The way how Marine Protected Area in Japan should be
～ to promote biodiversity conservation ～

Panel on Coastal Conservation and Management,
The Nature Conservation Society of Japan (NACS-J)

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Introduction – Why is the MPA discussion important in Japan ?

The discussion on Marine Protected Area (MPA) has recently drawn growing attention worldwide. Behind this development is, "Target 11" of the "Aichi Targets" (Strategic Plan 2011-2020), adopted in 2010 by the 10th Conference of the Parties of the UN Conservation on Biodiversity (CBD-COP10). This COP took place in Aichi, and thus Japan chaired the meeting. Target 11 states, "By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape."

In response to this, the Japanese government announced that "8.3 % of Japan's marine areas are designated as MPAs" (Headquarters for Ocean Policy 2011). Yet, many issues remain as to whether the area the government is calling MPA truly functions to conserve biodiversity and the natural ecosystem and allow sustainable marine resource uses. The Nature Conservation Society of Japan (NACS-J) set up a Panel on Coastal Conservation and Management to discuss these issues. As a result, two proposals were drawn up, Proposal 1 on reconstructing the MPA system and, as a result of an examination of necessary conditions for MPAs, Proposal 2 on prerequisites for MPA designation that would be desirable in future.

NACS-J strongly hopes that these proposals will result in the designation of more effective MPAs, which are fundamental to ensure the conservation and sustainable use of biodiversity.

Proposal 1: Revise the government's claim of 8.3 % MPA designation and reconstruct the MPA system so that it achieves biodiversity conservation

Many of the laws on which the government- bases its claims of MPA designation are not primarily concerned with biodiversity conservation. A large proportion of these purported MPAs, have as their legal basis on the Marine Fishery Resources Development Promotion Law and the Fisheries Act, which only consider commercial marine species and therefore, cannot be seen as strictly contributing to biodiversity conservation (see 'Background to Proposals 1 &2, section (7), Table 1-1, Table 2-2). Biodiversity conservation involves whole ecosystems, which consist of the environments of all species, including commercial marine species as well as many non-targeted species. Conserving biodiversity could ensure the existence of the commercial marine species, but conserving commercial species will not necessarily ensure survival of the entire ecosystem.

In addition to the questionable appropriateness of current MPAs for biodiversity conservation, the range of their objectives, regulatory targets, duration, and methods remain poorly defined. These need to be clarified in order to designate functional MPA.

We must consider the whole local marine ecosystem in order to conserve biodiversity and the natural environment. It is not possible for the government to claim that MPAs account for 8.3% of national marine area when the objectives of the MPA regulatory regimes are not necessarily biodiversity conservation. Therefore, the Japanese government should revise its view that it has secured an 8.3% MPA rate under the current system.

Thus, we would like to propose a reconstruction of the MPA system as described below.

1. Revision of the legal system

Among Japanese laws, the Natural Park Laws, Natural Monument Law (Law for the Protection of Cultural Properties), Nature Conservation Law, Wildlife Protection and Proper Hunting Act, and the Law for the Conservation of Endangered Species of Wild Fauna and Flora are the legal instruments that are primarily designed to conserve biodiversity and preserve nature. However, only a very small proportion of the 8.3%

that the government claims as MPA is governed by these laws.

On the other hand, the Marine Resources Development Promotion Act and Fisheries Act, which accounts for the lion's share of current MPAs, focus exclusively on commercial marine species. Thus, the great majority of current MPAs are not designated to conserve biodiversity. All of the laws under which MPAs are designated should be revised with biodiversity conservation as their main goal. This would allow the government to claim an MPA rate of 8.3 %.

2. Institutional collateral to facilitate MPA designation based on various types scientific evidences

The first requisite for designating MPA is scientific evidences; however, appropriate scientific evidence does not exist for present government-designated MPAs.

MPAs should be designated and regulated based on real data. Institutional collateral building, including legal reforms, will be needed before Japan will be able to designate MPAs based on scientific evidences. In this process, a system of adoptive management is recommended so that new data can be collected and the system revised accordingly.

Marine ecosystems, especially in coastal areas, are greatly influenced by terrestrial ecosystems. Hence, scientific evidence for MPA designation should include not only information on the coastal ecosystems themselves, but also on other essential on-land factors such as topography and, geological conditions, as well as on the biological communities of both the watershed and the seashore.

3. Institutional collateral to facilitate citizen participation

The process of choosing the present government-designated MPAs did not include citizen participation. The system for MPA designation must include consensus building involving a variety of actors, not only stakeholders and those with fishery rights.

Proposal 2: The Marine Protected Area (MPA) System envisioned by the Nature Conservation Society of Japan (NACS-J)

In pursuit of an appropriate revision of the current government MPA designation system, NACS-J would like to describe the goals we should adopt for the future. We believe an MPA designation system should fulfill the six requirements given below.

1) Designate the MPA based on scientific evidence

The first requisite for MPA designation is scientific evidence, and an ideal MPA should be designated and regulated on the basis of real scientific data. In addition, the studies and research on which the designation of protected areas is based should be made public. In cases where sufficient scientific data is unavailable, the designation and regulation of an MPA could be based on precautionary principle. In such cases, constant effort must be expended to undertake field studies, researches and other means of data collection.

Research results and witness records from ordinary citizens and NGOs are often neglected. When a scientific judgment is made for MPA designation, every piece of data, including those from citizens and NGOs, should be considered.

As noted above, marine, and especially coastal, ecosystems are influenced by conditions on adjacent lands, and so scientific data on both marine and terrestrial areas should inform the MPA designation process. Particularly, discussions of estuaries and the marine area surrounding them need to consider not only issues of landfill and construction of harbors and disaster-prevention structures, but also the effects of land-use in the watershed and river-spanning structures such as dams. In MPA implementation, regulations should also take into account a wide variety of contaminated materials of terrestrial origin, such as pollution run off from urban areas, agricultural lands, and industries.

2) Need for monitoring

Once the MPA has been set up, continuous monitoring is very important. Its impacts as well as its effectiveness need to be monitored constantly so that designation methods and the content of regulations can be revised. As in the MPA designation process, revisions must be based on scientific data from scientific surveys and research. Although continuous monitoring is financially burdensome, constant acquisition of data and analysis by experts together with advice and support from NGOs and local researchers are required, as is system that reflects these results in the form of MPA revision.

3) Participation of citizens in MPA designation

Consensus building with citizens is necessary in designating and managing an MPA. In most cases, it is not possible for the national government to manage the MPA in a comprehensive manner, and so local rules must exist to effectively conserve and utilize the MPA. In order to establish local rules, a system, that incorporates opinions from citizens and other various actors from the earliest stage is needed.

In addition, citizen-led monitoring should be encouraged, and the system must allow citizens to participate in monitoring studies undertaken by experts. One idea for supporting citizens' involvement in monitoring, is to staff Rangers and set up local facilities such as visitor centers.

Expanding the staff base for marine research is critical due to the limited numbers of staff capable of conducting marine research. A system for human resource development should be discussed, including possibilities for a system where Rangers at visitor centers, local key persons, and NGOs can teach ordinary citizens the importance of monitoring so that they will be motivated to participate in investigations. In cases where local NGOs are already present, these organizations could be also used for a range of other aspects.

Citizen's participation in and implementation of the results of monitoring studies can be achieved by taking local conditions into consideration and using various methods such as those described above. Our goal for the future is to build a mechanism to properly incorporate the results of citizen' monitoring into policies.

4) Habitats Awareness

In oceans, movements of water such as ocean currents, tidal streams, and sea tides are always present, shifting the sediments that compose coastal sands and mudflats. This applies to offshore and deep-sea areas as well. Organisms select their proper habitats in response to changes in their environment. The target of the protection provided by an MPA should be places defined as, "habitat", not individual organisms or communities. Such places can be designated for protection; however, because the movements of water, materials and the organisms themselves are much greater in marine ecosystems as compared with those on land. The habitat may superficially appear to be stable, but is actually in a state of dynamic equilibrium. This dynamic equilibrium is what needs to be maintained for true conservation of marine ecosystems. Therefore, the organisms and habitat conditions must be constantly monitored, and adoptive management carried out to maintain the dynamic equilibrium.

5) Borders and zoning meaningful to ecosystems

An MPA that effectively conserves marine ecosystems needs designated borders, that can minimize the adverse effects of the surrounding non-MPA on conditions in the MPA. Delineation of such borders should not be based on human convenience; MPA borders must be meaningful for the ecosystem, taking account of seawater movements, the distribution and migration patterns of organisms, and so on.

Proper zoning inside the MPA ensures protection of the targeted important natural ecosystems and allows the realization of sustainable use of natural resources and continuation of ecosystem services across the region. For example, "No Take Zones", strictly protect the area by eliminating the adverse effects of human activities as much as possible, and "Areas of sustainable use", allow for the sustainable use of natural resources. Zoning establishes internal divisions in the MPA by applying appropriate rules. Zoning is usually

applied in protected areas of terrestrial ecosystems.

However, several differences exist between marine and terrestrial ecosystems. For example, in terrestrial ecosystems, relatively clear borders can be drawn to distinguish a protected area from the surrounding area such as a catchment. For marine ecosystems, however drawing boarders on a map is not an easy way to clearly distinguish a certain marine area from its surroundings.

Designating borders and zoning should be carried out using the methods most effective for marine ecosystems, based on scientific data such as sea water movements, the distribution and migration patterns of organisms and so on.

6) Creating an MPA network

Even if MPAs that are effective in themselves were established, MPAs that exist in isolation do not function well to conserve biodiversity. The seas surrounding the Japanese islands have significantly high levels of marine biodiversity due to the presence of convergences of cold and warm currents. At the same time, there is a high proportion of species that do not carry out reproduction in waters close to the islands. In view of the life history of such species and their diffusion methods and pathways, connecting MPAs through multiple networks is absolutely imperative in order to maintain marine species diversity.

In addition, the requirements of meta-populations needs to be considered in conserving habitats and protecting marine organisms because these creatures live in dynamic marine environments. For effective conservation, MPA should be designated at source habitats where major reproduction occurs, rather than at sink habitats where reproduction events are irregular.

Case study:

Currently in Japan, as a result of coastal development, remnant mudflats largely exist in isolation in the estuarine regions of several rivers. More than 90 percent of mudflats have been lost due to human activities, and thus only a few exist in isolation in inner bays. In this situation, designating one isolated mudflat for an MPA will not suffice to protect the organisms and unique communities of mudflats, significantly elevating the risk of extinctions occurring. Many mudflat organisms release planktonic larva that move offshore through estuarine circulation and in time they ride undercurrents to move back to the mudflats to settle. However, this larva supply system has been disrupted in many places, and these organisms' communities are shrinking or going extinct. In such a case, protecting only the mudflat area in the upper bay, however valuable, will not ensure replenishment of mudflat biota. Because many larvae are released from source habitats, networks of protected areas centered on these source habitats are fundamental.

Background to Proposals 1 and 2

1) International and domestic trends in the MPA discussion

Discussions on Marine Protected Area (MPA) have recently drawn growing attention worldwide. In the United Nations Convention on the Law of the Sea (in force since1994, ratified by Japan in 1996), regulations concerning the protection and conservation of marine environments include a measures to protect and conserve habitats of marine organisms. More detailed discussions on MPA include, a resolution on MPA design and MPA networks was adopted at the World Summit on Sustainable Development in 2002, and in 2003, a resolution to build networks of marine and coastal protected areas by 2012 was adopted at the G8 Evian Summit in Sommet, France. At the 2010 Conference of the Parties 10 (COP10) of the Convention on Biological Diversity (CBD), at which Japan was a chair country, the "Aichi Targets" (Strategic Plan 2011-2020) were adopted, stating, "10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved… through well connected systems of protected areas and other effective area-based conservation measures" (See the box below for the full text of Target 11).

CBD-COP10 Aichi Target: Target 11

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

In light of these international trends, the Japanese government, having therefore delayed the discussions on establishing domestic MPAs, finally announced that, *"As one of the means to ensure the biodiversity and realize sustainable use of fishery resources, the government should, in accordance with the Convention on Biological Diversity and other international agreements, clarify how to establish marine protected areas in Japan under coordination between related ministries and appropriately promote the establishment thereof"* in its Basic Plan on Ocean Policy adopted in 2008. In response, Japan's Ministry of the Environment published the "Marine Biodiversity Conservation Strategy of Japan" and drew up a definition of Japanese MPA with reference to the international MPA described by the International Union for Conservation of Nature (ICUN) and the CBD.

2) Definitions of MPA and related issues

Japan's Ministry of the Environment (MoE) did define Japanese "MPA" with reference to the definitions adopted by the IUCN and the CBD. These three definitions are presented in the box below.

①**IUCN's definition of a Marine Protected Area (IUCN Resolution 1946, 1994)**

"Any area of intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment"

This definition was revised in 2008, and the new definition has been applied to terrestrial, freshwater, coastal and marine ecosystems, with detailed guidelines for each category of ecosystem.

The new definition: A protected area is *"a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values."*

②**The CBD's definition is of a Marine and Coastal Protected Area (COP7 Decision VII/5. 2004)**

The CBD definition is of "Marine and Coastal Protected area (MCPA)", instead of MPA.

"any confined area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna, and historical and cultural features, which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings."

③The MoE definition of a Marine Protected Area (Ministry of the Environment, Japan 2011, Marine Biodiversity Conservation Strategy)

"Marine areas designated and managed by law or other effective means, in consideration of use modalities, aimed at the conservation of marine biodiversity supporting the sound structure and function of marine ecosystems and ensuring the sustainable use of marine ecosystem services."

However, the MoE definition of MPA differs from the IUCN and CBD definitions. The continuing discussion on protected area establishment needs to address existing, domestic regulations, and management plans for resources such as fisheries and minerals. In this context, issues are being raised in Japan as to whether the present MoE's definition will really contribute to biodiversity conservation. Two of these issues are summarized below.

Issue 1: As we can assume that harvesting the biodiversity resource is included in "sustainable use of marine ecosystem services," stating this as a parallel objective on a par with biodiversity conservation could obscure the true meaning of "protected area." The term "sustainable use of marine ecosystem services" needs to be clarified so that use can only occur when the biodiversity has been adequately secured.

Issue 2: The use of a conditional statement such as "in consideration of use modalities" as part of the definition could limit the scope of protected areas, since such considerations could result in areas, already in use being excluded from protection. In fact, consultations with fishery unions and other port-related stakeholders in the process of designing marine areas as parts of national or quasi-national parks have resulted in the exclusion of such areas from protected zones. The MPA definition must provide for the incorporation of areas currently being used into protected areas through combinations of various regulations and zoning regimes.

3) Identifying ecologically and biologically important areas as the foundation for designating MPA

Identifying ecologically and biologically important areas is fundamental in designating protected areas. At the CBD-COP9, scientific criteria were adopted for identifying areas appropriate for protection (See box below). Marine areas in Japan should also be identified in the light of these criteria, and the threats and risk factors should also be identified for each. At the same time, one major challenge is that sufficient scientific data collection and assessment with respect to coasts and oceans in Japan has not yet been carried out, compared to what has been done for terrestrial ecosystems. In addition, as all these ecosystems exist in continuity, protection needs to be extended to open ocean waters and deep-sea areas.

Resolution regarding ocean and coastal protected areas (CBD-COP9 Decision IX/20)

Scientific criteria for identifying ecologically or biologically significant marine areas in need of protection in open-ocean waters and deep-sea habitats:

1. Area contains either (i) unique ("the only one of its kind"), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features *(Uniqueness or rarity)*
2. Areas that are required for a population to survive and thrive *(Special importance for lifehistory stages of species)*
3. Areas containing habitat for the survival and recovery of endangered, declining species or area with significant assemblages of such species *(Importance for threatened, endangered or declining specie and/or habitats)*
4. Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible or degradation or depletion by human activity or by natural events) or with slow recovery *(Vulnerability, fragility, sensitivity, or slow recovery)*
5. Area containing species, populations or communities with comparatively higher natural biological productivity *(Biological productivity)*
6. Areas contain comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity *(Biological diversity)*
7. Area with a comparatively higher degree of naturalness as a result of the lack of r low level of human-induced disturbance or degradation *(Naturalness)*

4) MPA Design – spatial design and zoning

The spatial design of the MPA must consist of borders that are ecologically meaningful, as opposed to administrative boundaries or lines of latitude and longitude. A bioregion that forms the basis for designing a protected area, must be large enough to maintain the integrity of the region's biological communities, habitats, and ecosystems, and to support important ecological processes, such as the nutrient, waste and, water cycles and seasonal migration of organisms (WRI, IUCN, UNEP, 1992). The CBD defined MPA as an area where the "marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings." Thus the design of the MPA needs to be based on scientific data and it should aim to effect secure habitats for rare species and restoration of marine resources. Zoning design inside the protected area is crucial if it is to fulfill its functions; it also contributes to making borders ecologically meaningful.

The concepts used in Man and Biosphere (MAB) zoning of, setting core areas, buffer zones, and transition zones, can also apply to protected areas of ocean. However, the movements of water and the distribution and migration patterns of marine organisms are more complicated than in terrestrial ecosystems, and so methods should be adopted that are the most effective for zoning marine ecosystems. For example, in order to defend protected areas from the effects of soil erosion, agrichemical runoffs, and abnormal outbreaks of predatory organisms, all of which easily move with water, relatively large buffer zones are required.

In addition, regulations are needed that can prohibit the construction of structures in the upper reaches of rivers or enforce other requirements when necessary. Transition zones, which allow for sustainable human activities such as environmentally friendly fisheries, should be located in areas that surround core areas in order to ensure core area protection (Figure 2).

Zoning of Biosphere Reserve described in the Man and Biosphere (MAB) Program

The objectives of the zoning proposed in UNESCO's MAB Program are to ensure the protection of nature and to realize the sustainable use of natural resources on a regional basis. The zoning consists of three zones: core areas – areas that require strict protection for biodiversity; buffer zones – areas that prevent negative impacts on the core areas from outside and maximizes biodiversity services from the core areas; transition zones – areas that allow for the sustainable use of biological resources and ecosystem services. The core areas are surrounded by the buffer zones, and the transition zones encircle the core areas and buffer zones.

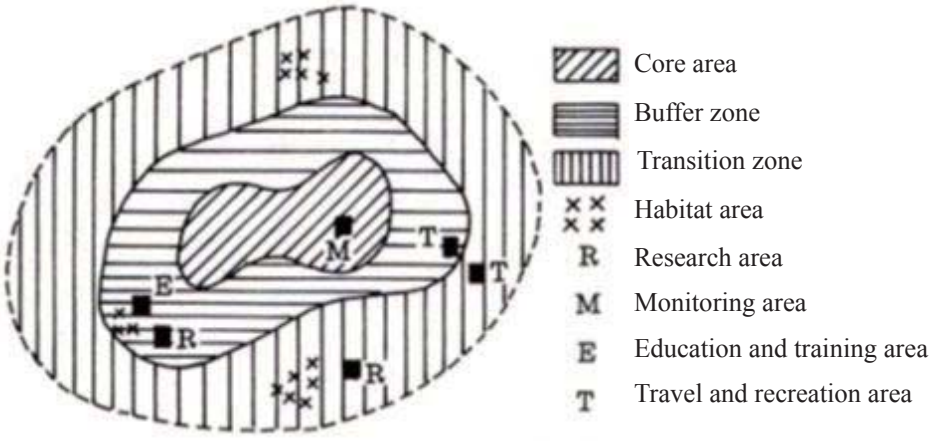

Figure 1 Conceptual diagram a core area, buffer zone and transition zone
(UNESCO International Co-coordinating Council of the MAB Program 1987)

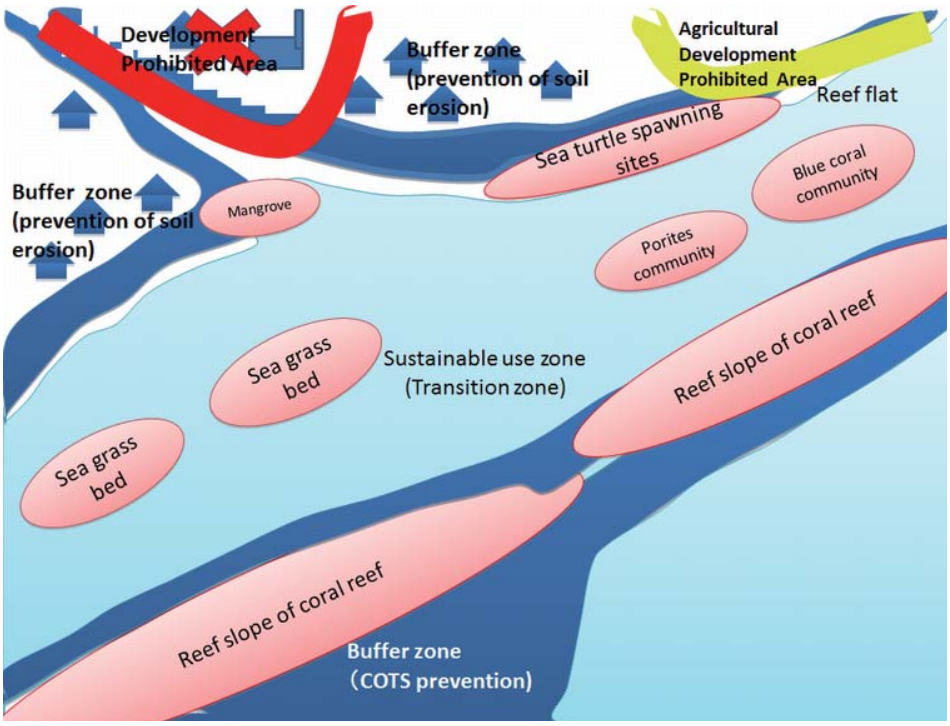

Figure 2 Conceptual diagram of zoning for marine protected areas

5) MPA networks and integrated coastal management

IUCN notes that MPA networks are needed because, "A collection of individual marine protected areas operating cooperatively and synergistically, at various spatial scales, and with a range of protection levels, in order to fulfill ecological aims more effectively and comprehensively than individual sites could alone. The network will also display social and economic benefits, though the latter may only become fully developed over long time frames as ecosystems recover" (WCPA/IUCN, 2006). At the CBD-COP9, a document providing scientific guidance for building major MPA networks was adopted as an annex to Resolution IX/20. Starting in 2011, Japan's Ministry of the Environment initiated a discussion to select of important marine areas. However, there is not enough scientific information available on Japanese sites to gauge compliance with IUCN's scientific guidance.

Resolution regarding ocean and coastal protected areas (CBD-COP9 Decision IX/20)

Scientific guidance for selecting areas to establish a representative network of marine protected areas, including in open ocean waters and deep-sea habitats:

1. *Ecologically and biologically significant areas*
2. *Representativity*
3. *Connectivity*
4. *Replicated ecological features*
5. *Adequate and viable sites*

Four initial steps to be considered in the development of representative networks of marine protected areas:

1. *Scientific identification of an initial set of ecologically or biologically significant areas*
2. *Development/choose a biogeographic, habitat, and/or community classification system*
3. *Drawing upon steps 1 and 2 above, iteratively use qualitative and/or quantitative techniques to identify sites to include in a network*
4. *Assess the adequacy and viability of the selected sites*

To establish an MPA network of organisms and ecosystems, the entire coastal area must be viewed in a comprehensive way. Whether a protected area is on land or sea, what matters is not its administrative boundaries, but whether or not its designation is truly meaningful from ecological point of view.

6) Reasons why Japan needs MPAs in marine and coastal areas:

①Considerable destruction of Japanese coastal areas has already occurred (Statistics below from the 5th National Survey on the Natural Environment)

- 47 % of Japanese coastlines (15,075km) have been transformed into artificial or semi-natural coastlines.
- The 80,000 ha of mudflats extant in 1945 have been reduced to 49,380ha (65%).
- Seagrass and algae beds currently cover 26,000ha and 140,000ha, respectively. Data show a decrease of 3% between 1978 and 1994.
- Coral reefs cover 33,000ha. Data show a decrease of 4% between 1976 and 1994. The island of Okinawa has experienced a greater decline of 15%.

② Unsatisfactory status of the current system of marine protected areas

- Sakiyama Bay on Iriomote Island is the only area designated as a natural reserve that corresponds to IUCN Protected Area Management Category I (section18, table2). Quasi-national parks that might possibly be classified as corresponding to IUCN Protected Area Management Category II only account for 0.05% of the area of marine parks and 0.01% of the area of Japan's territorial waters.
- In terms of ecosystems, 42.9% of coral reefs and 44.8% of seagrass beds are included in quasi-national parks; however, only 1.7% of the coral reefs and 0.2% of seagrass beds are included in marine parks. In addition, only 7.3% of mudflats are included in quasi-national parks, though only an insignificant percent is included in marine parks.
- Habitat protected areas that may possibly be classified under IUCN Protected Area Management Category IV, include those protected, under the Endangered Species Preservation Act, but at present there are only 9 such areas designated to protect 7 species, accounting for 885ha (385ha of which are in management areas where water body reclamation is prohibited). None of these were designated as habitat for marine organisms.
- There are 73 nationally managed quasi-national wildlife sanctuaries based on the Wildlife Protection and Hunting Law covering 3,650,000ha, as well as 3,815 quasi-provincial wildlife sanctuaries (managed by local governments) covering 3,093,000ha; together they cover 3.65 million ha (9% of national area). However, special protection zones such as those that prohibit water body reclamation account for only 295,000ha in total (0.8% of national area), with 146,000ha in quasi-national wildlife sanctuaries and 149,000ha in quasi-provincial wildlife sanctuaries. Almost none of these sanctuaries contain marine area.

As described above, many important ecosystems and much of the biodiversity in Japanese coastal areas are not included in protected areas governed by current laws and therefore stand in need effective conservation in MPAs that are part of marine parks. MPA designation is also needed to improve the management of fishery stocks in order to restore depleted resources and enable sustainable use.

7) Is Japan's currently-claimed MPA area of 8.3% truly MPA?

The Ministry of the Environment formulated its "Marine Biodiversity Conservation Strategy of Japan" in March, 2011 and in May reported on the "designation of marine protected areas in Japan" to the cabinet. By designating "Marine Protected Area" as defined in this strategy, an estimate based on various types of zones regulated by various government bodies amounting to 369,200km2 was calculated (See Table 1). This figure accounts for approximately 8.3% of Japan's territorial waters and exclusive economic zone (EEZ).

NACS-J has plotted the MoE's MPAs in each regulatory zone onto a digital map using GIS wherever possible (See 20-21, figures 3 and 4). Fishery rights zones were not plotted, as they occupy almost all coastal area.

As represented in Figure 3, many MPAs are in coastal development zones designated under the Marine Fishery Resources Development Promotion Law. Thus there remains considerable doubt as to whether these MPA designations were determined on the basis of their scientific importance for biodiversity.

Figure 4 shows Japan's territorial waters, exclusive economic zone, nature conservation areas, wildlife sanctuaries, and marine areas in natural parks. As can be seen, protected areas account for only a tiny proportion of Japan's territorial waters and EEZ. Here follows a more detailed list of issues bearing on Japan's current MPA .

Main issues

①Of the current 8.3% of marine area designated by the government as "MPAs," 6.9 % are"Designated sea areas" under the Marine Fishery Resources Development Promotion Law (1971), which promotes rationalization

of the use and development of fishery resources.

The same law also defines “Development zones for coastal fishery resources” (in which development such as altering and excavating the sea bed is prohibited), but such zones have been designated in only four prefectures, and its requirements regarding notification off development, advisory reports and control effects are unclear. It went into effect in 1971 and such “Designated sea areas” were indicated at that time, but since then no new important marine areas have been added. Moreover, prefectural governments, which are responsible for ‘Designated sea areas,’ have insufficient institutional capacity to regulate or manage these areas. Most importantly, this law is not designed to conserve biodiversity primarily intended for biodiversity conservation as its main objective.

②The types of protected areas under Japanese legislation that could be appropriate for MPA designation as understood by the international community or in reference to IUCN guidance are : quasi-national marine park areas (Natural Park Law), special marine zones in nature conservation areas (Nature Conservation Law), special protection zones for national wildlife sanctuaries (Wildlife Protection and Proper Hunting Act), natural treasure designated habitats (Law for the Protection of Cultural Properties), and protected water surface areas (Act on the Protection of Fishery Resources). These types of protected areas are, however, confined to coastal waters, with a total area accounting for less than 0.02% of territorial waters and the EEZ. This proportion would increase to 0.43% if ordinary zones of quasi-national parks were considered as MPA; however, regulation of ordinary zones is quite lax with respect to development, requiring only notification that development will occur.

The areas in most need of protection are the currently remaining coastal areas that have, escaped development pressure, and offshore areas that have, suffered few impacts from development and still remain as intact natural environments. Stricter MPA must be actively designated to prevent further adverse impacts of development in such areas.

③Zones subject to common fishery rights (under the Fisheries Act) occupy most of Japan’s coastal area and so it is unclear how the Ministry of the Environment has distinguished the area of MPAs that fall into these zones in its calculations. Although cases exist where fishery operators regulate and manage their use of resources wisely on their own initiative, common fishing rights zones are normally subject to harvest regulations based on fishery rights that have been set with the aim of promoting the fishery. Discussion is required to clarify whether or not these zones conform to IUCN Protected Area Management Category VI (Protected area with sustainable use of natural resources). If zones subject to common fishery rights were to be a part of MPA, fishery resources management regulations would need to be revised in order to promote designation of protected areas (e.g., No-take zones) and plans would be needed for resource management inside these zones. Specifically, tougher limits would have to be imposed by regulating on fishery resources, and conservation of biodiversity would have to be internalized by stakeholders so that they undertake voluntary efforts in order to ensure the effectiveness of the protected areas.

MPA establishment has lagged behind in Japan because both institutional design and sufficient legal basis for MPA are absent. On this background, what we appear to have is MPA for the mere purpose of approaching Aichi target 11, MPA of 10%, adopted by CBD-COP10, resulting in the government’s claim that areas designated under these several laws are MPA, in spite of the fact that some of these laws impose regulations that are of doubtful effectiveness for conservation and sustainable use of biodiversity.

Of course MPA can exist in many different forms, but ; the issue at hand is that the purpose of the protected areas and their size, regulation details, duration and management methods are presently unclear. In designing MPA, these issues must be clarified and consensus built among residents and society.

==== note ==========

Article 12 of this law defines these “Designated sea areas” is as follows: (unofficial translation) “Certain marine areas not included in Development zones can be designated by government ordinance as areas of high utility as fishing grounds due to advantageous natural circumstances of seabed topography, ocean currents, distribution of prey organisms, etc., and also areas that occupy an important position in terms of the fisheries industry.”

Table 1- 1: Areas of MPA designated under existing legislation(Part 1)

① MPA designated under laws designed for the protection of natural landscapes

Protected area (Legal institution)	Zone type	Status & extent of MPA designation	Area size (km2) up to two decimal points	Percent of terrestrial waters/EEZ
Natural park (Natural Park Law)	Marine park zone (former "underwater park")	National Park: 12 parks, 15,773ha Quasi-National Park: 15 parks, 1,994ha	177.67	0.004
	Ordinary zone	National park: 15 parks, 1,425,627ha Quasi-National Park: 25 parks, 418,406ha	18,440.33	0.4125
Natural seashore conservation area (Law Concerning Special Measures for Conservation of the Environment of the Seto Inland Sea)	Natural seashore conservation area	91 areas (designated under prefectural ordinances)	Area sizes unclear due to local government designation	Unclear

② MPA designated under laws designed for the protection of natural environments, habitat and breeding grounds

Nature Conservation Area (Nature Conservation Law)	Special marine zone	1, 128ha	1.28	0.00003
	Ordinary zone	None	-	-
Wildlife Sanctuaries (Wildlife Protection and Proper Hunting Act)	Special protection zone	Nationally designated: 12 areas, 20,747ha	207.47	0.0046
	Special protected designated zone	None	-	-
	Wildlife sanctuaries	Nationally designated: 14 areas, 28,207ha	282.07	0.0063
Habitat protection (Law for the Conservation of Endangered Species)	Management zones	None	-	-
	Off-limits zones	None	-	-
	Monitoring zones	None	-	-
National Treasure (Law for the Protection of Cultural Properties)	Designated wild habitats and locally designated areas	Designated habitats: 10, one marine area for plant species	Area size is unclear	Unclear

③ MPA designated under laws designed for the protection and propagation of aquatic organisms

Protected water surface (Act on the Protection of Fishery Resources 1951)	Protected water surface areas	55 areas, 2,948ha	29.48	0.0007
Development areas for coastal marine resources, Designated SEA areas (Marine Resources Development Promotion Act 1971)	Development zones for coastal marine resources	Hokkaido, Ishikawa, Shimane, Oita	223.97	0.005
	Designated sea areas		309,912.90	6.9332
Areas designated by prefectures and fishermen's groups (warrant system※)			Area unclear	Unclear
	No-Take zone		Area unclear	Unclear
Zones for common fishery rights (Fisheries Act 1949)	Regulated fishing (zones, period, fishing methods, number of vessels etc.)	Coastal areas	89,587.16	2.0042
		Total	418,862	9.3705

Materials published by the Ministry of the Environment in May, 2011:
Among the existing institutions as described above, geographical information is available for the natural parks, nature conservation areas, wildlife sanctuaries, protected water surface areas, zones for common fishery rights, designated sea areas and development zones for coastal resources. Calculations by the MoE of their total sizes excluding overlapping areas resulted in approximately 369,200km2, accounting for 8.23% of Japan's territorial areas and exclusive economic zones* (EEZ).
Verification of the calculation:
Territorial areas (including inland water) + EEZ = 4470,000 km2 (Japan Coast Guard: A)
Total areas excluding the overlapping areas = 369,200 km2 (B)
B/A* = 8.259%

*the total values of A and B include overlapping areas.
*area size was reported as of April, 2012, obtained from <http://www.env.go.jp/park/doc/data/index.html>

Table 1- 2: Objectives and aims of laws governing MPA (Part 2)

①Law for the protection of natural landscapes

Zones (legal institution)	Objectives for the designation of zones	Main contents of regulations
Natural park (Natural Park Law)	Ensure biological diversity through the protection of natural landscapes and promotion of their use	・Regulate development activities such as land changes (notification only required for ordinary zones) ・Regulate harvesting for marine park zones (permission required) ・Create special zones for brackish waters (permission required)
Natural seashore conservation area (Law Concerning Special Measures for Conservation of the Environment of the Seto Inland Se)	・Maintain the natural status and conserve seashores suitable for sea bathing and clamming ・Ensure the conservation and appropriate use natural seashores	・Regulate development activities such as building construction, changes in topography, mineral mining and quarrying (notification to prefectural governments required)

②Laws for the protection of natural environments and habitats and breeding grounds

Nature Conservation Area (Nature Conservation Law)	Conserve natural environments	・Regulate development such as topographical changes (notification required for ordinary zones) ・Regulate harvesting in marine special zones (permission required)
Wildlife Sanctuary (Wildlife Protection and Proper Hunting Law)	Protect wildlife	・Regulate hunting ・Regulate development such as building construction in special protected zones: regulation of the use of power-driven vessels added to provisions for special protected zones
Habitat protection (Law for the Conservation of Endangered Species)	Preserve domestically rare species	・Regulate development in monitoring zones (notification required) ・Regulate development (permission required), regulate harvest of designated species and use of power-driven vessels in management zones. Prohibit entrance in off-limit zones
National Treasure (Law for the Protection of Cultural Properties)	Protect scientifically important animals, plants and minerals	・Regulate changes in the current status and other activities that could impact the preservation of targeted properties (permission required)

③Laws for the protection and propagation of aquatic organisms

Protected water surface areas (Act on the Protection of Fishery Resources 1951)	Protect and propagate aquatic plants and animals	・Regulate development such as land fill and dredging areas of water important for spawning and larval growth (permission required) ・Regulate harvest of designated aquatic plants and animals
Development areas for coastal marine resources, Designated sea areas (Marine Resources Development Promotion Act 1971)	Promote development and utilization of marine fishery resources by taking measures to promote breeding and aquaculture of marine plants and animals	・Regulate development activities such as excavation and other changes in the sea bed (notification required to prefectural governor or Minister of Agriculture, Forestry and Fisheries) ・Prefectures formulates "development plan for coastal marine resources"
		・Designate fishing grounds of high utility due to advantageous natural circumstances of seabed topography, ocean currents, distribution of prey organisms, etc., and also areas that occupy an important position in terms of the fisheries industry. government ordinance
Areas designated by prefectures, fishermen's organizations, etc. (warrant system※)	Protect and propagate aquatic plants and animals, ensuring sustainable use	Regulate harvest of designated aquatic plants and animals
	※warrant system: No-Take Zones (Fisheries Act and Act on the Protection of Fisheries Resources), fishing cooperatives' voluntary efforts to manage resources in designated areas (Fisheries Cooperative Law)	
Zones for common fishery rights (Fisheries Act 1949)	Promote development of fisheries' productive capacity (ensure sustainable use through protection and propagation of aquatic plants and animals)	・Regulate harvest of aquatic plants and animals (zones, periods, fishing methods and number of vessels) through an exercise of fishing rights (prefectural governor's approval required) ・Regarding crimes of infringement on fishing rights by third parties, apply real rights in filing claims, and rights to claim damages or losses.

Reference materials published by the Ministry of the Environment, May, 2011:
With respect to the existing legal institution described above, geographical information is available for natural parks, nature conservation areas, wildlife sanctuaries, protected water surface areas, zones for common fishery rights, designated sea areas and development zones for coastal resources. Calculation of their total sizes excluding overlapping areas by the MoE resulted in approximately 369,200km2, accounting for 8.23% of the territorial areas and exclusive economic zones* (EEZ).
*created with reference to material published by the Ministry of the Environment "Materials regarding designation and administrative operation of national and national parks and quasi –national parks" (2007)

①Law for the protection of natural landscapes

Protected Area Zones (Legal instrument)	Plan Type	Regulation system	Subjects of regulation				Clearing authority
			Development	Hunting/ Fishing	Harvesting	Others	
Marine park zone (formerly " underwater park") (Natural Park Law, NPL)	Park plan (entire park)	Permission	○	○	○	○ Polluted water e.g., sewage	Minister of the Environment Governor
Ordinary zones (NPL)		Notification	○				Minister of the Environment Governor
Natural seashore conservation area (Law Concerning Special Measures for Conservation of the Environment of the Seto Inland Sea)		Notification	○				Governor

②Laws for the protection of natural environments and habitats and breeding grounds

Special marine zones (Nature Conservation Law, NCL)	Conservation plan (entire region)	Permission	○	○			Minister of the Environment
Ordinary zones (NCL)		Notification	○	–	–		Minister of the Environment
Special protection zone (Wildlife Protection and Proper Hunting Law, WPL)	Designation protocol	Permission	○	–	–		Minister of the Environment Governor
Special protected designated zone (WPL)		Permission	○	○	○	○	Minister of the Environment Governor
Wildlife sanctuary (WPL)	Designation protocol	Permission	–	○	–		Minister of the Environment Governor
Management zones (Law for the Conservation of Endangered Species, LCES)	Management plan for protection and propagation	Permission	○	○	○	○	Minister of the Environment
Off-limit Zones		Entry Prohibited	–	–	–	○	Minister of the Environment
Monitoring zones (LCES)		Notification	○	–	–		Minister of the Environment
Designated wildlife habitats and locally designated areas (Law for the Protection of Cultural Properties)	Management for preservation	Permission	○	○	○	○	Chief of the Cultural Affairs Agency

③Laws for the protection and propagation of aquatic organisms

Protected water surface (Act on the Protection of Fishery Resources)	Management plant	Permission	○	○			Minister of Agriculture, Forestry and Fisheries Governor
Development areas for coastal marine resources (Marine Resources Development Promotion Act, MRDPA)	Development plan for coastal marine resources (prefectures)	Notification/ Advice	○				Minister of Agriculture, Forestry and Fisheries Governor
Designated sea areas (MRDPA)	Designated by ordinances	Notification/ Advice	○				Governor
		Regulation		○			Governor Fisheries Adjustment Commission
No-Take Zones (MRDPA)				○			Governor Fisheries Adjustment Commission
Regulated fishing area (zoning, period, fishing methods, number of vessels etc.) (Fisheries Act)				○		○ Fishery rights infringement	Governor Fisheries Adjustment Commission

Table 2: IUCN Protected Areas Management Categories

Explains IUCN Protected Areas Management Categories and shows applications of the categories in marine protected areas.

Category	Name	Purpose of management	IUCN Protected Area Management Category
I a	Strict Nature Reserve	Academic researches or protection of wilderness	Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.
I b	Wilderness Area	Protection of wilderness	Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition
II	National Park	Ecosystem protection and recreation	Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual scientific, educational, recreational, and visitor opportunities.
III	Natural Monument or Feature	Protection of special natural phenomena	Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. There are generally quite small protected areas and often have high visitor value.
IV	Habitat/Species Management Area	Conservation with management	Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.
V	Protected Landscape/ Seascape	Protection of landscape and recreation	A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction Isi vital to protecting and sustaining the area and its associated nature conservation and other values.
VI	Managed Resource Protected Area	Sustainable use of natural ecosystems	Category VI protected areas conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

Notes relating to use in MPAs
The objective in these MPAs is preservation of the biodiversity and other values in a strictly protected area. No-take areas/marine reserves are the specific type of MPA that achieves this outcome. They have become an important tool for both marine biodiversity protection and fisheries management (Palumbi2001; Roberts and Hawkins 2000). They may comprise a whole MPA or frequently be a separate zone within a multiple-use MPA. Any removal of marine species and modification, extraction or collection of marine resources (e.g., through fishing, harvesting, dredging, mining or drilling) is not compatible with this category, with exceptions such as scientific research. Human visitation is limited, to ensure preservation of the conservation values. Setting aside strictly protected areas in the marine environments of fundamental importance, particularly to protect fish breeding and spawning areas and to provide scientific baseline areas that are as undisturbed as possible. However such areas are extremely difficult to delineate (the use of buoys can act as fish-aggregating devices, nullifying the value of the area as undisturbed) and hence difficult to enforce. Whenever considering possible category Ia areas, the uses of the surrounding waters and particularly "up-current" influences and aspects of marine connectivity, should be part of the assessment criteria. Category Ia areas should usually be seen as "cores" surrounded by other suitably protected areas (i.e., the area surrounding the category Ia area should also be protected in such a way that complements and ensures the protection of the biodiversity of the core category Ia area).
Category Ib areas in the marine environment should be sites of relatively undisturbed seascape, significantly free of human disturbance, works or facilities and capable of remaining so through effective management. The issue of "wilderness" in the marine environment is less clear than for terrestrial protected areas. Provided such areas are relatively undisturbed and free from human influences, such qualities as "solitude", "quiet appreciation" or "experiencing natural areas that retain wilderness qualities" can be readily achieved by diving beneath the surface. The issue of motorized access is not such a critical factor as in terrestrial wilderness areas given the huge expanse of oceans and the fact that many such areas would not otherwise be accessible; more important, however, is minimizing the density of use to ensure the "wilderness feeling" is maintained in areas considered appropriate for category Ib designation. For example, fixed mooring points may be one way to manage density and limit seabed impacts whilst providing access.
Category II areas present a particular challenge in the marine environment, as they are managed for "ecosystem protection", with provision for visitation, recreational activities and nature tourism. In marine environments, extractive use (of living or dead material) as a key activity is generally not consistent with the objectives of category II areas. This is because many human activities even undertaken at low levels (such as fishing) are now recognized as causing ecological draw-down on resources, and are therefore now seen as incompatible with effective ecosystem protection. Where such uses cannot be actively managed in a category II area to ensure the overall objectives of ecosystem protection are met, consideration may need to be given to whether any take should be permitted at all, or whether the objectives for the reserve, or zone within the reserve, more realistically align with another category (e.g., category V or VI) and should be changed. The conservation of nature in category II areas in the marine environment should be achievable through protection and not require substantial active management or habitat manipulation.
The protection of natural monuments or features within marine environments can serve a variety of aims. Localized protection of features such as seamounts has an important conservation value, while other marine features may have cultural or recreational value to particular groups, including flooded historical/archaeological landscapes. Category III is likely to be a relatively uncommon designation in marine ecosystems.
Category IV areas in marine environments should play an important role in the protection of nature and the survival of species (incorporating, as appropriate, breeding areas, spawning areas, feeding/foraging areas) or other features essential to the well-being of nationally or locally important flora, or to resident or migratory fauna. Category IV is aimed at protection of particular species or habitats, often with active management intervention (e.g., protection of key benthic habitats from trawling or dredging). Protection regimes aimed at particular species or groups, where other activities are not curtailed, would often be classified as category IV, e.g., whale sanctuaries. Time-limited protection, as in the case of seasonal fishing bans or protection of turtle nesting beaches during the breeding season, might also qualify as category IV. Unlike on land where category IV may include fragments of ecosystems, in the marine environment, use of this category has a significant opportunity for broader-scale ecosystem protection, most frequently encompassing patches of category Ia or b and category II interest.
The interpretation of the seascape concept in protected areas is attracting increasing interest. Category V protected areas stress the importance of the "interaction of people and nature over time" and in a marine situation, Category V might most typically be expected to occur in coastal areas. The preservation of long-term and sustainable local fishing practices or sustainable coral reef harvesting, perhaps in the presence of culturally-modified coastal habitats (e.g., through planting coconut palms)could be a suitable management mosaic to qualify as category V.
MPAs that maintain predominantly natural habitats but allow the sustainable collection of particular elements, such as particular food species or small amounts of coral or shells for the tourist trade, could be identified as category VI. The point where an area managed for resource extraction becomes a category VI marine protected area may sometimes be hard to judge and will be determined ultimately by reference to whether the area meets the overall definition of a protected area or not, as well as whether the area achieves verifiable ecological sustainability as measured by appropriate metrics.

Dudley, N. (Editor) (2008) Guidelines for Applying Protected Area Management Categories. Gland, Switzerland: IUCN. x + 86 pp.
http://www.iucn.org/about/union/commissions/wcpa/wcpa_puball/wcpa_pubsubject/wcpa_categoriespub/?1662/Guidelines-forapplying-protected-area-management-categories
Guidelines for Applying Protected Area Management Categories Nigel Dudley. Ed. Japanese version publisher: World Commission on Protected Area Japan (WCPA-J) Japanese translation: NaoyaFuruta, Atsuko Yamasaki (IUCN Japan project office), 2012.3.31

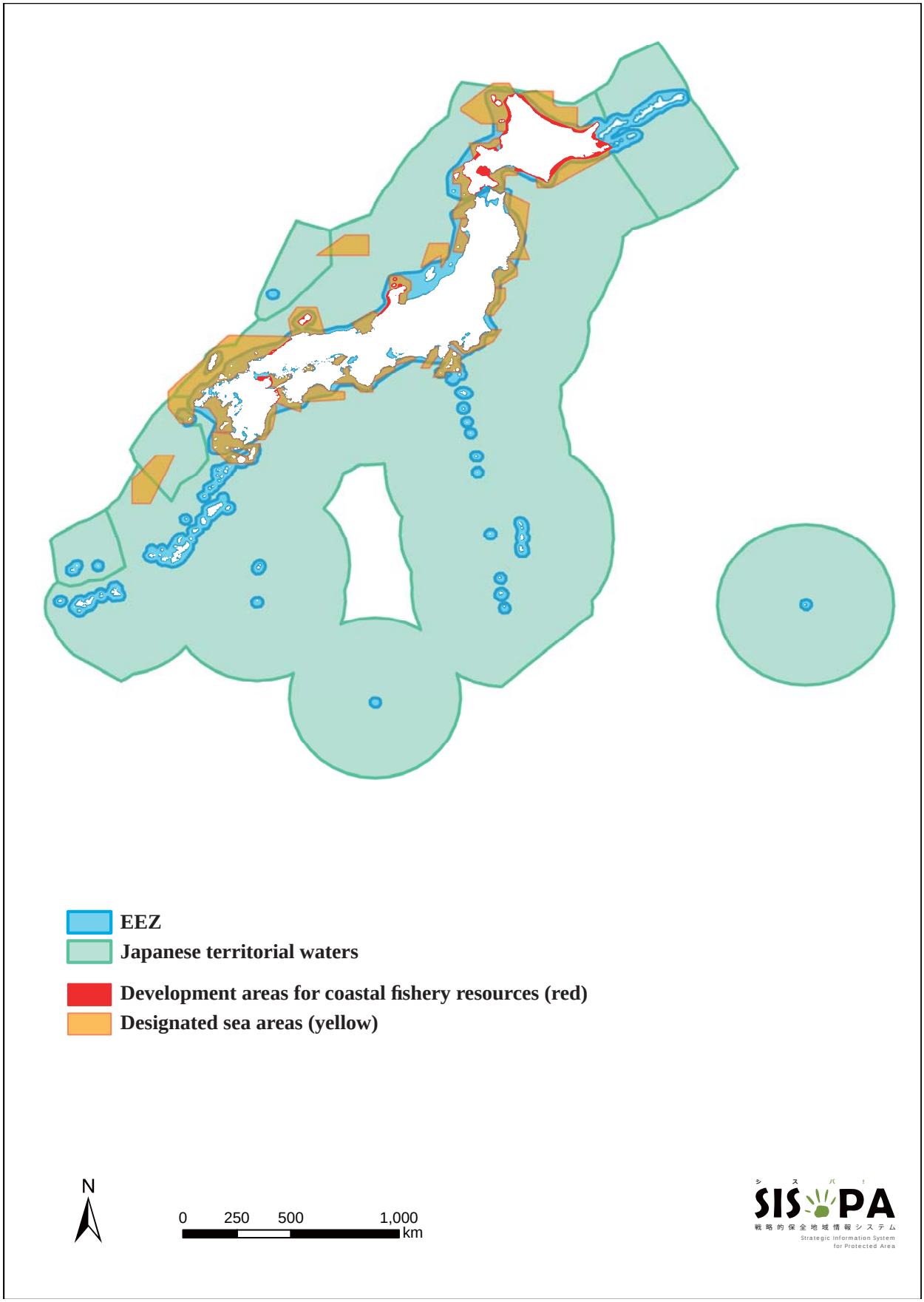

Figure 3 Location of "Development areas for coastal fishery resources (red) and Designated sea areas (yellow) " (Marine Fishery Resources Development Promotion Law) in Japanese territorial waters (blue) and EEZ (green)

(Created by NACS-J on the basis of prefectural newsletters and the enforcement order of Marine Fishery Resources Development Promotion Law)

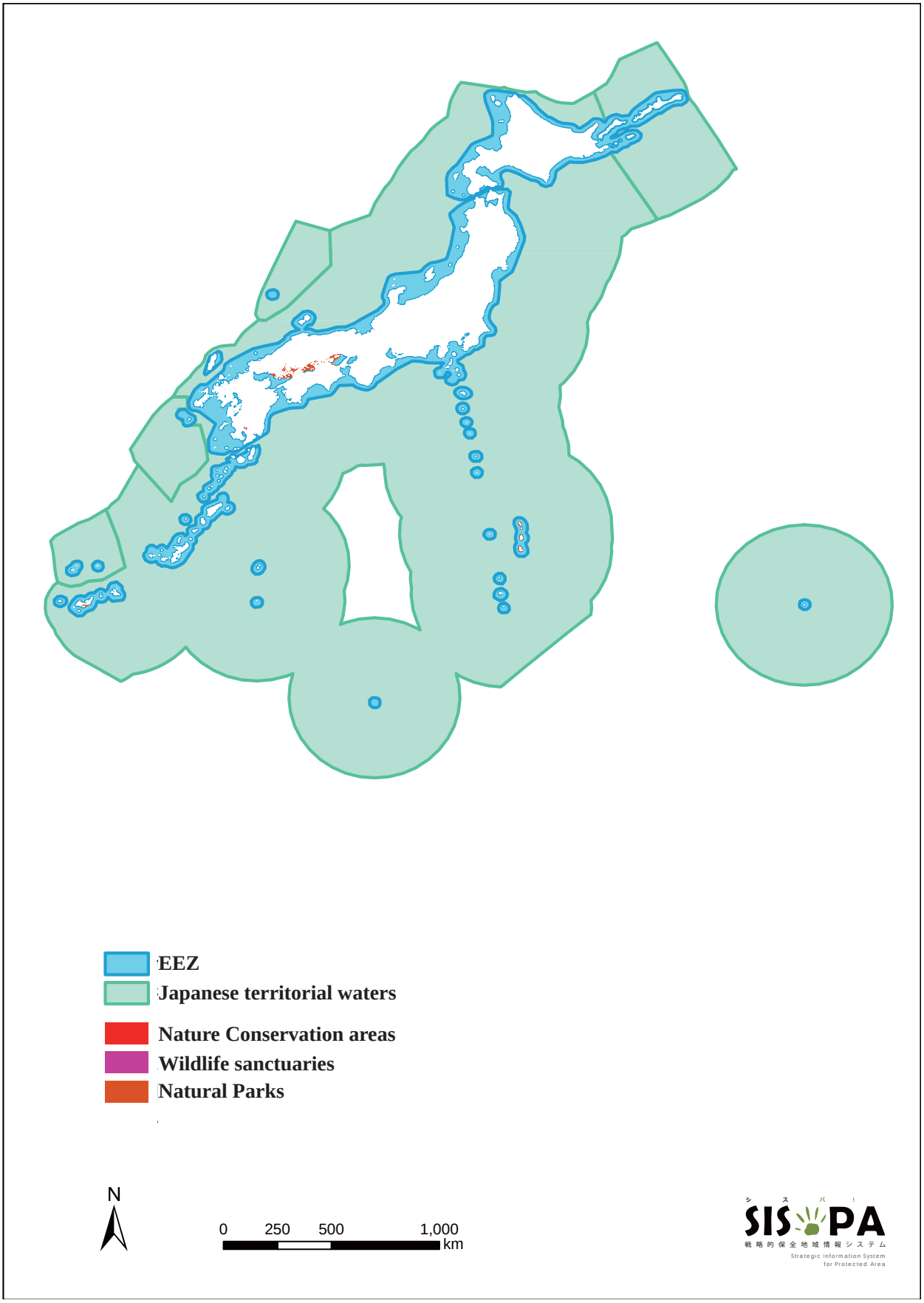

Figure 4 Location of "Nature Conservation areas (red), Wildlife sanctuaries (purple), and Natural Parks (brown)" in Japanese territorial waters (blue) and EEZ (green) sea areas

(Created by NACSJ on the basis of the information released by the Ministry of the Environment)