



# Project GloBAL

Global Bycatch Assessment of Long-Lived Species

## Country Profile

# Myanmar



## GENERAL INFORMATION ABOUT THE COUNTRY

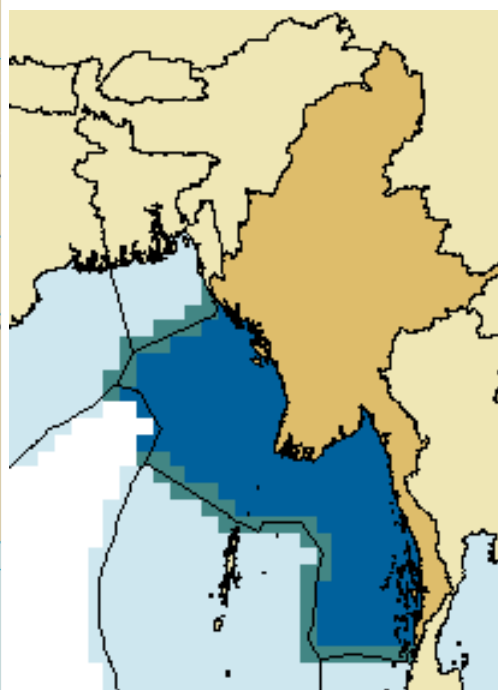
**Country Name** Myanmar (Burma)



**Map of Country**



**Map of EEZ**



**Geographic Coordinates:** 22 00 N, 98 00 E

**Terrestrial extent:** 657,740 km<sup>2</sup>

**Coastline:** 1,930 km

**EEZ Extent (Sea Around Us):** 532,775 km<sup>2</sup>

**Other countries operating within this EEZ:** Thailand

**Government agency for marine fisheries:** Ministry of Livestock and Fisheries  
(<http://www.livestock-fisheries.gov.mm/fisher.htm>)

**Government agency for the protection of marine environment:** National Commission for Environmental Affairs (NCEA)

**Population:** 47,382,633

**Government type:** military junta

**Administrative divisions:** divisions and 7 states

*divisions:* Ayeyarwady, Bago, Magway, Mandalay, Sagaing, Tanintharyi, Yangon

*states:* Chin State, Kachin State, Kayah State, Kayin State, Mon State, Rakhine State, Shan State

**Languages:** Burmese, minority ethnic groups have their own languages

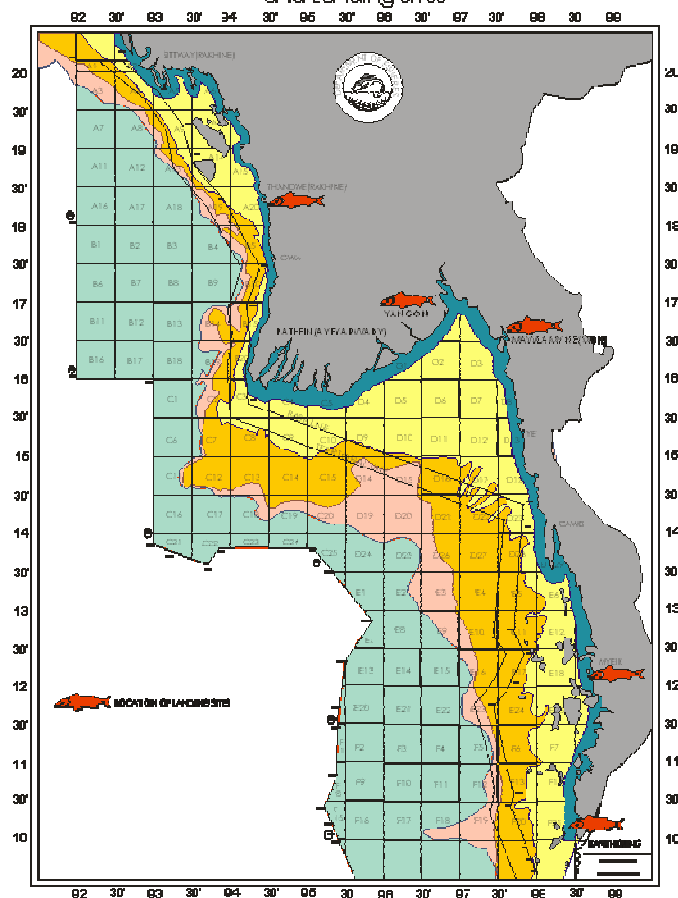
## **FISHERIES**

*Marine fisheries (FAO country profile)*

### Landing Sites

The main landing sites are around Yangon, at Pazuntaung Nyaungdan and Annawa for landings, with a fish market at San Pya in Alone township. Other major landing sites are found along the coast, at Thandwe, Mawlamyine, Myeik and Kawthoung (see map).

Department of Fisheries  
Fishing Grounds of Myanmar  
and Landing Sites



### Capture fishery

The marine capture fishery comprises coastal or inshore fisheries, and offshore or deep-sea fisheries. Various types of fishing gear are used to exploit the large diversity of marine species found in Myanmar waters. The fishing gear is classified into commercial, such as trawl net, purse seines, driftnet and gillnet, and traditional, including hook-and-line, cast net, bag net, trammel gill net, lift net and traps. However, the bulk of landings derive from trawls, purse seines, drift nets and gill nets. There were 29 791 inshore fishing vessels and 1 757 offshore fishing vessels licensed by DoF in 2004–2005, compared with 29 861 and 2 121, respectively, in 2003–2004.

### Trawl fisheries

Otter bottom trawl nets are the main gear for demersal finfish and penaeid prawns. The trawl fishery contributed more than 40% to marine landing in 2002–2003. The trawlers landed a large number of fish species. When demersal species were still the main catch, the trawl nets caught pelagic finfish, mainly the short (Indo-Pacific) mackerel (*Rastrelliger brachysoma*). This resulted in the Indo-Pacific mackerel being caught mainly by bottom trawl nets.

Penaeid shrimps are important for trawlers operating in inshore waters, particularly on the coast of Rakhine. They are the mainstay of the trawl fishery by virtue of their high commercial value and market demand. The rapid development and concentration of the trawl fishery within coastal waters has resulted in the current intensive exploitation of the coastal demersal finfish and penaeid

shrimp resources. There were 21 offshore fishing vessels and 13 452 inshore fishing vessels operating in Rakhine state in 2004–2005, between 1 September 2004 and 4 May 2005.

### **Purse seine fishery**

The purse seine is a major fishing gear, used to exploit the pelagic fish resources. The two main types of purse seines nets employed in Myanmar waters are the fish purse seine, which is used to catch small pelagic species, and the anchovy purse seine, for anchovies in coastal waters, especially in the northern sector of Rakhine state.

The fish purse seine nets are operated in a traditional manner, without fish aggregating devices (FADs). Catching efficiency of this gear has not improved through the years. There are no new fishing techniques to increase fishing pressure on stocks of small pelagic species. Most purse seiners have a skipper with expertise in seeking out fish schools relative to the “fish lures”, and at night, free-school scouting purse nets using lights. The purse seine fishery mainly harvests small mackerels and sardine species, such as *Rastelliger* spp. and *Sardinella* spp.

### **Anchovy purse seines**

Anchovy purse seines nets are operated in very shallow waters and target mainly anchovies of the genus *Stolephorus*. No landing data are available. The fishery is important, particularly along the northern coast of Rakhine. Post-harvest techniques are primitive, relying on sun-drying on the shore.

### **Driftnet and gillnet fishery**

Driftnet and gillnet are also important in coastal fisheries, and used selectively. The finfish drift net and gillnets mainly target higher valued commercial pelagic fish species, although the gillnets set by coastal fishermen mainly catch demersal fish species like marine catfish and jewfish. The shrimp drift and gillnets are actually trammel gillnets, and are employed to catch the more valuable species of shrimp, like *Peneaus merguensis*.

## **MANAGEMENT APPLIED TO MAIN FISHERIES**

### **Fisheries Management**

Management and development of fisheries resources is undertaken by the Department of Fishery (DoF) of the Ministry of Livestock and Fisheries. DoF responsibilities include, among others, facilitating the technical needs and equipment of the marine sector; distributing freshwater and deep-sea prawns to private breeders and assisting them with breeding techniques; undertaking research and development activities; collecting taxes; issuing fishing licenses; and establishing model breeding centers. DoF has also entered into several joint ventures with the private sector (both local and foreign companies) for fisheries operations.

The challenge for the country is to manage its fisheries in such a way as to ensure optimum and sustainable use of aquatic resources, as well as economic efficiency in their use and ensuring transfer of benefits in social terms. Myanmar has formulated a fishery development policy that respects national and international agreements and the conditions and nature of the resources.

One of the goals of fisheries management is to achieve sustainable coastal fisheries. To achieve this goal, various management strategies have been formulated and implemented to control

fishing effort and to promote rehabilitation and conservation of marine resources and marine ecosystems.

### Management of the Marine Fisheries Resources

DoF has established an appropriate legal framework and formulated and implemented various strategies for the sustainable development and management of marine fisheries. Fisheries management is pursued by proper licensing, prescribing exploitable species, designating environmental friendly fishing gears and methods, imposing closed areas and seasons, etc.

#### *Landings in Myanmar (tonnes) (Sea Around Us)*

| Year | Perch-likes | Other fishes & inverts | Crustaceans | Herring-likes | Anchovies | Molluscs | Tuna & billfishes | Sharks & rays | Flat-fishes | Total     |
|------|-------------|------------------------|-------------|---------------|-----------|----------|-------------------|---------------|-------------|-----------|
| 1990 | 628,086     | 38,794                 | 13,162      | 6,473         | 179       | 2,580    | 464               | 447           | 246         | 690,431   |
| 1991 | 660,201     | 36,368                 | 16,489      | 6,181         | 2,800     | 58       | 1,047             | 611           | 293         | 724,048   |
| 1992 | 667,981     | 38,472                 | 17,044      | 4,190         | 7,159     | 1,524    | 569               | 469           | 238         | 737,646   |
| 1993 | 680,948     | 51,712                 | 19,598      | 7,520         | 8,134     | 1,009    | 2,560             | 512           | 426         | 772,417   |
| 1994 | 677,860     | 35,416                 | 22,109      | 6,041         | 13,034    | 1,869    | 3,454             | 591           | 934         | 761,307   |
| 1995 | 682,039     | 30,953                 | 29,814      | 11,054        | 8,781     | 3,980    | 2,828             | 958           | 1,011       | 771,418   |
| 1996 | 545,049     | 31,707                 | 26,545      | 11,029        | 7,736     | 6,749    | 2,998             | 1,473         | 2,119       | 635,404   |
| 1997 | 707,560     | 37,959                 | 31,665      | 10,708        | 7,846     | 4,281    | 2,524             | 1,537         | 2,180       | 806,259   |
| 1998 | 769,074     | 51,218                 | 32,974      | 11,717        | 6,997     | 2,292    | 3,846             | 1,262         | 936         | 880,317   |
| 1999 | 825,790     | 46,352                 | 35,797      | 11,429        | 6,122     | 10,079   | 2,928             | 1,335         | 607         | 940,438   |
| 2000 | 936,336     | 45,941                 | 37,403      | 8,922         | 5,102     | 8,531    | 2,746             | 1,414         | 543         | 1,046,937 |
| 2001 | 996,598     | 42,187                 | 39,109      | 7,408         | 4,780     | 6,998    | 980               | 1,502         | 612         | 1,100,173 |
| 2002 | 1,085,182   | 38,907                 | 41,141      | 5,270         | 5,456     | 70       | 987               | 1,568         | 729         | 1,179,310 |
| 2003 | 1,129,932   | 38,470                 | 42,065      | 6,667         | 5,757     | 74       | 955               | 1,354         | 629         | 1,225,904 |

#### *Landings by gear type in Myanmar (tonnes) (Sea Around Us)*

| Year | bottom trawls | gillnets | mid-water trawls | driftnets | Hand-lines | hooks or gorges | beach seines | troll lines | set gillnets | drift lines | purse seines | Other gears | Total     |
|------|---------------|----------|------------------|-----------|------------|-----------------|--------------|-------------|--------------|-------------|--------------|-------------|-----------|
| 1990 | 244,783       | 95,356   | 89,627           | 62,084    | 42,574     | 35,314          | 35,203       | 35,422      | 15,252       | 10,901      | 6,636        | 17,277      | 690,431   |
| 1991 | 257,972       | 97,056   | 114,263          | 61,943    | 41,291     | 28,207          | 34,181       | 36,199      | 14,278       | 11,482      | 9,116        | 18,060      | 724,048   |
| 1992 | 264,812       | 90,591   | 130,656          | 60,899    | 42,829     | 28,571          | 35,158       | 34,258      | 15,010       | 9,275       | 6,506        | 19,083      | 737,646   |
| 1993 | 286,073       | 81,468   | 128,830          | 63,354    | 41,708     | 39,932          | 34,809       | 37,098      | 12,931       | 10,030      | 9,833        | 26,351      | 772,417   |
| 1994 | 277,033       | 87,111   | 116,143          | 65,131    | 43,835     | 24,399          | 37,941       | 39,487      | 14,567       | 9,961       | 17,176       | 28,523      | 761,307   |
| 1995 | 293,613       | 86,191   | 126,725          | 61,148    | 45,515     | 19,672          | 31,371       | 33,035      | 14,237       | 10,208      | 11,687       | 38,016      | 771,418   |
| 1996 | 229,358       | 68,361   | 114,854          | 47,738    | 34,824     | 17,579          | 23,155       | 26,198      | 10,022       | 8,245       | 14,073       | 40,996      | 635,404   |
| 1997 | 291,475       | 93,937   | 143,149          | 64,456    | 45,664     | 24,403          | 33,827       | 35,415      | 13,665       | 9,471       | 13,434       | 37,363      | 806,259   |
| 1998 | 324,025       | 94,383   | 150,921          | 69,558    | 47,219     | 24,514          | 37,553       | 40,297      | 14,783       | 10,968      | 13,533       | 52,561      | 880,317   |
| 1999 | 346,064       | 105,687  | 157,197          | 77,416    | 52,048     | 31,543          | 40,359       | 43,757      | 15,673       | 12,554      | 12,413       | 45,728      | 940,438   |
| 2000 | 398,507       | 120,999  | 167,692          | 90,248    | 64,069     | 29,095          | 45,689       | 46,793      | 18,467       | 12,611      | 10,908       | 41,860      | 1,046,937 |
| 2001 | 405,960       | 137,322  | 200,176          | 93,310    | 66,052     | 29,355          | 44,220       | 46,725      | 17,906       | 14,323      | 9,801        | 35,024      | 1,100,173 |
| 2002 | 463,404       | 139,746  | 226,270          | 94,430    | 64,705     | 25,391          | 47,216       | 49,498      | 17,334       | 12,957      | 11,771       | 26,589      | 1,179,310 |
| 2003 | 450,482       | 155,212  | 236,801          | 104,749   | 71,636     | 24,118          | 52,641       | 55,026      | 20,177       | 15,495      | 10,605       | 28,960      | 1,225,904 |

## Myanmar fishing fleet by number of vessels (FIGIS)

### Fishing fleets: Number (NO)

Display Country:

| Country              | Vessel Class             | Vessel Type   | 1990 | 1991 | 1992  | 1993  | 1994  | 1995  |
|----------------------|--------------------------|---------------|------|------|-------|-------|-------|-------|
| Myanmar              | 50-99.9                  | Fish carriers | 28   | 31   | 29    | 32 G  | 32 G  | 32 G  |
|                      |                          | Trawlers      | 41   | 60   | 69 G  | 76 G  | 76 G  | 76 G  |
|                      | <b>Sub-total 50-99.9</b> |               | 69   | 91   | 98 G  | 108 G | 108 G | 108 G |
|                      | 150-249.9                | Trawlers      | 29   | 29   | 29    | 29 G  | 29 G  | 29 G  |
|                      | 250-499.9                | Fish carriers | 0 .  | 0 .  | 3 G   | 3 G   | 3 G   | 3 G   |
| <b>Total Myanmar</b> |                          |               | 98   | 120  | 130 G | 140 G | 140 G | 140 G |
| <b>Grand total</b>   |                          |               | 98   | 120  | 130 G | 140 G | 140 G | 140 G |

### Fishing fleets: Total Tonnage (MT)

Display Country:

| Country              | Vessel Class             | Vessel Type   | 1990    | 1991     | 1992     | 1993     | 1994     | 1995     |
|----------------------|--------------------------|---------------|---------|----------|----------|----------|----------|----------|
| Myanmar              | 50-99.9                  | Fish carriers | 1,800 G | 1,900 G  | 1,843 G  | 2,043 G  | 2,043 G  | 2,043 G  |
|                      |                          | Trawlers      | 3,066 G | 5,066 G  | 5,366 G  | 5,666 G  | 5,666 G  | 5,666 G  |
|                      | <b>Sub-total 50-99.9</b> |               | 4,866 G | 6,966 G  | 7,209 G  | 7,709 G  | 7,709 G  | 7,709 G  |
|                      | 150-249.9                | Trawlers      | 5,934   | 5,934    | 5,934    | 5,934 G  | 5,934 G  | 5,934 G  |
|                      | 250-499.9                | Fish carriers | 0 .     | 0 .      | 1,057 G  | 1,057 G  | 1,057 G  | 1,057 G  |
| <b>Total Myanmar</b> |                          |               | 10,800  | 12,900 G | 14,200 G | 14,700 G | 14,700 G | 14,700 G |
| <b>Grand total</b>   |                          |               | 10,800  | 12,900 G | 14,200 G | 14,700 G | 14,700 G | 14,700 G |

### Fishing fleets - DECKED VESSELS: Number (NO)

Display Country:

| Country                     | Vessel Class               | Vessel Type   | 1996  | 1997  | 1998  |
|-----------------------------|----------------------------|---------------|-------|-------|-------|
| Myanmar                     | 12 - 17.9                  | Gillnetters   | 301   | 256   | 246   |
|                             |                            | Other seiners | 1     | 1     | 0 -   |
|                             |                            | Purse seiners | 0 -   | 0 -   | 3     |
|                             |                            | Trap setters  | 131   | 232   | 208   |
|                             |                            | Trawlers      | 21    | 23    | 64    |
|                             | <b>Sub-total 12 - 17.9</b> |               | 454   | 512   | 521   |
|                             | 18 - 23.9                  | Gillnetters   | 7     | 3     | 13    |
|                             |                            | Longliners    | 2     | 0 -   | 0 -   |
|                             |                            | Other seiners | 10    | 9     | 7     |
|                             |                            | Purse seiners | 14    | 5     | 1     |
|                             |                            | Trawlers      | 312   | 375   | 435   |
|                             | <b>Sub-total 18 - 23.9</b> |               | 345   | 392   | 456   |
|                             | 24 - 29.9                  | Gillnetters   | 0 -   | 0 -   | 15    |
|                             |                            | Longliners    | 0 -   | 1     | 0 -   |
|                             |                            | Other seiners | 22    | 19    | 13    |
|                             |                            | Purse seiners | 24    | 40    | 36    |
|                             |                            | Trawlers      | 315   | 379   | 386   |
|                             | <b>Sub-total 24 - 29.9</b> |               | 361   | 439   | 450   |
|                             | 30 - 35.9                  | Gillnetters   | 1     | 0 -   | 3     |
|                             |                            | Longliners    | 1     | 0 -   | 0 -   |
|                             |                            | Other seiners | 4     | 4     | 2     |
|                             |                            | Purse seiners | 0 -   | 0 -   | 2     |
|                             |                            | Trawlers      | 70    | 90    | 63    |
|                             | <b>Sub-total 30 - 35.9</b> |               | 76    | 94    | 70    |
|                             | 36 - 44.9                  | Trawlers      | 13    | 9     | 1     |
| 45 - 59.9                   | Longliners                 | 1             | 0 -   | 0 -   |       |
|                             | Trawlers                   | 1             | 4     | 0 -   |       |
| <b>Sub-total 45 - 59.9</b>  |                            | 2             | 4     | 0 -   |       |
| Up to 11.9                  | Gillnetters                | 380           | 360   | 397   |       |
|                             | Longliners                 | 0 -           | 1     | 3     |       |
|                             | Trawlers                   | 0 -           | 4     | 19    |       |
| <b>Sub-total Up to 11.9</b> |                            | 380           | 365   | 419   |       |
| <b>Total Myanmar</b>        |                            |               | 1,631 | 1,815 | 1,917 |
| <b>Grand total</b>          |                            |               | 1,631 | 1,815 | 1,917 |

## ANIMALS

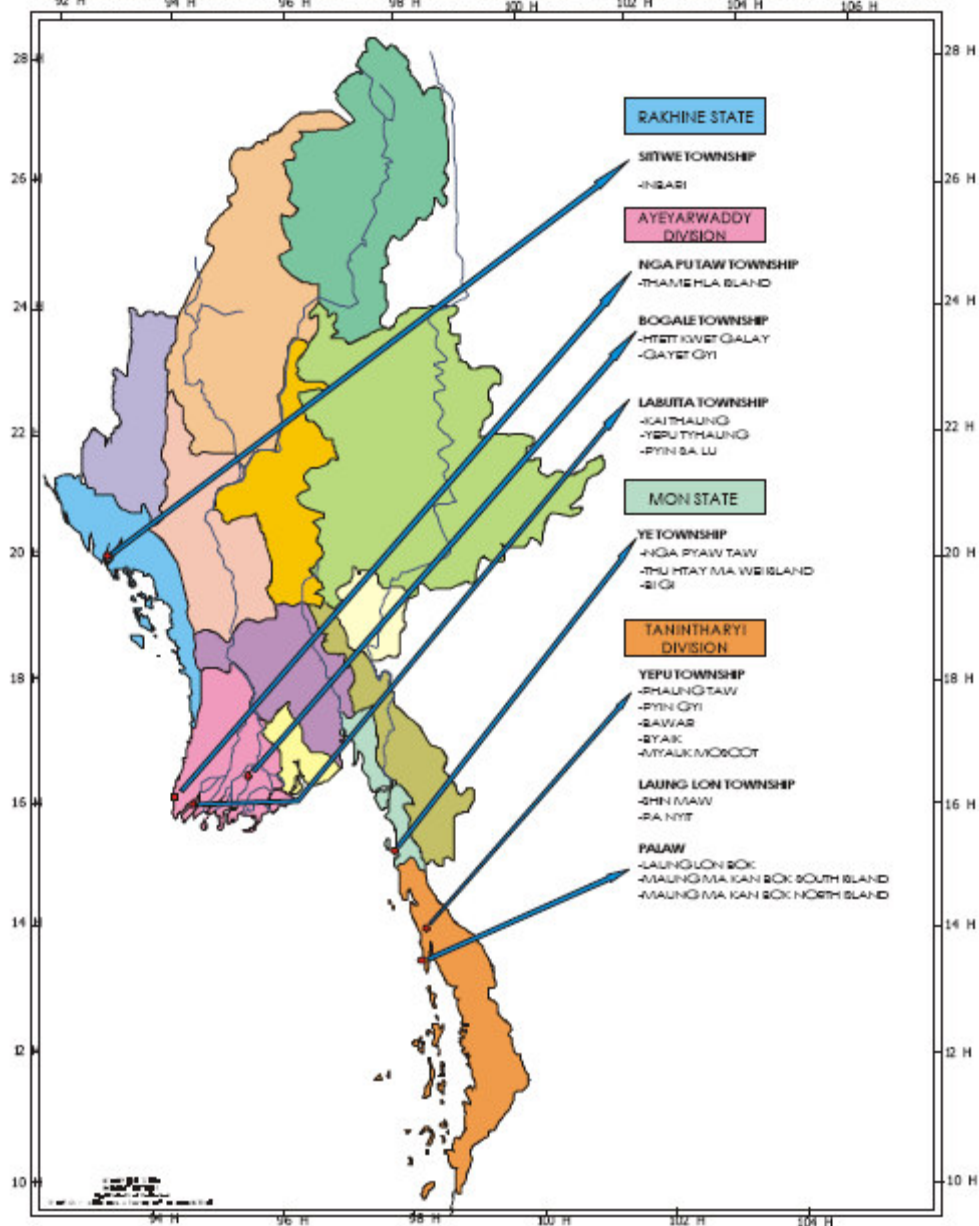
### Sea turtles

Five sea turtle species breed regularly on Myanmar's beaches. They are the Olive Ridley Turtle (*Lepidochelys olivacea*), Loggerhead Turtle (*Caretta caretta*), Green Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricata*), and Leatherback Turtle (*Dermochelys coriacea*). However, the latter two species are considered extremely rare. The Hawksbill Turtle and Leatherback, which were occasionally reported by fishermen from some part of Rakhine and Tanintharyi Coastal areas are totally disappeared from the Ayeyarwady Delta Coastal areas. All species have evidently abundant in the past. The beaches of "Tha-mi-hla Kyune" (Daimon island 15° 51' N 94° 17' E), an island at the mouth of the Patheingyi River, host the nesting Green turtle and Loggerhead turtle. But "Kaing – Thaung – Kyune" (Kaing-Thaung Island) ( 15° 44' N 95° 04' E) and "Taung-Ka-Done-Kyune" ( Taung-Ka-Done Island ) ( 15° 43' N 95° 18' E ), two small islands, which situated at the mouths of Ayeyarwady and Bogalay Rivers, respectively host the nesting Olive Ridley Turtle and Loggerhead Turtle. Most nesting is by Olive Ridley Turtle ( 70% ), followed by Loggerhead Turtles ( 20% ) and Green Turtle ( 10% ).

*From: Thorbjarnarson, 2000*



TURTLE DISTRIBUTION AND TURTLE BANK AREA IN MYANMAR COASTAL LINE



*From: Pe 200X*

**Resources**

Pe, M. 200X. On the Sustainable Management of the Bay of Bengal Large Marine Ecosystem (BOBLME). National Report of Myanmar GCP/RAS/179/WBG, 61 p.

Thorbjarnarson, J.B., Platt, S.G. & Khaing, S.T. 2000. Sea turtles in Myanmar: past and present. Mar. Turtle Newsletter, 88: 10–11.

## Marine mammals

List of marine mammals in Myanmar (*from Sea Around Us*)

| <b>Scientific name</b>            | <b>Common names</b>             |
|-----------------------------------|---------------------------------|
| <i>Balaenoptera acutorostrata</i> | Dwarf minke whale               |
| <i>Balaenoptera borealis</i>      | Sei whale                       |
| <i>Balaenoptera brydei</i>        | Brydes whale                    |
| <i>Balaenoptera edeni</i>         | Eden/Brydes whale               |
| <i>Balaenoptera musculus</i>      | Blue whale                      |
| <i>Delphinus tropicalis</i>       | Arabian common dolphin          |
| <i>Feresa attenuata</i>           | Pygmy killer whale              |
| <i>Globicephala macrorhynchus</i> | Short-finned pilot whale        |
| <i>Grampus griseus</i>            | Rissos dolphin                  |
| <i>Indopacetus pacificus</i>      | Longmans beaked whale           |
| <i>Kogia breviceps</i>            | Pygmy sperm whale               |
| <i>Kogia simus</i>                | Dwarf sperm whale               |
| <i>Lagenodelphis hosei</i>        | Frasers dolphin                 |
| <i>Megaptera novaeangliae</i>     | Humpback whale                  |
| <i>Mesoplodon densirostris</i>    | Blainvilles beaked whale        |
| <i>Mesoplodon ginkgodens</i>      | Ginkgo-toothed beaked whale     |
| <i>Mesoplodon mirus</i>           | Trues beaked whale              |
| <i>Neophocoena phocaenoides</i>   | Finless porpoise                |
| <i>Orcaella brevirostris</i>      | Irrawaddy dolphin               |
| <i>Peponocephala electra</i>      | Melon-headed whale              |
| <i>Physeter macrocephalus</i>     | Sperm whale                     |
| <i>Pseudorca crassidens</i>       | False killer whale              |
| <i>Sousa chinensis</i>            | Pacific hump-backed dolphin     |
| <i>Stenella attenuata</i>         | Pantropical spotted dolphin     |
| <i>Stenella coeruleoalba</i>      | Striped dolphin                 |
| <i>Stenella longirostris</i>      | Spinner dolphin                 |
| <i>Steno bredanensis</i>          | Rough-toothed dolphin           |
| <i>Tursiops aduncus</i>           | Indian Ocean bottlenose dolphin |
| <i>Tursiops truncatus</i>         | Bottlenose dolphin              |
| <i>Ziphius cavirostris</i>        | Cuviers beaked whale            |

**From deBoer 2002**

**Table 2.** The occurrence of cetacean species in North-eastern Indian Ocean waters and Iran.

| Species                                   | Iran | Pakistan | India | Sri Lanka | Bangladesh | Myanmar (Burma) | Thailand | Indonesia |
|---|------|----------|-------|-----------|------------|-----------------|----------|-----------|
| <i>Eubalaena australis</i>                |      |          | +     |           |            |                 |          |           |
| <i>Megaptera navaeangliae</i>             |      | ●        | ●     | ●         |            |                 |          |           |
| <i>Balaenoptera acutorostrata</i>         |      |          |       | ●         |            |                 |          |           |
| <i>Balaenoptera edeni</i>                 |      | ●        | ●     | ●         |            |                 | ●        | ●         |
| <i>Balaenoptera borealis</i>              |      |          | ●     |           |            |                 |          | ●         |
| <i>Balaenoptera physalus</i>              |      | ●        | ●     | ●         |            |                 |          | ●         |
| <i>Balaenoptera musculus</i>              |      | ●        | ●     | ●         | +          |                 |          | ●         |
| <i>Physeter macrocephalus</i>             |      |          | ●     | ●         |            |                 | ●        | ●         |
| <i>Kogia breviceps</i>                    |      |          | ●     | ●         |            | ○               |          |           |
| <i>Kogia sima</i>                         | ○    | ●        | ●     | ●         |            | ○               | ●        | ●         |
| <i>Ziphius cavirostris</i> <sup>4</sup>   |      | ●        |       | ●         |            |                 |          | ●         |
| <i>Hyperoodon sp.</i>                     |      |          |       | ●         |            |                 |          | ●         |
| <i>Mesoplodon ginkodens</i>               |      |          |       | ●         |            | ○               | ●        |           |
| <i>Steno bredanensis</i>                  |      |          | ●     | ●         |            | ○               | ●        | ●         |
| <i>Sousa chinensis</i>                    | ○    | ●        | ●     | ●         | ○          | ○               | ●        | ●         |
| <i>Tursiops spp.</i> <sup>1</sup>         | ○    | ●        | ●     | ●         | ○          | ○               | ●        | ●         |
| <i>Stenella attenuata</i>                 | ○    | ○        | ●     | ●         | ○          | ○               | ●        | ●         |
| <i>Stenella longirostris</i>              | ○    |          | ●     | ●         | ○          | ○               | ●        | ●         |
| <i>Stenella coeruleoalba</i> <sup>3</sup> |      |          |       | ●         |            | ○               | ●        | ○         |
| <i>Delphinus spp.</i> <sup>2</sup>        |      | ●        | ●     | ●         | ○          | ○               | ●        | ●         |
| <i>Lagenodelphis hosei</i>                |      |          | ●     |           |            | ○               |          | ●         |
| <i>Grampus griseus</i>                    | ○    | ○        | ●     | ●         | ○          | ○               |          | ●         |
| <i>Peponocephala electra</i>              | ○    | ●        | ●     | ●         |            | ○               | ●        | ●         |
| <i>Feresa attenuata</i>                   |      |          | ○     | ●         |            | ○               |          | ●         |
| <i>Pseudorca crassidens</i>               | ●    | ●        | ●     | ●         | ○          | ○               | ●        | ●         |
| <i>Orcinus orca</i>                       | ○    | ●        | ●     | ●         | ○          | ○               | ●        | ●         |
| <i>Globicephala macrorhynchus</i>         | ●    | ○        | ●     | ●         | ○          | ○               | ●        | ●         |
| <i>Orcaella brevirostris</i>              |      |          | ●     |           | ○          | ○               | ●        | ●         |
| <i>Neophocaena phocaenoides</i>           | ○    | ●        | ●     |           | ●          | ○               | ●        | ●         |

○: occurrence of species not confirmed but suspected to occur; ●: species known to occur; +: species reported before 1950; <sup>1</sup>*Tursiops aduncus* typically occurs in many coastal waters of Asia and may be sympatric with the larger, more robust species *Tursiops truncatus* in several locales, although the latter may inhabit more oceanic waters; <sup>2</sup>*Delphinus delphis*; *Delphinus capensis* and *Delphinus c.f. tropicalis*. The latter two forms are predominant south and west of China; <sup>3</sup>*S. coeruleoalba* was recorded in Northern Sulawesi (Indonesia), however, outside the Indian Ocean Sanctuary (Benoldi and Peccioni, 1999); <sup>4</sup> Pilleri and Gahr (1972) reported on a vertebra in Pakistan, that they identified as *Ziphius cavirostris*.

**Resources**

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## Seabirds

BirdLife 'datazone' lists the following seabird species for Myanmar:

| Family  | Species  |
|---|--|
| <i>Spheniscidae</i> (Penguins)                  |  |
| <i>Gaviidae</i> (Loons)                         |  |
| <i>Diomedidae</i> (Albatrosses)                 |  |
| <i>Procellariidae</i> (Petrels and shearwaters) |  |
| <i>Hydrobatidae</i> (Storm-petrels)             |  |
| <i>Pelecanoididae</i> (Diving-petrels)          |  |
| <i>Phaethontidae</i> (Tropicbirds)              | White-tailed Tropicbird <i>Phaethon lepturus</i>   |
| <i>Fregatidae</i> (Frigatebirds)                |  |
| <i>Pelecanidae</i> (Pelicans)                   | Great White Pelican <i>Pelecanus onocrotalus</i><br>Spot-billed Pelican <i>Pelecanus philippensis</i>  |
| <i>Sulidae</i> (Gannets and boobies)            | Brown Booby <i>Sula leucogaster</i>  |
| <i>Phalacrocoracidae</i> (Cormorants)           | Little Cormorant <i>Phalacrocorax niger</i><br>Indian Cormorant <i>Phalacrocorax fuscicollis</i><br>Great Cormorant <i>Phalacrocorax carbo</i>   |
| <i>Laridae</i> (Gulls and terns)                | Herring Gull <i>Larus argentatus</i><br>Yellow-legged Gull <i>Larus cachinnans</i><br>Great Black-headed Gull <i>Larus ichthyaetus</i><br>Brown-headed Gull <i>Larus brunnicephalus</i><br>Common Black-headed Gull <i>Larus ridibundus</i><br>Gull-billed Tern <i>Sterna nilotica</i><br>Caspian Tern <i>Sterna caspia</i><br>River Tern <i>Sterna aurantia</i><br>Lesser Crested-tern <i>Sterna bengalensis</i><br>Great Crested-tern <i>Sterna bergii</i><br>Black-naped Tern <i>Sterna sumatrana</i><br>Common Tern <i>Sterna hirundo</i><br>Little Tern <i>Sterna albifrons</i><br>Black-bellied Tern <i>Sterna acuticauda</i><br>Sooty Tern <i>Sterna fuscata</i><br>Whiskered Tern <i>Chlidonias hybrida</i><br>White-winged Tern <i>Chlidonias leucopterus</i><br>Brown Noddy <i>Anous stolidus</i><br>Indian Skimmer <i>Rynchops albicollis</i> |
| <i>Stercorariidae</i> (Skuas and jaegers)       | Pomarine Jaeger <i>Stercorarius pomarinus</i>  |
| <i>Alcidae</i> (Auks)                           |  |

## BYCATCH

### Sea turtles

Recently, the number of sea turtles in Myanmar has decreased markedly for the following reasons:

1. The use of sea turtle and their eggs as food in the past. The numbers of young sea turtles released were too low to replenish the wild populations.
2. The sale of sea turtle products
3. The invasion of nesting habitats
4. The incidental capture of sea turtle in off shore waters. Sea turtles are frequently caught by commercial fishing gears, such as trawls, drift nets and longline hooks.
5. Insufficient legislature and weak law enforcement.

After sometime Department of Fisheries has noticed that there is a declining trend of receiving the eggs from natural turtle nests, and from 1986, more priority has given for conservation measures, turtle nursery and research has established at Turtle Island/Diamond Island/ Tha-Mee-Hla (Beautiful Daughter Island) in the same year (1986). In 1989, the Government has promulgated fishery laws including conservation of turtle.

*From: Pe 200X*

#### **Turtle conservation of Myanmar (August 9, 2005)**

[http://www.myanmar Digest.com/eng\\_md/article/august/aug09.htm](http://www.myanmar Digest.com/eng_md/article/august/aug09.htm)

Our research group travelled to Bogale Township in June 2005, to conduct preliminary survey on reptilian fauna of this township. It was my second trip. Last October, we visited Mainmahla Island, Gayetgyi Island and Kadonkalay Island. These islands were formed with silt deposited by Bogale River and Gulf of Mottama. Bredid turtles lay eggs on Gayetgyi Island from September to March yearly. Female turtles made their nests to lay the eggs on the sandbank. We have chosen three stations for experiment as lower slope, upper slope and dune on nesting area. Each nest is fixed with pillars for date of laying eggs and serial number for identification. We have taken data such as egg laying date, time, pillar number, sector number, approximate hatching date, number of death, number of unhatched eggs, number of undeveloped eggs, number of total eggs, etc:

During our survey period the only species of Sea turtle (*Lepidochelys olivacea*) come up Gayetgyi Island. Its common name is olive ridley. Silicious sand of this island is the most suitable condition for sea turtles. We observed the waterway and migratory routes of olive ridley in Gayetgyi Island.

Research activities on turtle biology and population are virtually important to provide knowledge and information upon which to base successful management. In the past the research works on Sea turtles had been limited except two scholars of certain universities. They are Daw Saw Mya Kay Thi and U Maung Myint. Currently there is an increasing interest in the topic among Universities, NGOs and private sector. This is a positive sign in improving data base on sea turtle management and conservation in Myanmar.

We will continue the on-going research activities on bio-ecology and monitoring including survey of stocks and identification of major nesting sites and foraging area, identification of migratory routes and geographical ranges of population, conservation practices on nesting beach and determination of impact of coastal fisheries on the sea turtle population. The data and information on the two last points are entirely not available but we must try. To realize all of the above activities and achieve good results on sea Turtle program in Myanmar, collaboration with experts of Livestock Fisheries Department and human resources of universities are needed. Our research program on sea turtle, using tags and telemetry satellite was done only in a short time on several occasions. Sea turtles are tagged to ensure the

recognition of individuals for searching their migratory route. Tagging is most often conducted to obtain information on reproductive biology movements, stranding, residency and growth rates. Sea turtles have been tagged usually on the flippers of a metal or plastic tag inscribed with numbers and words. We have recorded that olive ridley is relatively small Sea turtle six to eight inches in size and occasionally five or nine pairs of lateral scutes. The carapace is uniform olive in color. Olive ridleys are carnivores and migratory animals. Female olive ridley came alone in Gayetgyi island when we reached there. We also assume that conservation efforts throughout the world are now directed at preventing extinction. Thus habitat management is considered to play a key role. Habitats are changed after tsunami and they no longer support these species. The long term success of any conservation program requires trained personnel and public support. Department of Fisheries trained their officials and Department of Education produced the researchers for Sea turtle conservation. We conserve our treasures under the guidance of Ministry of Livestock and Fisheries and Ministry of Education.

U Cho Hla Aung (DoF) and U Myint Maung (Professor and head of Department of Zoology, Dagon University) are steering committee members of our research group.

Environmental Education programs started at Department of Education. But it must be emphasized that the time may be very short for survival of these animals unless effective conservation action is taken as soon as possible. Some countries in Asia have lost unique and potentially very important resources. The migration of key species was studied by a tagging program in developing countries. Thus we are conducting the conservation-biological research works on Sea turtles. Most turtles are recaptured within one or two kilometers of their released locations, but all of these turtle species showed some ability to migrate significant distances. Relative migratory behavior thus varied between the key species. It is very urgent to work out to know the turtles' migratory routes in Myanmar.

We are working together with necessary aid especially from NGOs of these rural Island in Bogale Township. We appreciated them for their conservation-minded spirit.

Author : Sein Sein Thein (Dagon University)

**Resources:**

Pe, M. 200X. On the Sustainable Management of the Bay of Bengal Large Marine Ecosystem (BOBLME). National Report of Myanmar GCP/RAS/179/WBG, 61 p.

**Marine mammals**

*From deBoer 2002*

Table 3. A country by country summary of factors which could threaten or impact to coastal small cetaceans. Open circles refer to possible impacts, whereas filled circles indicate definite impacts to cetacean species within that particular country (Parsons, 1999).

| Country         | Direct takes | By-catch | Habitat loss  |             | Capture Fisheries | Pollution | Boat Traffic |
|-----------------|--------------|----------|---------------|-------------|-------------------|-----------|--------------|
|                 |              |          | Deforestation | Reclamation |                   |           |              |
| Iran            |              | ●        |               |             |                   | ●         | ○            |
| Pakistan        |              | ●        | ○             |             |                   | ○         |              |
| India           |              | ●        | ○             | ○           | ○                 | ●         | ●            |
| Sri Lanka       | ○            | ●        | ○             |             |                   | ○         |              |
| Bangladesh      |              | ●        | ○             |             |                   | ○         |              |
| Myanmar (Burma) |              | ●        | ○             |             |                   | ○         |              |
| Thailand        |              | ●        | ●             |             | ●                 | ○         | ●            |
| Indonesia       | ●            | ●        | ●             |             | ●                 | ●         | ○            |

***Resources:***

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**BYCATCH MITIGATION**

**Sea turtles**

New regulations issued in 2005 by the Ministry of Fisheries prohibit the eating of turtle meat and eggs and require that turtles caught as bycatch in fishing nets be released, and trawlers must be equipped with devices to minimize the risk of turtle capture.

*From: Hamann & Dryen 2006*

***Resources:***

Hamann, M. & J. Dryen. 2006. Status of leatherback turtles in Myanmar, p.102 *In: Indian Ocean & SE Asian Leatherback-Tsunami Assessment - February 2006 DRAFT.*