

Designation date: 13/12/12 Ramsar Site no. 2088

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

Dr. Tran Ngoc Cuong
Biodiversity Conservation Agency
Vietnam's Environment Protection Administration
Ministry of Natural Resources and Environment
Address: 5th floor, #99 Le Duan Building, Hanoi
Tel: +84 4 39412025 Fax: +84 4 39412028
Email: tranngoccuong1962@gmail.com,
tcuong@nea.gov.vn

FOR OFFICE USE ONLY.

DD MM YY

--	--	--

--	--	--	--	--	--

Designation date Site Reference Number

2. Date this sheet was completed/updated:

10 Feb 2012

3. Country:

Viet Nam

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Mui Ca Mau National Park

[Local name :Vuon Quoc Gia Mui Ca Mau]

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or
 b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
 ii) the boundary has been extended ; or
 iii) the boundary has been restricted**

and/or

If the site area has changed:

- i) the area has been measured more accurately ; or
 ii) the area has been extended ; or
 iii) the area has been reduced**

** **Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site:

Refer to Annex III of the Explanatory Note and Guidelines, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a **hard copy** (required for inclusion of site in the Ramsar List): ;
 ii) an **electronic format** (e.g. a JPEG or ArcView image) ; JPEG and MapInfo
 iii) a **GIS file providing geo-referenced site boundary vectors and attribute tables** .

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The boundary of the site is the boundary of Mui Ca Mau National Park, as shown on the map. In the sea-side, it is the coastline from Bay Hap River mouth to the point where Truong Phi canal joins the sea. The inland boundary follows canals that share borders with Nam Can, Trang Sao, and Dat Mui Protection Forests.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

Centre: 8°41'00"N, 104°47'32"E

9. General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

Mui Ca Mau National Park is situated in the southernmost tip of Vietnam. It is located in Dat Mui, Vien An and Dat Moi Communes (Ngoc Hien District) and Lam Hai Commune (Nam Can District) of Ca Mau Province. The park is located 100 km southwest of Ca Mau City.

10. Elevation: (in metres: average and/or maximum & minimum)

The site is generally plain with an average elevation of 1 m above mean sea level.

Minimum: 0 m above mean sea level

Maximum: 1.5 m above mean sea level

11. Area: (in hectares)

Mui Ca Mau National Park has a total area of 41,862 hectares, comprised of 4 functional zones as follows:

Terrestrial zones:

Strictly Protected Zone:	12,203 hectares
Ecological Rehabilitation Zone:	2,859 hectares
Administration and Service Zone:	200 hectares
and a Marine Protected Zone:	26,600 hectares

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Mui Ca Mau National Park is situated at the southernmost tip of Vietnam. The site was originally covered in natural mangrove forest but the vast majority was destroyed during the American War and, later, by conversion to aquacultural ponds and agricultural land. Most of the aquacultural ponds inside the park are abandoned, and now support extensive areas of re-colonising mangrove forest. There are extensive mudflats, which are also being colonised by mangrove. The site is continually expanding due to coastal accretion of up to 50 m per year in places (Buckton *et al.* 1999). In this aspect, Mui Ca Mau typically retains ecological characteristics of new and continuing aggradational lands in the southernmost Mekong Delta, Vietnam.

Mui Ca Mau Ramsar Site is situated at the junction between the East Sea and Gulf of Thailand and is the only place in Vietnam where two different tidal regimes interact, i.e. the east coast has an uneven bi-daily tide while the west coast has a daily tide. These tidal regimes contribute to the aggradation that is building new mud-flats around Ca Mau. These create favourable habitats for many aquatic and submerged species. Mui Ca Mau also provides very important passing and wintering habitats for a large number of waterbirds.

The park is divided into 4 zones: the strictly protected zone, ecological rehabilitation zone, administrative and service zone and the marine protected zone. Specific functional and management activities have been clearly defined for each zone.

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the Explanatory Notes and Guidelines for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criterion 1:

Almost all of the 1.6 million hectares of the Ca Mau Peninsula's natural wetlands have been converted to agriculture and aquaculture making this ecosystem rare in the Indochina Mangroves biogeographic region. Mui Ca Mau, with an extensive area (c. 13,400 ha) of mangroves and alluvial flats (c. 26,000ha), is the largest natural area of what remains of the Ca Mau Peninsular.

Phan Nguyen Hong (1997) stated Ca Mau Peninsular support a largest area of mangrove in Vietnam (c. 150,000ha). In 2010, VIFEP (2010) report an area of c. 60,000 ha of mangroves remains in the Peninsular. Most of these mangroves located in Ngoc Hien District (c. 34,000ha) and the most intact areas are now only found in the Ramsar Site. The site therefore supports one of most important sample for intact mangrove and mudflat habitats in the Indochina Mangroves biogeographic region.

Criterion 2:

There are a number of globally threatened species (IUCN 2011) was recorded for Mui Ca Mau, most noteworthy are those of otters, primates, waterbirds, reptiles and fishes (see table)

Scientific Name	Common Name	IUCN	CITES	CMS	VRD
Mammalia					
<i>Macaca arctoides</i>	Stump-tailed Macaque	VU	II		VU
<i>Lutra sumatrana</i>	Hairy-nosed Otter	EN	II		EN
<i>Aonyx cinerea</i>	Asian Small-clawed Otter	VU	II		VU
<i>Viverra zibetha</i>	Large-spotted Civet	VU			VU
<i>Prionailurus viverrinus</i>	Fishing Cat	EN	II		EN
<i>Manis javanica</i>	Sunda Pangolin	EN	II		EN
Aves					
<i>Platalea minor</i> ¹	Black-faced Spoonbill	EN	II	I	EN
<i>Egretta eulophotes</i>	Chinese Egret	VU		I	
<i>Numenius madagascariensis</i>	Far Eastern Curlew	VU			
Reptilia					
<i>Ophiophagus hannah</i>	King Cobra	VU	II		CR
<i>Batagur baska</i>	Four-toed Terrapin	CR	I		
<i>Cuora amboinensis</i>	Southeast Asian Box Turtle	VU	II		VU
<i>Hieremys annandalii</i>	Yellow-headed Temple Turtle	EN	II		EN
<i>Malayemys subtrijuga</i>	Snail-eating Turtle	VU	II		VU
<i>Siebenrockiella crassicollis</i>	Black Marsh Turtles	VU	II		
<i>Amyda cartilaginea</i>	Southeast Asian Softshell Turtle	VU	II		VU

¹At list three individuals were recorded in November-December 2010, one of them was carrying radio tracking transmitter by a South Korean/Japanese collaborative programme of tracking Black-face Spoonbills (Le Trong Trai pers. comm.).

Scientific Name	Common Name	IUCN	CITES	CMS	VRD
Chondrichthyes					
<i>Himantura gerrardi</i>	Whitespotted Whipray	VU			
Actinopterygii					
<i>Hippocampus kuda</i>	Estuary Seahorse	VU	II		EN
<i>Pangasius krempfi</i>	Catfish	VU			

Mui Ca Mau is also home to other fish species that are ranked as High or Very High Vulnerability by fishbase.org (see more in Criterion 8 and section 22). In addition, there is information on the annual visits of Dugong *Dugong dugon* (VU) and Irrawaddy Dolphin *Orcaella brevirostris* (VU) close to tidal flats of the park (Han Thanh Phong pers. comm., and VIFEP 2010). From unconfirmed records, Silver Langur *Trachypictbeus germaini* (EN) is also inhabit Mui Ca Mau's mangroves. However, there is a need of more survey to confirm the distribution of this species inside the proposed Ramsar Site (Hoang Minh Duc pers. comm.²).

Criterion 6:

Mui Ca Mau regularly supports >1% of the individuals in the populations of one species and one subspecies of waterbirds.

Common name	Scientific name	Count	Year	Season/Reference	1% level*
Chinese Egret	<i>Egretta ulophotes</i>	83	Mar 2000	Winter (Moore and Nguyen Phuc	35
		36	Dec 2000	Bao Hoa 2000)	
		43	2007	Nguyen Duc Tu per. comm. ³ .	

* Li and Mundkur 2007 and Wetlands International 2006

Criterion 8:

Mui Ca Mau maintains a wide range of natural and semi-natural ecosystems, including intertidal mudflats and mangroves of different ages, which are important breeding and spawning grounds for many important species of brackish water fishes, especially perciforms (order Perciformes) with account for more than 50% number of fish species recorded from the site (FFI 2007). Of them, the most important ones are Barramundi *Lates calcarifer*, snappers *Lutjanus* spp., Fourfinger threadfin *Eleutheronema tetradactylum*, Bronze croaker *Otolithoides biauritus*, Spotted scat *Scatophagus argus*, . Other important species include gobies such as Mudskippers *Pseudapocryptes* spp., Giant Mudskipper *Periophthalmodon schlosseri*, sleepers such as *Butis* spp. or Dusky Sleeper *Eleotris fusca*, mackerels such as Chacunda Gizzard Shad *Anodontostoma chacunda*, Thai Gizzard Shad *Anodontostoma thailandiae*, and Chinese Gizzard Shad *Clupanodon thrissa*. These species contribute a significant proportion income for local fisher households in the area (VIFEP 2010).

In addition, the site is important for a number of commercially important species that migrate from the brackish-water to fresh-water for breeding, especially eel-catfishes *Plotosus* spp., catfishes *Arius* spp., *Plotosus* spp. and *Pangasius* spp. including the globally vulnerable *Pangasius krempfi* (VIFEP 2010).

The mudflat and mangrove forest also support the larva of many economic marine organisms such as Giant tiger prawn *Penaeus monodon*, Flower shrimp *Penaeus semisulcatus*, Greasyback shrimp *Metapenaeus ensis*, Spear shrimp *Parapenaeopsis* spp., Mud crab *Scylla serrata*, clam species *Meretrix* spp., cockle species *Anadara* spp. and *Saccostrea* oysters spp.. The larvae and seedlings of these species,

²A specimen collected by Truong Minh Hoat in Mui Ca Mau in 1977. In 2007, Hoang Minh Duc recorded one captive individual in Dat Mui Commune, the man who kept this langur declared that it was taken from mangroves inside Mui Ca Mau.

³Asian Waterbird Census Data Sheet, 2007

which found with large amounts in the park, are importance sources for aquacultural production around the park (FFI 2007 and VIFEP 2010).

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

This area falls within **IM1402 (Indochina Mangroves)** Ecoregion within Tropical & Subtropical Moist Broadleaf Forests of Indo-Malayan Region.

b) biogeographic regionalisation scheme (include reference citation):

Olson *et al.* (2001) Terrestrial Ecoregions of the World: A New Map of Life on Earth.

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Geology and geomorphology:

Mui Ca Mau is a young alluvial flat that was built up during marine transgressions in the mid-Holocene. Moving from land to the sea, the area consists of following landforms:

- (i) Marine-swampy accumulation area in parts of Dat Mui, Vien An, Lam Hai and Dat Moi Communes. The surface soils consist of sediment materials carried to the coast by rives. These materials accumulate in the coast and gradually form the marine swamps.
- (ii) Estuarine mud-flat accumulation area supports mangrove trees is situated from Bai Boi to Bay Hap river mouth. The surface soils consist of grey silts.
- (iii) Marine-riverine accumulation area in the west of the park in Lam Hai and Dat Moi Communes. The surface soils formed from marine-riverine alluvial materials.

Geochemical characteristics of soils

- Neutral soil (pH: 6.21-7.35)
- High salinity: 20-30 ppt

Generally, soils in the area are neutral, high salinity, soil fertility is relatively high, sulfidic layers are generally not present. On other hand, the east coast is strongly eroded under impacts from wave dynamics, sediment materials from erosion area are carried to the sea forming large alluvial flats in the east side of Mui Ca Mau. The erosion rate can reach tens of meters a year. Waves and coastal flows gradually erode the coastal soils and vegetations forming low ridges in the coast with exposed materials include coarse and fine sands, cascajos, bivalve's shells and vegetation relics. Due to erosion, the area is losing hundreds hectares of forests land in the east coast.

Hydrology:

Water quality

- pH: varies from $7.82 \pm 0,19$ in rainy season, and $7.74 \pm 0,17$ in dry season
- Salinity: 2 - 25ppt in rainy season, and 29,3 - 32,4ppt in dry season
- Dissolved oxigen (DO): 5.1 ± 1.3 mg/l in rainy season, and 5.5 ± 0.9 mg/l in dry season
- Mineral salts
 - + $\text{PO}_4 - \text{P}$: 0.1 – 0.02 mg/l (rainy season); 0.04 – 0.08 mg/l (dry season)
 - + $\text{NH}_4 - \text{N}$: 0.00378 – 0.0076 mg/l (rainy season); 0.0021 – 0.005 mg/l (dry season)

- + $\text{NO}_2 - \text{N}$: 0.008 – 0.024 mg/l
- + $\text{SiO}_3 - \text{Si}$: 0.221 mg/l – 0.228 mg/l (rainy season); 0.300 mg/l – 0.408 mg/l (dry season)

The park consists of intertidal flats that are influenced by two tidal regimes: daily tidal in the East Sea and bi-daily tidal in the Gulf of Thailand. The tidal amplitude varies from 0.8 to 1m. The continental part of the parks is cut by an interlacing canal network. As the tidal range in the East Sea is higher than in the Gulf of Thailand, there are tidal flows from east to west. For this reason, most of canals flow from the south (East Sea) to the north (Cua Lon River). At the same time, the Cua Lon River is slopes slightly from east to west, causing a flow of Bo De River from the East Sea to the Gulf of Thailand.

The tidal pattern is very important in influencing the flows of canals and movement of sediments in the area. The alluvia of sediments facilitate movement of materials from East Sea to the Gulf of Thailand following Cua Lon River and deposit them in Ong Trang river mouth with the average contents of 70-80 mg/l in dry season and 30 mg/l in rainy season. It is estimated that the Cua Lon River carries 1.03 million tons of alluvial materials from East Sea to the Gulf of Thailand each year.

The well-developed canal network offers good navigation. However, the flow regimes of canals in the area are complicated due to tidal impacts. Such natural conditions and hydrological patterns influence the soil environment, ecology as well as all socio-economic activities in the area.

Climate

Mui Ca Mau National Park is situated in the sub-equatorial tropical monsoon climate zone with the total rainfall and accumulated calorie relatively higher than other areas in the Mekong Delta.

Rainy season is from May to November, highest rainfall months are August and September. Dry season is from December to April, months of highest numbers of sunny days are from January to April.

Average annual rainfall is 2,390mm, maximum can reach to 2,900mm in some years, and minimum is 2,000mm. Average number of rainy days is 165 days an year, varied from 130 to 200 days.

Average annual temperature is 26.8°C. Lowest temperature falls in January (24-26°C), and higher temperature falls in April (27.5-28.5°C).

Average annual humidity is 85.9%, varying from 83.5% to 89.0%, the most humid months are September and October. Average annual evapotranspiration is 1,074 mm.

The northeast wind starts from November to April. The southwest wind starts from June to September. May and October are months of transition between these two dominated winds. This climate is generally creating favourable conditions for growth and development of plant and animal species.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

Mui Ca Mau is situated in the Ca Mau Peninsular in the Mekong Delta in the south of Vietnam. The peninsular covers 1.6 million hectares. It has complicated hydrological, hydraulic and pedological regimes, and is influenced by two tidal regimes.

The Ca Mau Peninsular can be divided into six sub-zones, namely West Bassac, U Minh Thuong (Upper), U Minh Ha (Lower), South Ca Mau and Bac Lieu-Vinh Chau Coast. Water from this peninsular drains to the seas via Cai Lon, Cai Be, Ong Doc, Ganh Hao, and My Thanh rivers.

These rivers are important for reducing floods in the region. Water supply of the region comes from rains and water from Bassac River via an extensive canal and channel network. Aside from water supply, the West Bassac sub-zone provides the functions of flood control (mostly floods from the Long Xuyen Quadrangle), regulate watelogs, supply freshwater and control saline water in the areas contiguous with Cai Lon and Cai Be rivers. Mui Ca Mau National Park is situated in the South Ca Mau subzone where support some highest biodiversity and high potential for fishery and aquaculture.

The Ca Mau Peninsular was mostly formed in the Holocene transgressions. Most of the peninsular is dominated by saline, sulphate, peat and alluvial soils. In the sediments of the peninsular, there are three major minerals were found including hydromica, kaolinite and smectit (Le Xuan Thuyen, 1996). However, traversing landward from the sea, the content of smectit is strongly reduced from the new sediments of the coastal mangroves to the older sediments of inland areas. (Nguyen Ngoc Hoa *(ed)*, 1990).

The peninsular is located in the northern hemispherical tropic, sub-equatorial, and in the Asian Monsoon Zone. Such location defined climate characteristics of monsoon sub-equatorial of the region. The common climate features are high and stable temperature, and high and seasonal varied rainfall. Average annual temperature varies from 26-27°C (however, relatively lower than it of the overall Mekong Delta). The peninsular experiences a highest rainfall in the Mekong Delta. Average annual rainfall is c. 2,400mm. Rainfall allocation is seasonal. Rainy season from May to November accounts for 90-93% of total rainfall. Dry season starts from December to April.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Mui Ca Mau is situated in between two tidal regimes, where the tidal water flows from east to west via a network of rivers and canals. The tidal regimes significantly affect the flows of canals and sedimentary movement forming aggradational mudflats in the tip. These mudflats are very important in supporting park's biodiversity, and also, providing important breeding, feeding and roosting grounds for a number of species of high economical value. Well-developed canal network facilitate navigation activities, positively affects the soil and natural environments, and the socio-economic activities in the region. The tides also bring alluvial materials to the coast supporting the creation of new soil layers, hold back the sulphate soil activation, regulate the salinity of soils, and subsequently support the activities of biotic organisms in soil and water. Canals facilitate the movement of larvae of aquatic species and nutrients into wetlands and serve as a basic for the development of aquaculture in the site. The accumulation of alluvia and tidal dynamics create favourable conditions for the expansion and development of mangroves in Ca Mau tip.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the Explanatory Notes & Guidelines.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) Dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

A (Permanent shallow marine waters) - **G** (Intertidal mud, sand or salt flats) - **I** (Intertidal forested wetlands) - **B** (Marine subtidal aquatic beds) - **M** (Permanent rivers/streams/creeks) - **F** (Estuarine waters) - **L** (Permanent inland deltas) - **H** (Intertidal marshes) - **E** (Sand, shingle or pebble shores) - **1** (Aquaculture ponds) - **9** (Canals and drainage channels, ditches) - **Ts** (Seasonal/intermittent freshwater marshes/pools on inorganic soils)

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

Mui Ca Mau National Park contains extensive areas of intertidal mudflat, and large areas of mangrove forest, dominated by *Avicennia alba*, *A. officinalis*, *A. marina*, *Rhizophora apiculata* and *Kandelia candel*. Also, *Bruguiera* sp. and *Sonneratia* sp. occur sporadically (Buckton *et al.* 1999).

Some small areas of old growth *Rhizophora apiculata* mangrove remain. This vegetation type probably covered much of the area in the past. Evidence of over-exploitation is abundant, with many old logged bases of large *Rhizophora apiculata* trees present. There are still some big trees over 20 years old, though generally the habitat is degraded. Signs of mangrove forest regeneration, however, have been observed at Mui Ca Mau. There are also extensive *Rhizophora apiculata* plantations in the national park (Buckton *et al.* 1999).

Mui Ca Mau National Park is considered to be an important site for a number of migratory waterbirds and contains two Important Bird Areas: Dat Mui and Bai Boi (Tordoff 2002).

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS

Fauna and Flora International (2007) recorded 60 vascular plant species for the Mui Ca Mau National Park, of which 26 species are true-mangrove trees that are very important for the formation of mangroves in the region (see Appendix 5). There is no obvious variation between forest types such as mixed forest, *Rhizophora* forest and *Avicennia* forest, indicating the forests in the site are mature and about in climax. Most dominant species in the mangroves are *Rhizophora apiculata* and *Avicennia alba*. In addition, *A. officinalis*, *A. marina*, *Rhizophora apiculata*, *Kandelia candel*, *Bruguiera* sp. and *Sonneratia* sp. occur sporadically (BirdLife International 2004).

Mangrove in Mui Ca Mau is the best example for the natural succession of the forests with domination of *Rhizophora* spp. and *Avicennia* spp. in the estuarine areas, especially in the river mouth islands. Making a transect landward from the sea, we first see vegetation which is entirely dominated by *Avicennia* spp. growing in the soft substances, in the middle of island, *Rhizophora apiculata* appears to establish the mixed vegetations of *Avicennia-Rhizophora* species, further inland, where the substances are more stabilised, *Avicennia* spp. disappears giving room for monospecies vegetation of *Rhizophora apiculata* (Buckton *et al.* 1999).

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.

There are 26 mammal, 94 bird, 43 reptile, 9 amphibian and 137 fish species were recorded for the Mui Ca Mau National Park to date (FFI 2007 and WWF 2010).

Aside of globally threatened species as listed in Criteria 2, there are a number of species that are ranked by IUCN (2011) as globally near-threatened (NT) or data deficient (DD) including

Mammals: Large Flying-fox *Pteropus vampyrus* (NT), Large Indian Civet *Viverra zibetha* (NT);

Birds: Spot-billed Pelican *Pelecanus philippensis* (NT), Oriental Darter *Anbinga melanogaster* (NT), Painted Stork *Mycteria leucocephala* (NT), Black-headed Ibis *Threskiornis melanocephalus* (NT), Black-tailed Godwit *Limosa limosa* (NT), Eurasian Curlew *Numenius arquata* (NT), and Asian Dowitcher *Limnodromus semipalmatus* (NT);

Reptiles: Asiatic Rock Python *Python molurus* (NT), Tay Minh Water Snake *Enhydryis innominata* (DD), and Jagor's Water Snake *Enhydryis jagori* (DD);

Fishes: Numbray Narke *dipterygia* (DD), Scaly whipray *Himantura imbricata* (DD), Sole *Zebrias crossolepis* (DD), and few other species that are listed as High or Very vulnerability by fishbase such as: Zebra Bullhead Shark *Heterodontus zebra*, Daggertooth Pike Conger *Muraenesox cinereus*, Milkfish *Chanos chanos*, Giant Catfish *Arius thalassinus*, Gray Eel-catfish *Plotosus canius*, Barramundi *Lates calcarifer*, John's Snapper *Lutjanus johnii*, Blackmouth Croaker *Atrobucca nibe*, Bronze Croaker *Otolithoides biauritus*, Fourfinger Threadfin *Eleutheronema tetradactylum*, Largescale Mullet *Liza macrolepis*, and Largehead Hairtail *Trichiurus lepturus*.

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

Most of the natural wetlands in the Mekong Delta, Vietnam in general and of the Ca Mau peninsular in particular have been converted to agriculture and aquaculture. The proposed Ramsar Site is protecting the last remnants of mangrove and tidal flat landscape in the delta. Moreover, Ca Mau is the southernmost tip of Vietnam, making it a valuable natural and cultural asset of the nation, with unique features of the delta region that need to be maintained for future generations. The beauty of Ca Mau attracted a number of domestic and international visitors and is an inspiration for numerous work of art including poems, literatures, music and movies.

In the French and American Wars, Ca Mau forests served as the resistant base for the southern army and people, it was one of the places where received the “No-Number Vessels” carrying weapons from the North assisting the South. Therefore, Mui Ca Mau is bearing a number of historical values, and is an educational ground for future generations.

Although a new land with the populations is newly established in last few centuries, the site remains a typical cultural feature of the Kinh-Khmer reclamer communities. Some of the traditional festivals were formed and maintained for hundreds of years such as Nghinh Ong Festival (offering to the Whale).

Mangroves of Ca Mau National Park have an important role in provision of foods, medicines, and other products that are vital for the livelihood of local communities in and around the park. Mangroves also serve as a natural belt to protect other inland ecosystems from natural disasters or climate events such as storms, tropical cyclones and surges. A number of aquatic species including

fishes, clams and shells, crabs and shrimps are strongly depend whole or parts of their life cycles to the mangroves (see Criterion 4).

Most of local communities leaving in and around Mui Ca Mau National Park are poor and strongly depend on the wetland natural resources for their livelihood. In the war time, local inhabitants subsidised themselves by 'sky's birds' and 'water's fishes'. After reunification in 1975, a reclamation programme was started. Large areas of brackish and sulfated wetlands were washing for rice cultivation. Other areas of forest were cut down and after that converted to cultivation land for taro, pumpkin, mellow and maize (these lands are over-nutrient so that not suitable for rice cultivation). In late 1980s, a booming of shrimp aquaculture in the delta leading to a large area of mangroves in Ca Mau Peninsular was cleared for shrimp ponds. Late 1990s, as a result of setback of shrimp production together with the later establishment of Mui Ca Mau National Park, the mangroves and other natural intertidal flats have been rehabilitated.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

a) within the Ramsar site:

100% of the park area is owned by the government.

b) in the surrounding area:

Land in the surrounding area is privately owned by individual farmers.

25. Current land (including water) use:

a) within the Ramsar site:

100% area of the site is a National Park. It is a protected area that serves for biodiversity conservation and ecotourism. Local communities are allowed by the park authority to harvest resources (non-timber forest products and invertebrates) on a limited basis under the supervision and control of the park rangers.

b) in the surroundings/catchment:

The entire land area outside the park has been used for agricultural-forestry-fishery purposes.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) within the Ramsar site:

The mangrove forests of Mui Ca Mau have been severely degraded in the last few decades, largely as a result of illegal encroachment and conversion to aquacultural ponds. Considerable effort has been made to restore the site and many illegal settlers have been evicted. However, there are substantial numbers of people living in or around the site, who frequently encroach it and exploit the remaining mangrove. In addition, illegal fishing, which has been documented as being widespread at the site, is thought to cause significant disturbance to the avifauna. If unregulated, this activity could lead to declines in abundance of local marine life. The largest potential threat to biodiversity at Mui Ca Mau is afforestation of the intertidal mudflats with mangrove or of areas of disused agricultural land (which is also an important habitat for migratory birds) with tree species. Typhoons are another potential threat to biodiversity at the site (Tordoff (eds.) 2001).

In detail, the Site faces a number of factors affecting its ecological character, including:

- High pressure from population density, poverty and the low awareness on the importance of biodiversity conservation;
- Illegal encroachment of the local peoples in the park, even in the strictly protected zone, for over-exploitation of plant and animal resources that affecting biodiversity and environment;
- Wildlife trade and utility in the region is not yet controlled;
- Mangrove cutting for house making, charcoal and fuelwood etc. severely affected the forest stock and area;
- Park authority is lack of capacity (in term of human resource, equipment as well as legal and institutional support) for appropriate law enforcement; and
- The collaboration between park managers and local authority in management and protection of the park is not effective as expected.

b) in the surrounding area:

A number of issues in the wider landscape also affect the ecology of the park, including:

- Poverty and dependency of local community on wetlands resources place a great pressure on the park. Almost all of the people living in and around the park are engaged in aquacultural and fishery activities which are heavily depend on the natural resources in the parks in term of encroachment for land conversion and over exploitation of aquatic species. As this is a developing area, infrastructure and public facilities are fairly limited. General educational standards of local communities are low, and their livelihoods are unstable. Illegal encroachment to harvest wetland plant and animal products is a serious problem threatening biodiversity of the park. Park management board are now collaborating with local government to implement poverty alleviation programmes that aims to reduced the pressures on the park's natural resources.
- Another pressure comes from seasonal clam larvae collectors. In the season, the immigration population in the park sometimes reaches to c. 2,000 outsiders (accounting for 50% of the park's population).

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

Mui Ca Mau was designated as a national park, the highest category in the national protected areas system of Vietnam. During the French colonial period, part of the site was designated as Tam

Giang Ornamental Forest. In 1983, the southern part of the site was designated as Dat Mui Nature Reserve by the provincial people's committee. This nature reserve was included on Decision No 194/CT of the Chairman of the Council of Ministers, dated 9 August 1986, under the name Ca Mau (MARD 1997). In 1990, an investment plan was prepared for Dat Mui Nature Reserve, and, subsequently, a management board was established under Ca Mau Provincial FPD. Prior to 2003, the northern part of the site was designated as Bai Boi Coastal Protection Forest, and managed with the aim of preventing coastal erosion and protecting inland areas from flooding and other severe weather conditions. A management board for the coastal protection forest was established under the management of Ca Mau Provincial FPD.

In 2003, Dat Mui Nature Reserve and Bai Boi Coastal Protection Forest were combined, together with adjacent areas of natural habitat, to form Mui Ca Mau National Park, which was decreed by Decision No. 142/TTg of the Prime Minister, dated 14 July 2003.

In addition, Mui Ca Mau was designated as one of core zones of Mui Ca Mau Biosphere Reserve by UNESCO in 2009 (UNESCO-MAB 2009)⁴.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

No Management Plan exists. In Vietnam, the most important plan for a protected area is the investment plan approved by MARD that consists of the programmed of works and required budget for a given period. In Mui Ca Mau, the Investment Plan for the period of 2004-2010 and amendment for the period of 2010-2020 is being implemented.

d) Describe any other current management practices:

In 2004, Ca Mau Provincial People's Committee decided to fund the Investment Plan for Protection and Development of Mui Ca Mau National Park for the period of 2004-2010 with a total amount of VND 63.7 billion (c. USD 3 million). This plan was partially implemented and recently revised for the period of 2010-2020 will a total amount of VND 167 billion (c. USD 8 million).

Following the plan, the terrestrial and coastal parts of the national park was divided into three functional zones: Strictly Protection Zone, Ecological Zone and Administration and Service Zone with the specified management procedures are applied for each zone. The plan includes specific programmes such as Management and Protection, Scientific Research, and Ecotourism etc..

The National Park Management Board is implementing a wide range of collaborative activities with the local authorities and peoples to involve them in the conservation work and allow the locals to wisely use some wetland resources such as NTFP and molluscs on the mangrove grounds. In coming time, the park is planning to further this collaboration to establish of community groups in management and utilisation of the park's natural resources, and to participate in the ecotourism activities (Mui Ca Mau National Park 2008).

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

⁴<http://www.unesco.org/mabdb/br/brdir/directory/biores.asp?code=VIE+07&mode=all>

A new Investment Plan for the period of 2010-2020 was prepared and submitted for the approval by Ca Mau Provincial People's Committee and in hope that funding from the central government will be approved in this year. This Investment Plan will be include some key programmes including:

- Mangrove protection;
- Biodiversity conservation;
- Establishment of a marine protected area;
- Ecotourism;
- Community awareness; and
- Development of infrastructures for protection and management.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The park has no a technical section yet, park staff are not equipped with equipment and knowledge for monitoring biodiversity as well as environmental quality. Only a simple monitoring programme focusing water quality, hydrological indexes, flora and vegetation, waterbirds and aquatic species has been operated. Monitoring data are being used for development of approaches for sustainable management of the park. They are also serving for biodiversity conservation, aquatic resource management, water resource management, ecotourism, community development, environmental education, scientific research and environmental quality monitoring planning.

Since 1998, under national 661 programme (also known as Five Million Hectare of Forest Programme initiated by the Prime Minister's Decision No. 661/QĐ-TTg dated 29 July 1998), the park carried out following research activities:

- Inventory, survey and monitoring forest status;
- Preparation plant specimens for the park's herbarium; and
- Monitoring the coastal dynamics (erosion and aggradations) of East and West coasts.

With support from Biodiversity Conservation Agency of MoNRE, the park continues piloting 60 ha of mangrove recolonisation in the mudflat.

In collaboration with several research institutes, the park has carried out few inventories on migratory birds and fishes, and other wildlife.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The park has a conservation awareness program targeting local communities and schools to raise their awareness on the importance of conservation of wetlands. The activities include propaganda campaigns, quiz contests, training courses of forest fire presentation and wise-use of the wetlands.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Situated in the southernmost tip of Vietnam, the Dat Mui ecotourism site attracts a number of international and domestic visitors every year. However, due to difficult access, tourism development is somehow limited. Most of tourists only visit the park in day, not many overnight guests due to lack of standard accommodation for visitors.

The headquarters of the park has 12 guestrooms. Most of visitors to the park are bird watchers and researchers. In 2009, Mui Ca Mau National Park received 31,200 visitors, of which 2,100 were international visitors; in 2010, received 35,600 visitors, of which 2,700 international visitors.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Territorial Jurisdiction: Ca Mau Provincial People's Committee.

Functional Jurisdiction: Mui Ca Mau National Park Management Board.

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

The Provincial People's Committee of Ca Mau Province.

Mr. Tran Quoc Tuan,
Director of Mui Ca Mau National Park,
Commune No. 8, Ca Mau City
Ca Mau Province, Vietnam.
Tel.: +84 0913893541, Fax: +84 7803.824625,

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

BirdLife International and MARD (2004) *Sourcebook: Existing and proposed protected areas in Vietnam. Second Edition*. Hanoi, Vietnam: BirdLife International Vietnam Programme.

Buckton, S. T., Nguyen Cu, Ha Quy Quynh and Nguyen Duc Tu (1999). *Conservation of Key Wetland Sites in the Mekong Delta*. BirdLife International Vietnam Programme Conservation Report No. 12. BirdLife International Vietnam Programme, Hanoi, Vietnam.

IUCN (2010). IUCN Red List of Threatened Species. Version 2010.4. <www.iucnredlist.org>. Downloaded on 05 July 2011.

Le Xuan Thuyen (1996). *La partie sud du delta du Mékong: sédimentation actuelle et évolution récente*. Thèse, Univ. Bordeaux I. (in French)

Nguyen Ngoc Hoa ed., (1990). *Annotative Geological Maps of the Mekong Delta, Vietnam, scale: 1/200,000*. Vietnam's Geology Agency, Hanoi. (in Vietnamese)

Olson, D.M., Dinerstein, E., Wikramanaya, D.E., Burgess, N.D., Powell, G.V.N., Underwood, E.C., D'Amico, J.A., Itoua, I., Strand, H.E., Morrison, J.C., Loucks, C.J., Allnutt, T.F., Ricketts, KURA, Y., Lamoreux, J.F., Wettengel, W.W., Hedao, P., and Kassem K.R. (2001) Terrestrial Ecoregions of the World: A New Map of Life on Earth. *BioScience* November 2001/Vol. 51 No. 11: 933-938

Forest Inventory and Planning Sub-institute II - FIPI II (2004). An Investment Plan for Protection and Development of Mui Ca Mau National Park, Ca Mau Province, period 2004-2010. (in Vietnamese)

Tordoff, A. W. ed. (2002) *Directory of Important Bird Areas in Vietnam: key sites for conservation in Vietnam*. Hanoi: BirdLife International in Indochina and the Institute of Ecology and Biological Resources.

Fauna and Flora International - FFI (2007) Report on an initial biodiversity inventory of the Mui Ca Mau National Park. A report to the Park's Management Board. (in Vietnamese)

Mui Ca Mau National Park (2008) A conservation needs assessment for Mui Ca Mau National Park, Ca Mau Province. A document submitted to Vietnam Conservation Fund (VCF).

Phan Nguyen Hong ed. (1997) *Mangroves of Vietnam*. Agriculture Publishing House. Hanoi, Vietnam (in Vietnamese).

Viet Nam Institute of Fisheries and Economic Planning - VIFEP (2010) Detailed planning for a national fishery reserve area in the Ca Mau coastal zone to 2020. A synthesized report to General Directorate of Fisheries (D-FISH). Hanoi: December 2010. (in Vietnamese)

Wetland International (2006) *Waterbird Population Estimates - Fourth Edition*. Wetland International, Wageningen, The Netherlands.

Annex 1: Mammal species list for Mui Ca Mau National Park

(Source: FFI 2007)

No	Scientific name	English name	Notes
	I. INSECTIVORA		
	1. Soricidae		
1	<i>Suncus murinus</i>	House Shrew	
	II. SCANDENTIA		
	2. Tupaiidae		
2	<i>Tupaia belangeri</i>	Northern Treeshrew	
	III. CHIROPTERA		
	3. Pteropodidae		
3	<i>Pteropus vampyrus</i>	Large Flying-fox	NT
	IV. PRIMATES		
	4. Cercopithecidae		
4	<i>Macaca arctoides</i>	Stump-tailed Macaque	VU
5	<i>Macaca fascicularis</i>	Crab-eating Macaque	
	V. CARNIVORA		
	5. Mustelidae		
6	<i>Aonyx cinerea</i>	Asian Small-clawed Otter	VU
7	<i>Lutra</i> sp.	Otter sp.	
	6. Viverridae		
8	<i>Paradoxurus hermaphroditus</i>	Common Palm Civet	
9	<i>Viverra zibetha</i>	Large-spotted Civet	VU
10	<i>Viverra zibetha</i>	Large Indian Civet	NT
11	<i>Viverricula indica</i>	Small Indian Civet	
12	<i>Herpestes javanicus</i>	Small Asian Mongoose	
	7. Felidae		
13	<i>Prionailurus bengalensis</i>	Leopard Cat	
14	<i>Prionailurus viverrinus</i>	Fishing Cat	EN
	VI. ARTIODACTYLA		
	8. Suidae		
15	<i>Sus scrofa</i>	Wild Boar	
	VII. PHOLIDOTA		
	19. Manidae		
16	<i>Manis javanica</i>	Sunda Pangolin	EN
	VIII. RODENTIA		
	10. Sciuridae		
17	<i>Tamiops rodolphei</i>	Cambodian Striped Squirrel	
18	<i>Callosciurus finlaysonii</i>	Finlayson's Squirrel	
19	<i>Menentes bormorei</i>	Indochinese Ground Squirrel	
	11. Muridae		
20	<i>Bandicota indica</i>	Greater Bandicoot Rat	
21	<i>Rattus norvegicus</i>	Brown Rat	
22	<i>Rattus mollicollis</i>	Lampobatang Sulawesi Rat	
23	<i>Rattus argentiventer</i>	Ricefield Rat	
24	<i>Rattus andamanensis</i>	Indochinese Forest Rat	
25	<i>Rattus rattus</i>	House Rat	
26	<i>Rattus exulans</i>	Polynesian Rat	

No	Scientific name	English name	Notes
27	<i>Mus musculus</i>	House Mouse	

Notes: EN=Endangered, VU=Vulnerable, and NT=Near-threatened as per IUCN (2010)

Annex 2: Bird species list for Mui Ca Mau National Park

(Source: FFI 2007)

No	Scientific name	English name	Notes
	I. PELECANIFORMES		
	1. Pelecanidae		
1	<i>Pelecanus philippensis</i>	Spot-billed Pelican	NT
	2. Phalarocoridae		
2	<i>Phalacrocorax carbo</i>	Great Cormorant	
3	<i>Phalacrocorax niger</i>	Little Cormorant	
	3. Anhingidae		
4	<i>Anhinga melanogaster</i>	Oriental Darter	NT
	II. CICONIIFORMES		
	4. Ardeidae		
5	<i>Ardea cinerea</i>	Grey Heron	
6	<i>Ardea purpurea</i>	Purple Heron	
7	<i>Casmerodius albus</i>	Great Egret	
8	<i>Mesophoyx intermedia</i>	Intermediate Egret	
9	<i>Egretta garzetta</i>	Little Egret	
10	<i>Egretta eulophotes</i>	Chinese Egret	VU
11	<i>Bubulcus ibis</i>	Cattle Egret	
12	<i>Ardeola bacchus</i>	Chinese Pond-heron	
13	<i>Ardeola speciosa</i>	Javan Pond-heron	
14	<i>Butorides striatus</i>	Striated Heron	
15	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron	
16	<i>Ixobrychus sinensis</i>	Yellow Bittern	
	5. Ciconiidae		
17	<i>Mycteria leucocephala</i>	Painted Stork	NT
18	<i>Anastomus oscitans</i>	Asian Openbill	
19	<i>Ciconia episcopus</i>	Woolly-necked Stork	
	6. Threskiornithidae		
20	<i>Threskiornis melanocephalus</i>	Black-headed Ibis	NT
21	<i>Plegadis falcinellus</i>	Glossy Ibis	
22	<i>Platalea minor</i>	Black-faced Spoonbill	EN
	III. ANSERIFORMES		
	7. Anatidae		
23	<i>Dendrocygna javanica</i>	Lesser Whistling-duck	
	IV. FALCONIFORMES		
	8. Pandionidae		
24	<i>Pandion haliaetus</i>	Osprey	
	9. Accipitridae		
25	<i>Elanus caeruleus</i>	Black-winged Kite	
26	<i>Haliastur indus</i>	Brahminy Kite	
	10. Falconidae		
27	<i>Falco peregrinus</i>	Peregrine Falcon	
	V. GALLIFORMES		
	11. Rallidae		
28	<i>Gallirallus striatus</i>	Slaty-breasted Rail	
29	<i>Amaurornis phoenicurus</i>	White-breasted Waterhen	

No	Scientific name	English name	Notes
30	<i>Gallicrex cinerea</i>	Watercock	
	VI. CHARADRIIFORMES		
	12. Recurvirostridae		
31	<i>Himantopus himantopus</i>	Black-winged Stilt	
	13. Charadriidae		
32	<i>Vanellus cinereus</i>	Grey-headed Lapwing	
33	<i>Pluvialis fulva</i>	Pacific Golden Plover	
34	<i>Pluvialis squatarola</i>	Grey Plover	
35	<i>Charadrius mongolus</i>	Lesser Sand Plover	
36	<i>Charadrius leschenaultii</i>	Greater Sand Plover	
37	<i>Charadrius sp.</i>		
	14. Scolopacidae		
38	<i>Limosa limosa</i>	Black-tailed Godwit	NT
39	<i>Numenius phaeopus</i>	Whimbrel	
40	<i>Numenius arquata</i>	Eurasian Curlew	NT
41	<i>Numenius madagascariensis</i>	Far Eastern Curlew	VU
42	<i>Tringa totanus</i>	Common Redshank	
43	<i>Tringa stagnatilis</i>	Marsh Sandpiper	
44	<i>Tringa nebularia</i>	Common Greenshank	
45	<i>Tringa glareola</i>	Wood Sandpiper	
46	<i>Tringa sp.</i>		
47	<i>Xenus cinereus</i>	Terek Sandpiper	
48	<i>Actitis hypoleucos</i>	Common Sandpiper	
49	<i>Heteroscelus brevipes</i>	Grey-tailed Tattler	
50	<i>Arenaria interpres</i>	Ruddy Turnstone	
51	<i>Limnodromus semipalmatus</i>	Asian Dowitcher	NT
52	<i>Calidris ferruginea</i>	Curlew Sandpiper	
	15. Laridae		
53	<i>Larus brunnicephalus</i>	Brown-headed Gull	
54	<i>Chlidonias hybridus</i>	Whiskered Tern	
55	<i>Gelochelidon nilotica</i>	Gull-billed Tern	
56	<i>Hydroprogne caspia</i>	Caspian Tern	
57	<i>Sterna hirundo</i>	Common Tern	
	VII. COLUMBIFORMES		
	16. Columbidae		
58	<i>Streptopelia tranquebarica</i>	Red Collared-dove	
59	<i>Streptopelia chinensis</i>	Spotted Dove	
60	<i>Treron bicincta</i>	Orange-breasted Green-pigeon	
	VIII. CUCULIFORMES		
	17. Cuculidae		
61	<i>Cacomantis merulinus</i>	Plaintive Cuckoo	
62	<i>Endynamys scolopacea</i>	Asian Koel	
63	<i>Phaenicophaeus tristis</i>	Green-billed Malkoha	
64	<i>Centropus sinensis</i>	Greater Coucal	
65	<i>Centropus bengalensis</i>	Lesser Coucal	
	IX. APODIFORMES		
	18. Apodidae		
66	<i>Hirundapus caudacutus</i>	White-throated Needletail	
	X. CORACIIFORMES		

No	Scientific name	English name	Notes
	19. Alcedinidae		
67	<i>Alcedo atthis</i>	Common Kingfisher	
68	<i>Pelargopsis capensis</i>	Stork-billed Kingfisher	
69	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	
70	<i>Halcyon pileata</i>	Black-capped Kingfisher	
71	<i>Todiramphus chloris</i>	Collared Kingfisher	
	20. Picidae		
72	<i>Dendrocopos macei</i>	Fulvous-breasted Woodpecker	
73	<i>Picus vittatus</i>	Laced Woodpecker	
74	<i>Picus</i> sp.		
75	<i>Chrysocolaptes lucidus</i>	Greater Flameback	
	XI. PASSERIFORMES		
	21. Hirundinidae		
76	<i>Hirundo rustica</i>	Barn Swallow	
	22. Motacillidae		
77	<i>Motacilla cinerea</i>	Grey Wagtail	
78	<i>Motacilla alba</i>	White Wagtail	
79	<i>Anthus novaeseelandiae</i>	Australasian Pipit	
	23. Pycnonotidae		
80	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	
	24. Irenidae		
81	<i>Aegithina tiphia</i>	Common Iora	
	25. Turdidae		
82	<i>Copsychus saularis</i>	Oriental Magpie-robin	
	26. Sylviidae		
83	<i>Acrocephalus orientalis</i>	Oriental Reed-warbler	
84	<i>Orthotomus sutorius</i>	Common Tailorbird	
85	<i>Orthotomus ruficeps</i>	Ashy Tailorbird	
86	<i>Phylloscopus fuscatus</i>	Dusky Warbler	
	27. Monarchidae		
87	<i>Rhipidura javanica</i>	Pied Fantail	
	28. Nectariniidae		
88	<i>Nectarinia jugularis</i>	Olive-backed Sunbird	
	29. Zosteropidae		
89	<i>Zosterops palpebrosus</i>	Oriental White-eye	
	30. Ploceidae		
90	<i>Passer montanus</i>	Eurasian Tree Sparrow	
	31. Sturnidae		
91	<i>Acridotheres grandis</i>	White-vented Myna	
92	<i>Acridotheres tristis</i>	Common Myna	
	32. Dicruridae		
93	<i>Dicrurus macrocercus</i>	Black Drongo	
	33. Corvidae		
94	<i>Crypsirina temia</i>	Racket-tailed Treepie	

Notes: EN=Endangered, VU=Vulnerable, and NT=Near-threatened as per IUCN (2010)

Annex 3: Herptile species list for Mui Ca Mau National Park

(Source: FFI 2007)

No	Scientific name	English name	Notes
	REPTILIA		
	I. SQUAMATA		
	1. Gekkonidae		
1.	<i>Gekko gecko</i>	Tokay Gecko	
2.	<i>Hemidactylus frenatus</i>	Common House Gecko	
3.	<i>Hemidactylus garnoti</i>	Indo-Pacific Gecko	
4.	<i>Cosymbotus platyurus</i>	Flat-tailed House Gecko	
	2. Agamidae		
5.	<i>Acanthosaura lepidogaster</i>	Scale-bellied Tree Lizard	
6.	<i>Calotes versicolor</i>	Oriental garden lizard	
7.	<i>Draco maculatus</i>	Orange-winged Flying Lizard	
	3. Scincidae		
8.	<i>Mabuya multifasciata</i>	East Indian Brown Mabuya	
9.	<i>Lygosoma quadrupes</i>	Short-legged Skink	
	4. Varanidae		
10.	<i>Varanus salvator</i>	Common Water Monitor	
	5. Xenopeltidae		
11.	<i>Xenopeltis unicolor</i>	Asian Sunbeam Snake	
	6. Uropeltidae		
12.	<i>Cylindrophis ruffus</i>	Red-tailed Pipe Snake	
	7. Boidae		
13.	<i>Python molurus</i>	Asiatic Rock Python	NT
14.	<i>Python reticulatus</i>	Asiatic Reticulated Python	
	8. Colubridae		
15.	<i>Abaetulla prasina</i>	Oriental Whipsnake	
16.	<i>Cerberus rhynchops</i>	Dog-faced Water Snake	
17.	<i>Chrysopelea ornata</i>	Golden Tree Snake	
18.	<i>Dendrelaphis pictus</i>	Painted Bronzeback	
19.	<i>Elaphe radiata</i>	Radiated Ratsnake	
20.	<i>Enhydris bocourti</i>	Bocourt's Water Snake	
21.	<i>Enhydris enhydris</i>	Striped Water Snake	
22.	<i>Enhydris innominata</i>	Tay Minh Water Snake	DD
23.	<i>Enhydris jagori</i>	Jagor's Water Snake	DD
24.	<i>Enhydris plumbea</i>	Boie's Mud Snake	
25.	<i>Erpeton tentaculatum</i>	Tentacled Snake	
26.	<i>Fordonia leucobalia</i>	White-bellied Freshwater Snake	
27.	<i>Homalopsis buccata</i>	Puff-faced Water Snake	
28.	<i>Oligodon cyclurus</i>	North-east Indian Kukri Snake	
29.	<i>Psammodynastes pulverulentus</i>	Common Mock Viper	
30.	<i>Ptyas korros</i>	Indochinese Rat Snake	
31.	<i>Ptyas mucosus</i>	Oriental Ratsnake	
32.	<i>Xenobrophis piscator</i>	Chequered Keelback	
	9. Elapidae		
33.	<i>Bungarus fasciatus</i>	Banded Krait	
34.	<i>Naja siamensis</i>	Black And White Spitting Cobra	
35.	<i>Ophiophagus hannah</i>	King Cobra	VU

No	Scientific name	English name	Notes
	10. Viperidae		
36.	<i>Trimeresurus popeorum</i>	Pope's Tree Viper	
37.	<i>Trimeresurus albolabris</i>	White-lipped Tree Viper	
	III. TESTUDINATA		
	11. Emydidae		
38.	<i>Batagur baska</i>	Four-toed Terrapin	CR
39.	<i>Cuora amboinensis</i>	Southeast Asian Box Turtle	VU
40.	<i>Malayemys subtrijuga</i>	Mekong snail-eating turtle	VU
41.	<i>Siebenrockiella crassicolis</i>	Black Marsh Turtles	VU
42.	<i>Hieremys annandalii</i>	Yellow-headed Temple Turtle	EN
	12. Trionychidae		
43.	<i>Amyda cartilaginea</i>	Southeast Asian Softshell Turtle	VU
	AMPHIBIA		
	I. GYMNOPTIONA		
	1. Ichthyophiidae		
1.	<i>Ichthyophis bannanicus</i>		
	II. Anura		
	2. Bufonidae		
2.	<i>Duttaphrynus melanostictus</i>	Asian Common Toad	
	3. Ranidae		
3.	<i>Hoplobatrachus rugulosus</i>	East Asian Bullfrog	
4.	<i>Fejervarya cancrivora</i>	Crab-eating Frog	
5.	<i>Fejervarya limnocharis</i>	Asian Grass Frog	
6.	<i>Rana macrodactyla</i>		
	4. Rhacophoridae		
7.	<i>Rhacophorus leucomystax</i>		
	5. Microhylidae		
8.	<i>Kaloula pulchra</i>	Malaysian Narrowmouth Toad	
9.	<i>Microhyla beymonsi</i>	Arcuate-spotted Pygmy Frog	

Notes: CR= Critical endangered, EN=Endangered, VU=Vulnerable, NT=Near-threatened, and DD=Data Deficient as per IUCN (2010)

Annex 4: Fish species list for Mui Ca Mau National Park

(Source: FFI 2007)

No	Scientific name	English name	Notes
	CARCHARHINIFORMES		
	Scyliorhinidae		
1	<i>Atelomycterus macleayi</i> Whitley, 1939	Australian marbled catshark	
	HETERODONTIFORMES		
	Heterodontidae		
2	<i>Heterodontus zebra</i> Gray, 1831	Zebra bullhead shark	HV
	RAJIFORMES		
	Dasyatidae		
3	<i>Himantura gerrardi</i> (Gray, 1851)	Sharpnose stingray	VU
4	<i>Himantura imbricata</i> (Bloch & Schneider, 1801)	Scaly whipray	DD
	TORPEDINIFORMES		
	Narkidae		
5	<i>Narke dipterygia</i> (Bloch & Schneider, 1801)	Numbray	DD
	GONORHYNCHIFORMES		
	Chanidae		
6	<i>Chanos chanos</i> Forskal, 1775	Milkfish	HV
	ELOPIFORMES		
	Megalopidae		
7	<i>Megalops cyprinoides</i> (Broussonet, 1782)	Indo-Pacific tarpon	
	ANGUILLIFORMES		
	Muraenesocidae		
8	<i>Muraenesox cinereus</i> Forskal, 1755	Daggertooth pike conger	HV
9	<i>Congresox talabonoides</i> (Bleeker, 1853)	Indian pike conger	
	Congridae		
10	<i>Ariosoma anago</i> (Temminck, 1846)	Silvery conger	
	Ophichthidae		
11	<i>Pisodonophis cancrivorus</i> (Richardson, 1848)	Longfin snake-eel	
12	<i>Ophichthus rutidoderma</i> (Bleeker, 1853)	Olive snake eel	
	CLUPEIFORMES		
	Clupeidae		
13	<i>Anodontostoma chacunda</i> (Hamilton, 1822)	Chacunda gizzard shad	
14	<i>Anodontostoma thailandiae</i> Wongratana, 1983	Thai gizzard shad	
15	<i>Clupanodon thrissa</i> Linnaeus, 1758	Chinese gizzard shad	
16	<i>Escualosa thoracata</i> (Valenciennes, 1847)	White sardine	
17	<i>Ilisha melastoma</i> (Bloch & Schneider, 1801)	Indian ilisha	
	Dussumieriinae		
18	<i>Dussumieria acuta</i> Valenciennes, 1847	Rainbow sardine	
	Engraulidae		
19	<i>Coilia grayii</i> Richardson, 1845	Gray's grenadier anchovy	
20	<i>Coilia macrognathos</i> Bleeker, 1852	Longjaw grenadier anchovy	
21	<i>Coilia reventischii</i> Bleeker, 1858	Many-fingered grenadier anchovy	
22	<i>Setipinna breviceps</i> (Cantor, 1849)	Shorthead hairfin anchovy	
23	<i>Setipinna phasa</i> (Hamilton, 1822)	Gangetic hairfin anchovy	
24	<i>Setipinna taty</i> (Cuvier, 1848)	Scaly hairfin anchovy	
25	<i>Setipinna melanochir</i> (Bleeker, 1849)	Dusky-hairfin anchovy	

No	Scientific name	English name	Notes
26	<i>Stolephorus commersonii</i> Lacepede, 1803	Commerson's anchovy	
	SILURIFORMES		
	Ariidae		
27	<i>Arius thalassinus</i> (Ruppell, 1837)	Giant catfish	HV
28	<i>Arius maculatus</i> (Thunberg, 1792)	Spotted catfish	
29	<i>Arius microcephalus</i> Bleeker, 1855	Squirrelheaded catfish	
30	<i>Arius sagor</i> (Hamilton, 1822)	Sagor catfish	
31	<i>Osteogeneiosus militaris</i> (Linnaeus, 1758)	Soldier catfish	
	Plotosidae		
32	<i>Plotosus lineatus</i> (Thunberg, 1787)	Striped eel catfish	
33	<i>Plotosus canius</i> Hamilton, 1822	Gray eel-catfish	HV
	Bagridae		
34	<i>Anchoa argentivittata</i> (Regan 1904)	Regan's anchovy	
	Pangasiidae		
35	<i>Pangasius krempfi</i> Fang & Chaud, 1949		HV
36	<i>Pangasius polyuranodon</i> Bleeker, 1852		
	AULOPIFORMES		
	Synodontidae		
37	<i>Harpadon nehereus</i> (Hamilton, 1822)	Bombay-duck	
	SYNBRANCHIFORMES		
	Synbranchidae		
38	<i>Ophisternon bengalense</i> McLelland, 1844	Bengal eel	
	AULOPIFORMES		
	Synodontidae		
39	<i>Saurida tumbil</i> (Bloch, 1795)	Greater lizardfish	
40	<i>Saurida undosquamis</i> (Richardson, 1848)	Brushtooth lizardfish	
41	<i>Saurida elongata</i> (Temminck & Schlegel, 1846)	Slender lizardfish	
	GADIFORMES		
	Bregmacerotidae		
42	<i>Bregmaceros maclellandi</i> Thompson, 1840	Unicorn cod	
	BATRACHOIDIFORMES		
	Batrachoididae		
43	<i>Batrachomoeus trispinosus</i> (Günther, 1861)	Three-spined frogfish	
44	<i>Halophryne diemensis</i> (Leseuer, 1823)	Banded frogfish	
	ATHERINIFORMES		
	Atherinidae		
45	<i>Hypoatherina temminckii</i> (Bleeker, 1853)	Samoan silverside	
	BELONIFORMES		
	Belonidae		
46	<i>Strongylura strongylura</i> (van Hasselt, 1823)	Spottail needlefish	
	Hemiramphidae		
47	<i>Hyporhamphus sindensis</i> (Regan, 1905)	Sind halfbeak	
48	<i>Hemiramphus far</i> Forskal, 1775	Black-barred halfbeak	
	SYNGNATHIFORMES		
	Syngnathidae		
49	<i>Hippocampus kuda</i> Bleeker, 1852	Spotted seahorse	VU
50	<i>Ichthyocampus carce</i> (Hamilton, 1822)	Pipefishes	

No	Scientific name	English name	Notes
	SCORPAENIFORMES		
	Synanceiidae		
51	<i>Minous monodactylus</i> (Bloch & Schneider, 1801)	Grey stingfish	
	Platycephalidae		
52	<i>Platycephalus arenarius</i> Ramsay & Ogilby, 1886	Northern sand flathead	
	PERCIFORMES		
	Centropomidae		
53	<i>Lates calcarifer</i> (Bloch, 1790)	Barramundi	HV
	Ambassidae		
54	<i>Ambassis gymnocephalus</i> (Lacepède, 1802)	Bald glassy	
	Serranidae		
55	<i>Cephalopholis argus</i> Bloch & Schneider, 1801	Peacock hind	
	Terapontidae		
56	<i>Terapon jarbua</i> (Forsskål, 1775)	Jarbua terapon	
57	<i>Terapon theraps</i> (Cuvier, 1829)	Largescaled terapon	
	Apogonidae		
58	<i>Apogon fasciatus</i> White, 1790	Broadbanded cardinalfish	
	Sillaginidae		
59	<i>Sillago sihama</i> (Forsskål, 1775)	Silver sillago	
60	<i>Sillago maculata</i> Quoy & Gaimard, 1824	Trumpeter sillago	
	Carangidae		
61	<i>Decapterus maruadsi</i> (Temminck 1844)	Japanese scad	
62	<i>Selaroides leptolepis</i> (Cuvier, 1833)	Yellowstripe scad	
63	<i>Parastromateus niger</i> (Bloch, 1795)	Black pomfret	
	Leiognathidae		
64	<i>Leiognathus equulus</i> (Forskål, 1775)	Common ponyfish	
65	<i>Leiognathus daura</i> (Cuvier, 1829)	Goldstripe ponyfish	
66	<i>Leiognathus brevisrostris</i> (Valenciennes, 1835)	Shortnose ponyfish	
67	<i>Secutor ruconius</i> (Hamilton, 1822)	Deep pugnose ponyfish	
	Lutjanidae		
68	<i>Lutjanus erythropterus</i> (Block, 1790)	Crimson snapper	
69	<i>Lutjanus johnii</i> (Bloch, 1792)	John's snapper	HV
	Lobotidae		
70	<i>Lobotes surinamensis</i> (Bloch, 1790)	Tripletail	
	Haemulidae		
71	<i>Pomadasys maculatus</i> (Bloch, 1793)	Saddle grunt	
	Gerreidae		
72	<i>Gerres lucidus</i> Cuvier, 1830	Saddleback silver-biddy	
	Sciaenidae		
73	<i>Atrobucca nibe</i> (Jordan & Thompson, 1911)	Blackmouth croaker	HV
74	<i>Otolithes ruber</i> (Bloch & Schneider, 1801)	Tigertooth croaker	
75	<i>Panna microdon</i> (Bleeker, 1849)	Panna croaker	
76	<i>Otolithoides biauritus</i> (Cantor, 1849)	Bronze croaker	HV
77	<i>Chrysochir aureus</i> (Richardson, 1846)	Reeve's croaker	
78	<i>Pennahia pavak</i> (Lin, 1940)	Pawak croaker	
79	<i>Dendrophysa russelii</i> (Cuvier, 1829)	Goatee croaker	
80	<i>Nibea maculata</i> (Bloch & Schneider, 1801)	Blotched croaker	
81	<i>Johnius amblycephalus</i> (Bleeker, 1855)	Bearded croaker	
82	<i>Johnius belangerii</i> (Cuvier, 1830)	Belanger's croaker	

No	Scientific name	English name	Notes
83	<i>Johnius dussumieri</i> (Cuvier, 1830)	Sin croaker	
	Mullidae		
84	<i>Parupeneus barberinoides</i> (Bleeker, 1852)	Bicolor goatfish	
85	<i>Parupeneus barberinus</i> (Lacepède, 1802)	Dash-and-dot goatfish	
	Drepaneidae		
86	<i>Drepane longimana</i> (Bloch & Schneider, 1801)	Concertina fish	
	Toxotidae		
87	<i>Rhacochilus toxotes</i> Agassiz, 1854		
	Scatophagidae		
88	<i>Scatophagus argus</i> (Linnaeus, 1766)	Spotted scat	
	Polynemidae		
89	<i>Eleutheronema tetradactylum</i> (Shaw, 1804)	Fourfinger threadfin	HV
90	<i>Polynemus borneensis</i> Bleeker, 1852	Blackhand paradise fish	
	Pomacentridae		
91	<i>Abudefduf bengalensis</i> (Bloch, 1787)	Bengal sergeant	
	MIGILIFORMES		
	Mugilidae		
92	<i>Liza macrolepis</i> (Smith, 1846)	Largescale mullet	HV
93	<i>Liza melinoptera</i> (Valenciennes, 1836)	Otomebora mullet	
94	<i>Liza subviridis</i> (Valenciennes, 1836)	Greenback mullet	
95	<i>Mugil cephalus</i> Linnaeus, 1858	Flathead grey mullet	
	Eleotridae		
96	<i>Butis butis</i> (Hamilton, 1822)	Duckbill sleeper	
97	<i>Butis melanostigma</i> (Bleeker, 1849)	Black-spotted gudgeon	
98	<i>Eleotris fusca</i> (Schneider & Forster, 1801)	Dusky sleeper	
99	<i>Prionobutis koilomatodon</i> (Bleeker, 1849)	Mud sleeper	
100	<i>Ophiocara porocephala</i> (Valenciennes, 1837)	Northern mud gudgeon	
101	<i>Acentrogobius chlorostigmatoides</i> (Bleeker, 1849)	Greenspot goby	
	Gobiidae		
102	<i>Acentrogobius caninus</i> (Valenciennes, 1837)	Tropical sand goby	
103	<i>Oxyurichthys microlepis</i> (Bleeker, 1849)	Maned goby	
104	<i>Pseudapocryptes borneensis</i> (Bleeker, 1855)	Mudskipper	
105	<i>Pseudapocryptes elongatus</i> (Cuvier, 1816)		
106	<i>Parapocryptes serperaster</i> (Richardson, 1846)		
107	<i>Aulopareia janetae</i> Smith, 1945	Scalycheek goby	
108	<i>Boleophthalmus boddarti</i> (Pallas, 1770)	Boddart's goggle-eyed goby	
109	<i>Glossogobius aureus</i> Akihito & Meguro, 1975	Golden tank goby	
110	<i>Glossogobius giuris</i> (Hamilton, 1822)	Tank goby	
111	<i>Periophthalmodon schlosseri</i> (Pallas, 1770)	Giant mudskipper	
112	<i>Rhinogobius ocellatus</i> (Fowler, 1937)	Goby	
113	<i>Stigmatogobius sadanundio</i> (Hamilton, 1822)	Goby	
114	<i>Taenioides cirratus</i> (Blyth, 1860)	Bearded worm goby	
115	<i>Taenioides nigrimarginatus</i> Hora, 1924	Blackfin eel goby	
116	<i>Trypauchen vagina</i> (Bloch & Schneider, 1801)	Eel goby	
	Siganidae		
117	<i>Siganus javus</i> (Linnaeus, 1766)	Streaked spinefoot	
	Trichiuridae		
118	<i>Trichiurus lepturus</i> Linnaeus, 1758	Largehead hairtail	HV
119	<i>Eupleurogrammus muticus</i> (Gray, 1831)	Smallhead hairtail	

No	Scientific name	English name	Notes
	Scombridae		
120	<i>Rastrelliger kanagurta</i> (Cuvier, 1816)	Indian mackerel	
121	<i>Auxis thazard</i> Dresslar & Fesler, 1889	Frigate tuna	
122	<i>Scomberomorus commerson</i> (Lacepède, 1800)	Narrow-barred Spanish mackerel	
	Stromateidae		
123	<i>Pampus argentens</i> (Euphrasen, 1788)	Silver pomfret	
124	<i>Pampus chinensis</i> (Euphrasen, 1788)	Chinese silver pomfret	
	PLEURONECTIFORMES		
	Soleidae		
125	<i>Zebrias crossolepis</i> Cheng & Chang, 1965	Sole	DD
	Cynoglossidae		
126	<i>Cynoglossus arel</i> (Bloch & Schneider, 1801)	Largescale tonguesole	
127	<i>Cynoglossus lingua</i> Hamilton, 1822	Long tonguesole	
128	<i>Cynoglossus microlepis</i> (Bleeker, 1951)	Smallscale tonguesole	
129	<i>Cynoglossus cynoglossus</i> (Hamilton, 1822)	Bengal tongue sole	
130	<i>Cynoglossus suyeni</i> Fowler, 1934	Tonguesole	
	TETRAODONTIFORMES		
	Ostraciidae		
131	<i>Ostracion rhinorhynchus</i> Bleeker, 1852	Horn-nosed boxfish	
	Tetraodontidae		
132	<i>Lagocephalus lunaris</i> (Bloch & Schneider, 1801)	Lunartail puffer	
133	<i>Tetraodon fluviatilis</i> Hamilton, 1822	Green pufferfish	
134	<i>Chelonodon patoca</i> (Hamilton, 1822)	Milkspotted puffer	
135	<i>Tetraodon cutcutia</i> Hamilton, 1822	Ocellated pufferfish	
	MUGILIFORMES		
	Sphyraenidae		
136	<i>Sphyraena langsar</i> Bleeker, 1854	Yellowtail barracuda	
137	<i>Sphyraena chrysotaenia</i> Klunzinger, 1884	Yellowstripe barracuda	

Notes: VU=Vulnerable, and DD=Data Deficient as per IUCN (2010)

HV = 'High to very high vulnerability' follow fishbase.org

Annex 5: Plant species list for Mui Ca Mau National Park

(Source: FFI 2007)

No	Scientific name	No	Scientific name
	Polypodiophyta		Rhizophoraceae
	Pteridaceae	27	<i>Rhizophora apiculata</i> Bl.
1	<i>Acrostichum aureum</i> L.		<i>Rhizophora mucronata</i> Poir. In Lamk.
2	<i>Stenochlaena palustris</i> (Burm.f.) Bedd.		<i>Kandelia candel</i> (L.) Druce.
	Magnoliophyta	28	<i>Ceriops decandra</i> (Griff.) Ding Hou.
	Magnoliopsida	29	<i>Ceriops tagal</i> (Perr.) C.B. Rob.
	Acanthaceae	30	<i>Bruguiera parviflora</i> (Roxb.) W. & Arn. ex Griff.
3	<i>Hygrophila phlomoides</i> Nees. in Wall.	31	<i>Bruguiera gymnorrhiza</i> (L.) Lamk.
4	<i>Acanthus ilicifolius</i> L.	32	<i>Bruguiera sexangula</i> (Lour.) Poir. in Lamk.
5	<i>Acanthus eberacteatus</i> Vahl.	33	<i>Bruguiera cylindrica</i> (L.) Bl.
	Aizoaceae		Rubiaceae
6	<i>Sesuvium portulacastrum</i> L.	34	<i>Psychotria serpens</i> L.
	Annonaceae	35	<i>Morinda citrifolia</i> L. var. <i>bracteata</i> Hook.F.
7	<i>Annona glabra</i> L.		Sonneratiaceae
	Asclepiadaceae	36	<i>Sonneratia caseolaris</i> (L.) Engl.
8	<i>Tylophora tenius</i> Bl.	37	<i>Sonneratia alba</i> J.E.
9	<i>Tylophora indica</i> (Burm. f.) Merr.	38	<i>Sonneratia ovata</i> Bak.
10	<i>Gymnanthera nitida</i> R. Br.		Verbenaceae
	<i>Finlaysonia aborata</i> Wall.	39	<i>Cleodendron inerme</i> (L.) Gaertn.
	Asteraceae	40	<i>Avicennia alba</i> Bl.
11	<i>Wedelia bifolia</i> (L.) DC.	41	<i>Avicennia officinalis</i> L.
12	<i>Eclipta prostrata</i> (L.) L.	42	<i>Avicennia marina</i> (Forssk.) Vierh.
13	<i>Pluchea indica</i> (L.) Lees.		Vitaceae
	Bignoniaceae	43	<i>Cayratia trifolia</i> (L.) Domino.
14	<i>Dolichandrone spathacea</i> (L.f.) K. Schum.		Liliopsida
	Combretaceae		Arecaceae
15	<i>Lumnitzera racemosa</i> Willd.	44	<i>Nypa fructican</i> Wurmb.
	Convolvulaceae	45	<i>Phoenix paludosa</i> Roxb.
16	<i>Ipomaea macrantha</i> Roem. & Schult.		Cyperaceae
	Euphorbiaceae	46	<i>Scirpus littoralis</i> Schrab.
17	<i>Glochidion littorale</i> Bl.	47	<i>Fimbristylis caesia</i> Miq.
18	<i>Excoecaria agallocha</i> L.	48	<i>Fimbristylis miliacea</i> (L.) Vahl.
	Fabaceae	49	<i>Cyperus exaltatus</i> Retz.
19	<i>Derris trifolia</i> Lour.	50	<i>Cyperus castaneus</i> Willd.
20	<i>Sesbania cannabina</i> (Retz.) Pers.	51	<i>Cyperus pumilis</i> L.
21	<i>Sesbania sesban</i> (L.) Merr.		Flagellariaceae
	Malvaceae	52	<i>Flagellaria indica</i> L.
22	<i>Hibiscus tiliaceus</i> L.		Poaceae
23	<i>Thespesia populnea</i> (L.) Soland. ex Correa	53	<i>Phragmites valloaria</i> (L.) Veldk.
	Meliaceae	54	<i>Eleusine indica</i> (L.) Gaertn.
24	<i>Xylocarpus moluccensis</i> (Lamk.) Roem.	55	<i>Dactyloctenium aegyptiacum</i> (L.) Willd.
25	<i>Xylocarpus granatum</i> Koen.	56	<i>Chloris barbata</i> Sw.
59	<i>Echinochloa crus-galli</i> (L.) P. Beauv.	57	<i>Panicum repens</i> L.
60	<i>Paspalum vaginicum</i> Swort.	58	<i>Panicum maximum</i> Jacq.
	Myrsinaceae		
26	<i>Aegiceras corniculatum</i> (L.) Blanco.		