



**Provisional Criteria for the Evaluation of Sites
Nominated for Inclusion in the Network of Sites
of Importance for Marine Turtles in the Indian
Ocean – South-East Asia Region**

Working Paper #2

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**Secretariat of the Indian Ocean – South-East Asia Marine Turtle
Memorandum of Understanding**

INTRODUCTION

The Signatory States to the *Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia* (IOSEA Marine Turtle MoU) are considering options for the establishment and administration of a *Network of Sites of Importance for Marine Turtles in the Indian Ocean – South-East Asia Region* (IOSEA Marine Turtle Site Network). The proposed network will serve as a mechanism for sites to operate more cooperatively and synergistically, both ecologically and administratively, rather than working in isolation with minimal coordination.

This document presents a draft suite of criteria that the IOSEA Advisory Committee would use to: (i) Evaluate nominations of new sites; (ii) re-assess the rationale for continued inclusion of existing sites; and (iii) conduct gap analyses for the overall network to identify priorities for inclusion of additional sites.

Please refer to the following IOSEA document for detailed information on: (1) the rationale for the site network proposal; (2) the process for nominating and evaluating candidate sites; and (3) alternative approaches for coordinated governance of sites included in the network:

IOSEA. 2011. *Towards a Network of Sites of Importance to Marine Turtles in the Indian Ocean – South-East Asia Region*. Working Paper #1. Version: 22 September 2011. Secretariat of the Indian Ocean – South-East Asia Marine Turtle Memorandum of Understanding, Bangkok.

The suite includes 19 criteria, which are placed into one of four categories: Network-wide, Ecological/ Biological, Governance-related, Socio-economic/Political. A weighting scheme is used to differentiate the relative importance of the various criteria. The maximum value assigned to each criterion determines its relative importance in the overall rating. Points are awarded against each criterion, up to its maximum value.

Guidance is provided to assist evaluators in their evaluation of a particular criterion (which might also be helpful to proponents, in terms of highlighting the information that will be assessed). It is understood that quantitative data and other information may not be available in all cases for the purpose of making an objective assessment. Where uncertainty exists, evaluators are encouraged to reach a collective consensus that best reflects the actual situation. Where doubt persists, a neutral score should be assigned that neither penalises nor rewards the proponent.

For a site to be recommended for inclusion in the network, it must obtain a minimum score against *each* of the four categories, as well as a minimum *total* score. For example, a site must obtain a minimum score of '10' from the three criteria that make up the Network-wide Ecological Criteria category. The site must also achieve a minimum total score of 75.

DRAFT SELECTION CRITERIA FOR THE IOSEA MARINE TURTLE SITE NETWORK

I. NETWORK-WIDE ECOLOGICAL CRITERIA (Minimum Total Category Value: 10)

N1. Representativeness and Replication

Definition: Inclusion of this site contributes to the network's: (i) adequate representation of the full range of coastal habitat diversity required for the maintenance of marine turtle populations and species of the IOSEA region (*representativeness*), and/or (ii) inclusion of multiple sites containing identical habitat types (*replication*).

Rationale: Representativeness and replication are required components of an effective site network. Including examples of each coastal habitat used by marine turtles across their life history stages -- including nesting, foraging, reproductive and migratory habitat, and examples of each community type within these habitats -- achieves a network of representative marine turtle habitat sites. Replication of these critical habitat types in the network reduces the risk of regional losses of a single habitat type by spreading the risk, and increases the chance for a marine turtle habitat type to survive disturbances.

Maximum Possible Value: 6

Scale:

- 2 = Low/minor contribution to representativeness/replication: the habitat types included in the site are already well represented in the network; and the ecological value of the habitats contained within this site is low relative to other habitats already included in the network.
- 4 = Modest contribution to representativeness/replication: the habitat types found at the site are moderately covered within the network.
- 6 = Very significant/unique contribution to representativeness/replication: the habitat types found at the site are not yet well represented in the network.

Guidance: Evaluators should bear in mind other sites already in the network when making this assessment. In the initial phase of network development with few sites in the network, assessment against this criterion is likely to result in a score of 5 or 6. For example, a site containing sea turtle nesting, foraging and development habitat, which at the initiation of the network would contribute to representation and eventual replication of the full range of sea turtle habitats, would be assigned a score of 6.

N2. Ecological Connectivity

Definition: Inclusion of the site contributes to protecting functional links among areas of protected marine turtle habitat. Inclusion of this site -- considering its spacing from other sites in the network, and based on information from migration and genetic studies -- contributes to the network's fulfillment of ecological connectivity between sites.

Rationale: Protecting connectivity among habitat types required for life history stages of marine turtles is critical for the maintenance of turtle populations. A network of managed sites can be designed to protect functional connectivity between marine turtle habitats, where individual sites in the network benefit from one another. The *shape* (to consider edge effects, where margins of protected areas may be heavily exploited) and *spacing* of the individual sites in the network determine the ecological connectivity of the network as a whole.

Maximum Possible Value: 6

Scale:

- 2 = Low/minor contribution to connectivity.
- 4 = Modest contribution to connectivity.
- 6 = Very significant contribution to connectivity

Guidance: Functional links between individual sites might include, for example, reproductive coastal habitat adjacent to a nesting beach, or serial nesting beaches known to be used by a single population. Sites that are known to be in close proximity to other important sea turtle habitats would be assigned a high value. For example, a site that lies adjacent to other sea turtle foraging areas might be assigned a value of 5 or 6 when assessed against this criterion. If there are few sites in the network, assessment against this criterion may not yet be applicable, in which case a site should be assigned a neutral score of 4.

N3. Area

Definition: The area of a site, or combined area of functionally-linked sites, contributes to protecting the area of marine turtle habitat needed to sustain turtle aggregations.

Rationale: . Sufficient protection of habitat area is a required component of an effective site network. A continuous tract of relatively undisturbed habitat may be critical to the ability of an aggregation of turtles to nest, forage, reproduce or migrate

Maximum Possible Value: 8

Scale:

2 = Site comprises less than 10% of the area of a marine turtle population's critical habitat.

4 = Site contributes from > 10% to 50% of the area of a population's critical habitat.

8 = Site encompasses more than half of the area of a population's critical habitat.

Guidance: The proportion of 'critical habitat' refers to a stock's required habitat for each life history stage. For instance, a site that comprises about a third of the area of a stock's total known nesting habitat, warrants the assignment of 4 points.

II. ECOLOGICAL AND BIOLOGICAL CRITERIA (Minimum Total Category Value: 20)

EB1. Presence of rare marine turtle stock or species

Definition: Presence of a marine turtle genetic stock or species that is rare in the IOSEA region.

Rationale: Protection of sites supporting regionally rare examples of marine turtle stocks or species contributes to reducing the risk of extirpations and extinctions, halting declines, and achieving recovery.

Maximum Possible Value: 8

Scale:

2 = Site is frequented by individuals of one species considered rare, from a national or regional perspective..

5 = Site is frequented by individuals of more than one species considered rare, from a national or regional perspective..

8 = Site is exceptional for the rarity of the species present (or the number of rare species present)..

Guidance: A stock or species may be rare due to limited overlap of its distribution with the IOSEA region, or because of reduced abundance in the country concerned. Rarity might be interpreted qualitatively and/or in terms of number of rare species present. For example, a site that supports the flatback turtle, a species that is rare in the IOSEA region, or a site that supports the leatherback turtle in a country where few or no other records are known, might be awarded a high score.

EB2. Species and/or genetic stock richness

Definition: Regular use of the site by multiple marine turtle species or genetic stocks.

Rationale: The greater the number of marine turtle stocks or species supported by a site, the greater the value of the site for regional marine turtle biodiversity conservation.

Maximum Possible Value: 8

Scale:

4 = The site regularly supports ≥ 2 species and/or genetic stocks of one or more species

6 = The site regularly supports ≥ 3 species and/or genetic stocks of one or more species

8 = The site regularly supports ≥ 4 species and/or genetic stocks of one or more species

Guidance: This criterion considers only the *number* of species supported by a given site; it does not consider the *rarity* of the species concerned, which is addressed by criterion EB2.

EB3. Turtle Abundance

Definition: Habitat that regularly supports an aggregation of marine turtles, the size of which is considered to be of regional importance. At marine turtle nesting sites, the larger the number of adult females, the larger the number of clutches or hatchlings expected to contribute to the growth of the population..

Rationale: A site that supports a large number of marine turtles is valuable for sustaining turtle populations. At nesting beaches, the larger the reproductive contribution of a nesting beach, the higher its ecological value.

Maximum Possible Value: **8**

Scale: (Adapted from Wallace et. al. 2010 Plos One paper on Regional Management Units, where numbers are average annual nesting females for the most recent survey data available),

Species / Score	2	3	4	6	8
<i>C. caretta</i>	<100	101-1,000	1,001-5,000	5,001-10,000	>10,000
<i>C. mydas</i>	<100	101-1,000	1,001-5,000	5,001-10,000	>10,000
<i>E. imbricata</i>	<100	101-1,000	1,001-5,000	5,001-10,000	>10,000
<i>D.coriacea</i>	<100	101-1,000	1,001-5,000	5,001-10,000	>10,000
<i>L. olivacea</i>	<100	101-1,000	1,001-10,000	10,001-100,000	>100,000
<i>L. kempii</i>	<100	101-1,000	1,001-10,000	10,001-100,000	>100,000
<i>N. depressus</i>	<100		101-1,000		>1,000

Guidance: If quantitative data are lacking in the site nomination, local or other expert opinion may be called upon to provide an indicative measure of abundance.

EB4. Refugia (Resistance and Resilience)

Definition: The site contains near pristine marine turtle habitat that is likely to be relatively resistant and/or resilient to disturbance, including climate change.

Rationale: This criterion specifically considers predicted ecosystem vulnerability to and responses to disturbance, with an underlying premise that it is important to protect areas that resist and/or recover quickly from disturbance. In addition to other sources of disturbance, outcomes of climate change -- including relative sea-level rise, rising air and sea surface temperatures, and possibly the spread of invasive alien species (alterations to species' distributions) -- are predicted to affect marine turtles and habitat.

Maximum Possible Value: **8**

Scale:

1 = Relatively disturbed sites; sites with low/minor relative degree of resistance and resilience.

4 = Sites with a relatively modest degree of disturbance, and thus modest resistance or resilience.

8 = Sites that are pristine, thus considered to possess a very high degree of resistance or resilience.

Guidance: Nominations may include sites that are close to pristine condition, sites that act as refugia, and thus by proxy, sites that are likely to be relatively resistant and resilient to stresses. A site where few or no threats to sea turtles and their habitat are known to exist would be characterised as relatively undisturbed and hence of relatively high resistance and resilience; such a site might be assigned a value of 6-7 when assessed against this criterion. Examples might include sites where there is a relatively low degree of existing human development and where threats from habitat degradation, including coastal erosion, and natural threats are considered to be low.

EB5. Degraded, but with capacity for rehabilitation

Definition: A site that contains marine turtle habitat is considered to be substantially disturbed if the site has experienced substantial habitat modification, has invasive alien species or native species that pose a threat to marine turtles or their habitat, has been polluted with compounds that adversely affect marine turtles, or has experienced another disturbance that has reduced the ability of the site to support marine turtle life history stages relative to historical levels. In the IOSEA region, there are numerous examples of degraded marine turtle nesting, foraging, reproductive and migratory habitat, where anthropogenic and other sources of disturbance to marine turtles are inferred to have caused observed dramatic declines in turtle populations. Many of these sites have the capacity for rehabilitation, which could be pivotal for preventing population extinctions and for eventual recovery.

Rationale: Degraded marine turtle habitat that possesses the potential to be rehabilitated to resume relatively natural ecosystem functioning, structure and provision of services similar to a least-disturbed site is of high conservation value. Recovery of threatened populations of marine turtles may require re-establishment in areas of historic range.

Maximum Possible Value: **6**

Scale:

- 0 = Very low capacity for rehabilitation and virtually no ongoing management interventions to rehabilitate the degraded habitat.
- 2 = Low capacity for rehabilitation and few ongoing management interventions to rehabilitate the degraded habitat.
- 4 = Moderate capacity for rehabilitation and some ongoing management interventions to rehabilitate the degraded habitat.
- 6 = High capacity for rehabilitation and very active ongoing management interventions to rehabilitate the degraded habitat.

Guidance: A degraded site may be included in the network if and only if the site: (i) possesses the capacity for rehabilitation, where there is a high degree of confidence that the site's turtle habitat could be restored to approximate pre-disturbance condition; AND (ii) the management authority has initiated conservation interventions to rehabilitate the degraded habitat. For example, a site with a high degree of predation of eggs, hatchlings or adult turtles by native or introduced fauna would be considered degraded; but might have a moderate-high capacity for rehabilitation through active management interventions that are clearly described by the proponent.

III. GOVERNANCE CRITERIA (Minimum Category Value: 20)

G1. Legal framework

Definition: The legal framework provides adequate protection of the site and of marine turtle species found at the site.

Rationale: While legal and management frameworks vary for protected areas depending on the local context, from traditional management to government-led management, the existence of legal (and management) frameworks for protection of the site and for marine turtles, is critical in most cases. A site that lacks adequate existing legal protection, and

lacks legal protection for marine turtles, is likely to be a “paper park”, with little or no implementation of needed management interventions.

Maximum Possible Value: **8**

Scale:

1 = Relatively low/minor degree of legal protection.

5 = Modest, but not completely sufficient, degree of legal protection.

8 = Comprehensive and fully adequate legal protection.

Guidance: Site descriptions are expected to include sufficient detail of the legislation and regulations in effect to permit an assessment of their efficacy in addressing known threats. A site where incompatible human activities and/or land uses are not prohibited through legislation and/or regulation, or where such activities and/or land uses are allowed to occur without any mitigating processes, should be assigned a low score when assessed against this criterion.

Where a convincing rationale is provided that either private and/or public tenure, or customary or traditional approaches do not require legislation, and that land management is demonstrated to be providing fully adequate protection, then the full criterion weight may be awarded for the site.

G2. Conservation actions

Definition: Conservation interventions have been undertaken or are underway to mitigate known threats to marine turtles identified at the site. Demonstration of management actions to address threats facing marine turtles at a site indicates a high degree of political will and support for marine turtle conservation and protection of the site.

Rationale: A management authority that is able to demonstrate the implementation of activities designed to mitigate priority threats to marine turtles at the site indicates that the site has the potential to retain high regional conservation value to marine turtles for the long term. Effective exclusion of activities determined to be incompatible with the conservation of marine turtles and their habitat ensures the long-term protection of the site's value to marine turtles.

Maximum Possible Value: **10**

Scale:

1 = Low/minor relative degree of conservation effort.

6 = Modest, but not completely sufficient degree of conservation effort.

10 = Very high degree of exemplary conservation effort (or otherwise the site requires no or only nominal conservation intervention due to the absence of threats).

Guidance: A site benefitting from a relatively wide array of described management interventions and few current threats to sea turtles and their habitat might be assigned a value of 8-9 when assessed against this criterion. A site lacking natural or human threats to sea turtles and their habitat, irrespective of the extent of conservation action, would be assigned a high value when assessed against this criterion.

G3. Collaborative management, surveillance and enforcement

Definition: Availability of immediate (at least short-term) resources for the site for participatory work with local stakeholders to strengthen local stewardship of marine turtles, and/or to provide for adequate surveillance and enforcement of prevailing regulations.

Rationale: In areas where customary management systems or private tenure are in place, community-based approaches to management and enforcement, including co-management (management through the collaboration of the local community, agencies from all levels of government, NGOs, and potentially additional external organizations) may be appropriate. Adequate resources for enforcement demonstrate strong support for protecting the site and its marine turtles. For most marine turtle protected areas, if

resources for some form of enforcement are lacking, efforts to prevent overuse and misuse of resources will not be achieved.

Maximum Possible Value: 8

Scale:

- 1 = Low/minor resources for collaborative management, surveillance and enforcement.
- 4 = Modest resources for collaborative management, surveillance and enforcement.
- 8 = Substantial resources for collaborative management, surveillance and enforcement (or otherwise a site where there are few people and hence limited need for surveillance and enforcement).

Guidance: Obstacles to effective enforcement may include inadequate surveillance due to inaccessibility of portions of a site, inadequate funding for sufficient enforcement staff and equipment to patrol the entire site, as well as insufficient human and legal resources to deal with violations of the regulations in place. Site descriptions are expected to outline in sufficient detail the resources available for these purposes.

G4. Research and Monitoring Significance

Definition: (i) The site is currently used to monitor marine turtle abundance, including at index nesting beaches, foraging grounds, and reproductive areas; and/or (ii) marine turtle survey data span > 20 years for the site.

Rationale: The site has existing or potential value for research and/or monitoring.

Information obtained through monitoring informs adaptive management processes. Monitoring activities also present a mechanism for stakeholder involvement. An index site and/or sites with a long time-series of monitoring data are of critical importance for understanding the change in marine turtle populations regionally, including to support modeling robust estimates of population trends, changes in age and sex structures, sources of mortality, etc. A sufficiently long time-series of monitoring data, as well as long-term understanding of management activities, is critical to separate long-term temporal and spatial trends from cyclical, shorter-term, serially correlated patterns in ecosystem changes and in changes in characteristics of populations of long-lived, low-productive species. For these species, anthropogenic effects are likely to be evident only over periods of decades or longer. Furthermore, for marine turtles, the anthropogenic mortality of juveniles and subadults may be undetected when monitoring only focuses on adult nesting females. Therefore, monitoring across marine turtle habitats is critical.

Maximum Possible Value: 8

Scale:

- 4 = The site is characterized by one of the following: (i) Contains an index beach, foraging habitat, or reproductive habitat; (ii) Survey data span > 20 years; (iii) Survey data have been used to estimate trends in population size.
- 6 = The site is characterized by two of the following: (i) Contains an index beach, foraging habitat, or reproductive habitat; (ii) Survey data span > 20 years; (iii) Survey data have been used to estimate trends in population size.
- 8 = The site is characterized by all three of the following: (i) Contains an index beach, foraging habitat, or reproductive habitat; (ii) Survey data span > 20 years; (iii) Survey data have been used to estimate trends in population size.

Guidance: Site descriptions are expected to give evidence (for example, by citing published literature) that one or more of these conditions has been met.

G5. Sustainable Human and Financial Resources

Definition: Availability of long-term resources (human and financial) to enable effective governance activities -- including monitoring, management interventions, surveillance and enforcement, and performance evaluation -- where such resources are determined to be sustainable (for example, where a legal mechanism ideally provides for permanent financing and staffing).

Rationale: Effective implementation of governance activities requires long-term funding. Sustainable financing for a site indicates strong political will and leadership support for protection of the site and its marine turtles. Secure finance strategies are comprised of a diverse portfolio of complementary revenue sources. Different funding mechanisms will be appropriate depending on the type of organization managing the site and the types of permanent and short-term activities that are identified, as required, to ensure the permanent conservation of marine turtles and other resources of the site.

Maximum Possible Value: 8

Scale:

- 1 = Low/very limited actual or prospective long-term financing.
- 5 = Modest long-term financing, with modest prospect of improvement.
- 8 = Substantial long-term financing already in place or evidence that this will be forthcoming in the near-future (e.g perhaps catalysed by inclusion of the site in the network).

Guidance: Site descriptions are expected to document the extent of human and financial resources available for governance activities, and offer evidence of future prospects in this regard.

IV. SOCIO-ECONOMIC AND POLITICAL CRITERIA (Minimum Category Value: 15)

S1. Cultural and Traditional Importance

Definition: Contains prehistoric or historic resources of cultural and traditional significance.

Rationale: A site that is traditionally or culturally important provides additional justification for its protection and might help to leverage more resources for protection.

Maximum Possible Value: 5

Scale:

- 1 = Low/minor cultural and traditional importance.
- 3 = Modest cultural and traditional importance.
- 5 = Very significant cultural and traditional importance.

Guidance: Site descriptions are expected to document a site's cultural and traditional importance, if any, preferably with reference to published or unpublished historical accounts.

S2. Compatible Activities

Definition: Activities occurring within the site are compatible with the conservation of marine turtles and their habitat.

Rationale: Providing local communities with socio-economic activities in protected sites that are consistent with ecological objectives (i.e. do not degrade the integrity of marine turtle habitat and do not entail unsustainable use of marine turtles) can complement effective governance through community support for restrictions on incompatible activities.

Maximum Possible Value: 8

Scale:

- 1 = Many incompatible socio-economic activities occurring at the site.
- 4 = Some incompatible socio-economic activities occurring at the site.
- 8 = Few, if any, incompatible socio-economic activities occurring at the site.

Guidance: Site descriptions are expected to document activities occurring at the site and indicate whether or not any of these are incompatible with the conservation of marine turtles.

S3. Educational Value

Definition: Opportunities for educational and outreach activities, by virtue of the site's location and other inherent characteristics.

Rationale: Education and outreach programs are an investment to bring about changes in behaviour and attitudes by having a better-informed community of the value of coastal marine turtle habitats. For example, augmenting public knowledge of the importance of marine turtle habitats provides the local community with information to make informed decisions about the use of their resources, and ideally results in grassroots support for measures to conserve and sustainably manage coastal resources.

Maximum Possible Value: 6

Scale:

- 1 = Limited educational/outreach potential.
- 3 = Modest educational/outreach potential.
- 6 = High educational/outreach potential.

Guidance: Site descriptions are expected to document existing educational initiatives, and to indicate the potential for extending the scope and coverage of these activities. A site with a well-established community-based programme might score towards the upper range; whereas a relatively isolated site that lacks practical access might be assigned a low score when assessed against this criterion.

S4. Existing Recognition and Protection

Definition: Existing protected status or other national, regional or international recognition for the site's value to marine turtles.

Rationale: (i) A history of recognition of the importance of the site to marine turtles suggests that there is awareness and political support for the site's protection. (ii) A site with a longstanding history of protected status might already benefit from higher resources for governance, with concomitant potential to be of benefit to the other sites in the IOSEA Marine Turtle Site Network.

Maximum Possible Value: 6

Scale:

- 2 = The site has been afforded protected status for ≤ 5 years..
- 4 = The site has been afforded protected status for ≥ 5 years and < 10 years.
- 6 = The site has been afforded protected status for > 10 years.

S5. National Importance

Definition: Significance of the site in a national context, relative to other marine turtle habitat areas in the country.

Rationale: Local importance of the site (for example, if this is the only area of high abundance or nesting of marine turtles in the nation), provides additional justification for political support for the protection of a site. Moreover, a site identified to be of national importance might assist in leveraging resources for protection.

Maximum Possible Value: 6

Scale:

- 1 = Low/minor relative national importance.
- 3 = Modest relative national importance.
- 6 = Very significant relative national importance

Guidance: A site containing the only sea turtle nesting habitat in a country and would be assigned a maximum value of 6 when assessed against this criterion. Where many sites exist in a given country, other indicators of relative importance might include existing local or national protected status designation.

S6. Perceived additional benefit for the site through its inclusion in the network

Definition: Perception of additional conservation benefit that would be achieved through the inclusion of the site in the network.

Rationale: A priority is placed on adding sites to the network that, as a result of the designation, would likely obtain substantial augmented conservation benefit.

Maximum Possible Value: 6

Scale:

2 = Limited additional conservation benefit for the site is expected from its inclusion in the IOSEA Marine Turtle Site Network.

4 = Modest additional conservation benefit for the site is expected from its inclusion in the IOSEA Marine Turtle Site Network.

6 = Substantial additional conservation benefit for the site is expected achieved through its inclusion in the IOSEA Marine Turtle Site Network.

Guidance: This is a largely subjective interpretation, both on the part of the nominator and reviewer. However, it may be guided by the notion that a site with an already high degree of protection and recognition has less to gain from inclusion in the network than a site with little or no national recognition.