



# **Towards a Network of Sites of Importance for 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 (IOSEA)**

## **ACKNOWLEDGEMENTS**

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## Executive Summary

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.

The overarching goal of the proposed IOSEA Marine Turtle Site Network is to:

Achieve long-term protection of nesting beaches, foraging grounds and other areas that are of high regional value for the conservation of marine turtles; to derive unique benefits through the systematic addition of sites that collectively encompass essential ecological properties; and to optimize the use of limited financial and human resources through the coordinated operation of networked sites.

The IOSEA Marine Turtle Site Network objectives are to:

- (i) Provide a regional mechanism to enhance the conservation of sites of importance to marine turtles that might otherwise not be adequately protected, that will attain additional benefits from being in a network irrespective of their current status, and that serve as regional models of effective governance;
- (ii) Derive ecological and governance benefits that are not possible to achieve by managing individual sites in isolation;
- (iii) Contribute, through enhanced regional conservation of marine turtles and their habitats, to more effective maintenance of ecosystem services that support human well-being; and
- (iv) Catalyse opportunities for participatory resource management and community development centred on marine turtles, through network-wide information exchange.

A number of benefits arising from the site network are critical to achieving regional-scale objectives. These include:

- Optimal use of limited resources for governance. A fully functional network will coordinate available financial, technical and human resources to conduct common training, facilitate exchange of information on best practices, carry out joint research and monitoring, undertake performance evaluation, and encourage adaptive management;
- Enhanced local-to-global scale recognition of the importance of the networked sites, on the strength of a credible selection process. This in turn should catalyse increased support and resources for more effective site-based and regional management;
- Mitigation of adverse socio-economic impacts over a wider geographic scale. Activities incompatible with marine turtle conservation cannot be eliminated entirely, but such activities may be restricted at selected network sites in a way that diffuses adverse impacts across the wider region;
- Protection of ecological connectivity between habitats through strategic spacing and shape of sites; and

- Optimisation of regional resistance and resilience of marine turtle habitats to environmental stress. This will be achieved by including and managing sites containing marine turtle habitats necessary for different life cycle phases, by protecting multiple examples of each habitat type, and by including sites that act as refugia to current and predicted stress.

Countries will be invited to nominate turtle nesting beaches and adjacent areas considered to be important sites for marine turtles and, in doing so, will hopefully have an added incentive to secure additional resources and protection at the sites. However, provision of additional resources is not a binding commitment or obligation upon joining the network. Site nominations must come from governments, to assure the highest level of recognition, but proposals can be drafted by other interested parties.

The need to prepare a baseline site assessment is the only fundamental requirement associated with site nomination. This exercise will be extremely valuable in and of itself, especially if one has never been conducted previously. In addition to helping identify constraints and management gaps, the assessment will lend credibility to the site selection process and will help to match potential donors to specific site needs.

Nominated sites will be recommended to the Meeting of IOSEA Signatory States for inclusion in the network based on an objective evaluation of each submission against a suite of criteria, to be conducted by the IOSEA Advisory Committee.

It is generally agreed that nominating a site to the network should not impose any new binding financial commitments or any new legal obligations on Signatory States. Beyond that, the structure and operation of the IOSEA Marine Turtle Site Network will depend largely on the financial resources made available for its development. Three possible models are presented to reflect different scenarios -- ranging from little or no new funding to substantial investment by interested donors.

\* \* \* \* \*

This document serves to: (1) explain the rationale for the site network proposal; (2) present a draft suite of criteria against which to assess sites for possible inclusion in the network; (3) describe a process for site nomination and evaluation of candidate sites; and (4) present alternative approaches for coordinated governance of sites included in the network.

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# 1. BACKGROUND, PURPOSE AND BENEFITS OF AN IOSEA MARINE TURTLE SITE NETWORK

## 1.1. Background

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) is a non-binding framework through which States and organisations of the Indian Ocean and South-East Asia region, and other concerned States, are working together to conserve and replenish depleted marine turtle populations for which they share responsibility. The IOSEA Marine Turtle MoU took effect in September 2001 and has 33 Signatory States (as of December 2011). Supported by an Advisory Committee of eminent scientists and complemented by the efforts of numerous nongovernmental and intergovernmental organisations, Signatory States are working towards the collective implementation of a Conservation and Management Plan comprising 24 programmes and 105 separate activities.

Governments and numerous other organisations have undertaken marine turtle conservation activities in the Indian Ocean and South-East Asia region for many decades, allocating substantial financial, institutional and staff resources for this purpose. Impressive achievements have been realised on local, national and regional levels. The establishment of the proposed *Network of Sites of Importance for Marine Turtles in the Indian Ocean – South-East Asia Region* (IOSEA Marine Turtle Site Network) will serve to recognise these past efforts, while more effectively achieving regional-scale ecological and governance objectives that single protected sites cannot achieve in isolation.

The concept of a network of sites of importance for marine turtles has been under development for several years, having been introduced initially in 2004 at the second Meeting of the IOSEA Signatory States. While the development of the site network concept has progressed since the idea was first presented, divergent views persisted about several aspects of the proposal. Among the primary issues are: what would the governance structure of the network entail, how would sites be evaluated for inclusion and ultimately chosen, and what additional obligations, if any, would be required of governments. This document further elaborates these issues for consideration and discussion by the Signatory States.

The present initiative serves to:

- explain the rationale for the site network proposal;
- present a draft suite of criteria against which to assess sites for possible inclusion in the network;
- describe a process for site nomination and evaluation of candidate sites; and
- present alternative approaches for coordinated governance of network sites.

## 1.2. Context

The IOSEA region is host to six species of marine turtles: Loggerhead (*Caretta caretta*), Olive ridley (*Lepidochelys olivacea*), Green (*Chelonia mydas*), Hawksbill (*Eretmochelys imbricata*), Leatherback (*Dermochelys coriacea*), and Flatback (*Natator depressus*). Across the region, there are several examples of decades-long conservation programmes whose management interventions have contributed to stable or increasing turtle populations. In addition, several countries can boast significant turtle populations that, if not still thriving, have remained resilient in the face of increasingly diverse and escalating human pressures.

However, many of the region's marine turtle populations have declined significantly, some having been eliminated almost completely. Various factors are thought to have contributed

to unsustainable turtle mortality, including: widespread and intense exploitation of eggs, meat and shell, fisheries-related mortality (by-catch), destruction and degradation of critical habitats, pollution, climate change, and inappropriate management practices. [Consequently, where marine turtles were once a substantial economic resource in many parts of the IOSEA region, costly management interventions are now required to protect marine turtles and their habitats.]

Marine turtles depend on diverse habitats at different phases of their life cycle, including suitable beaches for nesting and coastal waters for foraging and reproduction. Yet the importance of many of these coastal habitats – critical not only for marine turtles, but for a wide range of species as well as ecosystem services critical for human wellbeing – is often not recognised. Short-term economic interests trump restrictions necessary to ensure long-term sustainability.

A lack of awareness and understanding of the ecological value of these unique habitats may lead governments to permit inappropriate development of areas at the expense of coastal ecosystem integrity, as well as the conservation of marine turtles. In some areas marine turtles and their habitats may be protected on paper, through appropriate national legislation and regulations, yet the implementation of adequate conservation measures on the ground is often lacking. In either case, there are adverse impacts for the coastal communities that rely on the services provided by these ecosystems.

Protecting areas critical for the region's marine turtles will simultaneously yield a range of socio-economic benefits for people. Maintaining coastal water quality, protecting habitat used as nursery grounds for seafood species that support commercial and subsistence fisheries, and generally protecting mangrove and reef habitat in a way that reduces threats from coastal hazards – such as erosion, flooding, and strong wave action – is good for humans as well as turtles.

The overarching goal of the proposed IOSEA Marine Turtle Site Network is thus to:

Achieve long-term protection of nesting beaches, foraging grounds and other areas that are of high regional value for the conservation of marine turtles; to derive unique benefits through the systematic addition of sites that collectively encompass essential ecological properties; and to optimize the use of limited financial and human resources through the coordinated operation of networked sites.

Site networks, a collection of individual protected sites operating cooperatively and synergistically, both ecologically and administratively, can achieve ecological and governance benefits that single protected sites cannot achieve in isolation. These include:

- Optimal use of limited resources for governance. A fully functional network will coordinate available financial, technical and human resources to conduct common training, facilitate exchange of information on best practices, carry out joint research and monitoring, undertake performance evaluation, and encourage adaptive management;
- Enhanced local-to-global scale recognition of the importance of the networked sites, on the strength of a credible selection process. This in turn should catalyse increased support and resources for more effective site-based and regional management;
- Mitigation of adverse socio-economic impacts over a wider geographic scale. Activities incompatible with marine turtle conservation cannot be eliminated entirely, but such activities may be restricted at selected network sites in a way that diffuses adverse impacts across the wider region;

- Protection of ecological connectivity between habitats through strategic spacing and shape of sites; and
- Optimisation of regional resistance and resilience of marine turtle habitats to environmental stress. This will be achieved by including and managing sites containing marine turtle habitats necessary for different life cycle phases, by protecting multiple examples of each habitat type, and by including sites that act as refugia to current and predicted stress.

There are many other initiatives and programmes at various levels that provide for the designation and protection of sites of importance for biodiversity in the IOSEA region, including those of The World Heritage Convention, UNESCO's Man and Biosphere Programme, the Ramsar Convention on Wetlands, the Programme for the Red Sea and Gulf of Aden (PERSGA), and the Association of Southeast Asian Nations (ASEAN). These initiatives should be taken into account in designing and implementing the IOSEA Marine Turtle Site Network.

### **1.3. Objectives**

The objectives for the IOSEA Site Network are founded on the stated objective of the IOSEA Memorandum of Understanding, "to protect, conserve, replenish and recover marine turtles and their habitats, based on the best scientific evidence, taking into account the environmental, socio-economic and cultural characteristics of the signatory States," (IOSEA, 2009a). The proposed IOSEA Site Network is an important adjunct for fulfilling the six objectives of the IOSEA MoU *Conservation and Management Plan* (IOSEA, 2009b).

The objectives of the IOSEA Marine Turtle Site Network are to:

- (i) Provide a regional mechanism to enhance the conservation of sites of importance to marine turtles that might otherwise not be adequately protected, that will attain additional benefits from being in a network irrespective of their current status, and that serve as regional models of effective governance;
- (ii) Derive ecological and governance benefits that are not possible to achieve by managing individual sites in isolation;
- (iii) Contribute, through enhanced regional conservation of marine turtles and their habitats, to more effective maintenance of ecosystem services that support human well-being; and
- (iv) Catalyse opportunities for participatory resource management and community development centred on marine turtles, through network-wide information exchange.

## **2. SITE INFORMATION SHEET**

The completion of a site information sheet is an important prerequisite for the nomination of a site to the network. It provides the justification for site to be included in the network and is the basis upon which the merits of including a site will be evaluated by the IOSEA Advisory Committee. The sheet includes baseline information on the site; describes the current and/or planned management framework; and identifies any resources already committed or foreseen for management of the site.

The exercise of preparing such an assessment will be extremely valuable in and of itself, especially if one has never been conducted previously for the site. In addition to helping identify current constraints and management gaps, it will lend credibility to the site selection process and will help to match potential donors to specific site needs. A well-prepared site information sheet can also be used to assess management progress at regular intervals.



All site information sheets will be compiled in a searchable database that will be maintained on the IOSEA website for public viewing, thus providing another vehicle for publicising the importance of the site to the international community.

The outline an *IOSEA Marine Turtle Site Network Information Sheet*, presented below, is adapted from existing site network materials from the Convention on Migratory Species (2007) and the Ramsar Secretariat (2009). In due course, a template will be prepared together with explanatory notes to facilitate the submission and processing of requested information (Appendix 1).

### **Proposed Contents of the *IOSEA Marine Turtle Site Network Information Sheet***

- 1. Date of submission**
- 2. Name and address of compiler**
- 3. Country**
- 4. Name of site**
- 5. Geographical coordinates**
- 6. General location**
- 7. Area**
- 8. Physical features of the site**
- 9. Ecological resources**
- 10. Socio-economic value**
- 11. Cultural/traditional importance**
- 12. Jurisdiction**
- 13. Management authority**
- 14. Current protected status and governance framework**
- 15. Land tenure/ownership**
- 16. Current and past land uses and activities within the site**
- 17. Past and current factors adversely affecting the site's overall ecological character, as well as threats to marine turtles and their habitat at the site**
- 18. Conservation and management interventions taken**
- 19. Conservation interventions proposed, but not yet implemented**
- 20. Current / proposed scientific research and monitoring**
- 21. Current / proposed communication, education, and public awareness activities**
- 22. Financial resources available for management of the site and other activities**
- 23. Additional resource needs at the site**
- 24. References**
- 25. Site map**

### **3. NOMINATION AND EVALUATION PROCESS**

Government agencies will nominate sites to become part of the IOSEA Marine Turtle Site Network by addressing a covering letter to the IOSEA Secretariat, accompanied by the required Site Information Sheet(s). Appendix 2 contains a template for a covering letter that a Signatory State Focal Point may use for this purpose. Nominations may be submitted to the Secretariat at any time, up to [three] months prior to the Meeting of Signatory States. Interested nongovernmental organizations, academic institutions and the private sector are encouraged to suggest sites for possible formal nomination by governments, and may assist governmental bodies in the preparation of the Site Information Sheet. However, the formal submission must be made a governmental body. In the longer term, it may be useful to encourage a sub-regional approach to both nomination and evaluation, in order to promote interaction among neighbouring countries as well as familiarity with the sites in question.

The IOSEA Advisory Committee will evaluate all site nominations against a suite of criteria, defined in Section 4. The Committee may call upon independent reviewers / local experts to assist in its evaluation, in cases where specialized expertise and knowledge about a particular site is lacking.

Whereas nominations may be submitted at any time, the Advisory Committee will review them only two times per year, for sake of efficiency and to facilitate relative comparisons across sites. These reviews will take place approximately nine months and three months prior to the regular Meeting of IOSEA Signatory States.

The Advisory Committee will comment on the nominations, suggest any necessary amendments or improvements, and make recommendations to the Meeting of IOSEA Signatory States for inclusion or rejection based on the results of their assessment. The Secretariat will circulate the Advisory Committee's recommendations to IOSEA Focal Points no later than [one month] prior to the regular Meeting of the Signatory States.

Each Meeting of the Signatory States will have on its agenda the consideration of any new candidate sites, and will either endorse or reject the inclusion of a given site. When relevant, rejections may be accompanied by specific recommendations about what would be needed for the nomination to be approved.

### **4. CRITERIA TO EVALUATE THE INCLUSION OF SITES IN THE NETWORK**

The suitability of including individual sites in the network will be assessed against a suite of criteria, which will help to assure minimum standards and add credibility to the selection process. This is necessary to ensure that the site network meets its ambitious ecological and socioeconomic objectives, to promote effective governance of individual sites and the network at large, and to secure confidence among the donor community of the likelihood of success of initiatives conducted at individual sites, as well as network-wide activities.

The Site Information Sheet (Appendix 1) provides all the information needed for objective assessment of nominated sites. The IOSEA Advisory Committee will use the criteria 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.

The 19 selection criteria are divided into 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.

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.

This design is intended to allow sites that might be deficient in some areas still to be included in the network on the basis of their strengths in other areas, while setting a minimum standard for inclusion. The thresholds are also designed so that both sites with nesting beaches and sites with other habitats would be able to meet minimum thresholds. Table 1 summarizes the maximum attainable values for each of the 19 criteria, and the minimum values needed for each category and the overall total.

Table 1. Criteria used to evaluate sites for inclusion in the IOSEA Marine Turtle Site Network

Criterion	Maximum Value	Score
<b>I. NETWORK-WIDE ECOLOGICAL CRITERIA</b>		
N1. <u>Representativeness and Replication</u> Contribution of the site towards: (i) adequate representation of the full range of 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).	6	
N2. <u>Ecological Connectivity</u> Contribution to the protection of ecological connectivity within the network, considering the site's spacing from other protected sites (sites in the network or protected under other mechanisms), based on information from migration and genetic studies.	6	
N3. <u>Area</u> 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.	8	
<b>Minimum Category Value / Subtotal</b>	<b>10</b>	
<b>II. ECOLOGICAL AND BIOLOGICAL CRITERIA</b>		
EB1. <u>Presence of Critically Important, Rare Marine Turtle Stock or Species</u> Presence of a marine turtle stock or species that is regionally rare.	8	
EB2. <u>Species and/or Genetic Stock Richness</u> Regular use of the site by multiple species or stocks of marine turtles.	8	
EB3. <u>Turtle Abundance</u> Regularly supports an aggregation of marine turtles that is considered to be of regional importance.	8	
EB4. <u>Refugia (Resistance and resilience)</u> Includes marine turtle habitat that is resistant or resilient to disturbance.	8	

EB6. Degraded, but with Capacity for Rehabilitation 6  
 A disturbed site that has the capacity to rehabilitate turtle habitat; and actions are currently being taken to rehabilitate the site.

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**Minimum Category Value / Subtotal** **20**

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**III. GOVERNANCE CRITERIA**

G1. Legal Framework 8  
 The legal framework provides adequate protection of the site and of marine turtle species found at the site.

G2. Conservation Actions 10  
 Conservation interventions have been undertaken or are under way to mitigate known threats to marine turtles identified at the site.

G3. Collaborative Management, Surveillance and Enforcement 8  
 Availability of immediate (at least short-term) resources for the site to strengthen local stewardship of marine turtle conservation and management measures; and/or provide for adequate surveillance and enforcement of prevailing regulations.

G4. Research and Monitoring Significance 8  
 The site is currently used to monitor marine turtle abundance, including at index nesting beaches, foraging grounds, and reproductive areas, and/or marine turtle survey data span > 20 years for the site.

G5. Sustainable Human and Financial Resources 8  
 Availability of long-term resources (both human and financial) to enable effective governance activities, including monitoring, management interventions, surveillance and enforcement of regulations, and performance evaluation.

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**Minimum Category Value / Subtotal** **20**

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**IV. SOCIO-ECONOMIC AND POLITICAL CRITERIA**

S1. Cultural and Traditional Importance 5  
 Contains prehistoric or historic resources of cultural and traditional significance.

S2. Compatible Socio-economic Activities 8  
 Activities occurring at the site are compatible with the conservation of marine turtles and their habitat.

S3. Educational Value 6  
 Opportunities at the site for educational and outreach activities.

S4. Existing Recognition and Protection 6  
 Existing protected status or other national, regional or international recognition for the site's value to marine turtles.

S5. National Importance 6  
 Significance of the site in a national context, relative to other marine turtle habitat areas in the country.

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S6. Perceived Additional Benefit Perception of additional conservation benefit that would be achieved through the inclusion of the site in the network.	6
<b>Minimum Category Value / Subtotal</b>	<b>15</b>
<b>Total Minimum Score</b>	<b>75</b>

A companion IOSEA Working Paper #2 (IOSEA, September 2011) describes these criteria and the rationale behind them in more detail and defines, for each criterion, a scale that evaluators can use to assess more precisely the merits of a particular submission.

## 5. OPTIONS FOR NETWORKING SITES

There are divergent views within the IOSEA family regarding the operation of the proposed IOSEA Site Network. However, it is generally agreed that adding a site to the IOSEA Site Network should not impose any new binding financial commitments or any new legal obligations on Signatory States. The three models presented below represent a continuum, with implementation measures and network coordination being largely dependent on available financial resources. Different levels of cost are associated with the alternative designs that can be envisaged. Combinations of aspects of the designs presented in these three alternatives are also feasible. Table 2 provides a summary of the continuum of networking activities possible under each of the three Models.

### 5.1. Model 1: Limited or No New Funding Available

Under this scenario of limited or no new funding, it may be difficult to achieve increased networking of sites. Nonetheless it is expected that regional and international recognition resulting from inclusion of sites in the network will help to raise their profile.

Each site will be inaugurated through a dedication ceremony, including provision of an IOSEA certificate to the Signatory State, and installation of signage identifying the site's inclusion in the IOSEA Marine Turtle Site Network. A dedicated page for each site will be created on the IOSEA website to publicise its main features. Emphasis will be given to identifying, as concretely as possible, the particular resource needs of each site. It is hoped that this increased attention may lead to additional funding that can be made available for conservation and management interventions at the site.

Even in the absence of significant new funding, ties can be developed among network sites – for example by twining pairs or larger numbers of 'sister sites'. These sister sites can begin to coordinate their human, technical and financial resources with the aim of conducting collaborative staff training, outreach, monitoring, and management activities.

In the course of applying for inclusion in the network, a site manager and/or collaborators will have conducted basic field and desk research in order to prepare the IOSEA Site Network Information Sheet (Appendix 1). This will serve as a benchmark against which to measure progress and to guide adaptive management -- with a goal of maintaining and augmenting the long-term site-specific and network-wide values of the site. Analyses of ecological gaps in the network will help to guide its systematic growth, to ensure that it is achieving the desired objectives.

### 5.2. Model 2: Moderate New Funding Available

Under this scenario, new funding will be used to increase the networking of all sites through coordinated activities, including financial support to implement formal mechanisms for the coordination and sharing of technical, financial and human resources between subsets of sites in the network. Also under this scenario, new site management plans or improvements of existing plans will be developed for a number of 'model' sites. Available funding will also be used to undertake some prioritized interventions at these sites.

Site management plans will contain the following elements, some of which will have been documented already in the original site network nomination (those identified with an asterisk):

- Executive summary, covering essential issues and key decisions;
- Introduction, defining the purpose of the plan and legal basis for the development of the plan;

- Statement of the goal and objectives for establishment of the protected site, and its inclusion in the site network, categorizing these into short, medium and long-terms;
- Definition of the site's boundaries, and a geographic description of its setting and accessibility\*;
- Baseline inventory descriptions of the site's resources, of relevance to decisions for the site's management \*;
- Description of past and present types and levels of activities and resource uses\*;
- Documentation of past and current threats to the site's resources \*;
- Description of the site's existing legal and management framework \*;
- Securing of appropriate legal status and integration in national planning framework;
- Summary of stakeholder past involvement in the site selection and planning processes and planned continual involvement in implementation of all aspects of the management plan;
- Statement of policies, plans, actions, inter-agency agreements and responsibilities of individual agencies relevant to meeting the objectives of the protected site and to mitigate threats and conflicts;
- Zoning plan, if relevant, and definition of permitted and prohibited activities within each zone;
- Regulations to implement the permitted and prohibited activities;
- Contingency plan for emergencies;
- Sustainable financing plan;
- Establishment of long-term data collection/management system using standardised protocols ;
- Methodology for incorporation of results of monitoring, research, evaluation into planning;
- Negotiation, as appropriate, of agreements to achieve a sustainable level of traditional use of marine turtles through a collaborative management framework, that might also provide for alternative livelihoods;
- Process for the preparation of periodic performance assessment, workplans, and reporting;
- Plan for meeting reporting requirements and other obligations of being a component of the IOSEA Marine Turtle Site Network; and
- An assessment of the financial, human and physical resources required to establish and manage the protected site, including: staffing, equipment and facilities, training, budget, outreach and education, monitoring, research, rehabilitation, conservation interventions to address threats, surveillance and enforcement, performance evaluation and adaptive management.

### **5.3 Model 3: Substantial New Funding Available**

Under this scenario, significant resources will be available to implement activities at individual sites and network-wide. Ideally, institutional donors will be attracted to make a major investment in the development and operation of the network, by committing substantial resources towards network-wide coordination activities and fundamental site-based activities, including: infrastructure development, human resource development and capacity-building, conservation interventions, community engagement and information sharing, and networking among sites.

Initial funding will be used to improve network coordination and to implement management plans at selected sites -- including a budget for subsequent infrastructure and human resource development, and activities to address priority threats to marine turtles and their habitats. Depending on the nature of the site and the amount of funding available, the following site-based activities are envisaged:

**Infrastructure development:**

- Construction or upgrading of visitor (information) centre;
- Construction of guard stations, as appropriate;
- Non-expendable equipment procurement and maintenance (e.g. for patrolling on land/sea); and
- Provision of standard beach-management kits (e.g. basic research, monitoring equipment).

**Human resource development and capacity-building:**

- Recruitment or (re-)assignment of personnel (manager, guards, community outreach/education/development specialists, researchers etc.);
- Specialised staff training (methodology, team building etc.);
- If eco-tourism activities are desirable, an eco-volunteer programme ;
- Acquisition of standard reference materials; and
- Staff exchanges with other network sites and related institutions.

**Conservation interventions:**

- Temporal or spatial restrictions on habitat use, as appropriate;
- *In-situ* nest (i.e. clutch/egg) protection; measures to minimise mortality from all sources and to maximise the production and survival of hatchlings;
- *Ex-situ* nest protection in accordance with defined protocol;
- Habitat restoration/rehabilitation, debris removal etc., as necessary;
- Mitigation of undesirable impacts at or near the site (lighting, vehicles, sand extraction, invasive predators, bycatch etc.);
- Research and long-term monitoring programme (on-site collection of biological and sociological data, genetics, tagging, pollution monitoring etc.); and
- Extraordinary re-introduction programme (e.g. egg exchange between rookeries), when necessary/appropriate, with adequate long-term experimental design and monitoring to measure outcomes (i.e. only as a last resort intervention, to test the efficacy of this approach).

**Community engagement and information sharing:**

- Education and awareness programme for defined audiences;
- Collaborative management framework, including incentives to involve local communities in benefit-sharing (e.g. managed eco-tourism, alternative livelihood development etc.);
- Initiatives to enhance community welfare (literacy, health projects etc.);
- Engagement of relevant nongovernmental and intergovernmental organizations;
- Information exchange with other network sites; and
- Sharing of data with national/regional/global databases (e.g. IMapS, OBIS).

**Networking with other sites:**

Participate in formal mechanisms for sharing resources with other sites, including training and implementation of standardized monitoring, sharing resources for surveillance and enforcement, and participating in “sister sites” programme.

Network sites targeted for substantial funding will be expected to designate, and preferably undertake to co-finance, a site manager before any disbursement of funds takes place. The site may already be under some form of management, in which case the existing manager could be co-opted to participate in the new framework; otherwise a new manager will need to be appointed for any new site. Disbursement of funds and administrative arrangements may vary from site to site, depending on the prevailing conditions.



Managers at each site in the network will participate in network-wide coordination of governance activities. Each site will also receive educational and technical materials; assistance in implementing a management plan; as well as support for research, monitoring, training, public outreach and educational activities.

Formal arrangements to institutionalize the networking of sites for all sites in the network will be developed and implemented within the funding available -- for instance, to provide for the exchange of information and personnel, and sharing of technical and financial resources for monitoring, surveillance, enforcement, staff training, etc.

Table 2. Potential activities for coordination and integration of sites under each of three scenarios for the IOSEA marine turtle site network.

<b>Activity for networking marine turtle sites</b>	<b>Model 1 – Nominal New Funding</b>	<b>Model 2 – Moderate New Funding</b>	<b>Model 3 – Substantial New Funding</b>
Preparation of a Site Network Information Sheet – providing an ecological and governance benchmark for the site	X	X	X
Issuance of IOSEA certification to designate inclusion of the site in the network	X	X	X
Design, production and installation of signs identifying the site's inclusion in the network	X	X	X
Site profile page on a newly created Site Network section of the IOSEA website, focusing content to the donor community	X	X	X
Creation of 'Sister Sites' mechanisms to promote sharing of financial, technical and human resources	X	X	X
New or improved site management plans developed for a number of 'model' network sites		X	X
Establishment of ad hoc mechanisms for coordination and sharing of technical, financial and human resources (limited in scope)		X	X
Funding allocated for prioritized interventions at 'model' network sites		X	X
Establishment of more substantial mechanisms for network-wide coordination and sharing of technical, financial and human resources			X
Dedicated site managers appointed at selected sites to help implement coordinated network activities			X
Regional educational and technical materials prepared / distributed			X
Networked sites receive technical, financial and human resource assistance in implementing site management plans			X
Substantial and well-coordinated site-based activities are implemented across the network			X

## 5.4 Roles of the Signatory States, Advisory Committee and Secretariat

The respective roles of the Signatory States, Advisory Committee and Secretariat need to be elaborated in more detail, however the functional responsibilities may be summarised as follows:

Signatory States (individually, unless otherwise noted):

- Develop proposals for site nominations (i.e. prepare Site Nomination Sheets), in consultation with other interested partners.
- Formally submit the site nominations to the Secretariat.
- Collectively decide whether or not to accept sites for inclusion in the network, taking into account recommendations made by the Advisory Committee.
- Make arrangements for the inauguration of newly listed sites, in collaboration with the Secretariat.
- Examine the potential for twinning with other sites, with a view to enhancing coordination and cost-effectiveness of conservation efforts.
- Consider the need and possibility to enhance the protection status of listed sites.
- Consider the possibility of increasing the funding available for the development of site management plans, as well as conservation interventions and research activities, at selected sites.
- Keep under review the operation of the site network, and consider proposals for further improvement.

Advisory Committee:

- Review and evaluate proposals for site nominations against the agreed selection criteria; suggest necessary amendments/improvements; and recommend acceptance or rejection of site nominations by the Meeting of Signatory States.
- Within the framework of the IOSEA Technical Support / Capacity-building programme, offer expert advice/technical support (e.g. at selected sites) upon request of Signatory States.
- Make recommendations for improving the operation of the site network.

Secretariat:

- Issue IOSEA certification for newly listed sites and cooperate with Signatory States in inauguration activities.
- Develop and maintain a dedicated section of the IOSEA Website to publicise listed sites, including mention of additional resource needs.
- Encourage interested partners to suggest additional sites for inclusion in the network.
- Work with the Advisory Committee to develop technical/training materials suitable for use at network sites.
- Seek additional funding for implementation of activities at individual sites as well as network-wide interventions.

## 6. NEXT STEPS

This section briefly describes possible preparatory activities to occur in advance of the launch of the proposed IOSEA Marine Turtle Site Network, and components of the site network, for consideration by IOSEA Signatory States.

### 6.1. Preliminary Activities

IOSEA Signatory States will be invited to submit proposals of candidate sites from which initially up to [ten] sites will be selected. The reason for initially limiting the number of sites included in the network is so that efforts are focused on establishing effective demonstration sites that can serve as models elsewhere. Through their national governments, NGOs (including environmental groups, academic institutions and the private sector) will be welcome to suggest possible sites for formal nomination by IOSEA Signatory States, and to assist in the preparation of relevant documentation.

Although the process of identifying appropriate sites for nomination should be rigorous, country-driven and involve a wide range of stakeholders, one may make use of reviews already undertaken in other fora to begin to draw up master lists of candidate sites, for preliminary consideration. A number of sources are readily available for consultation, and have been used to produce an indicative list of sites (Appendix 3). The indicative list has not been screened against the provisional suite of criteria presented in this document. It is merely a compilation of findings from other reviews to identify some areas of importance for marine turtles. The six IUCN Protected Area Categories, familiar to most protected area managers, may be of value in categorizing the sites that are eventually selected to form the network.

### 6.2. Criteria Validation

It will be constructive to include a continuum of sites in a validation exercise to assess the provisional suite of criteria, as well as the definitions and assigned weights. The criteria can be tested to confirm whether they meet best professional judgement for a range of sites: from those considered not belong in the network, to those that are understood to be of highest ecological importance and clearly warranting inclusion (e.g., relatively least-disturbed reference sites).

### 6.3. Gap Analysis

There is a need to conduct national and regional-level gap analyses to establish national and regional priorities for the nomination of new sites for the network. The suite of criteria as well as overarching goal and objectives, provide a framework against which to identify gaps in the site network.

### 6.4. Sustainable Financing

IOSEA Signatory States and the Secretariat should seek up to five years of funding to support the initial formation of the site network, after which time the sites would be expected to be self-sufficient or maintained through direct government and other funding. Capital outlays would be expected to be highest in Years 1 and 2, and substantially less in Years 3-5, to cover ongoing operational costs.

Funding needs at site level will differ from site to site, and country to country, depending on local circumstances. In some countries, a site may already have protected status and conservation programmes and infrastructure in place, and will require funding only to meet incremental improvements. In other countries, a site may be designated that has never before benefited from protection, thus requiring substantial investment.

Conceptually, there are at least two ways of presenting the site network proposal to interested donors:

(1) The proposal could be offered as a complete package to a major donor that is able to provide sufficient funding to cover the network development and coordination costs, as well as the operating costs of a certain number of sites (backed by matching funds, as necessary). Administration and disbursement of funds would be handled centrally, so that the donor would need to have only one point of reference. This approach may be attractive to donors that would like to support interventions in multiple countries, without necessarily having to administer the project funding through separate arrangements.

(2) Alternatively, multiple donors may be interested in and/or may have the means only to support activities in individual sites or countries, or certain aspects of implementation at particular sites. In this case, donors may prefer to deal directly with the site management, and each site will be responsible for the administration of funds received. To assure that funds are still available to cover the basic network development and coordination costs, a certain percentage of the site's budget should be allocated to the coordinating body. In this way, individual sites can participate in and receive support from the network, while paying their fair share of the associated development and coordination costs.

These two approaches are not mutually exclusive, and the network could embrace both of them simultaneously. To complement the funds provided by major external donors, several sources of matching funds are envisaged:

- (1) Voluntary contributions from interested governments, towards the overall operation of the site network (not necessarily linked to a particular site);
- (2) Financial and in-kind contributions from a site's host country; and
- (3) Financial and/or in-kind contributions from interested non-governmental organizations (particularly those already working in the area or at the site), private sector, academic and research institutions, and communities adjacent to the site.

## **6.5. Performance Assessment and Adaptive Management**

Once the site network is operational, the effectiveness of management interventions can be monitored employing a modified version of a tool for "Reporting Progress at Protected Area Sites" (Stolton, 2007). Performance assessments for the network and for individual sites should be conducted according to an established schedule and methodology. Monitoring data and other information from network sites should be shared and compiled to enable periodic evaluation of the efficacy of conservation interventions and to guide adaptive management.

## **7. REFERENCES**

- Convention on Migratory Species. 2007. *Western/Central Asian Site Network for the Siberian Crane and other Waterbirds. Guidelines to Prepare Site Nomination Documentation*. Convention on Migratory Species Secretariat, Bonn, Germany.
- IOSEA. 2005. *Network of Sites of Importance for Marine Turtles. Draft Proposal for the establishment of a network of sites of importance for marine turtles and associated communities of the Indian Ocean – South-East Asian (IOSEA) region*. MT-IOSEA/SS.3/Doc. 8.1. Third Meeting of the Signatory States, 29-31 March, 2005, Bangkok. Indian Ocean – South-East Asian Marine Turtle Memorandum of Understanding, Bangkok.
- IOSEA. 2009a. *Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia*. Concluded under the auspices of the Convention on the Conservation of Migratory Species of Wild

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- IUCN. 1994. *Guidelines for Protected Areas Management Categories*. International Union for the Conservation of Nature, Gland, Switzerland.
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- Stolton S, Hockings, M, Dudley, N, MacKinnon, K, Whitten, T and Leverington, F. 2007. *Reporting Progress in Protected Areas A Site-Level Management Effectiveness Tracking Tool: second edition*. World Bank/WWF Forest Alliance. WWF, Gland, Switzerland.

## **8. APPENDICES**

- Appendix 1.** [DRAFT] IOSEA Marine Turtle Site Network Information Sheet - Template
- Appendix 2.** Generic Nomination Letter
- Appendix 3.** Indicative List of Potential Network Sites

## APPENDIX 1. [DRAFT] IOSEA Marine Turtle Site Network Information Sheet

*The following text will be reformatted as a template, including text boxes and explanatory notes, to make the information easier to fill in and process.*

1. **Date of submission:** The date on which the Site Information Sheet was completed.
2. **Name and address of compiler:** Name and contact information for the person or people who prepared this information sheet.
3. **Country:** The name of the country in which the site is located.
4. **Name of site:** The name of the site (alternative names should be given in brackets).
5. **Geographical coordinates:** The geographical coordinates (latitude and longitude) of the approximate centre of the site, expressed in 'decimal degrees' or 'degrees, minutes, and seconds'. If the site consists of two or more discrete units, the coordinates of the centres of each of these units should be given.
6. **General location:** A description of the general location of the site. This should include the site's distance (in a straight line) and compass bearing from the nearest "provincial", "district" or other significant administrative centre, town or city. The population of the listed centre and its administrative region should also be stated.
7. **Area:** The approximate area of the site to be included in the network (in hectares or square kilometers).
8. **Physical features of the site:** A short description of the principal physical characteristics of the site, including the marine turtle habitat types occurring at the site. List the ecosystem types included in the site (nesting beach, foraging habitat, reproductive habitat, migratory habitat) and the approximate area in hectares (or km<sup>2</sup>) of each habitat type included.
9. **Ecological resources:** A short description of the ecological resources contained in the site, including noteworthy biodiversity (from ecosystem types to genetic stocks of populations).
10. **Socio-economic value:** A short description of the principal social values of the site (e.g., tourism, outdoor recreation, education and scientific research, agricultural production, grazing, water supply, fisheries production). Whenever possible, indicate which of these values are consistent with the maintenance of natural functional processes and ecological character, and which values are derived from non-sustainable exploitation or which result in detrimental ecological changes. Also, assess the future socio-economic potential of the site.
11. **Cultural/traditional importance:** Describe cultural values (e.g., historical associations and religious significance). Describe the relative national cultural/traditional importance of the site.
12. **Jurisdiction:** The name of the government authority with: (a) territorial jurisdiction over the site, e.g. state, region or municipality etc.; and the name of the authority with (b) functional jurisdiction for conservation purposes, e.g., Department of Environment, Department of Fisheries, etc.

- 13. Management authority:** The name, address and contact details of the body responsible for the direct local conservation and management of the site.
- 14. Current protected status and governance framework:** Mention any nationally relevant protected area status, international conservation designations and, in the case of transboundary sites, bilateral or multilateral conservation measures which pertain to all or part of the site. If a protected area or reserve has been established, give the date of its establishment and size. If only a part of the site is included within a protected area, the area of marine turtle habitat that is protected should be noted. International designations may include sites listed under the World Heritage Convention, Man and Biosphere Reserve Network, other site conservation networks, etc. If appropriate, list the IUCN (1994) protected areas management category/ies which apply to the site.
- 15. Land tenure/ownership:** Details of ownership of the site and ownership of surrounding areas (e.g., state, provincial, private, etc.). Explain any terms that have a special meaning in the country or region concerned.
- 16. Current and past land uses and activities within the site:** Describe the current and past human activities and land uses within the site. Some indication of the relative importance of each form of land use should be given, whenever possible.
- 17. Past and current factors adversely affecting the site's overall ecological character, as well as threats to marine turtles and their habitat at the site:** Describe the human and natural factors affecting the ecological character of the site, both within and in the vicinity of the site. These may include existing, new or changing activities/uses, major development projects etc., which have had, are having, or may have a detrimental effect on the natural ecological character of the site. For all adverse and change factors reported, supply measurable/quantifiable information (when such data exist), as well as information on the scale, extent and trend of the change factor and its impact. This information should provide a basis for monitoring of ecological character of the site.
- 18. Conservation and management interventions taken:** Describe conservation and management interventions already taken at the site to address threats. Some of this information may have been recorded in abbreviated form in the IOSEA Site Data Sheets, available online ([www.ioseaturtles.org/reporting](http://www.ioseaturtles.org/reporting)).
- Describe the management planning process for the site, including any management plan, if this has been developed and is being implemented, including whether it has been officially approved. Describe any other conservation measures taken at the site, such as restrictions on development, management practices beneficial to wildlife, closures of hunting, etc. Include also information on any monitoring schemes and survey methods in place at the site. Indicate any other protected area designation that might already apply to the site (e.g. UNESCO status, nationally or regionally-designated MPA etc.)
- If the site is listed as a Ramsar site, mention if the site is included on, or has been removed from, the Montreux Record and provide details of any Ramsar Advisory Missions that have been undertaken to the site.
- Any application of coastal and marine spatial planning, or integrated coastal/marine zone management planning, involving or affecting the site should be noted.
- Provide a brief assessment of the effectiveness of protected area legislation or status of any protected areas whenever possible. Involvement of local communities and indigenous people in the participatory management of the site should also be described.
- 19. Conservation interventions proposed, but not yet implemented:** Provide details of any conservation measures that have been proposed, or are in preparation, for the site, including any proposals for legislation, protection and management. Summarize the history of any longstanding proposals that have not yet been implemented, and differentiate between those proposals that have already been officially submitted to the

appropriate government authorities and those which have not as yet received formal endorsement, e.g., recommendations in published reports and resolutions from specialist meetings. Also mention any management plan that is in preparation but has not yet been completed, approved or implemented.

**20. Current / proposed scientific research and monitoring:** Describe any current and/or proposed scientific research and information on any special facilities for research. Describe past and current marine turtle monitoring activities at the site (e.g., tagging, satellite tracking, genetic sampling, surveys, ongoing beach monitoring, etc.). Where relevant, identify the number of years of monitoring that has occurred.

**21. Current / proposed communication, education, and public awareness activities:** Give details of any existing and/or planned programmes, activities and facilities for communication, education and public awareness, including training; and comment on potential opportunities for future educational and outreach activities of the site.

**22. Financial resources available for management of the site and other activities:** Identify financial resources available to address immediate and near-term costs, and financial resources available for longer-term sustainable financing.

**23. Additional resource needs at the site:**

Where specific needs are identified (e.g. skilled personnel, specialised training, facilities, field equipment etc.) indicate how marine turtle conservation activities are presently impaired on account of their unavailability (e.g. inability to carry out regular surveys, to conduct certain types of research, to monitor certain parts of the range etc.) This information may be useful for compiling a general picture of deficiencies and resource needs that could be presented to potential programme sponsors.

**24. References:** List key references relevant to marine turtle records and to the site, including management plans, major scientific reports, and bibliographies. When a large body of published material on the site is available, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies. Reprints or copies of the most important literature should be appended whenever possible. Provide web-site addresses of references where available.

**25. Site map:** The most detailed and up-to-date map of the site available should be appended to the Site Information Sheet in digital and/or hardcopy format. The ideal site map will clearly show the area boundaries of the site, scale, latitude, longitude and compass bearing, administrative boundaries (e.g., province, district, etc.), and display basic topographical information, the distribution of the main site habitat types and notable hydrological features. It will also show major landmarks (towns, roads, etc.). Indications of land use activities are especially useful.

The optimum scale for a map depends on the actual area of the site depicted. Generally the map should have a 1:25,000 or 1:50,000 scale for areas up to 10,000 ha; 1:100,000 scale for larger areas up to 100,000 ha; 1:250,000 for areas exceeding 100,000 ha. In simplest terms, the site should be depicted in some detail. For moderate to larger sites, it is often difficult to show detail on an A4 sheet at the desired scale, so generally a sheet larger than this is more appropriate. While an original map is not absolutely necessary, a very clear image is highly desirable. A map exhibiting the above attributes will be more suitable for scanning.



## APPENDIX 2. GENERIC NOMINATION LETTER

To:  
IOSEA Marine Turtle MoU Secretariat  
c/o UNEP Regional Office for Asia and Pacific  
United Nations Building  
Rajdamnern Nok Avenue  
Bangkok 10200, Thailand

Reference number <insert number>  
<Insert date>

Dear Sir/Madam,

Re: Nomination of a new site in <insert country name> for inclusion in the IOSEA Marine Turtle Site Network

<Insert country name> recognizes the importance of conserving marine turtles and their coastal habitats and wishes to participate in the Network of Sites of Importance for Marine Turtles in the Indian Ocean – South-East Asia Region (IOSEA Marine Turtle Site Network), established under the Convention on Migratory Species (CMS) 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).

It is my pleasure to nominate the following sites <insert name(s) of site(s)> to join this network in order to further the aim of conserving the region's marine turtles and their coastal habitats. The relevant Site Information Sheet(s) and Site Map(s) are attached.

I understand that this application will be reviewed by the Secretariat and the IOSEA MoU Advisory Committee, which may suggest certain amendments prior to its consideration by the next meeting of the IOSEA Signatory States.

Yours sincerely,

<insert name>  
<insert position, organization>  
<insert contact details>

Enclosures: Site Information Sheet  
Site Map

### APPENDIX 3. INDICATIVE LIST OF POTENTIAL NETWORK SITES

The following is an indicative list of sites, determined to be areas of importance for turtles (IOSEA, 2005). The following list does not purport to be comprehensive, nor does it make any judgment as to whether a particular site or area would meet the criteria for, or would benefit from, inclusion in the proposed IOSEA Marine Turtle Site Network. The geographic scope of many of the areas included in this list extends beyond what is envisaged for the site network. Non-Signatory States of the IOSEA Marine Turtle MoU, shown in italics, are included for illustration only.

Country	Name of site/area	Remark	Source *
South-East Asia + neighbours			
Australia	Commonwealth Waters: Coringa-Herald NR, Lohou Reef NR, Ashmore Reef, Field Island; Western Australia: ca. 15 sites identified; Cocos Keeling Island; Queensland: ca. 30 sites identified' Great Barrier Reef Marine Park Area: ca. 35 sites identified; Northern Territory: many sites, including ca. 10 specifically identified.	Multiple species; using nesting, feeding and developmental habitats.	1
Cambodia	ca. 30 specific islands and beaches identified in Sihanoukville and Kampot province	Nesting and feeding grounds	1
Indonesia	Raja Ampat region / Bird's Head Peninsula (Jamursba Medi Beach); Aru Islands	Includes region's largest leatherback turtle nesting site	2
Indonesia	Derawan Archipelago (Berau Islands) – Pulau Sangalaki, Pulau Sammana	Largest green turtle nesting rookery in SE Asia	2
Indonesia	Banda Sea/Lucipara cluster	Hawksbill turtles	2
<i>Malaysia</i>	Terengganu and Pahang States	Nesting leatherbacks (former times; almost extinct)	10
<i>Malaysia/Philippines</i>	Turtle Islands (Talang-Talang Besar, Talang-Talang Kecil and Satang Besar; Boan, Lihiman, Langaan, Great Bakkungan, Taganak, Baguan)	Important nesting sites for green and hawksbill turtles; migration corridor. Turtle Islands Heritage Protected Area in place since 1996.	2
Myanmar	Thamee Hla Island, Diamond and Little Coco Islands	Olive ridley turtles	3
<i>Papua New Guinea</i>	Kamiali Wildlife Area, Labu/Busama, Sio, Saidor, Talasea/Kilu, Madang/Long Island, Daru Island, Gasmata, Manus	Nesting and feeding areas	1
Philippines	Tubbataha-Cagayan ridge / Bastera and Beazley reefs	Important migration route for turtles	2
Philippines	Approx. 30 other specific nesting areas identified in Bataan, Zambales, Batangas, Palawan, Occidental Mindoro, Oriental Mindoro, Sorsogon, Catanduanes, Antique, Negros Occidental, Camiguin, Guimaras, Zamboanga de Sur, Davao City, Misamis Oriental, and Siregao del Sur	Mostly green and hawksbill turtles	1

Thailand	Gulf of Thailand: Kram Island, Kra Island; Andaman Sea: Phrathong Island, Khorkhao Island, Prapat Beach, Thaimuang Beach, Maikhaw Beach, Talibong Island, Similan Island	Nesting sites and feeding habitat, for mostly green and hawksbill turtles	1
Viet Nam	Con Dao islands (14 sites)	Green turtle nesting	6
Viet Nam	Nui Chua (Ninh Thuan), Quang Ninh to Kien Giang coastal areas, including Vinh Thuc Island, Minh Chau Beach, Bach Long Vy Island (Hai Phong), Phu Quy Island; Hon Gam-Ba Lang reefs		6,8
Various (disputed territory)	Spratley Island group	Marine turtle nesting site	
Northern Indian Ocean			
Bangladesh	St. Martin's Island, Sondia and Kutubdia Island, Enani Beach, Maurdarbari (Sundarban)	Mostly olive ridley, some green turtle nesting	1,3
India	Gahirmatha and Rushikulya beaches, Bahuda and Devi River mouths (Orissa), Krishna and Godavari River mouths (Andhra Pradesh), Tamil Nadu and Gujarat coasts, Kerala and Karnataka coasts, Andaman and Nicobar Islands, Lakshadweep Islands	Olive ridley, green and leatherback turtles migrating	2,3
Maldives	Nesting islands in most atolls: e.g. Haa Alifu (Mulhadhoo Island); Baa Atoll (Kunfunadhoo, Maadhoo Islands); Ari Atoll (Hukureulhi Island); Laamu Atoll (Gadhoo Island)	Green and hawksbill turtles (nesting/foraging)	2,9
Pakistan	Sindh (Hawkes Bay, Sandspit) and Baluchistan coasts	Olive ridley and green turtles nesting	3
Sri Lanka	Rekawa, Bandarawatta, Duwemodara, Kosgoda, Kahandamodara beaches etc (about 15 in total specifically identified)	Multi-species nesting beaches	1,7
Northwestern Indian Ocean			
Eritrea	Fatuma Island group	Green and hawksbill turtles reported	
<i>Egypt</i>	Red Sea Islands	Green and hawksbill turtles (nesting/foraging)	

Islamic Republic of Iran	Booshehr Province: Nakhiloo, Ommolkaram Islands, Nayband Bay; Hormozgan Province: Shidvar, Hendourabi, Queshm, Lavan, Kish, Hormoz Islands; Oman Sea area (Sistan and Baluchestan Province): Kratti, Tang, Pozm, Chabahar, Miami	Mostly green and hawksbill turtles	1
Jordan	Gulf of Aqaba		
Oman	Ras Al Hadd Cape, Masirah Island/Barr Al Hickman, Dimaniyat Islands, Al Hallaniyat Islands	Ras Al Hadd: most important green turtle rookery in Indian Ocean Masirah: largest loggerhead nesting grounds in the world	1,2
<i>Qatar</i>	Al Ruwais Island and east coast	Green turtles	3
Saudi Arabia	Ras Baridi, Karan and Jana Islands	Green turtles	3
Saudi Arabia	Jubail Marine Wildlife Sanctuary	Largest green and hawksbill rookery in the Gulf	2
<i>Sudan</i>	Suakin Archipelago, Mohammed Qol Islands		4
United Arab Emirates	Murawah Island – Bu Tini Shoals	Feeding populations of green turtles, nesting hawksbills	2
Yemen	Belhaf – Bir Ali coast; Socotra Archipelago	Important turtle nesting/feeding areas	2
Western Indian Ocean			
Comoros	Moheli, other specific islands/beaches	Mostly green turtle nesting	1,4,5
France	Europa, Tromelin, Glorieuse	Very high number of nesting green turtles	2,4,5
France	Mayotte archipelago	Approx. 35 beaches important for green and hawksbill nesting	4
Kenya	Approximately 25 specific nesting beaches identified, and other 7 areas identified as feeding grounds	Mostly green and hawksbill turtles feeding	1
Madagascar	Northwest/North: Nosy Sakatia, Nosy Iranja, Nosy Hara; Northeast/East: Masoala, Ile Sainte Marie; Southeast: Ankaramany, Enakao, Ibakoko, Eledrato, Anstsotso, Sainte- Luce, Evatraha; Southwest: Nosy Ve, Ifaty, Toliara	Green, hawksbill, loggerhead, olive ridley turtles	1,2
Mauritius	St. Brandon atoll, Caragados Carajas shoals, Agalega	Nesting and foraging habitat for green and hawkbill turtles	1,2,4
Mozambique	Mainland: south coast Maputo Bay - Ponta de Ouro, Inhambane, Inhassoro; Inhaca Island, Bazaruto Archipelago, Primeiras-Segundas Archipelago	Important nesting, foraging and developmental habitat for green turtles; other sites important for loggerhead and leatherback nesting	2,4
Mozambique	Mozambique channel	Important migratory	10

channel		corridor for all species of turtles in the region (especially greens, leatherbacks and loggerheads)	
Seychelles	Southern islands: Aldabra group (Aldabra/Asomption & Cosmoledo/Astove), Farquhar group (Farquhar & Providence/Cerf)	Important green turtle nesting, and foraging habitat for immature green turtles and hawksbills	1,4,5, 10
Seychelles	Amirantes (esp. D'Arros/St. Joseph, Poivre, Alphone/ St. Francois), Granitic islands (Aride, Bird, Cousin, Cousine, Curieuse, Ste Anne) and Platte & Coetivy	Important hawksbill nesting, and foraging habitat for immature hawksbills and green turtles	1,4,5, 10
<i>Somalia</i>	Bajuni	Nesting sites for olive ridley, green and hawksbill turtles	2
South Africa	KwaZulu-Natal coast: Maputaland Marine Reserve, St. Lucia Marine Reserve, Aliwal Shoal, Pondoland, Tsitsikamma Nature Reserve, Aghulas Bank	Mostly leatherback and loggerhead turtles	1,5
United Kingdom	Chagos Archipelago: Peros Banhos Atoll, Diego Garcia, Salomon Atoll, Egmont Atoll, Chagos Bank (Danger Island, Cow Island)	Hawksbill and green turtles nesting/feeding	1,2
United Rep. of Tanzania	Mafia Island; Zanzibar: Unguja, Pemba Islands	Hawksbill and green turtles nesting/feeding	

\* Information sources:

- (1) IOSEA Marine Turtle MoU National Reports (Australia, Bangladesh, Cambodia, Comoros, Islamic Republic of Iran, Kenya, *Madagascar*, Mauritius, Oman, Philippines, *Papua New Guinea*, Seychelles, *South Africa*, Sri Lanka, Thailand, United Kingdom)
- (2) Proceedings of the 2002 World Heritage Marine Biodiversity Workshop (and related background papers: <http://international.nos.noaa.gov/heritage>) – UNESCO World Heritage Centre, 2003
- (3) A Marine Turtle Conservation Strategy and Action Plan for the Northern Indian Ocean – IUCN, 2001.
- (4) A Strategy to Conserve and Manage the Marine turtle Resources of the Western Indian Ocean Region, Mortimer, 2001
- (5) A Marine Turtle Conservation Strategy and Action Plan for the Western Indian Ocean – IUCN, 1996.
- (6) Vietnam's First National Workshop on Marine Turtle Conservation, 2001
- (7) Classification of Marine turtle Nesting Beaches of Southern Sri Lanka (Amarasooriya, 2000)
- (8) Proceeding of a Training Workshop (2-4 September 2002) on Marine turtle Research, Biology and Conservation in Cambodia, 2004
- (9) Maldives Marine Research Bulletin, 2000
- (10) Personal communication (J. Mortimer)