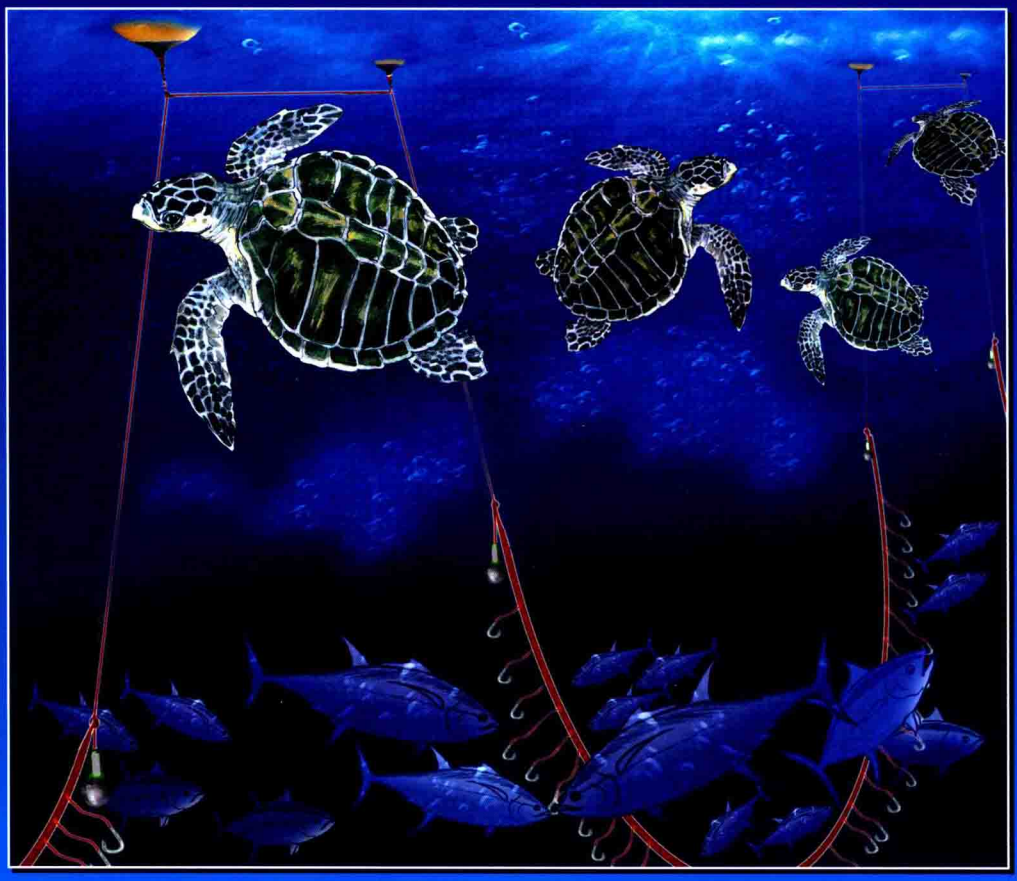
GUIDELINES TO REDUCE SEA TURTLE MORTALITY IN FISHING OPERATIONS



GUIDELINES TO REDUCE SEA TURTLE MORTALITY IN FISHING OPERATIONS

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Preparation of this document

Reports and materials prepared at two international meetings were central to the development of these technical guidelines. The meetings were the Expert Consultation on Interactions between Sea Turtles and Fisheries within an Ecosystem Context (Rome, 9–12 March 2004) and the Technical Consultation on Sea Turtles Conservation and Fisheries (Bangkok, 29 November to 2 December 2004). The important contribution of the participants to both meetings is acknowledged.

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Guidelines to reduce sea turtle mortality in fishing operations.
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ABSTRACT

Sea turtles are affected by a range of different factors, some natural and others caused by human activities, including fishing operations. As a result, all sea turtle species whose conservation status has been assessed are considered to be threatened or endangered. These guidelines provide assistance for the preparation of national or multilateral fisheries management measures and industry initiatives that may help to conserve sea turtles by reducing the negative impacts that fisheries may have on them. The guidelines are voluntary and non-binding. Their scope is global, but when they are implemented, national and regional diversity, including cultural and socio-economic differences, should be taken into account. These guidelines present our best understanding of how to reduce interactions between sea turtles and fishing gear and reduce the proportion of caught turtles that are killed as a result of interactions with marine capture fisheries. They include information about how to change fishing gear and fishing methods and how the fishing industry can adopt voluntary approaches to reduce sea turtle mortality. The guidelines make suggestions about implementing management actions, such as input and output controls and bycatch fees, and they cover subjects such as bycatch hotspot avoidance, best practices for the handling and release of caught turtles and reducing derelict fishing gear and other marine debris. They also identify fisheries and areas where fishing may be a relatively important cause of sea turtle deaths. Research, monitoring, information exchange, capacity-building, financial support, socio-economic, cultural and legal aspects are also discussed.

Abbreviations and acronyms

BRD	bycatch reduction device
CBD	Convention on Biological Diversity
CCRF	FAO Code of Conduct for Responsible Fisheries
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
COFI	FAO Committee on Fisheries
EEZ	exclusive economic zone
FAD	fish aggregating device
FAO	Food and Agriculture Organization of the United Nations
GFCM	General Fisheries Commission for the Mediterranean
IAC	Inter-American Convention for the Protection and Conservation of Sea Turtles
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IGO	intergovernmental organization
IOTC	Indian Ocean Tuna Commission
IPOA	international plan of action
IUU	illegal, unreported and unregulated fishing
MoU	memorandum of understanding
MPA	marine protected area
MSC	Marine Stewardship Council
NAFO	Northwest Atlantic Fisheries Organization
NGO	non-governmental organization
OFCT	Overseas Fishery Cooperation Foundation
OLDEPESCA	Latin American Organization for Fisheries Development
OPRT	Organization for the Promotion of Responsible Tuna Fisheries
RFB	regional fishery body
RFMO	regional fisheries management organization
SEAFO	South East Atlantic Fisheries Organization
SSH	sea surface height
SST	sea surface temperature
TAC	total allowable catch
TED	turtle excluder device
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
VMS	vessel monitoring system
WCPFC	Western and Central Pacific Fisheries Commission

CONTENTS

Introduction

Background

The FAO Code of Conduct for Responsible Fisheries (CCRF) calls for the sustainable use of aquatic ecosystems and requires that fishing be conducted with due regard for the environment. Article 7.2.2d of the CCRF specifically addresses biodiversity issues and conservation of endangered species and, in so doing, calls for the catch of non-target species, both fish and non-fish species, to be minimized. The CCRF also promotes the maintenance, safeguarding and conservation of biodiversity by minimizing fisheries impacts on non-target species and the ecosystem in general.

These guidelines were developed to support the implementation of the CCRF. They are addressed primarily to decision-makers within fisheries management authorities and to interest groups such as fishers, fishing companies, fishers' organizations, relevant non-governmental organizations (NGOs) and others. They aim to help these interest groups to identify and implement appropriate measures to reduce interactions with sea turtles and thereby help to address the issue of sea turtle mortality in fishing operations.

Figure 1. The seven species of sea turtles

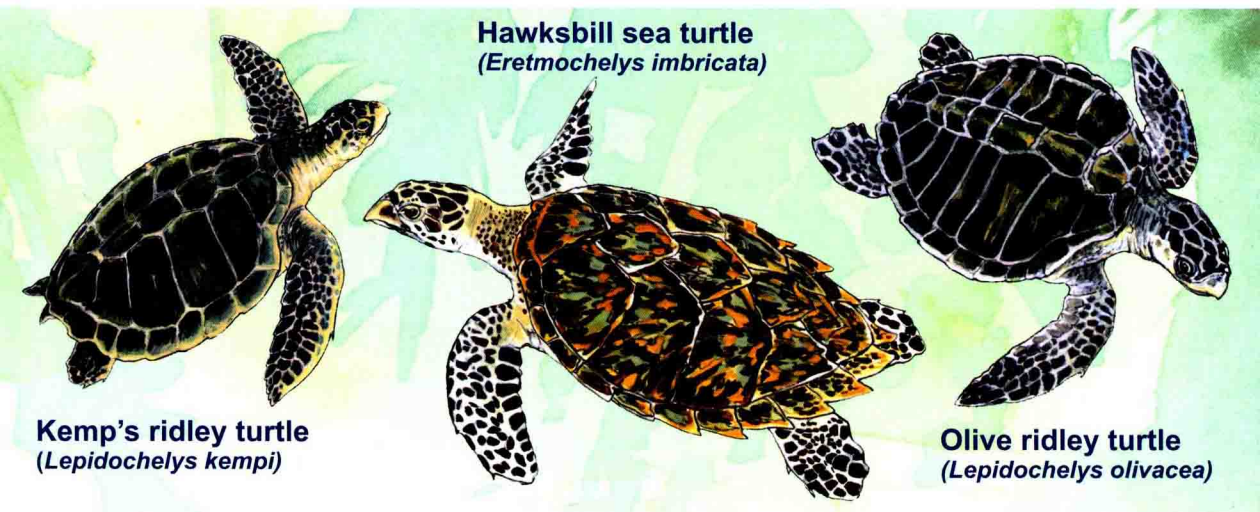


Figure 1. Continued.

These guidelines were drafted at the request of the FAO Committee on Fisheries (COFI), which raised the question of sea turtle conservation at its 25th session. They are the product of two international meetings: an Expert Consultation on Interactions between Sea Turtles and Fisheries within an Ecosystem Context (March 2004) and a Technical Consultation on Sea Turtle Conservation and Fisheries (November/December 2004). "Guidelines to Reduce Sea Turtle Mortality in Fishing Operations" were developed at the latter meeting.
These guidelines were endorsed at the 26th session of the COFI, which called for their immediate implementation by members and regional fishery bodies (RFBs). They also provided the key inputs for the preparation of these guidelines.

The key objectives of these guidelines are to: (i) present measures for avoiding or minimizing sea turtle interactions in marine capture fisheries; and (ii) consolidate existing handling and release guidelines.

Identification, distribution and biology of sea turtles

There are seven species of sea turtles, i.e. the loggerhead (*Caretta caretta*), the green turtle (*Chelonia mydas*), the hawksbill (*Eretmochelys imbricata*), the Kemp's ridley (*Lepdochelys kempi*), the olive ridley (*L. olivacea*), the flatback (*Natator depressus*) and the leatherback turtle (*Dermochelys coriacea*) (Figure 1).

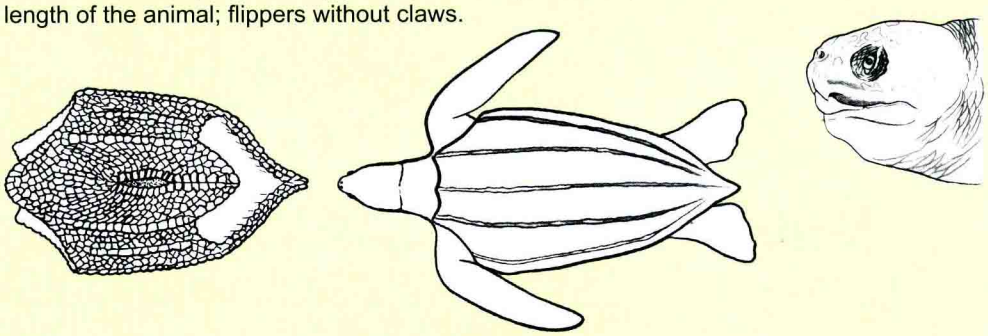
In the areas where they co-occur, they can easily be distinguished (see identification key below).

Sea turtle identification key

1a. **FAMILY DERMOCHELYIDAE**

Dermochelys coriacea
Leatherback turtle

Carapace (dorsal part of shell) with 5 distinct ridges running the length of the animal; flippers without claws.



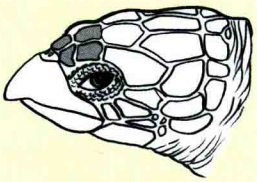
1b. **FAMILY CHELONIDAE**

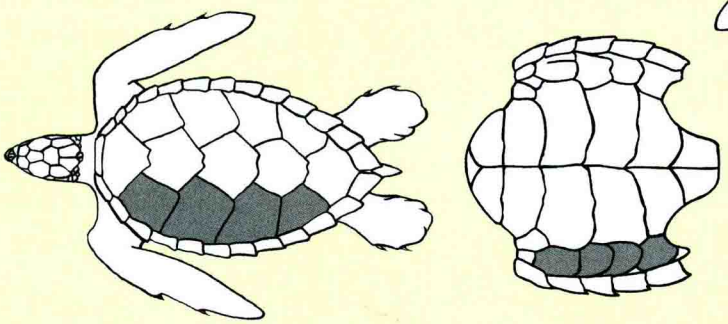
Carapace with no ridges, consisting of large hard scutes; flippers with one or more claws.

2a. Carapace with 4 lateral scutes

Eretmochelys imbricata
Hawksbill sea turtle

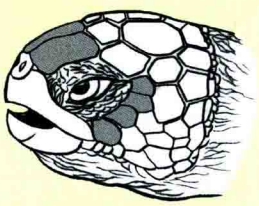
3a. Beak smooth, hawklike; 2 pairs of scales between eyes; flippers with 2 claws; carapace elliptical; underside with 4 lateral scutes, without pores

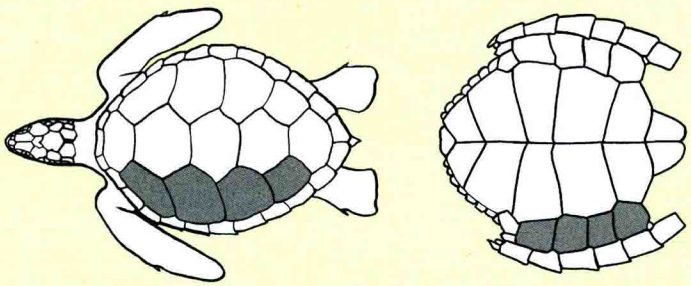




Chelonia mydas
Green sea turtle

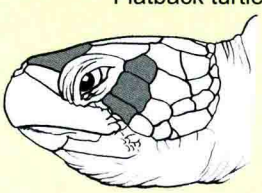
3b. Beak serrated; 1 pair of scales between eyes; 4 scales posterior to eyes; flippers with 1 evident claw; carapace oval; underside with 4 lateral scutes

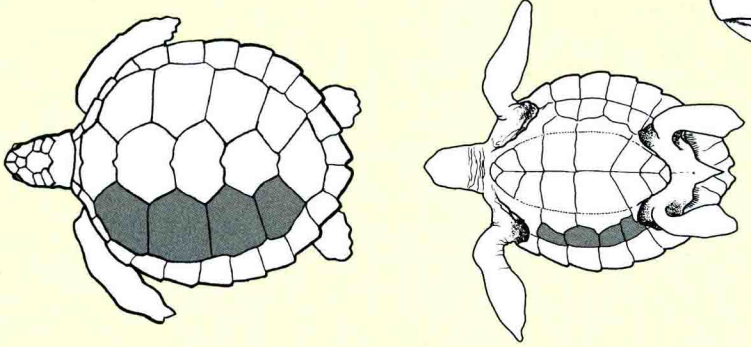




Natator depressus
Flatback turtle

3c. Beak smooth; 1 pair of scales between eyes; 3 scales posterior to eyes; flippers with one evident claw; carapace round and flattened, with slightly upward-folded margins; underside with 4 lateral scutes without pores

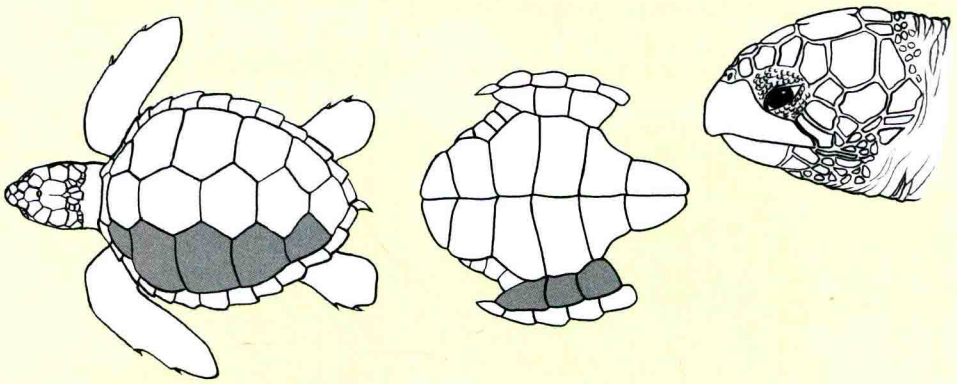




2b. Carapace with 5 lateral scutes

Caretta caretta
Loggerhead turtle

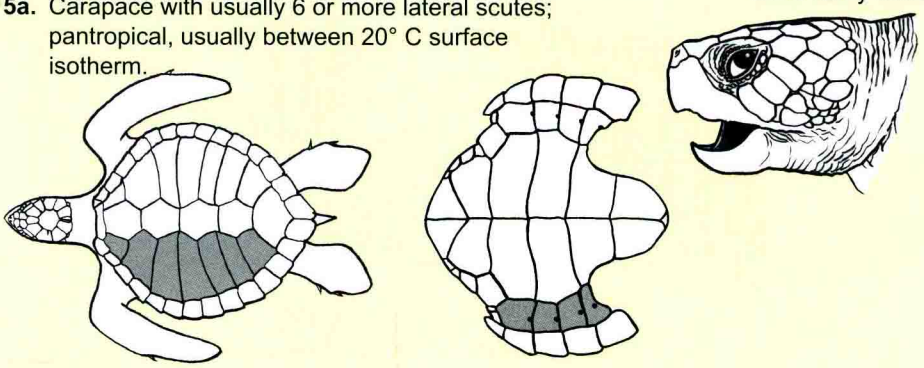
4a. Carapace elongated, its length always greater than its width; underside with 3 lateral scutes without pores.



4b. Carapace nearly round, its length similar to its width; underside with 4 lateral scutes.

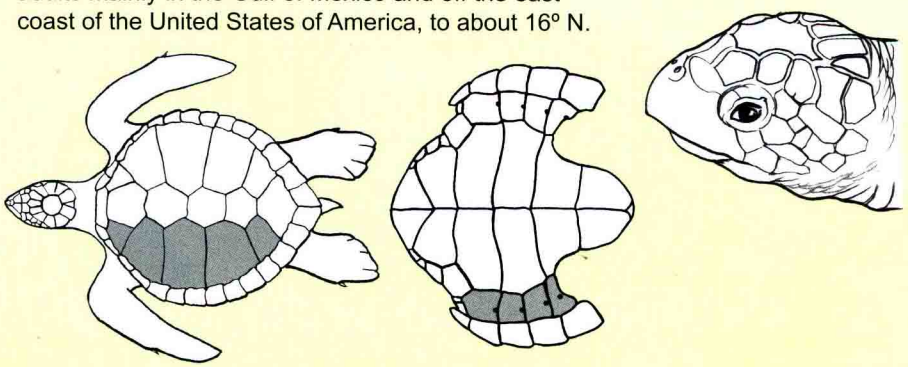
Lepidochelys olivacea
Olive ridley turtle

5a. Carapace with usually 6 or more lateral scutes; pantropical, usually between 20° C surface isotherm.



Lepidochelys kempii
Kemp's ridley turtle

5b. Carapace with 5 lateral scutes; restricted distribution, adults mainly in the Gulf of Mexico and off the east coast of the United States of America, to about 16° N.



Most sea turtles are widely distributed in tropical and subtropical waters of all oceans. A few species have a more restricted distribution, such as the Kemp's ridley with adults occurring in the Gulf of Mexico and juveniles with a broader distribution reaching northern European waters, and the flatback, confined to northern Australian waters (Figure 2a–2g).

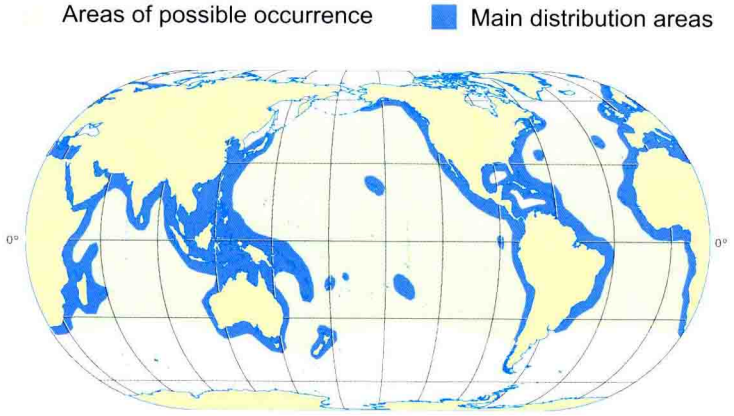


Figure 2a. Leatherback turtles (*Dermochelys coriacea*) are circumglobal, found from tropical to temperate regions.

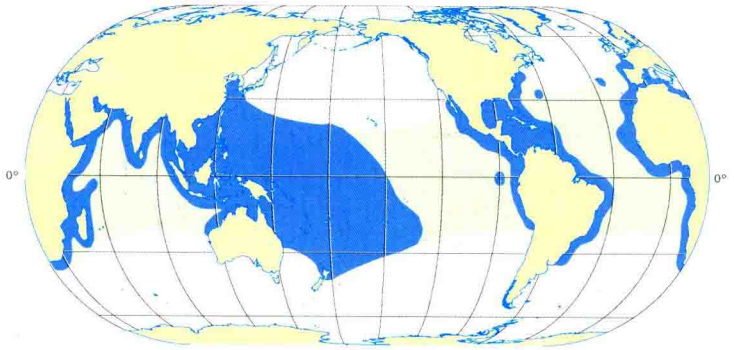


Figure 2b. Hawkbill sea turtles (*Eretmochelys imbricata*) are the most tropical of all sea turtles, found throughout central America and the Indo-Pacific Region.

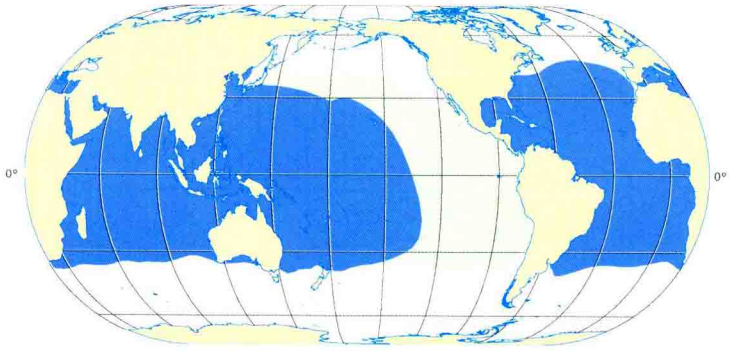


Figure 2c. Green sea turtles (*Chelonia mydas*) are widely distributed in tropical and subtropical waters, near continental coasts and around islands.

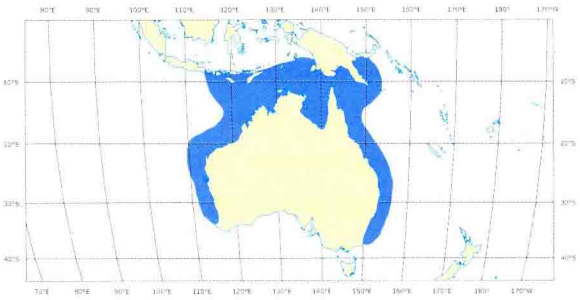


Figure 2d. Flatback sea turtles (*Natator depressus*) are indigenous to northwestern, northern, and northeastern regions of Australia and have the most restricted range of all sea turtle species.

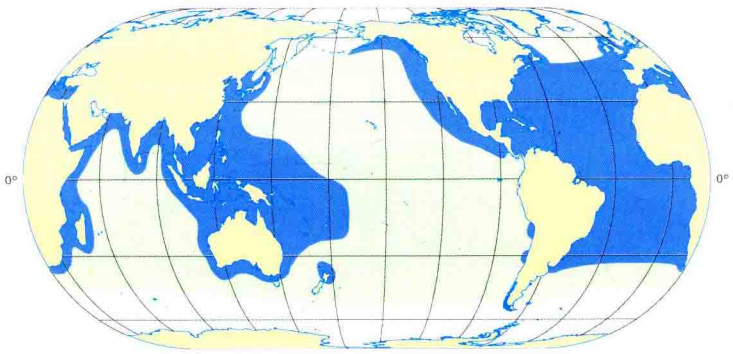


Figure 2e. Loggerhead sea turtles (*Caretta caretta*) are circumglobal, from tropical to temperate habitats.

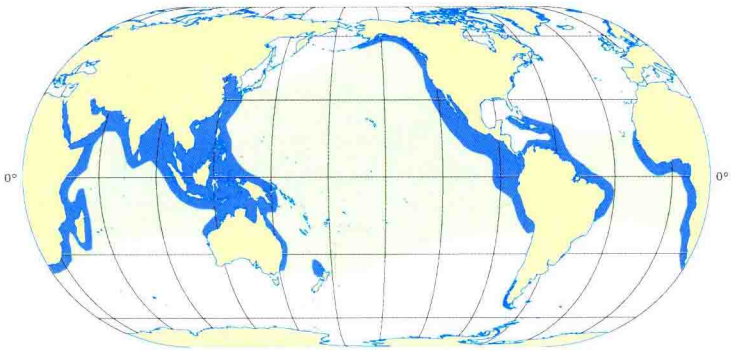


Figure 2f. Olive ridley sea turtles (*Lepidochelys olivacea*) are found in the tropical regions of the Atlantic, Indian and Pacific Oceans.

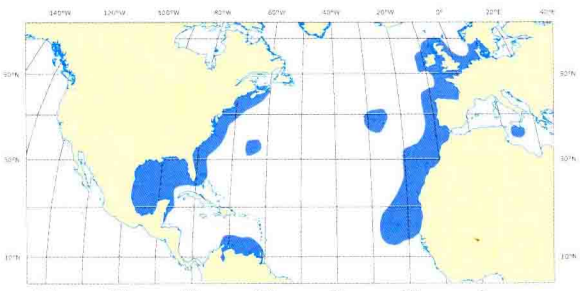
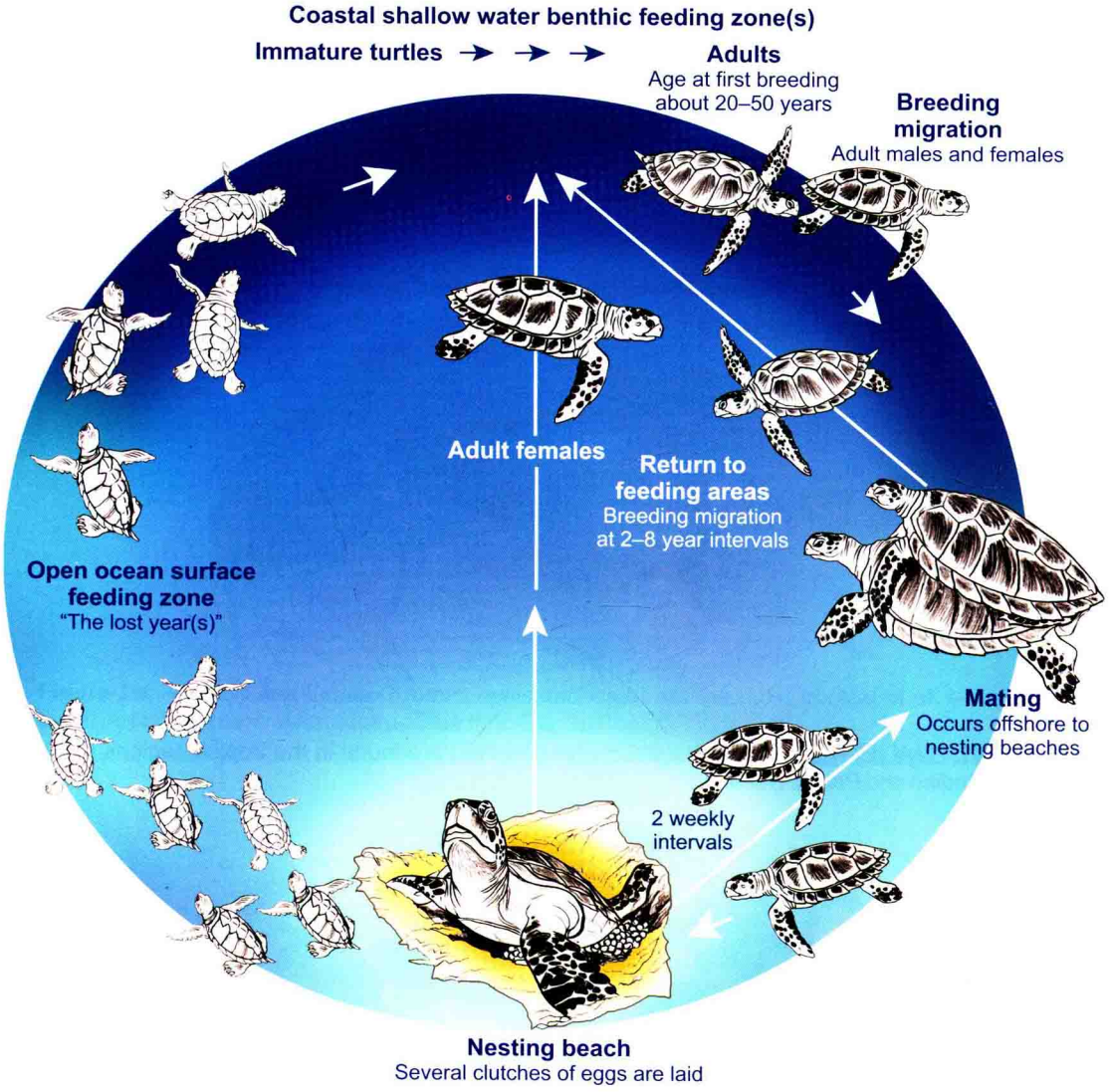


Figure 2g. Adult Kemp's ridley sea turtles (*Lepidochelys kempii*) usually occur in the Gulf of Mexico. Juveniles and immatures range between temperate and tropical coastal areas of the northwestern Atlantic Ocean. Occasionally, young turtles reach northern European waters and as far south as the Moroccan coast.

All species of sea turtles are long-lived, slow-growing species, characterized by a complex life cycle and utilizing a wide range of habitats (Figure 3). Sexual maturity is delayed in all species, with estimates varying in different species and populations, but usually exceeding 20, even 50, years. After mating, females dig nests in sandy beaches, and lay from 50 to 130 eggs per nest. Hatchlings crawl to seawater and swim towards the open ocean. After a period of time that varies according to species, juveniles return to coastal waters to feed on benthic organisms.

Figure 3. Life cycle and main habitats [1]



[1] After Lanyon, J.M., Limpus, C.J. & Marsh, H. 1989. Dugongs and turtles: grazers in the seagrass system. *In*: A.W.D. Larkum, A.J. McComb & S.A. Shepherd (eds), *Biology of Seagrasses: A Treatise on the Biology of Seagrasses with Special Reference to the Australian Region*, pp. 610–634. Amsterdam, Elsevier.

Exceptions to this general pattern are the leatherback turtles, which remain pelagic throughout their life cycle, and the flatback turtles, which remain neritic throughout their lives. As the turtles grow and reach sexual maturity, both males and females leave their feeding grounds and migrate to the nesting beach. This periodic migration will continue throughout their lives. Females dig nests in dry sand, returning faithfully to the same beach each time they are ready to nest and returning to the sea either to rest before nesting again later that season or before beginning their migration back to their feeding ground.

Threats to sea turtles

Because of their long life span, a life cycle that requires several habitat types, and their extensive distribution in terms of the distance they cover, sea turtles are affected by a range of different factors, some natural and others caused by human activities, at all stages of their life cycle (Figures 4a–d and 5).

These factors have an impact both in the terrestrial part of their habitat as well as in the marine environment. Impacts in the nesting environment (on sandy beaches) include: the direct take of adults for meat, oil, shells, etc.; the collection of eggs by humans; the predation of eggs by animals (e.g. dogs, pigs); climate change, which may affect embryo development; sea-level rise, a consequence of global warming that in some circumstances results in a reduction of nesting beach habitat; loss of nests due to hurricanes; and heavy utilization of nesting beaches by humans.

Figure 4. Examples of major threats to sea turtles

Figure 4a. Fibropapilloma tumours and pollution