EUROPE / NORTH AMERICA

PAPAHĀNAUMOKUĀKEA: MARINE NATIONAL MONUMENT, HAWAI'I

USA

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

PAPAHĀNAUMOKUĀKEA: MARINE NATIONAL MONUMENT, HAWA'I (UNITED STATES OF AMERICA) ID NO. 1326

1. DOCUMENTATION

i) **Date nomination received by IUCN**: 15th March 2009.

ii) **Additional information officially requested from and provided by the State Party**: Additional information was requested form the State Party following the IUCN World Heritage Panel, and was provided to the World Heritage Centre, ICOMOS and IUCN in February 2010.

iii) **UNEP-WCMC Data Sheet**: Sourced from nomination document which cites 556 references.

iv) **Additional Literature Consulted (selection)**: DeMartini, E.E. and Friedlander, M.A. (2006) **Predation, endemism, and related processes structuring shallow-water reef fish assemblages of the NWHI**. Atoll Res. Bull. 543: 237-256; Fefer, S.I., Harrison, C.S., Naughton, M.B. and Schallenberger, R.J. (1984) **Synopsis of results of recent sea bird counts in the Northwestern Hawaiian Islands**. Proc Res. Inv. NWHI. UNIHI-SEAGRANT-MR-84-01; Friedlander, A.M. and DeMartini, E.E. (2002) **Contrasts in density, size, and biomass of reef fishes between the northwestern and the main Hawaiian islands: the effects of fishing down apex predators.** Mar Ecol Prog Ser. Vol. 230: 253–264, 2002; Friedlander, A.M., Keller, K., Wedding, L., Clarke, A., Monaco, M. (eds.). (2009) **A Marine Biogeographic Assessment of the Northwestern Hawaiian Islands.** NOAA Technical Memorandum NOS NCCOS 84. NOAA Silver Spring, MD. 363 pp (and the references therein); Hillary, A., Kokkonen, M. and Max, L. (2002). World Heritage Papers 4: **Proceedings of the World Heritage Marine Biodiversity Workshop** UNESCO; IUCN; NOAA; UNF; Maragos, J.E. and Gulko, D. (eds) (2002) **Coral reef ecosystems of the North Western Hawaiian Islands: Interim results emphasizing the 2000 surveys.** USFWS and Hawai'I DNLR, Honolulu, Hawai'I. 46pp; Parrish, F. and Abernathy, K. (2006) **Movements of monk seals relative to ecological depth zones in the lower Northwestern Hawaiian Islands.** Atoll Res. Bull. 543: 115-130; PMNM (2008) **Papahānaumokuākea Marine National Monument Management Plan**. Prepared by Papahānaumokuākea Marine National Monument, December 2008. USFWS, NOAA, Hawai'i DLNR. Vol 1-5; Smith, A. and Jones, K.L. (2007). **Cultural Landscapes of the Pacific Islands.** ICOMOS Thematic study. ICOMOS and UNESCO World Heritage Centre, December 2007. 132 pp; World Heritage Reports 12: **The State of World Heritage in the Asia-Pacific Region**; Waddell, J.E. and Clarke, A.M. (eds.) (2008) **The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States.** NOAA Center for Coastal Monitoring and Assessment (CCMA). 569pp (and the references therein).

v) **Consultations**: 13 external reviews. Extensive consultations were conducted during the field mission including with representatives of management agencies, administrators in state and federal government, representatives of academic institutions and non-governmental organizations and cultural practitioners.

vi) **Field Visit**: Jerker Tamelander, IUCN, jointly with Ian Lilley on behalf of ICOMOS; August 2009.

vii) **Date of IUCN approval of this report**: 22nd April 2010.

2. SUMMARY OF NATURAL VALUES

Papahānaumokuākea: Marine National Monument (PMNM) is located in the north-central Pacific Ocean, roughly 250 km northwest of the main Hawaiian Islands. The total area of the nominated property extends across the whole of PMNM and is approximately 362,075 km^2, of which around 14 km^2 are land areas. The natural values of greatest significance noted in the nomination encompass earth science, near pristine ecosystems, high endemism and the habitats of threatened and endangered species.

In terms of their earth science values, the nominated property forms a major portion of the world's oldest and longest volcanic chain known as the Hawaiian – Emperor Archipelago, a well-studied example

of island hotspot progression. Hotspots are areas of exceptional volcanic activity beneath tectonic plates, where submarine volcanoes typically erupt in a series on a moving tectonic plate over a plume in the Earth's mantle to form volcanic seamounts, and emergent islands. As each eruptive centre moves away from the hotspot it gradually erodes. The hotspot volcanism thus results in a sequence of progressively younger islands, atolls and submerged banks representing the different stages of island and seamount formation and evolution. The Hawaiian Archipelago is also surrounded by seamounts that have not been formed by hotspot volcanism, likely remnants of continental mass and thus much older than the archipelago.

The large area of the nominated property encompasses a multitude of habitats, ranging from 4,600 m below sea level to 275 m above sea level at Nihoa, and including abyssal areas, seamounts and submerged banks, coral reefs, shallow lagoons, littoral shores, dunes, dry grasslands, shrublands as well as a hypersaline lake. The size of the archipelago, its biogeographic isolation and the distance between islands and atolls has led to distinct and varied habitat types and species assemblages. Due to the very limited human impacts, the marine ecosystems continue to be dominated by top predators, a rarity from the perspective of both conservation and a science. There are healthy populations of fish, and PMNM's reefs are remote, nearly pristine and thus represent one of the last remaining intact large-scale predator-dominated coral reef ecosystems. The prevalence of coral disease is low in the Northwestern Hawaiian Islands, and only a handful of introduced marine invertebrate species have been found there compared to 287 in the main Hawaiian Islands.

The geographic isolation of Hawai'i has resulted in some of the highest endemism of any tropical marine ecosystem: approximately 25% of the nearly 7,000 known marine species recorded are endemic to PMNM. Coral endemism in PMNM's reefs ranges from 24-42% and fish endemism from 20-62%. PMNM is als considered to be of outstanding importance for the conservation of a number of globally threatened species. It contains all six main reproductive sites of the Critically Endangered Hawaiian Monk Seal. Five species of threatened sea turtles occur in the waters PMNM, but only the endangered Green Turtle uses the shores of PMNM to bask and breed. PMNM contains more than 450 nesting sites of this species which amount to more than 90% of the total nesting area of its Hawaiian population.

Four species of globally threatened birds are endemic to PMNM: the Nihoa Millerbird, Nihoa Finch, Laysan Duck and Laysan Finch. The nomination notes that, collectively, PMNM is the largest tropical seabird rookery in the world with more than 14 million birds. In total 5.5 million birds of 21 species breed annually on the islands, including 99% of the world's Laysan Albatross and 98% of the world's Black-footed Albatross, both globally threatened seabird species. Populations of several other seabirds are of global significance, including Bonin Petrel, Christmas Shearwater, Tristram's Storm-petrel and Grey-backed Tern. PMNM thus constitutes one of the largest and most significant strongholds of tropical seabirds in the world. Because of its high level of endemism and the near pristine nature of its reefs, PMNM represents a global biodiversity conservation priority, as assessed by a range of different global analyses.

PMNM is nominated as a mixed property, in relation to both its cultural and natural values. A detailed evaluation of the nomination under cultural criteria was conducted in parallel by ICOMOS.

3. COMPARISONS WITH OTHER AREAS

The nomination presents a substantial comparative analysis which has been augmented by the reviews received by IUCN, and further research undertaken by UNEP-WCMC in conjunction with IUCN. For the purpose of comparative analysis it was considered useful to differentiate the earth science values of the nominated property from its ecological and biological values.

In relation to earth science values, the scale, distinctness and linearity of the manifestation of these geological processes in PMNM are unrivalled and played a major role in the development of hotspot theory by Canadian geophysicist and geologist John Tuzo Wilson. While there are a number of other notable examples of hotspot trails these tend to be seamount chains and do not include emergent land.

Of the Pacific archipelagos formed by oceanic hotspots none are as old and extensive as the Hawaiian archipelago. The Society and Marquesas island groups provide less clear hotspot progression, while the Austral islands, where the hotspot is still active, are far less expansive and do not contain true atolls. Of archipelagos in the Indian Ocean only the Chagos Archipelago is of comparable magnitude to PMNM. However, its geological morphology is different and associated with volcanism over a mid-oceanic ridge. Similarly, Atlantic island groups are by and large associated with mid-oceanic ridges, while the Greater and Lesser Antilles are influenced by a multitude of processes not present at PMNM due to distance from continental landmasses.

There is therefore a strong case for inscription under criterion (viii) on the basis of the size and scale of

the property. It is important to note that Hawai'i is already recognised on the World Heritage list for its geological values. Hawaii Volcanoes National Park preserves the current active manifestations of the Hawai'i hotpot in the form of Mauna Loa and Kilauea volcanoes. The values of the nominated property are directly connected to the values in Hawaii Volcanoes National Park and jointly present a very significant testimony of hotspot volcanism. The relationship to Hawaii Volcanoes National Park which is a more immediate and visible manifestation of the same natural geological phenomena represented in PMNM is a factor that is in need of further consideration.

In terms of values for ecosystems it is noted that the Hawaiian Archipelago is the longest and most isolated chain of tropical islands in the world. Ecological processes continue to be only modestly influenced by human beings. PMNM includes a wide range of terrestrial and pristine marine ecosystems and communities with their associated ecological and biological processes. The sheer size, both horizontally and vertically, the diversity of habitats and the naturalness of PMNM make this property exceptional. Due to the minimal human impacts the marine ecosystems of PMNM are dominated by apex predators. At a time when most reef systems around the world have seen a dramatic decline of top predators the area is thus not only of recognized conservation importance but a major scientific reference.

PMNM contains significant areas of marginal reef environments, including the world's northernmost atoll. Other marginal reefs are represented on the World Heritage list, e.g. in the iSimangaliso Wetland Park (South Africa), however the geographical setting is completely different to that of the property. The Great Barrier Reef (Australia), Lagoons of New Caledonia: Reef Diversity and Associated Ecosystems (France), Sian Ka'an (Mexico), and Belize Barrier Reef Reserve System (Belize) all contain extensive coral reef habitat, however, they are all under the influence of processes associated with continental landmasses. No World Heritage properties currently include coral reefs representative of the central deep Pacific.

Four marine coralline sites inscribed on the World Heritage List, Tubbataha Reefs Natural Park (Philippines), East Rennell (Solomon Islands), Aldabra Atoll (Seychelles), and Brazilian Atlantic Islands: Fernando de Noronha and Atol das Rocas Reserves (Brazil) are atolls, but of different geological history, the latter three being primarily raised atolls while Tubbataha is highly influenced by its location in the dense Southeast Asian archipelago, as is Komodo National Park (Indonesia). They also all exhibit oceanographic conditions different to those in PMNM.

PMNM is also clearly differentiated from the Galapagos Islands (Ecuador), likewise a chain of oceanic islands in the Pacific. The Galapagos Islands lie on the Equator, while PMNM lies in the transition zone between the tropics and subtropics. Galapagos also does not encompass many of the features found in PMNM such as true atolls, low reef islands, seamounts, and submerged banks.

While not outstanding in terms of species richness when compared to existing World Heritage properties and other marine areas, the nominated property has one of the highest degrees of marine species endemism globally among taxa for which reliable data is available. Among World Heritage properties only Islands and Protected Areas of the Gulf of California (Mexico), Coiba National Park and its Special Zone of Marine Protection (Panama), and Rapa Nui National Park (Chile) have comparable (although lower) levels of fish endemism, but Rapa Nui does not include a marine component while the Gulf of California and Coiba are inshore coastal systems and thus under very different hydrographic regimes. The property supports a greater number of endemic species than other areas to the southwest, including the Phoenix Islands Protected Area (PIPA) in Kiribati, and it has greater reef development and diversity than reefs further east in the Galapagos Islands or eastern Polynesia. PMNM is home to 22 globally threatened species and PIPA is home to 20 globally threatened species. According to IUCN's Species Information System, PMNM and PIPA overlap with the distribution ranges of 31 and 52 threatened species of corals, mammals and birds. Coral diversity is also about four times higher in PIPA than PMNM. Overall, 28% of the assessed coral, bird and mammal species that overlap with PMNM are threatened, compared to 19% in PIPA. Both PMNM and PIPA are characterised by predator-dominated intact marine ecosystems with healthy populations of fish, including large numbers of top predators, corals and sea turtles. PMNM is also the largest tropical seabird rookery in the world, i.e. the seabird populations surpass any other tropical area, inscribed or not on the World Heritage list in terms of diversity and numbers.

Other tropical or subtropical marine protected areas comparable in size to PMNM include the Marianas Trench Marine National Monument, the Pacific Remote Islands Marine National Monument (both United States of America) and the Palau Shark Sanctuary (Palau). None of them share the patterns of endemism and apex domination, the marginal reef environment and the distinct island hotspot progression geology. No other large-scale marine protected area in the world provides the degree of protection present in PMNM, including strict regulation of all forms of activity and use throughout. Whilst other areas have higher species richness, PMNM is thus of critical importance for

a number of globally threatened species, including one marine mammal and several bird species.

4. INTEGRITY

4.1. Protection

The entire area is owned and controlled by the Governments of the United States of America and the State of Hawai'i. Due to historical reasons the monument includes large federally administered areas, state land (Kure), as well as Midway, technically a so-called unorganized, unincorporated territory of the United States. There is no private ownership of land or waters within the monument. The Monument was established in 2006 through Presidential Proclamation, which prohibits unauthorized access, bans dumping of waste and resource extraction, with a phasing out of the commercial fishery. It provides for controlled visitation to Midway Atoll, and provides for educational and scientific activities as well as Native Hawaiian cultural activities. The proclamation does not modify or diminish existing jurisdictions, such as an Ecosystem Reserve, a Marine Refuge, National Wildlife Refuges and a State Seabird Sanctuary, some of which date back more than 100 years. Several additional laws apply to the monument, including e.g. the Endangered Species Act and the Migratory Bird Treaty Act.

The Papahānaumokuākea Particularly Sensitive Sea Area (PSSA) has the same boundaries as the Monument, and six Areas to be Avoided (ATBA) have also been adopted by the International Maritime Organization (IMO), each extending out 50 nautical miles or 92.6 kilometres from the centre of islands or atolls. The licensed fishery operating in the monument will be phased out by 15 June 2011. Presently there are eight licenses although some licensed ships do not fish the area and harvest is reportedly below catch limits.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines.

4.2 Boundaries

The boundaries of the nominated property have been clearly defined, and are set 50 nautical miles (92.6 kilometres) from emergent land. They are identified as a series of geographic coordinates and interconnecting lines. Thus the entirety of the monument boundary falls in the pelagic, mostly over abyssal areas.

Buffer zones have not been identified as the boundaries of the monument are not directly impacted by activities for which buffer zones would provide effective protection. Possible threats from shipping have been dealt with through IMO PSSA and ATBA designations. The monument boundaries as well as PSSA and ATBA related regulations have been included on marine charts used in the United States and also communicated globally, including through IMO, and thus appear on up-to-date versions of both electronic and printed navigational charts.

In spite of its large area the property may offer some possibilities of extension, subject to further research on biological connectivity and speciation processes. For example, study of deeper habitat and species, which is currently in its infancy, may warrant extension of the property to include additional seamounts, submerged banks or other features presently outside or only partially included in the monument area. Biological connectivity between the nominated property and atolls and islands to the south may provide basis for consideration of serial nominations. The State Party is encouraged to further explore such potential through ongoing research.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines.

4.3 Management

Management responsibilities rest with three co-trustees: the State of Hawai'i, through the Department of Land and Natural Resources (DLNR); the U.S. Department of the Interior, through the Fish and Wildlife Service (FWS); and the U.S. Department of Commerce, through the National Oceanic and Atmospheric Administration (NOAA). The co-trustees have entered into a Memorandum of Agreement setting out mechanisms for managing the Monument including roles and responsibilities, decision making and coordinating bodies. There are clear and effective governance arrangements including a Monument Management Board, composed of representatives of NOAA, FWS, the State of Hawai'i and the Office of Hawaiian Affairs, which carries out the day-to-day management and coordination of Monument activities. An Interagency Coordinating Committee has been established to engage other state and federal agencies that support monument operations. Protection of, and research into, the traditional and cultural values of the monument are inscribed both in the Executive Order establishing the monument and its management plan.IUCN noted the engagement of representatives of the indigenous Hawaiian community in the management of the property during its evaluation mission, meeting with a variety of native Hawaiian stakeholders and leaders, and interaction with members of the Centre for Hawaiian Studies at the University of Hawai'i, the cultural advisory committee of the monument and the Office of Hawaiian Affairs.

Management aims, objectives and jurisdictions are laid out in a comprehensive 15-year Monument Management Plan, to be reviewed every five years. The plan sets out strategic objectives and defines 22 thematic Action Plans that address identified priority needs. The action plans are well conceived and clearly structured, addressing many threats and identifying many research and management needs. There is a GIS database incorporating research data, habitat classifications, species distributions, cultural sites and data, a spatial bibliography of published literature and information on activities carried out under permit in the monument. Importantly, this also includes a Management Plan Tracking Tool, which incorporates indicators and activities defined in relation to priorities identified in the management plan.

Capacity for implementation of monument management activities varies among the three co-trustees, both in terms of finances and human resources. Funding for monument management is provided largely through federal as well as through State budgets. Although approved on an annual basis by Congress and state legislative assembly, commonly as part of broader funding packages, it constitutes a reliable and sustainable mechanism for supporting management activities at the property. Annual Monument budgets come from NOAA/NOAA-Fisheries, FWS, the State of Hawai'i, the Office of Hawaiian Affairs. There are also contributions from the public, interest groups and organizations, a model with potential for expansion.

The management authorities generally have strong technical and financial capacity. It is important to note that their management mandates rely on partnerships both for research and enforcement. Sound collaboration with state/national institutions and other branches of co-trustee agencies in the implementation of many Action Plans has been achieved. Enforcement of regulations is a challenge due to the isolation and size of the monument. A direct collaboration with the US Coast Guard has been established. The effectiveness of enforcement requires constant monitoring and further development of surveillance technology as well as operational means of intervention in case of breaches. There is room for improvement and consolidation, for example emergency response plans to minimize the impacts of groundings and/or spills were still under development at the time of the IUCN/ICOMOS evaluation mission.

The process for considering permits for activities in the monument is moving from disparate procedures run by each co-trustee agency towards a single unified mechanism that is both rigorous and transparent. The process is still subject to much discussion, and is presently subject to a challenge through court proceedings, but provides an example of how the co-trustees have promoted integration, and will provide valuable lessons learned that can serve to direct further efforts. IUCN is concerned that the multiple jurisdictions and the multi-agency management arrangement created around them still seem overly complex; each co-trustee still operates institutionally disconnected processes with separate procedures, budgets, staff etc. Although the complex management structure of the monument is a product of the terms of the Executive Order establishing the monument, federal as well as state law, there may be a case for studying options for even more far-reaching integration, e.g. into a single management authority for the monument with unified budgets and co-located staff.

PMNM has a public face projected through a website and the Mokupāpapa Discovery Centre in Hilo on Hawai'i island, and various campaigns and educational programmes serve to further understanding and involvement of stakeholder groups. These are all well conceived but would benefit from scaling up and further elaboration for the monument to achieve its objective of "bringing the monument to people" rather than vice versa, which is necessitated by the strict limitations on visits to the area. In particular, generating a broader understanding of the permitting and management effectiveness systems and procedures would serve to remove some of the concerns and misconceptions related to these among some stakeholder groups.

IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines.

4.4 Threats

Human impacts within the property over the past 200 years include military activities, seabird egg and feather collection, whaling, guano mining and fisheries. Past use has significantly impacted the ecology and landscape of terrestrial systems on low-lying islands, most notably Midway, host to a military base and still an emergency airfield. Laysan provides a good example of successful restoration of an island completely altered by guano mining and other uses.

The nominated property is free from many of the threats facing most other marine or island protected areas in the world, such as land-based pollution and encroachment, and impacts associated with visitors are highly limited. However, five threats originating from outside the monument are of particular concern: ship groundings, Illegal, Unreported and Unregulated fishing (IUU), marine litter, introduction of invasive alien species and climate change.

The risk of ship groundings has been reduced through establishment of a PSSA and six ATBA. Any incidents would be due to significant human

error, complete technical breakdown, or extreme weather events. Incidents in the area over the past decades have been largely related to research, management or Navy operations. Corresponding emergency response plans to minimize the impacts of groundings and/or spills should become operational as soon as possible.

Commercial fishery in the area is being phased out. Although fishing is strictly regulated and not considered to compromise current management objectives of the property, recreational fisheries such as that around Midway and off some ships could be further curbed due to the possible secondary impacts. Fishing for cultural practices is allowed under the management plan, and managed to ensure minimal impacts.

The healthy fish and shark populations in the area are vulnerable to IUU fishing. The remoteness of the property and presently high fuel prices is considered to reduce these risks, but with continued depletion of fisheries elsewhere and the high market price of species found in abundance within and around the nominated property (e.g. tuna and sharks), these resources may be illegally targeted. A threats assessment process and development of a surveillance plan involving partnerships with the US Coast Guard but potentially also the US Navy is underway.

The biogeographical isolation of the monument means its ecosystems are particularly vulnerable to the introduction of alien and potentially invasive species. Several alien marine species have been recorded, although so far without known large-scale impacts. Conversely, the terrestrial environment of the low islands has been fundamentally altered through introductions of rats, rabbits and various plant species. The number of terrestrial invasive plants varies from three at Nihoa to 249 at Midway. Eradication of rats and rabbits has been successful and other eradication and rehabilitation efforts are permanently underway. There is hope that ecosystems relatively similar to those originally found on the islands can be restored, but continued and intensified efforts are required for decades to maintain gains made and eventually restore natural habitats. Presently the main potential vectors for species introduction are related to illegal incursions, management and research activities, and other permitted activities such as for cultural use. Management and other permitted activities are subject to protocols designed to minimize the risk of further species introduction, applicable both to activities in water and on land. The risks of species introductions from illegal activities can only be reduced through effective control and enforcement.

Marine litter is the most visible threat to the nominated property and although it presently does not jeopardize many of the features for which the property has been nominated for inscription on the World Heritage list, impacts on endangered species is cause for concern. Originating from land as well as ships around the central and northern Pacific, enormous quantities of marine litter are transported to the monument, becoming stuck on reefs, in lagoons and washed ashore. While risks of entanglement are partly mitigated through removal campaigns on fishing nets, the problems of ingestion of small pieces of plastic by albatross cannot be mitigated. Comprehensive international efforts are required to reduce risks by addressing the problem of marine litter at source.

Climate change impacts are already observed to be affecting the property. It can be anticipated that the low-lying islands will increasingly lose area to inundation as well as erosion as a result of sea level rise, which is also likely to increase seawater intrusions during storms and extreme wave events. This is expected to have negative implications e.g. for sea turtle as well as seabird nesting. Elevated sea surface temperatures have already caused significant coral bleaching within the nominated property, and further increases may reduce foraging opportunities for seabirds due to changes in fish populations and behaviour. Acidification is less studied but may, in the medium and long term, impact deepwater habitats and ecosystems of the monument, such as deep reefs with possible implications for monk seal foraging grounds and other species. The monument is already under a strict management regime designed to maintain ecosystem health, which may confer resilience and increase adaptive capacity. The area lends itself to the study of the impacts of climate change on large, near-pristine marine ecosystems, an area of research where the monument can greatly contribute to conservation efforts around the globe.

Overall, the marine ecosystems of PMNM are in exceptionally good health compared to most other sea areas in the world, in large part due to historically low and presently strictly limited use of the area. Addressing the threats facing the monument requires action on multiple levels and by multiple stakeholders, but can maintain present conservation status with continued effort. Management and protection mandates, strategies and implementation arrangements are by and large sound and sufficient to address the threats facing the area, with some strengthening possible as identified herein.

In summary, IUCN considers the nominated property meets the conditions of integrity as set out in the Operational Guidelines.

5. ADDITIONAL COMMENTS

Evaluation of cultural aspects of the World Heritage nomination of the property is carried out by ICOMOS. IUCN considers there are important relationships between Native Hawaiian culture and practices and the natural values of the property, that are also a recognised factor in the management of the property. IUCN also noted that the islands of Papahānaumokuākea, notably Nihoa and Mokumanamana, play a central role in Native Hawaiian archaeology, cultural identity, tradition, and spiritual well being, There is increased interest in matters related to the nominated property, and IUCN heard a broad range of opinion on uses and interpretations, including from a range of leaders and representatives of indigenous people, regarding the associative cultural landscape of the property during the evaluation mission. The cultural uses of the property and their associations with nature, at their past and present levels, are positive and appropriate in relation to the conservation of the natural values of the property. Provided they do not change in favour of increased resource extraction, they can also increasingly contribute to ensuring these values are maintained.

6. APPLICATION OF CRITERIA

Papahānaumokuākea: Marine National Monument, Hawai'i has been nominated as a mixed property under cultural criteria (iii), (iv), and natural criteria (viii), (ix) and (x). Evaluation of the nomination under criteria (iii) and (iv) is carried out by ICOMOS.

Criterion (viii): Earth's history and geological features

The property provides an illustrating example of island hotspot progression, formed as a result of a relatively stationary hotspot and stable tectonic plate movement. Comprising a major portion of the world's longest and oldest Volcanic chain, the scale, distinctness and linearity of the manifestation of these geological processes in PMNM are unrivalled and have shaped our understanding of plate tectonics and hotspots. The geological values of the property are directly connected to the values in Hawaii Volcanoes National Park and World Heritage property and jointly present a very significant testimony of hotspot volcanism. The property includes a significant portion of the largest and oldest feature of its kind, including the world's northernmost true atoll.

IUCN considers that the nominated property meets this criterion.

Criterion (ix): Ecological and biological processes

The large area of the property encompasses a multitude of habitats, ranging from 4,600 m below sea level to 275 m above sea level, including abyssal areas, seamounts and submerged banks, coral reefs, shallow lagoons, littoral shores, dunes, dry grasslands and shrublands and a hypersaline lake. The size of the archipelago, its biogeographic isolation as well as the distance between islands and atolls has led to distinct and varied habitat types and species assemblages. PMNM constitutes a remarkable example of ongoing evolutionary and biogeographical processes as illustrated by its exceptional ecosystems, speciation from single ancestral species, species assemblages and very high degree of marine and terrestrial endemism. As many species and habitats remain to be studied in detail these numbers are likely to rise. Because of its isolation, scale and high degree of protection the property provides an unrivalled example of reef ecosystems which are still dominated by top predators such as sharks, a feature lost from most other island environments due to human activity.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodviersity and threatened species

The terrestrial and marine habitats of PMNM are crucial for the survival of many endangered or vulnerable species the distributions of which are highly or entirely restricted to the area. This includes the critically endangered Hawaiian Monk Seal, four endemic bird species (Laysan Duck, Laysan Finch, Nihoa Finch and Nihoa Millerbird, and six species of endangered plants such as the Fan Palm. PMNM constitutes a vital feeding, nesting, and nursery habitat for many other species including seabirds, sea turtles and cetaceans. With 5.5 million sea birds nesting in the monument every year and 14 million residing in it seasonally it is collectively the largest tropical seabird rookery in the world, and includes 99% of the world's Laysan Albatrosses (vulnerable) and 98% of the world's Black-footed Albatrosses (endangered). Despite relatively low species diversity compared to many other coral reef environments, the property is thus of very high in situ biodiversity conservation value.

IUCN considers that the nominated property meets this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision in relation to the natural elements of the property. Considering the property is nominated as a mixed property, IUCN will integrate this recommendation with that of ICOMOS, as appropriate, considering the view ICOMOS takes in relation to the cultural values of the property.

IUCN recommends that the World Heritage Committee adopt the following decision:

The World Heritage Committee,

1. Having examined Documents **WHC-10/34.COM/8B** and **WHC-10/34.COM/INF.8B2**,

2. Inscribes **Papahānaumokuākea Marine National Monument, Hawai'i, USA** on the World Heritage List under natural criteria (**viii**), (**ix**) and (**x**);

3. Adopts the following Statement of **Outstanding Universal Value**:

Brief synthesis

Located between in the north-central Pacific Ocean, Papahānaumokuākea: Marine National Monument Hawai'i (PMNM) extends almost 2000 km from southeast to northwest. It makes up a significant portion of the Hawai'i-Emperor hotspot trail, constituting an outstanding example of island hotspot progression. Much of the monument is made up of pelagic and deepwater habitats, with notable features such as seamounts and submerged banks, extensive coral reefs, lagoons and 14 km^2 emergent lands distributed between a number of eroded high islands, pinnacles, atoll islands and cays. With a total area of around 362,075 km2 it is one of the largest marine protected areas (MPAs) in the world, and is unique among large-scale MPAs in that all forms of use, including non-extractive use, are regulated and highly restricted throughout.

The geomorphological history and isolation of the archipelago have led to the development of an extraordinary range of habitats and features, including an extremely high degree of endemism. Largely as a result of its isolation marine ecosystems and ecological processes are virtually intact, leading to exceptional biomass accumulated in large apex predators. Island environments have, however, been altered through human use, and although some change is irreversible there are also examples of successful restoration. The area is host to numerous endangered or threatened species, both terrestrial and marine, some of which depend solely on PMNM for their survival.

Criteria

***Criterion (viii)**: The property provides an illustrating example of island hotspot progression, formed as a result of a relatively stationary hotspot and stable tectonic plate movement. Comprising a major portion of the world's longest and oldest Volcanic chain, the scale, distinctness and linearity of the manifestation of these geological processes in PMNM are unrivalled and have shaped our understanding of plate tectonics and hotspots. The geological values of the property are directly connected to the values in Hawaii Volcanoes National Park and World Heritage property and jointly present a very significant testimony of hotspot volcanism. The property includes a significant portion of the largest and oldest feature of its kind, including the world's northernmost true atoll.*

***Criterion (ix)**: The large area of the property encompasses a multitude of habitats, ranging from 4,600 m below sea level to 275 m above sea level, including abyssal areas, seamounts and submerged banks, coral reefs, shallow lagoons, littoral shores, dunes, dry grasslands and shrublands and a hypersaline lake. The size of the archipelago, its biogeographic isolation as well as the distance between islands and atolls has led to distinct and varied habitat types and species assemblages. PMNM constitutes a remarkable example of ongoing evolutionary and biogeographical processes as illustrated by its exceptional ecosystems, speciation from single ancestral species, species assemblages and very high degree of marine and terrestrial endemism. For example, a quarter of the nearly 7,000 presently known marine species in the area are endemic. Over a fifth of the fish species are unique to the archipelago while coral species endemism is over 40%. As many species and habitats remain to be studied in detail these numbers are likely to rise. Because of its isolation, scale and high degree of protection the property provides an unrivalled example of reef ecosystems which are still dominated by top predators such as sharks, a feature lost from most other island environments due to human activity.*

***Criterion (x)**: The terrestrial and marine habitats of PMNM are crucial for the survival of many endangered or threatened species the distributions of which are highly or entirely restricted to the area. This includes the critically endangered Hawaiian Monk Seal, four endemic bird species (Laysan Duck, Laysan Finch, Nihoa Finch and Nihoa Millerbird, and six species of endangered plants such as the Fan Palm. PMNM constitutes a vital feeding, nesting, and nursery habitat for many other species including seabirds, sea turtles and cetaceans. With 5.5 million sea birds nesting in the monument every year and 14 million residing in it seasonally it is collectively*

the largest tropical seabird rookery in the world, and includes 99% of the world's Laysan Albatrosses (vulnerable) and 98% of the world's Black-footed Albatrosses (endangered). Despite relatively low species diversity compared to many other coral reef environments, the property is thus of very high in situ biodiversity conservation value.

Integrity

The boundaries of the property are all located in the ocean, but nevertheless have been clearly defined, demarcated on navigational charts and communicated widely. The large size of the property ensures inclusion of a wide variety of habitat types, including a highly significant area of marginal reef environment as well as submerged banks and deepwater habitat. It also ensures a high degree of replication of habitat type. Although past use has altered some terrestrial environments the property is still predominantly in a natural state: its nature conservation status is exceptional. This is largely due to its isolation as well as a combination of management and protection efforts, some dating back more than 100 years, including national natural resource protection legislation as well as internationally adopted restrictions. The integrity of the property and its ecological processes are in excess of most other island archipelagos and most other tropical marine environments in the world.

Management and protection requirements

PMNM is a highly protected area established through Presidential Proclamation in 2009, which adds to pre-existing state, federal and international legal mandates that govern management of spatially defined areas, species, or provide overarching regulations on environmental protection. Management responsibilities rest with three co-trustees: the State of Hawai'i, the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration. The co-trustees have entered into a Memorandum of Agreement setting out mechanisms for managing PMNM, including roles and responsibilities, decision making and coordinating bodies.

The multiple jurisdictions have created a complex institutional environment for management of the property, but management planning and intervention practices are well conceived. In view of the threats facing the property, almost all of which originate outside its boundaries, multi-agency involvement and participation, if governed well, is a strength provided the complexity does not compromise operational capacities and the ability to quickly respond to challenges.

Management aims, objectives and jurisdictions are laid out in a Monument Management Plan which includes strategic objectives and detailed thematic action plans that address priority needs. It is important that these efforts are sustained with the aim to increase streamlining, including of mechanisms for supporting monument activities, stakeholder participation and outreach.

Threats to the property emanating outside its boundaries include marine litter, hazardous cargo, future exploration and mining, military operations, Illegal, Unregulated and Unreported (IUU) fishing, commercial fishing, anchor damage, vessel strikes and Invasive Alien Species.

4. Commends the State Party on the on-going comprehensive management efforts and encourages the State Party to continue and intensify efforts to address the threats to the property emanating outside its boundaries, including marine litter, hazardous cargo, future exploration and mining, military operations, Illegal, Unregulated and Unreported (IUU) fishing, commercial fishing, anchor damage, vessel strikes and Invasive Alien Species, through consultation, collaboration and development and implementation of appropriate strategies nationally and, as possible, internationally;

5. Also commends the State Party on the development of a consultation process between the Monument Management Board and the Department of Defense, encourages the State Party to further investigate opportunities for improved information sharing and coordination with the military in support of management efforts and urges the State Party to ensure that the military presence will not in any way affect the Outstanding Universal Value and the integrity of the property;

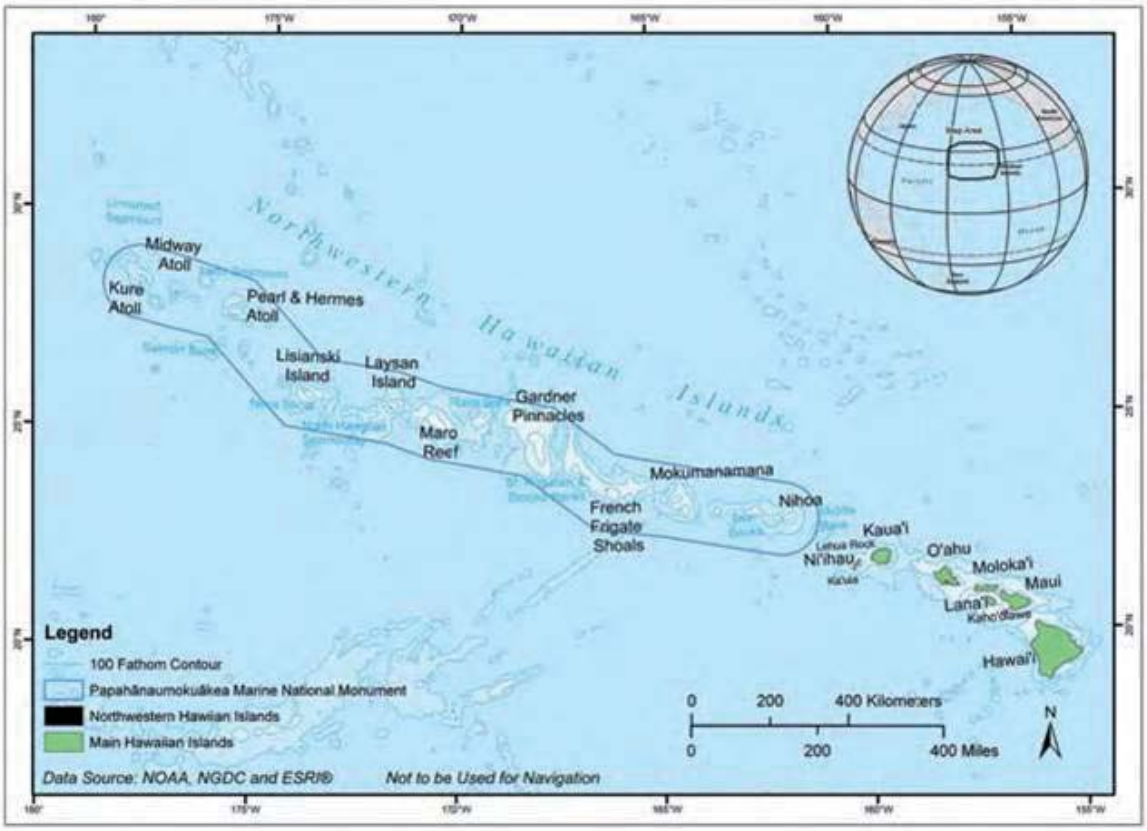
6. Recommends that research and awareness-raising should consider the geological linkages with the Hawaii Volcanoes National Park and World Heritage property;

7. Recommends that the State Party, through the co-trustee agencies and the Monument Management Board and in consultation and collaboration with relevant institutions and stakeholder groups, develop a response plans for the property related to climate change, in order to harmonize existing

agency plans and activities in a coherent framework that can further strengthen conservation and management efforts as well as generate information of importance beyond the property itself;

8. Welcomes the sister site agreement between the Governments of the United States of America and Kiribati on the management of PMNM and Phoenix Islands Protected Area respectively, and encourages State Parties to continue and, as possible, expand on this collaboration.

Map 1: Papahānaumokuākea Marine National Monument. Overview of the nominated area.



Map 2: Location of Papahānaumokuākea Marine National Monument.