



Memorandum of Understanding on the
Conservation and Management of Marine Turtles and
their Habitats of the Indian Ocean and South-East Asia

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TRADITIONAL AND CULTURAL USE OF MARINE TURTLES

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ABSTRACT

Marine turtles and human societies have interacted for millennia, virtually wherever they have been in contact. Evidence from a variety of sources shows that humans have exploited the eggs, meat, blood, oil, shell, skin, bones, and other parts of these reptiles to provide raw materials for food, tool-making, ornaments, and religious objects. Yet, humans also use marine turtles indirectly, such as through incidental capture in fishing operations, and through other forms of habitat modification. Moreover, these reptiles are used in non-consumptive ways for artistic, emotional, scientific, spiritual, and other cultural reasons. The great age and diversity of interactions between humans and marine turtles provide the foundations for the cultural, economic, emotional, intellectual, social, and spiritual motivations that determine how conservation and management activities are designed, conducted, and assessed. Hence, an understanding of the cultural, social, and traditional role of these reptiles is fundamental for strengthening the participation and collaboration of Signatory States in multilateral environmental agreements, such as the IOSEA. However, because the information is widely dispersed, and impacts of different types of human-turtle interactions have rarely been evaluated in a systematic way, this issue needs much greater attention.

INTRODUCTION

Interactions between humans and marine turtles take on many diverse forms, and include ‘*directed consumptive use*’, such as collecting eggs and hunting turtles, as well as ‘*indirect consumptive use*’, such as incidental capture in fishing gear and accidental deaths caused by disorientation from artificial lighting and other forms of habitat perturbation. Other types of interaction include ‘*non-consumptive use*’, such as occurs in a wide variety of human activities ranging from artistic expression, to education and research, to wildlife viewing and tourism, to emotional, recreational and spiritual pursuits. Some activities may involve a combination, such as removing eggs for incubation in hatcheries, and later release of the hatchlings.

Many of these human activities can be categorised as ‘*cultural*’ or ‘*traditional*’ by virtue of the importance that certain members of society bestow upon them. While some interactions between humans and marine turtles clearly date back several millennia, it is imperative to understand that not all *cultural* or *traditional* activities are necessarily ancient, or even old, nor are they necessarily manifestations of ‘*primitive*’, pre-industrial societies: the very popular turtle-watching activities that have developed over the past decade around the world in many countries shows how quickly traditions can change and develop. Although there is considerable variety from locality to locality, even within the same country, the ways in which humans and marine turtles have interacted over the centuries is relevant to all coastal societies in the region.

It is essential to understand that all conservation and management activities are conceived, designed, conducted, and assessed within a cultural context – without this context there would be no need for conservation initiatives or international instruments such as the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA). Hence, while the biological aspects of marine turtles form the basis on which fundamental

decisions must be founded, the existence, development, evaluation, and success of the MoU are all intimately related to social and cultural foundations. Because many forms of use, or human-turtle interactions, are poorly understood, and rarely assessed, it is necessary to promote greater understanding and evaluation of these issues. This topic is relevant to all States of the region, independent of how industrialised and developed they may be.

The object of this paper is to summarise various basic aspects of ‘cultural and traditional use’ – or human turtle interactions in the broader sense, particularly as they relate to the societies and governments of the Signatory States of the IOSEA. This is but an initial attempt to provide a basic outline, and some recommendations, for the consideration of the Signatory States and other interested parties.¹

ANCIENT EVIDENCE

Archaeology

Zooarchaeology: Marine turtles and human societies have interacted for millennia. Archaeological evidence indicates that as much as 57,000 years ago human groups in southern Africa exploited these animals, where their bones were left in middens.² Other archaeological evidence has been recorded along the eastern coast of Africa, particularly in Tanzania and Kenya, although these remains are much more recent. In general, zooarchaeological information on marine turtles from southern and eastern Africa is uncommon and incomplete, often with little more than superficial analysis. There are records from Mayotte, Comores, that indicate that marine turtles were exploited about a thousand years ago,³ but otherwise very little information is available from island states in the western Indian Ocean.

In contrast, there is considerable zooarchaeological information from the Arabian Peninsula, particularly the eastern coast, where records date back nearly seven millennia (Figure 1). At least a dozen sites have been thoroughly studied, providing detailed information on dates of occupation and customs of inhabitants.⁴ In several ancient sites marine turtle bones form a major part of the faunal remains, and indicate that prehistoric societies relied heavily on these reptiles. Detailed analyses also provide evidence for the capture of turtles from marine feeding grounds as well as on nesting beaches, the development of specialised industries based on marine turtle products, and the symbolic use of marine turtle remains in human graves. Indeed, at Ra’s al-Hamra, Oman, the persistent occurrence of marine turtle crania and other bones in graves dating back to about 3500 BC clearly shows that these animals had an extraordinarily important significance to this ancient society.⁵

There is one record of marine turtle bones in an archaeological site in Anuradhapura, Sri Lanka (800-250 BC),⁶ but little else seems to have been recorded about archaeological remains of these animals from South Asia. Considerable zooarchaeological evidence is available from detailed studies conducted in various sites in Thailand.⁷ Here again, turtle bones form conspicuous, and common, grave goods, indicating that these reptiles enjoyed special status for ancient societies in this region.

Cultural artefacts – manufactured with remains of marine turtles: Only those parts of marine turtles that are resistant to degradation over time are likely to remain for the archaeological record. Hence, although it is known that marine turtle parts such as stomachs and skins have been used by certain societies during recent times, ancient cultural artefacts are restricted to bone, and to a lesser extent the keratinous scutes of these reptiles.

Worked, or culturally modified, bones of marine turtles are recorded from around the world; a vast variety of tools and other objects have been fabricated by diverse societies.

However, from the IOSEA region, the only culturally modified marine turtle bones seem to be a tablet with a hole from Umm-an-Nar, Abu Dhabi,⁸ and grave goods, such as pendants, carved ornaments, bangles, etc., from Khok Phanom Di and Nil Kham Haeng, Thailand.⁹

Bangles made of tortoise-shell (keratinous scutes, mainly from hawksbill turtles) are reported from several grave sites in pre-dynastic Egypt, estimated to date back more than four millennia.¹⁰ Otherwise, however, there is little evidence from the IOSEA region of ancient artefacts made of tortoise-shell. As will be discussed below, ancient historic evidence clearly shows that tortoise-shell has been traded widely around the IOSEA region for millennia, so the paucity of archaeological evidence is likely related to the fact that this material is far less durable than bone.

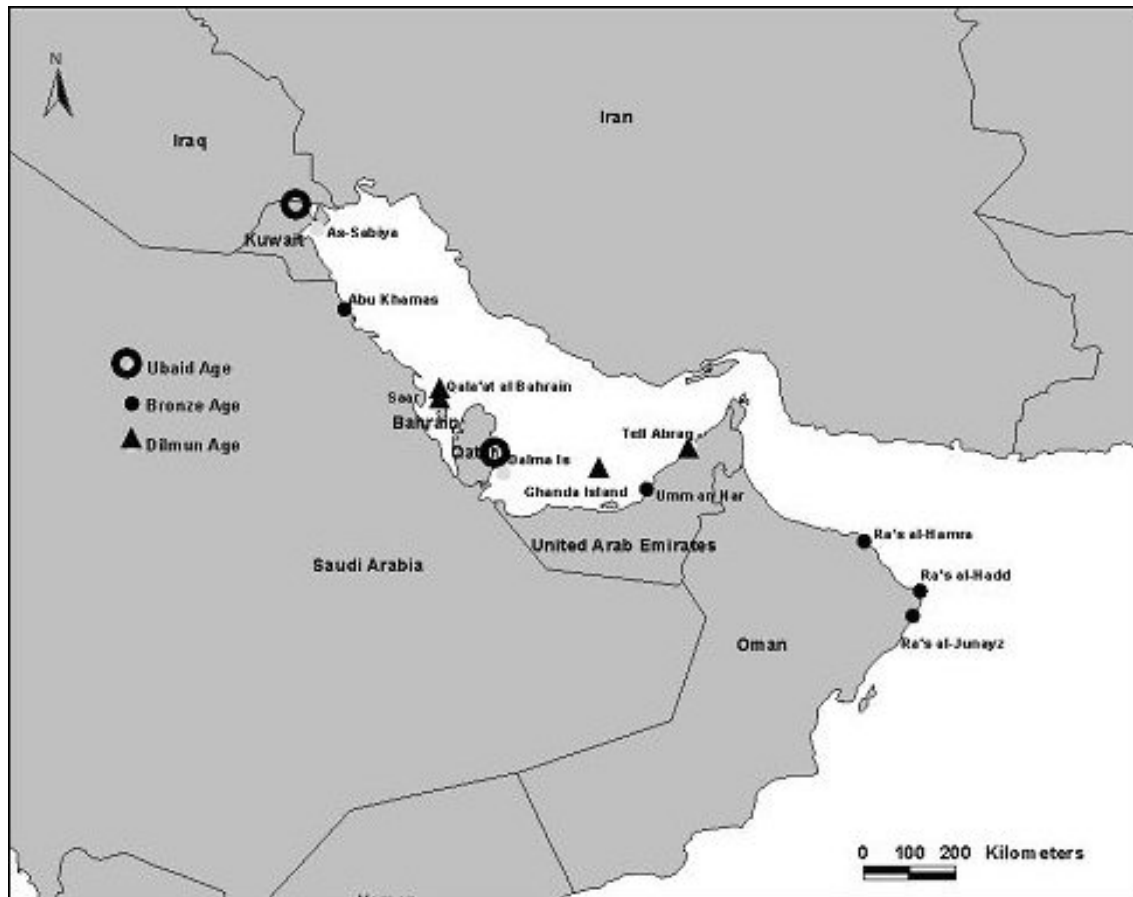


Figure 1. Locations of archaeological sites on the eastern shores of the Arabian Peninsula where marine turtle bones have been found.

Cultural artefacts – representations of marine turtles: Representations of marine turtles, or at least turtles in a marine environment, are known from diverse cultures, media, and settings. Various forms of seals and seal impressions from the Middle East provide some of the clearest examples (Figure 2). Reliefs depicting marine turtles have been described from palace walls at Nimrod, Mesopotamia, and Nineveh.¹¹ A terracotta representation of a marine turtle is known from Mohenjarajo, in the Indus Valley.¹² Hence, some of the most ancient of civilizations produced realistic representations of these reptiles. Given the abundance of turtle representations in contemporary societies of South and South-East Asia, it is likely that prehistoric cultures also used similar symbols. While some artefacts may have been used to convey information about hunting and the directed use of marine turtles, it is also likely that some representations celebrated other aspects of these animals. However, we may never learn the depth of meaning and emotion attached to cultural artefacts of marine turtles.



Figure 2. Impression from a cylindrical seal found in Hamad Town, Bahrain, from the Dilmun period (from Vine 1993: 53).

Ancient historical accounts

Cuneiform tablets from Sumerian cities, some five thousand years old, evidently contain records of marine fisheries products delivered to state authorities, and some of these are thought to refer to marine turtles.¹³ The ancient writing system of the Han Chinese evolved as pictographs, frequently inscribed on turtle shells and used for divination purposes,¹⁴ and the ancient/traditional character for turtle shows a clear depiction of this animal.¹⁵

One ancient Greek text attributed to Agatharchides of Cnidus from the third century BC, reports on primitive peoples, evidently from the Red Sea, hunting and utilising marine turtles and their parts. Another Greek text, the *Periplus Maris Erythraei*, provides detailed information on trade networks that existed in the Indian Ocean two thousand years ago, and the most commonly mentioned commodity was tortoise-shell.¹⁶ From this, as well as Arab¹⁷ and Chinese¹⁸ documents a thousand years later, it is clear that parts and products of marine turtles have had enormous importance to human societies over most of the Indian Ocean. Indeed, marine turtles seem to have provided key products that were fundamental in the early globalisation of trade and commerce.¹⁹

Sources of ancient information

Primary information on archaeology, zooarchaeology, and ancient history is scattered among a variety of publications from different disciplines and countries. Recent reviews and references²⁰ provide details and primary sources of information on evidence of ancient interactions between humans and marine turtles, but far more information could be compiled, synthesised, and evaluated.

CONTEMPORARY EVIDENCE

Historic information

Marine turtles seem to have captured the imagination of naturalists and explorers from the earliest of times. One of the oldest illustrated publications on marine life clearly shows a leatherback turtle (Figure 3).²¹ Documents from the European age of discovery and colonial periods are an invaluable source of information on commercial use of turtles, particularly for tortoise-shell and for food products, such as whole turtles, meat, calipee, calipash, and oil. The meticulous records from the British Colonial administration provide unique sources of historic information on localities, quantities, and monetary values of turtle products. Trade records, mainly the export of raw materials, from Aden, Australia, India,

Seychelles, Zanzibar, and other ex-colonial producers of marine turtles show that vast numbers of turtles were once exploited for export to industrialising nations. Notably, the records also show that the rates of exploitation exceeded the rates of recruitment for the respective populations, and as such they routinely provide classic examples of the over-exploitation, and destruction, of natural resources. The history of export of green turtle products from the Seychelles is an archetypal case of over-exploitation.²²

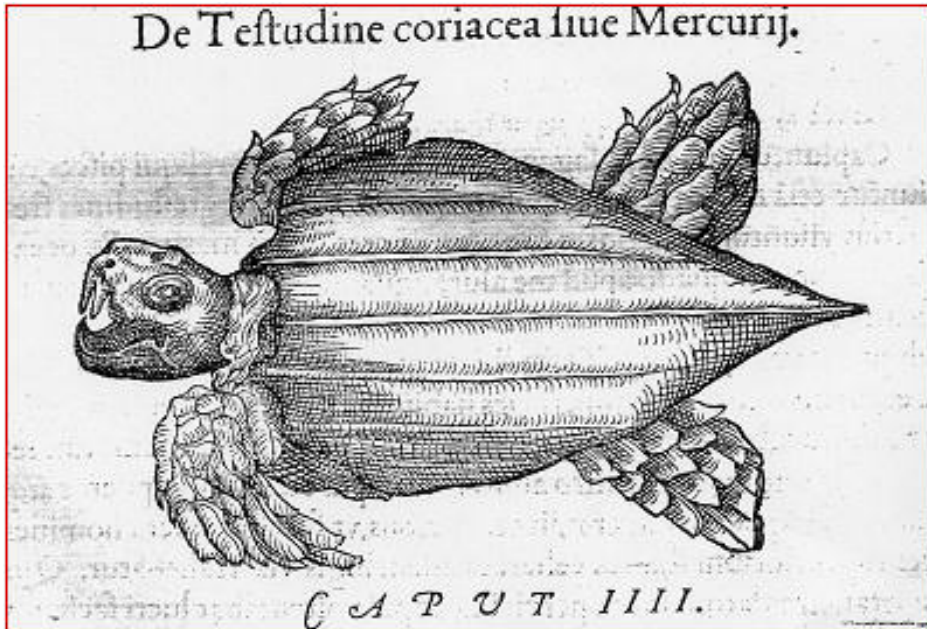


Figure 3. Illustration from Rondeletii 1554, showing a leatherback turtle (courtesy of the Joseph F. Cullman 3rd Library of Natural History, Smithsonian Institution Special Collections Department).

Ethnographic information

A variety of societies around the Indian Ocean have long-standing traditions involving the hunting and celebration of marine turtles. These include the Bajun of southern Somalia and northern Kenya,²³ the Sakalava and Vezo²⁴ of northwest and southwest Madagascar, respectively; Balinese,²⁵ Papuans,²⁶ and aboriginal Australians²⁷ and Torres Straits Islanders. In addition, various fishing and coastal societies throughout the IOSEA region are known to have regularly hunted, consumed, traded, and utilised marine turtles and their parts and products, even though there may have been no evidence of ‘special traditional or cultural practices’.

Trade statistics

As well as centuries-old trade practices across the IOSEA Region, consumptive practices and traditions, such as turtle soup, in industrialised nations outside the region have driven markets and intense fisheries. In addition to the colonial records, mentioned above, studies begun in the 1970s have concentrated on imports of turtle products into Japan.²⁸

Interpreting contemporary evidence

While historic data, ethnographic studies, and trade statistics provide more information, and far more quantitative information, that is generally available from studies of ancient evidence, the information is not easy to interpret in terms of conservation and management practices. Some ethnographic information indicates that certain societies developed methods for regulation of turtle take. For example, the Vezo had a series of taboos regarding butchering, cooking, and eating these animals, but most importantly they believe that the turtles, unlike fish, should not be killed frequently (daily) but perhaps once a month or once a year, although at the same time they have a rather ‘easy’ attitude about

observing all the taboos all the time.²⁹ Similarly, even although some recent studies have provided detailed anthropological analyses – even unique information on human foraging strategies and social behaviour (for example of Torres Strait Islanders³⁰) – and these are of considerable theoretical importance, it is still not possible to understand how traditional systems actually regulated access to turtles, and managed the human-turtle interaction effectively.

EVALUATING IMPACTS

Despite the antiquity and widespread nature of human-turtle interactions, there is relatively little *systematic* information on the impacts of ancient interactions. By its very nature, zooarchaeological evidence can never be subjected to highly quantitative analyses, for there are a multitude of assumptions – many of which cannot be tested – that are involved in the finding and collecting of the evidence. Yet, there is a major need in zooarchaeological studies to provide more robust information that can be used for making evaluations and defensible conclusions of the impacts of ancient human-turtle interactions.³¹ Although archaeological evidence provides unique insights into past societies, the interpretation of cultural artefacts, and past human interactions, is even more difficult to quantify. Nonetheless, flawed as it may be, this evidence is the best we have for inquiring about ancient human-turtle relationships, and attempting to understand the impacts of these activities before systematic information was recorded.

Historic information from the periods of exploration and colonisation, Asian, Arab, and European, often provides irreplaceable evidence of past levels of abundance, rates of exploitation, and commercial relations;³² and a few attempts have been made to compile and analyse some of these colonial data.³³ The IOSEA region, with its complex colonial histories, provides a wealth of potential information to evaluate the impacts of past activities of human use of marine turtles. On the other hand, without knowing levels of effort for exploitation, production, exportation, and data recording (among other things), these data must be interpreted with caution.

Information from contemporary times, involving not only directed use, but also indirect use and non-consumptive use, is available from diverse sources,³⁴ but very few systematic studies have been carried out on how human interactions with the turtles have affected the long-term status of these reptiles. Because marine turtles are slow-maturing and long-lived, information on population trends must be gathered over periods of at least ten years. Unfortunately, systematic, long-term data (ten years or more) are rare, but several localities in the IOSEA region are now providing invaluable information from projects and programmes that have been running continuously for a decade or more; these occur in various countries, including: Australia, France, Malaysia, India, Pakistan, Seychelles, South Africa, and Tanzania.

Of particular interest are cases of co-management, where state authorities collaborate with communities and other non-governmental groups. Several forms of co-management of marine turtles exist, particularly where there is of legal exploitation of eggs, such as in Philippines.³⁵ Various initiatives in co-management are also well advanced in Australia and Kenya.

RECOMMENDATIONS

Basic zooarchaeological information on marine turtles needs to be compiled, together with other archaeological and ancient historic evidence, and where possible this should be synthesised and evaluated to look for possible indications of ancient human impacts on marine turtles. Any ancient customs that might have involved folk management practices for regulating human impacts on the turtles and their habitats should be explored and described as fully as possible. Because the utility of information from the ancient times may be questioned, it is important to point out that *‘[a]ll interest in the past is because of present concerns, although in societies with a literary tradition, our conception of the past is constrained at least to some degree by written records.’*³⁶ A better understanding of past human-turtle interactions, cultural values and practices that were involved, can only strengthen our understanding of contemporary customs, thus providing the foundations for better, more effective conservation and management.

Historic records, particularly information with quantities of turtles and/or their parts, should be compiled and analysed to establish basic information on past levels of abundance, rates of exploitation, and evidence for human impacts on turtle populations. Ethnographic information from around the IOSEA region, particularly regarding coastal societies, should be examined for indications of folk management practices that may be relevant to marine turtle conservation. Cases of marine turtles employed in various cultural manifestations, e.g., as objects of art, symbols, ceremonial objects, etc.) should be investigated to

strengthen arguments in different societies about the social and cultural values of these animals. This would be particularly useful for the Year of the Turtle campaign of the IOSEA.

In some cases, it may be useful to explore comparative information on human-turtle interactions involving other animals with similar life histories, for example, other species of turtles that nest on marine and estuarine beaches³⁷ as well as dugongs. Comparisons with human-turtle interactions in areas outside the IOSEA region could also provide valuable insights. Similarities and differences in customs, traditions, conservation and management practices will help to enhance our understanding on how best to develop culturally effective conservation and management programmes for the IOSEA.

In addition, it is essential that long-term monitoring programmes on different marine turtle populations – with standardised techniques – be carefully planned, executed, and maintained. These must be assessed in the light of different management practices. Collaboration between and among Signatory States (SS) and also between and among SS and other states of the region will be fundamental.

NOTES

¹ The author invites comments and corrections on this draft.

² Plug 2004

³ Reading and Goodman 1984

⁴ see reviews in Frazier 2003; 2004a; 2004b; in press

⁵ Potts 1990: 71; Salvatori 1996: 207-209

⁶ Chandraratne 1997: 9

⁷ Higham 1989; Higham and Bannanurag 1990; Higham and Thosart 1998

⁸ Hoch 1995: 250, 251

⁹ Higham and Bannanurag 1990: 39 ff; Higham and Thosarat 1998: 98, 118

¹⁰ Lucas 1948: 50

¹¹ van Buren 1939: 104; Albenda 1983: 6, 27

¹² pers. obs.

¹³ Owen 1981; Englund 1990; 1998

¹⁴ Allan 1991

¹⁵ Dwe 1981: 678

¹⁶ Casson 1989: 17, 101

¹⁷ Meilink-Roelofs, 1962: 14

¹⁸ Duyvendak, 1949: 14, 17, 21; Wheatley, 1959: 39, 83

¹⁹ Frazier 2004b

²⁰ Frazier 2003; 2004a; 2004b

²¹ Rondeletii 1554: 450

²² Frazier 1974

²³ Gudger, 1919a; 1919b; Grottanelli, 1955

²⁴ Astuti, 1995

²⁵ Covarrubias, 1947; Lindsay and Watson 1995

²⁶ Spring, 1981

²⁷ ODea, 1991; Bliege Bird and Bird, 1997; Bliege Bird et al., 2001

²⁸ Milliken and Tokunaga 1987

²⁹ Astuti, 1995: 49, 64

³⁰ Bliege Bird and Bird, 1997; Bliege Bird et al., 2001

³¹ Frazier 2004a

³² for example, the early Dutch explorations in the eastern Indian Ocean

³³ for example, in the case of Seychelles (Frazier 1974)

³⁴ see, for example, the *Marine Turtle Newsletter*, *Proceedings of the Annual Symposium on Sea Turtle Biology and Conservation* (from the 8th to the 25th Annual Symposia), and multi-authored books such as Bjorndal 1995, Lutz and Musick 1997, and Lutz et al. 2003, not to mention a plethora of published articles in various scientific journals.

³⁵ Cola 1998; see also Frazier 2004b

³⁶ Allan 1991: 14

³⁷ including *Trionyx* spp., *Pelochelys* spp., *Chitra* spp., *Batagur baska*, and *Callagur borneoensis*

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