parts

We should determine how we can be more than the sum of our forty-three individual parts – how to become a 'community' or 'system' of World Heritage marine sites that are willing to share our experience and expertise with our success stories with one another – which is why we met in Hawaii.

> ***'... [you are] a community of practice where innovation can be spread around the world and grow ...'***
>
> Jon Jarvis, Director, US National Park Service

World Heritage marine sites require access to basic management needs, including adequate funding

Concerns about budgets, staffing, and facilities were common in discussions at the meeting and in the results of the survey, especially in non-HIC marine sites. While most marine sites rely on funding from national governments, alternative sources of funds for basic management needs, should be investigated. A few sites have been successful in raising funds through endowment funds and user charges (see Box 16).

World Heritage is an internationally recognized 'brand'

World Heritage is an internationally recognized 'brand'. The general public looks at 'branding' as an important value added aspect of products or services, since it often denotes a certain attractive quality or characteristic. From the perspective of 'brand owners' (in this case, the World Heritage Committee and States Parties), branded products or services have higher values. A global brand is one that is perceived to reflect the same set of values around the world. Global brands transcend their origins and create strong enduring relationships with the public across countries and cultures.

The 'added value' of World Heritage listing should be apparent to governments, non-governmental organizations, the wider marine conservation community, the media and diverse publics.

Box 16. Model for sustainable financing: the endowment fund for the Malpelo Fauna and Flora Sanctuary

The Global Conservation Fund (GCF) of Conservation International finances – with funds provided by the Gordon and Betty Moore Foundation – the creation, expansion, and long-term management of protected areas. In 2008, the GCF approved a contribution of up to US$2.5 million to Fondo para la Acción Ambiental y la Niñez for an endowment to conserve the Malpelo Fauna and Flora Sanctuary (Colombia), which includes the small island and its abundant waters. Fondo Acción has matched the amount, making the total endowment up to US$5 million. Proceeds from the endowment cover operating expenses of an alliance of public and private entities that are charged with protecting the island and its marine ecosystem.

World Heritage marine sites should be 'models of management excellence'

Unlike many of the world's marine protected areas that are acknowledged to be 'paper parks', World Heritage marine sites are required to have an adequate protection and management system to ensure the safeguarding of their outstanding universal value. Once inscribed, sites become part of a rigorous cycle of monitoring and evaluation. Focusing our energy and expertise on further improving the management of these 43 marine places collectively could deliver models for the world's other marine protected areas.

Legal recognition and protection by national governments is a requirement for World Heritage sites. World Heritage sites also have direct recognition in international law that states that activities must not negatively affect the OUV of sites.

'A rising tide lifts all boats.'

English proverb

World Heritage marine sites should use international legal instruments more proactively and lead by example

International conventions and their legal instruments can be used to protect World Heritage marine sites from human activities. For example, designation as a Particularly Sensitive Sea Area (PSSA, Box 17) increases the protection of marine areas from shipping activities. Five World Heritage marine sites already have this designation: Great Barrier Reef (1990); Malpelo Fauna and Flora Sanctuary (2002); The Wadden Sea (2002); Galápagos Islands (2005); and Papahānaumokuākea (2007).

World Heritage marine sites should prepare for significant change over the next twenty to fifty years

Changes in the environment external to the boundaries of World Heritage marine sites will have profound effects inside the sites over the next twenty to fifty years. These changes will include climate change, changes in the distributions of marine animals and habitats, increases in human populations and the demands placed on the marine sites by human activities in and outside the sites, changes in technology, changes in values, and so on. World Heritage marine sites should be prepared to face this uncertain future and prepare to adapt. Adaptation strategies are needed both system-wide and at the site-level.

Socotra Archipelago © Mario Caruso

Box 17. Particularly Sensitive Sea Areas: an example of a powerful international instrument

A Particularly Sensitive Sea Area (PSSA) is a marine area that needs special protection through action by the International Maritime Organization (IMO) because of its significance for recognized ecological, socio-economic or scientific attributes where such attributes may be vulnerable to damage by international shipping activities. IMO has developed a set of criteria to use when identifying PSSAs with respect to adopting measures to protect such areas against damage, or the threat of damage, from international shipping activities. These criteria can be divided into three categories: ecological; social, cultural and economic; and scientific and educational. To be identified as a PSSA, the area should meet at least one of the criteria. The criteria relate to PSSAs within and beyond the limits of the territorial sea. They can be used by IMO to designate PSSAs beyond the territorial sea with a view to the adoption of international protective measures regarding pollution and other damage caused by ships. National administrations may also use them to identify areas within their territorial seas that may be vulnerable to damage by shipping activities.

A PSSA imposes a higher level of restrictions on the freedom of international navigation than is normally applicable in the international law of the sea and the IMO international maritime law conventions. Because of its far-reaching effect, and especially its associated protective measures (APM), a PSSA cannot be adopted unilaterally by a coastal state's maritime administration, but rather must be proposed to the IMO as the properly mandated body in this regard. As a result, it is the IMO, rather than one or more coastal states, that designates a PSSA with global application.

Once a PSSA is designated by the IMO and APMs approved, coastal states can legislate these requirements, and most importantly, enforce them. In fact, the guidelines require coastal states to inform the IMO of the steps they will take for enforcement purposes, which must be consistent with the United Nations Convention on the Law of the Sea. All states are required to take steps to ensure that their ships comply with the PSSAs. Once approved, PSSAs are formally identified on nautical charts in accordance with international symbols and methods of the International Hydrographic Organization.

For more information on PSSAs:
http://www.imo.org/ourwork/environment/pollutionprevention/pssas/Pages/Default.aspx

Box 18. The Great Barrier Reef Outlook Report: a model for thinking about the future

The Great Barrier Reef Marine Park Outlook Report 2009 is an important stocktake of the Great Barrier Reef, its management and its future. The primary aim of the Outlook Report is to provide a regular and reliable report on the management of the Great Barrier Reef Marine Park, the overall condition of the ecosystem of the Great Barrier Reef region (including the ecosystem outside the region where it affects the region), social and economic factors, as well as a risk-based assessment of the longer-term outlook for the region.

Regular reporting through the Outlook Report is crucial in the ongoing monitoring of the Great Barrier Reef and its management. It is a summary of the past and present condition of the environmental, economic and social values of the Great Barrier Reef and presents its possible future. The first Outlook Report highlights that the Great Barrier Reef is one of the most diverse and remarkable ecosystems in the world and remains one of the most healthy coral reef ecosystems. Climate change, continued declining water quality from catchment runoff, loss of coastal habitats from coastal development and a small number of impacts from fishing are identified as the priority issues reducing the resilience the Great Barrier Reef.

The Outlook Report 2009 has been prepared by the Great Barrier Reef Marine Park Authority (GBRMPA) based on the best available information. Many people with an interest in the Great Barrier Reef contributed throughout development of the Outlook Report, including a number of Australian and Queensland Government agencies, leading Great Barrier Reef scientists, researchers, industry representatives, advisory committees, members of regional communities and the public. The report was independently peer reviewed.

The report identifies climate change, continued declining water quality from land runoff, loss of coastal habitats from coastal development, and a small number of impacts from fishing and illegal fishing and poaching as the priority issues reducing the resilience of the Great Barrier Reef.

The Great Barrier Reef Marine Park is a multi-use marine park and is considered by many to be a leading example of world best practice for management. However, the effectiveness of management is challenged because complex factors that have their origin beyond the Great Barrier Reef region, such as climate change, catchment runoff and coastal development, are some of the greatest threats to the ecosystem. These factors are playing an increasing role in determining the condition and future of the Great Barrier Reef.

While the Great Barrier Reef is recognized as one of the world's best managed reefs and is likely to survive better under the pressure of accumulating risks than most reef ecosystems, the Outlook Report identifies that the current long-term outlook for the reef is poor. Unavoidably, future predictions of climate change dominate most aspects of the Great Barrier Reef's outlook over the next few decades. Decisions made in the next few years are likely to determine its long-term future. The future outlook for the Great Barrier Reef will depend to a large degree on the extent to which climate change is addressed worldwide and on the resilience of the ecosystem in the immediate future.

Source: GBRMPA; for additional information see: www.gbrmpa.gov.au/corp_site/about_us/great_barrier_reef_outlook_report

Coconut hermit crab in Phoenix Islands Protected Area © Paul Nicklen, National Geographic Stock

How do we get there?

Based on the extensive discussions with site managers and the results of the threats and management survey conducted during the first World Heritage Marine Site Managers Meeting in Hawaii, a preliminary set of actions have been identified that will make a start with moving the World Heritage marine site managers community toward a new future. The actions are based on the outcomes of the meeting and guided by the shared values as outlined above.

They are only a preliminary step, a "work in progress", to set the stage for building a stronger community of World Heritage marine site managers, but flexible enough to adapt to changing circumstances. The actions reflect the recognition that threats and management challenges are often common, while solid cooperation, communication and political support are essential building blocks to ensure that these exceptional marine places will be maintained so that future generations can continue to enjoy them.

'If we can't save these 43 sites, what hope do we have for the oceans?'

Nainoa Thompson, Navigator,
Polynesian Voyaging Society

Next steps: 2011-2013

The workshop reached a number of conclusions and actions to be followed up over the next two years.

Common threats	
Conclusions	**Follow-up actions**
WH marine sites share common threats to protecting and maintaining their outstanding universal value, including habitat destruction, overfishing, invasive species, pollution – and most ominously, climate change. WH marine site managers identified training workshops that would address key threats as a priority need.	**Before mid 2011:** • Report summary analysis of common threats, based on World Heritage Committee decisions, mission- and state-of-conservation reports, and survey conducted among site managers and their representatives at the Hawaii meeting. This analysis will highlight priority threats both within and across sites, and will be shared and discussed with key NGO's and other governmental and non-governmental organizations central to marine conservation. **Beyond (mid 2011-2013):** • Create thematic working groups among site managers around specific threats, e.g. climate change or others, with the objective of: – Exchanging good practices and discussing specific actions that could be taken; – Helping to set a global agenda towards focusing media attention on the major threats to WH marine sites. • WH Marine Programme will explore the possibility of including a chapter or section of the next IPCC report on the effects of climate change on WH marine sites

Common management challenges

Conclusions	Follow-up actions
WH marine sites have different marine conservation objectives across sites (from strictly protected areas to multiple-use marine parks), they share common management challenges, including insufficient funding, inadequate public and political support, inadequate management capacity, poor institutional coordination/cooperation, etc. Generating broad-based support from national governments, the private sector, and foundations is essential for securing sustained revenue sources and building the institutional arrangements necessary for effective WH marine site management WH marine site managers identified training workshops that would address management issues (e.g. sustainable financing, enforcement) as a real need WH marine site managers expressed a strong interest in the concept of 'transformation', i.e. a need to identify indicators that could be used to evaluate levels of success and measure progress. WH marine site managers would like to learn how to use international and regional conventions to improve management at their sites (and conversely, international conventions should take account of WH marine sites).	**Before mid 2011:** • Publish a final report of the WH site managers meeting, including a summary of major management challenges based on World Heritage Committee decisions, mission- and state-of-conservation reports, survey conducted among site managers and their representatives at the Hawaii meeting; • Develop a marine site managers website that will bring together management plans and other reference documents (studies, initiatives, etc.) to share among all WH marine site managers; and • Provide WH site managers with a package of information, including contact details of all WH marine site managers, a step-by-step guide to ecosystem-based marine spatial planning, and a CD with presentations from the Hawaii meeting. **Beyond (mid 2011-2013):** • The WH Marine Programme will develop training workshops on ecosystem-based management, marine spatial planning, or sustainable financing in three to five WH marine sites that currently lack essential management skills and capacity; • WH Marine Programme will assess the recurring costs of managing a selection of marine sites with the objective of estimating what it would cost to protect adequately the 'Crown Jewels of the Ocean', recognizing that costs per site would vary enormously across countries due to differences in local costs; • WH Marine Programme will organize a meeting with national governments that could provide financial assistance to WH marine sites; • WH Marine Programme will organize a meeting with potential private sector representatives that could provide financial assistance to WH marine sites.

Cooperation

Conclusions	Follow-up actions
Several examples of 'partnering' between sites have been initiated already. These partnerships should be encouraged, implemented, expanded and publicized, as examples of good practice and should move WH marine site managers towards becoming a 'learning community' that learns from each others successes and mistakes.	**Before mid 2011:** • Encourage and expand new partnerships similar to the one between PIPA and Papahānaumokuākea for capacity-building between The Wadden Sea and Banc d'Arguin for migratory bird habitat management, between Glacier Bay and the West Norwegian Fjords on reducing the effects of cruise ships, and between iSimanglaliso and Ponta do Ouro (Mozambique) towards the creation of capacity for transboundary site conservation; • Explore and establish new partnerships on cooperation with other key international instruments for conservation, including but not limited to the International Maritime Organization (IMO). **Beyond (mid 2011-2013):** • The WH Marine Programme will actively identify, encourage, and support the expansion of transnational site management partnerships.

Political support

Conclusions	Follow-up Actions
Political awareness and support are essential to sustain effective WH marine site management. WH States Parties representatives should be kept informed about issues related to WH marine sites in their countries.	**Before mid 2011:** • The WH Marine Programme will write to World Heritage States Parties representatives to raise the profile of the marine site(s) within their country and make them aware of issues at site(s) in their country. **Beyond (mid 2011-2013):** • The WH Marine Programme will, on a continuous basis and where appropriate, take targeted action to leverage political support for selected WH marine sites.

Communication	
Conclusions	**Follow-up actions**
WH marine site managers can become global 'opinion makers' if they speak with one voice.	**Before mid 2011:** • The WH Marine Programme will sponsor a side event on WH Marine Programme during the 35th session of the World Heritage Committee (rescheduled for Paris, France, 19–29 June 2011). • The WH Marine Programme will also sponsor a side event to increase the visibility of marine World Heritage at the International Marine Conservation Congress (Victoria, Canada, 14-18 May 2011). **Beyond (mid 2011-2013):** • The WH Marine Programme will plan for increased visibility of WH marine sites at major international meetings such as: • UN Conference on Sustainable Development (Rio+20 Earth Summit, Rio de Janeiro, May 2012) • World Parks Congress 2014. • The WH Marine Programme will find and develop new partnerships with strategic partners who can help leverage support for WH marine sites such as, but not limited to: – NOAA – Conservation International – Oceana – National Geographic/Mission Blue – SEAlliance • The WH Marine Programme will explore/develop new media partnerships aimed at increasing the visibility of WH marine sites, their irreplaceable OUVs and conservation threats. **Continuing (mid 2011–2013):** • Media campaign in the online and printed edition of *International Herald Tribune* to highlight conservation issues in 8 World Heritage marine sites each year.

Annexes

Phoenix Islands Protected Area © Rotjan

Annex 1 / References

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Annex 2 / Table A1

Total, land, and marine water areas of World Heritage marine sites, rank ordered by area of marine waters

World Heritage marine site	Country	Total area (km²)	Coastal or island land area (km²)	Marine water area (km²)	% Marine
Phoenix Islands Protected Area	Kiribati	408,250	28	408,222	100
Papahānaumokuākea	United States	362,075	14	362,061	100
Great Barrier Reef	Australia	348,700	4,300	344,400	99
Galápagos Islands	Ecuador	140,665	5,665	135,000	96
Shark Bay	Australia	21,973	6,289	15,684	71
Lagoons of New Caledonia	France	15,473	0	15,473	100
Islands and Protected Areas of the Gulf of California	Mexico	18,380	4,024	14,356	78
Kluane/Wrangell-St. Elias/Glacier Bay/ Tatshenshini-Alsek	Canada/United States	98,391	85,036	13,355	14
Natural System of Wrangel Island Reserve	Russian Federation	19,156	7,620	11,536	60
The Wadden Sea	Germany/Netherlands	9,684	0	9,684	100
Malpelo Fauna and Flora Sanctuary	Colombia	8,575	3	8,572	100
Banc d'Arguin National Park	Mauritania	12,000	5,549	6,451	54
Gough & Inaccessible Islands	United Kingdom	3,979	79	3,900	98
Coiba National Park & Special Zone of Marine Protection	Panama	4,301	529	3,772	88
Whale Sanctuary of El Vizcaino	Mexico	3,710	0	3,710	100
High Coast – Kvarken Archipelago	Finland/Sweden	3,369	917	2,452	73
Everglades National Park	USA	5,929	3,557	2,372	40
Cocos Island National Park	Costa Rica	1,998	25	1,973	99
Ha Long Bay	Viet Nam	1,500	0	1500	100
Socotra Archipelago	Yemen	4,105	2,776	1,329	32
Komodo National Park	Indonesia	2,193	891	1,302	59
Sian Ka'an	Mexico	5,280	4,080	1,200	23
Tubbataha Reefs Natural Park	Philippines	968	0	968	100
iSimangaliso/Wetland Park	South Africa	2,396	1,556	840	35
Belize Barrier Reef	Belize	963	167	796	83
Macquarie Island	Australia	875	128	747	85
The Sundarbans	Bangladesh	1,395	697	698	50
New Zealand Sub-Antarctic Islands	New Zealand	765	268	497	65
Ujung Kulon National Park	Indonesia	1231	768	443	36
Brazilian Atlantic Islands: Fernando de Noronha and Atol das Rocas Reserves	Brazil	1,407	975	432	31
Area de Conservación Guanacaste	Costa Rica	1,460	1,030	430	29
Peninsula Valdès	Argentina	3,600	3,240	360	10
Surtsey Island	Iceland	337	14	323	96
Heard and McDonald Islands	Australia	386	77	309	80
St Kilda	United Kingdom	242	9	233	96
Shiretoko	Japan	711	487	224	32
East Rennell	Solomon Islands	370	166	204	55
Aldabra Atoll	Seychelles	350	208	142	41
Sundarbans National Park	India	1,330	1,197	133	10
West Norwegian Fjords – Geirangerfjord and Nærøyfjord	Norway	1,227	1,120	107	9
Ibiza, Biodiversity and Culture	Spain	112	26	86	77
Gulf of Porto: Calanche of Piana, Gulf of Girolata, Scandola Reserve	France	118	76	42	36
Puerto-Princesa Subterranean River National Park	Philippines	58	55	3	5
	TOTAL	**1,519,987**	**143,646**	**1,376,310**	

Annex 2 / Table A2

World Heritage marine sites by year of inscription and inscription criteria													
World Heritage marine sites	Country	Year of inscription	INSCRIPTION CRITERIA										
			Cultural						Natural				
			1	2	3	4	5	6	7	8	9	10
Pre-1985													
Everglades National Park	United States	1979							●		●	●
Kluane/Wrangell-St Elias/Glacier Bay/ Tatshenshini-Alsek	Canada/United States	1979							●	●	●	●
Great Barrier Reef	Australia	1981							●	●	●	●
Aldabra Atoll	Seychelles	1982							●		●	●
Gulf of Porto: Calanche of Piana, Gulf of Girolata, Scandola Reserve	France	1983							●	●		●
1985–1989													
St Kilda	United Kingdom	1986			●		●		●		●	●
Sian Ka'an	Mexico	1987							●			●
Sundarbans National Park	India	1987									●	●
Banc d'Arguin National Park	Mauritania	1989									●	●
1990–1994													
Shark Bay	Australia	1991							●	●	●	●
Komodo National Park	Indonesia	1991							●			●
Ujung Kulon National Park	Indonesia	1991							●			●
Tubbataha Reefs Natural Park	Philippines	1993							●		●	●
Whale Sanctuary of El Vizcaino	Mexico	1993										●
Galápagos Islands / Galapagos Marine Reserve	Ecuador	1978/1994							●	●	●	●
Ha Long Bay	Viet Nam	1994							●	●		
1995–1999													
Gough and Inaccessible Islands	United Kingdom	1995							●			●
Belize Barrier Reef	Belize	1996							●		●	●
Cocos Island National Park	Costa Rica	1997									●	●
Macquarie Island	Australia	1997							●	●		
The Sundarbans	Bangladesh/India	1997									●	●
Heard and McDonald Islands	Australia	1997								●	●	
East Rennell	Solomon Islands	1998									●	
New Zealand Sub-Antarctic Islands	New Zealand	1998									●	●
Ibiza, Biodiversity and Culture	Spain	1999		●	●	●					●	●
iSimangaliso Wetland Park	South Africa	1999							●		●	●
Area de Conservación Guanacaste	Costa Rica	1999									●	●
Peninsula Valdès	Argentina	1999										●
Puerto-Princesa Subterranean River National Park	Philippines	1999							●			●
2000–2004													
High Coast/Kvarken Archipelago	Finland/Sweden	2000								●		
Brazilian Atlantic Islands: Fernando de Noronha and Atol das Rocas Reserves	Brazil	2001							●		●	●
Natural System of Wrangel Island Reserve	Russian Federation	2004									●	●
2005–2010													
Coiba National Park & Special Zone of Marine Protection	Panama	2005									●	●
Islands & Protected Areas of the Gulf of California	Mexico	2005							●		●	●
West Norwegian Fjords – Geirangerfjord and Nærøyfjord	Norway	2005							●	●		
Shiretoko	Japan	2005									●	●
Malpelo Fauna and Flora Sanctuary	Colombia	2006							●		●	
High Coast/Kvarken Archipelago	Finland/Sweden	2006								●		
Lagoons of New Caledonia	France	2008							●		●	●
Surtsey Island	Iceland	2008									●	
Socotra Archipelago	Yemen	2008										●
The Wadden Sea	Germany/Netherlands	2009								●	●	●
Phoenix Islands Protected Area (PIPA)	Kiribati	2010							●		●	
Papahānaumokuākea	United States	2010			●			●		●	●	●

Annex 2 / Table A3

World Heritage marine sites by IUCN protected area management categories							
	IUCN Protected Area management categories						
	Strict Nature Preserve	Wilderness Area	National Park	Natural Monument	Habitat/Species Management Area	Protected Landscape/Seascape	Managed Resource Protected Area
World Heritage marine site	1a	1b	2	3	4	5	6
Shark Bay	●		●	●	●		●
Great Barrier Reef	●		●				●
Peninsula Valdés	●		●		●		●
High Coast / Kvarken Archipelago	●			●	●		
Komodo National Park	●		●				●
Shiretoko	●		●		●	●	
Kluane / Wrangell-St Elias / Glacier Bay / Tatshenshini-Alsek	●		●				
Banc d'Arguin National Park	●		●				
Ujung Kulon National Park	●		●				
Brazilian Atlantic Islands: Fernando de Noronha and Atol das Rocas Reserves	●		●				
Macquarie Island	●						
New Zealand Sub-Antarctic Islands	●						
Surtsey	●						
Natural System of Wrangel Island Reserve	●						
Gough and Inaccessible Islands	●						
Heard and McDonald Islands	●						
Aldabra Atoll	●						
Sundarbans National Park	●						
West Norwegian Fjords – Geirangerfjord and Nærøyfjord	●					●	
Belize Barrier Reef			●	●	●	●	
Galápagos Islands			●				●
Islands and Protected Areas of Gulf of California			●				●
Coiba National Park and Special Zone of Marine Protection			●				
Everglades National Park			●				
Cocos Island National Park			●				
Sian Ka'an			●				
Tubbataha Reefs Natural Park			●				
iSimangaliso Wetland Park			●				
Puerto-Princesa Subterranean River National Park			●				
East Rennell			●				
Area de Conservación Guanacaste			●				
The Sundarbans					●		
Malpelo Fauna and Flora Sanctuary					●		
St Kilda					●		
Ibiza, Biodiversity and Culture					●		
Lagoons of New Caledonia						●	
Gulf of Porto: Calanche of Piana, Gulf of Girolata, Scandola Reserve						●	
The Wadden Sea						●	
Papahānaumokuākea						●	
Whale Sanctuary of El Vizcaino							●
Phoenix Islands Protected Area	Unassigned						
Ha Long Bay	Unassigned						
Socotra Archipelago	Unassigned						
Number of sites by management category	19	0	20	3	9	7	7

Annex 3 / Agenda of the Site Managers Meeting

United Nations
Educational, Scientific and
Cultural Organization

World Heritage Convention

Day 1

Wednesday, 1 December 2010

Mauka to Makai

Restoration from the Mountains to the Sea

08:00 **Bus pick up at the Ala Moana Hotel – site managers**
Ala Moana Hotel: 410 Atkinson Drive, Honolulu, Hawai'i 96814
Across the street from the Hawai'i Convention Center

09:00 **Site visit 1 — Hui Kā Maoli Ola Native Plant Nursery**
Native Plant Restoration Project
Rick Barboza

10:30 **Site visit 2 — Māhuahua 'Ai o Hoi**
Wetland Restoration and Food Security Project
Kanekoa Schultz

12:00 **Site visit 3 — Paepae o He'eia Fishpond (lunch and tour)**
Traditional Fishpond Restoration and Aquaculture Project
Hi'ilei Kawelo

14:00 **Site visit 4 — Moku o Lo'e, Hawai'i Institute for Marine Biology (HIMB)**
Partnering with Science to Achieve Conservation
Jo-Ann Leong

16:00 **Bus pick up at Ala Moana Hotel**

17:30 **Opening reception**
Hawai'i Institute for Marine Biology

19:00 **Boat departs HIMB**

19:30 **Transit back to hotels**

Annex 3 / Agenda of the Site Managers Meeting

Day 2

Thursday, 2 December 2010

Setting the Course

Hawai'i Convention Center

08:45 **Host site welcome/cultural protocol**

09:05 **Welcome**
Dr. Fanny Douvere, Coordinator, UNESCO World Heritage Marine Programme, World Heritage Centre, Paris

09:15 **Opening remarks**
– Philippe Kridelka, Director, UNESCO Liaison Office in New York
– Dr. Larry Robinson, Assistant Secretary of Commerce for Oceans and Atmosphere, National Oceanic and Atmospheric Administration, Washington, DC, USA
– Tom Strickland, Assistant Secretary for Fish & Wildlife and Parks, U.S. Department of the Interior, Washington, DC, USA

09:45 **Introduction of site managers and other participants**

10:05 **Opening keynote – Setting the course: a navigator's perspective**
Nainoa Thompson, Navigator, Hōkūle'a & President, Polynesian Voyaging Society, Honolulu, HI, USA

10:40 **Purpose and introduction to the meeting – review agenda**

10:50 **Break**
Coffee & Tea

11:15 **Plenary moderated discussion – Challenges and opportunities for marine World Heritage**
Moderator: Jens Enemark, Secretary - Common Wadden Sea World Heritage Site, Germany and Denmark

12:00 **Lunch**

13:30 **Balancing conservation and economic development Part I**
Andrew Zaloumis, Chief Executive Officer - iSimangaliso Wetland Park, South Africa

13:50 **Balancing conservation and economic development Part II**
Angelique Songco, Tubbataha Reefs Natural Park, Phillippines

14:10 **Balancing conservation and economic development Part III**
Jean Marie Dominici, Manager, Scandola Reserve, France

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14:30 **Questions and discussion**
Moderator: Julian Barbiere, UNESCO Intergovernmental Oceanographic Commission, Paris, France

15:00 **Marine spatial planning: an idea whose time has come**
Charles Ehler and Julian Barbiere, UNESCO Intergovernmental Oceanographic Commission, Paris, France

15:30 **Break**
Coffee & Tea

15:45 **Purpose and introduction to the breakout sessions**
Anne Walton, NOAA Office of National Marine Sanctuaries

Participants move into breakout groups

15:55 **Navigating the Future I: where do we want to be?***
The Role of Marine World Heritage in Ocean Conservation

17:15 **Reports from the first breakout sessions**
Questions and discussion

17:45 **Summary remarks – Marine World Heritage: our strengths and weaknesses**
Dan Basta, Director – NOAA Office of National Marine Sanctuaries, Washington, DC, USA

18:00 **Break**

19:30 **Dinner**

Keynote – Protecting our marine crown jewels: a common challenge
Jean Michel Cousteau, Ocean Futures Society

* Navigating the Future II scheduled for Day 3

Annex 3 / Agenda of the Site Managers Meeting

Day 3

Friday, 3 December 2010

New Opportunities

Hawai'i Convention Center

08:45 **Review of Day 2—Overview of Day 3**

09:00 **Implementing an ecosystem-based approach for managing World Heritage marine sites**
German Soler, Manager, Malpelo Fauna and Flora, Columbia

09:20 **Thinking about the future of World Heritage marine sites**
Andrew Skeat, Great Barrier Reef Marine Park Authority, Australia

09:40 **Questions and discussion**
Moderator: Miguel Jorge, Director Ocean Initiative, National Geographic, Washington, DC, USA (Invited)

10:15 **Break**
Coffee & tea

10:30 **Purpose and introduction to the breakout sessions**
Anne Walton, NOAA Office of National Marine Sanctuaries

Participants move into breakout groups

10:40 **Navigating the Future II: How do we get there?**
The role of marine World Heritage in ocean conservation

12:15 **Plenary luncheon**

Keynote – New opportunities for World Heritage marine sites
Dr. Greg Stone, Senior Vice-president and Chief Scientist for Oceans, Conservation International

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13:30 **Reports from the second breakout sessions**
Questions and discussion

14:00 **Final remarks from site managers**

14:45 **Closing remarks – towards a new future for marine World Heritage: our agenda for action**
Philippe Kridelka, Director, UNESCO Office to the United Nations, New York
Jon Jarvis, Director, National Park Service, US Department of the Interior, Washington, DC
Dan Basta, Director - NOAA Office of National Marine Sanctuaries
Dr. Fanny Douvere, Coordinator, World Heritage Marine Programme

15:15 **Closing cultural protocol**

15:30 **End of meeting**

Special evening event

17:30 **Papahānaumokuākea World Heritage site**
Inscription Ceremony & Ten Year Commemoration Event
Hawai'i Convention Center

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