Information Sheet on EAA Flyway Network Sites (SIS) – 2017 version

Available for download from http://www.eaaflyway.net/about/the-flyway/flyway-site-network/

Categories approved by Second Meeting of the Partners of the East Asian-Australasian Flyway Partnership in Beijing, China 13-14 November 2007 - Report (Minutes) Agenda Item 3.13

Notes for compilers:

1. The management body intending to nominate a site for inclusion in the East Asian - Australasian Flyway Site Network is requested to complete a Site Information Sheet. The Site Information Sheet will provide the basic information of the site and detail how the site meets the criteria for inclusion in the Flyway Site Network. When there is a new nomination or an SIS update, the following sections with an asterisk (*), from Questions 1-14 and Question 30, must be filled or updated at least so that it can justify the international importance of the habitat for migratory waterbirds.

2. The Site Information Sheet is based on the Ramsar Information Sheet. If the site proposed for the Flyway Site Network is an existing Ramsar site then the documentation process can be simplified.

3. Once completed, the Site Information Sheet (and accompanying map(s)) should be submitted to the Flyway Partnership Secretariat. Compilers should provide an electronic (MS Word) copy of the Information Sheet and, where possible, digital versions (e.g. shapefile) of all maps.

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1. Name and contact details of the compiler of this form *:

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EAAF SITE CODE FOR OFFICE USE ONLY:

E	A	A	F	1	1	7

2. Date this sheet was completed *:

DD/MM/YYYY

03/03/2014

3. Country *:

Republic of the Union of Myanmar

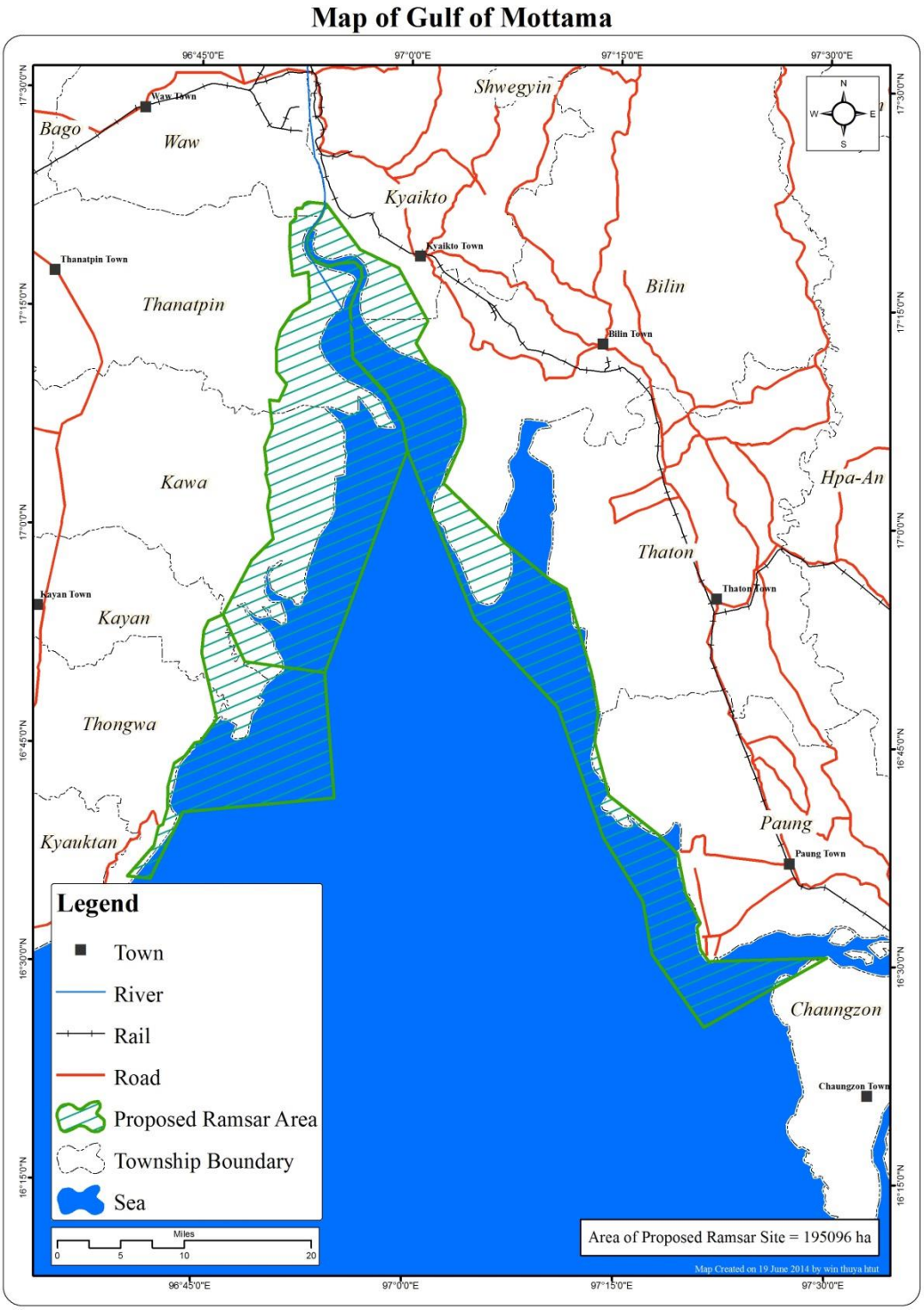
4. Name of the Flyway Network site *:

Accepted English transcription of the Site's name.

Gulf of Mottama

5. Map of site *:

The most up-to-date available and suitable map of the wetland should be appended to the SIS (only in digital format and shape file). The map must clearly show the boundary of the site. Please refer to the "Digitising Site Boundaries in Google Earth" file linked here.



6. Geographical coordinates (latitude/longitude, in decimal degrees) ***:**

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.

Latitude :17° 13'N

Longitude: 97° 01' E

West point : Latitude 16° 35'N Longitude : 96° 40'E

East point: Latitude 16° 30'N Longitude : 97° 30'E

North point: Latitude 17° 22'N Longitude : 96° 52'E

South point: Latitude 16° 25'N Longitude : 97° 21'E

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

The elevation ranges from 0 to 15 m above sea level.

8. Area *:

The total area of the site, in hectares. If the areas of discrete site units are known, please also list each of these together with the names (or labels) used to identify and differentiate these units.

195,096 hectares.

9. General overview of the site *:

A brief (two sentences) summary of the site, mentioning principal physical and ecological functions, and its importance for migratory waterbirds.

The site is bell-shaped and estuary ecosystem and from October to mid-April hosting about 200,000 migratory waterbirds. These include the globally threatened Spoon-billed Sandpiper *(Eurynorhynchus pygmeus)*, Spotted Greenshank *(Tringa guttifer),* Great Knot *(Calidris tenuirostris) and* Lesser Adjutant *Stock (Leptoptilos javanicus).*

The tide range is 4-7m (depending on estimates) exposing areas of tidal flats whose extent and undisturbed character are increasingly rare and important in the region. The tides and currents constantly redistribute sediments on a large scale, producing shifting channels and a mix of erosion and accretion, and making Gulf of Mottama one of the most dynamic estuaries in the world. The main habitats are estuarine waters, intertidal mudflats, sandbars, muddy and sandy shorelines and salt marsh. The local communities use the site for fishing, grazing, duck-rearing and paddy farming.

10. Justification of Flyway Site Network criteria *:

Please provide waterbird count information (with year of latest count) that demonstrates that the site meets the criteria of the Flyway Site Network (Annex 1). That is:

- it regularly supports > 20 000 migratory waterbirds; or,
- it regularly supports > 1 % of the individuals in a population of one species or subspecies of

migratory waterbird; or,

- it supports appreciable numbers of an endangered or vulnerable population of migratory waterbird
- it is a “staging site” supporting > 5 000 waterbirds, or > 0.25% of a population stage at the site.

A listing of the populations of migratory waterbirds covered by the East Asian – Australasian Flyway Partnership and the 1% thresholds is attached (Annex 3).

The “staging site” criterion is particularly difficult to apply and application of this should be discussed with the Secretariat. Also note that some species have several populations that are very difficult to distinguish in the field.

A2 (A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.)

The site supports four species listed by the IUCN Red List in one of the status categories specified in this criterion, as follows:

Species Name	Common Name	IUCN Red List	CITES	CMS
Eurynorhynchus pygmeus	Spoon-billed Sandpiper	CR		I
Tringa guttifer	Spotted Greenshank	EN		II
Calidris tenuirostris	Great Knot	VU		
Leptoptilos javanicus	Lesser Adjutant	VU		

A5 (A wetland should be considered internationally important if it regularly supports 20,000 or more water birds.)

The Gulf of Mottama is one of the most important sites for migratory waterbirds in mainland South-east Asia. Between 150,000 and 200,000 birds are estimated to use the site annually, the majority feeding on the highly productive intertidal mudflats. Over 70 waterbird species have been recorded at the site, including six species of duck, 31 species of wader and 16 species of tern or gull. Species recorded at the site include four globally threatened species, of which at least three are thought to regularly occur in significant numbers: Spotted Greenshank (*Tringa guttifer)*, Spoon-billed Sandpiper (*Eurynorhynchus pygmeus) and* Great Knot (*Calidris tenuirostris).*

The site may even qualify under criterion (5) on the basic of two species, include a count of 20000 to 40000 Lesser Sand Plover (Charadrius mongolus) and Kentish Plover (Charadrius alexandrines)

A6 (A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbirds.)

The total of 14 species of water birds are present in the non-breeding season in sufficient number to represent more than 1% of the relevant biogeographic population. The East and South-East Asian population of Spoon-billed Sandpiper *Eurynorhynchus pygmeus (74),* Painted Stork *Mycteria leucocephala (140),* Black- headed Ibis *Threskiornis melanocephalus* (150-300), Eurasian Curlew *Numenius arguata* (2200-4000), Black-tailed Godwit *Limosas limosa* (3500-5000), Lesser Sand Plover *Charadrius mongolus* (20000-40000), Pacific Golden Plover *Pluvialis fulva (8000-10000), Kentish Plover Charadrius alexandrinus (10000-20000)*, Common Greenshank *Tringa nebularia* (1800 – 3500), Common Redshank *Tringa totanus* (4500-8000), Spotted Redshank *Tringa guttifer* (1400-2000), Red-necked Stint *Calidris ruficollis* (7000-12000), Curlew Sandpiper *Calidris ferruginea* (7000-12000), Broad- billed Sandpiper *Limicola falcinellus* (4000-5000) commonly accepted 1% threshold for this species.

11. Wetland Types *:

List the wetland types present (see Annex 2). List the wetland types in order of their area in the Flyway Network site, starting with the wetland type with the largest area.

A, G, F, H, E, I

1, 5

A --Permanent shallow marine waters in most cases less than six metres deep at low tide; includes sea bays and straits.

E -- Sand, shingle or pebble shores; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.

F -- Estuarine waters; permanent water of estuaries and estuarine systems of deltas.

G --Intertidal mud, sand or salt flats.

H --Intertidal marshes; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.

I -- Intertidal forested wetlands; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.

1 -- Aquaculture (e.g., fish/shrimp) ponds

5 -- Salt exploitation sites; salt pans, salines, etc.

12. Jurisdiction *:

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

Yangon Region, Bago Region and Mon State

13. 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 and the title and/or name and email address/phone number of the person or persons in this office with direct responsibility for managing the wetland.

State and Regional Government

14. Bibliographical references *:

A list of key technical references relevant to the wetland, including management plans, major scientific reports, and bibliographies, if such exist. Please list Web site addresses dedicated to the site or which prominently feature the site, and include the date that the Web site was most recently updated. When a large body of published material is available about the site, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies.

1) Biodiversity and Nature Society&Oikos (2012). *Myanmar Protected Area*

2) BirdLife International (1998) *Proceedings of the Thailand IBA workshop, Bangkok, November 1998.*Unpublished report.

3) BirdLife International (2001) *Threatened birds of Asia: the BirdLife International Red Data Book.* Cambridge, UK: BirdLife International.

4) www.birdlife.org/datazone/speciesfactsheet.php?id=3057

5) www.myanmarbiodiversity.orn

6) SBS Task Force

7) http://www.birdholidays.co.uk/Myanmar.birdwatching.holiday.2013.htm

8) http://www.eaaflyway.net/spoon-billed-sandpiper.php

9) www.saving-**spoon**-**billed**-**sandpiper**.com/

10) www.wwt.org.uk

11) Article on Myanmar in WWTs Waterlife magazine

12) www.saving-**spoon**-**billed**-**sandpiper**.com/

13) http://mag.audubon.org/articles/birds/fighting-save-spoon-billed-sandpiper-extinction-five-years

14) http://www.rspb.org.uk/ourwork/projects/details.aspx?id=289593

15) www.birds.cornell.edu/Page.aspx?pid=2536

16) http://www.cms.int/en/publication/international-single-species-action-plan-conservation-spoon-billed-sandpiper

17) http://www.saving-spoon-billed-sandpiper.com/2013/09/news/events/see-spoonies-in-myanmar-and-support-their-conservation/

18) http://www.birdlife.org/datazone/speciesfactsheet.php?id=3060

15. 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.

There are extensive tidal flats and sandbars exposed at low water level over most of the estuary, from the point where it is 1km wide to where it 50km wide, 60km downstream, with the largest area stretching over 5km out to low water down most of the eastern side of the site. Exposure variations with spring and neap tides have produced three identifiable zones in the tidal flats: upper (inundated for 2-3 days in each cycle), mid (inundated for 6-9 days in each cycle) and lower (inundated every day). Each of these zones has a different sediment profile and associated biota. The main habitats are estuarine waters, intertidal mudflats, sandbars, muddy and sandy shorelines and salt marsh.

Marked seasonal variations in temperature, pH, salinity, and dissolved oxygen levels are also produced by monsoon rainfall. Due to the Sittaung River inflow at the northern end of the Gulf, the water is brackish.

All of the land in the Gulf of Mottama is owned by the Myanmar Government. In 2012, an area of 195,096ha of the Gulf of Mottama was proposed as a Ramsar Site.

16. Physical features of the catchment area:

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

The site is surrounded by agricultural land, much of which is flat and seasonally floods in the prevailing monsoonal climate. Two prominent rivers, Sittaung and Thanlwin, flow into the Gulf of Mottama. During the spring tide, when the tide range is around 6.6 m, the turbid zone covers an area of more than 45,000 km^2, making it as one of the largest perennially turbid zones of the world's oceans. During the neap tide, with the tidal range of 2.98 m, the highly turbid zone coverage drops to 15,000 km^2.

17. Hydrological values:

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

The Gulf of Mottama provides sediment trapping benefit in the formation of shifting channels. According to upwelling system, it supports a highly nutrient feeding ground for the waders and provides nutrients for agriculture.

18. General ecological features:

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

The Gulf of Mottama is a large and generally undisturbed funnel-shaped estuary with extensive tidal flats. The Gulf exhibits a tidal cycle which is extremely pronounced in speed and volume, gathering from a width of around 100km and concentrating in a funnel-shaped bay to produce a powerful bore phenomenon. The tides can reach heights of over 1m on spring tides in the upper estuary and high tides highly unusual in the region. The tide drops by over 4-7m (depending on estimates) exposing areas of tidal flats whose extent and undisturbed character are increasingly rare and important in the region. The tides and currents constantly redistribute sediments on a large scale, producing shifting channels and a mix of erosion and accretion, and making this one of the most dynamic estuaries in the world.

Principal ecosystem services include subsistence fishing and farming, and tourism.

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy 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 SIS.*

(Please add here the species which do not come under sec no 14)

20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 10. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the SIS.*

(Please add here the species which do not come under sec no 14)

Over 140 species of waterbirds have been recorded at the site (see species list appended), with large congregations of migrants being present during the northern winter. This includes especially high numbers of Lesser Sand Plover (*Charadrius mongolus)* (up to 40,000). See Species list appended.

Four of the bird species are globally threatened: Spoon-billed Sandpiper, Spotted Green Shank, Lesser Adjutant and Great Knot; Painted Stock, Black-headed Ibis, Eurasian Curlew and Black-tailed Godwit are classified as Near Threatened.

At least 39 fish species occur in the site (see species list appended)

Three species of turtle, Green Turtle (EN), Logger headed (EN) and Olive Ridley Turtle (VU) are recorded.

21. Social, economic and cultural values:

a) Describe if the site has any general social, economic 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:

The village size is roughly estimated to be about 40-2000 households. All of the surveyed areas can be accessed by temporary roads near the coastal line during the dry season. Some of the villages can be accessed by the same road during the rainy season. Boats are the only vehicles to access most of the villages in the monsoon season with heavy rain. The ethnic mix of the area includes Burmese Mon, Karen, and small numbers of other ethnic groups such as Indian. Most of the villagers in the surveyed areas are Buddhist, while there are also some Christian, Muslim and Hindu. (Kyaikhto, Bilin, Thaton are majority Burman, while Paung and Chaungsone are majority Mon; both of these ethnic groups are predominantly Buddhist in Myanmar). Every village has at least one monastery and as in much of traditional Buddhist areas of Myanmar, the villagers respect and heed the sermons and advice of the monks.

Most villages depend either on fishing or on agriculture, whereas one (Kawhtin) is mixed with both livelihood activities. The villages located on sea bank depend mostly on fishing and the rest depend on agriculture and gardening. These villages have irrigated or rain-fed paddyfield on which they cultivate rice in the rainy season and mung beans in dry season (if water is available); as well as orchard/garden land for betel, coconut, and vegetables such as cabbage and niger (a type of sunflower) as a cash crop.

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? (Double-click the checkbox to check and choose “Checked” under “Default Value” from “Check Box Form Field Options” window)

Yes

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: ☒

22. Land tenure/ownership:

a) Within the Flyway Network site:

Government of Myanmar

b) In the surrounding area:

All land is owned by the national government, but village authorities have some rights of tenure, and rights associated with auctioning the use of ponds.

23. Current land (including water) use:

a) Within the Flyway Network site:

There are two relevant authorities – Administrative Department and Ministry of Livestock & Fisheries are tolerant to low level of artisanal net and line fishing which are in theory controlled through a licensing system.

b) In the surroundings/catchment:

The surrounding catchment is mostly cultivated land, industry, aquaculture, and fishery. There is some small scale cattle / water buffalo grazing.

24. 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 Flyway Network site:

Management of the site is not fully coordinated. Administrative department under the Ministry of Home Affair, Irrigation Department in the Ministry of Agriculture and Irrigation and Ministry of Livestock & Fisheries are responsible for the site. Some private line fishers and private companies are using with illegal fishing net against the fishery law.

Erosion can occur progressively and is expanding the site.

The small-scale fishing activities with traps, nets and hook & line are not regarded as adverse activities on fish populations, although the disturbance caused to birds.

Tourism development zone has been recommended 2012.

Waste management problems are a possibility.

b) In the surrounding area:

Most of the people inhabiting the areas around the site live at subsistence level and have poor awareness of the full values of the site.

Pesticide used in rice fields in the surrounding area is said to be increasing.

Some unlicensed fishing activities and sand mining take place.

25. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Flyway Network 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.

Still proposed as a Ramsar Site

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate, see Annex 3):

Ia ☐; Ib ☐; II ☐; III ☐; IV ☒; V ☐; VI ☐; N/A ☐

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

No officially approve management plan yet. Community-based management plans are being prepared.

If yes, is it being implemented?: If no, is one being planned?

d) Describe any other current management practices:

- Community Based Natural Resources Management (CBNRM)
- Sustainable Resources Use and Development Plan (SRUDP)
- Capacity building to Local Conservation Group
- Wetlands management training
- Bird watching training
- Annual migratory bird monitoring.

26. Conservation measures proposed but not yet implemented:

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

With the support of international organisations, Biodiversity And Nature Conservation Association (BANCA) will coordinate and cooperate with relevant government departments for the long term wetlands management planning.

It will hopefully be extended to the RAMSAR Site. If the application is successful.

27. Current scientific research and facilities:

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

- A rapid assessment of Fish & Fishery information in a part of east coast of Gulf of Mottama (Mon State)
- Annual monitoring on migratory water birds population

28. 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.

Some CEPA activities are being conducted for local conservation groups in Gulf of Mottama.

29. Current recreation and tourism:

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

Most keen shorebird watcher from international visited for the wintering migratory migration. Annual about (20) tourists visited to the Gulf of Mottama especially east cost of Spoon-billed Sandpiper core habitat areas.

30. Threats *:

Which of the following threats is present historically – when the threat stopped but the effects are still there (H), currently (C) or potentially (P)?

	Historically	Currently	Potentially
Residential and commercial development			
housing and urban areas	☐	☐	☒
commercial and industrial areas	☐	☐	☒
tourism and recreation areas	☐	☐	☐
Agriculture and aquaculture			

annual and perennial non-timber crops	☐	☐	☐
wood and pulp plantations	☐	☐	☐
livestock farming and ranching	☐	☐	☐
marine and freshwater aquaculture	☒	☒	☒
Energy production and mining			
oil and gas drilling	☐	☒	☒
mining and quarrying	☐	☒	☒
renewable energy	☐	☐	☐
Transportation and service corridors			
roads and railroads	☐	☐	☐
utility and service lines	☐	☐	☐
shipping lanes	☐	☐	☐
flight paths	☐	☐	☐
Biological resource use			
hunting and collecting terrestrial animals	☐	☐	☐
gathering terrestrial plants	☐	☐	☐
logging and wood harvesting	☐	☒	☐
fishing and harvesting aquatic resources	☒	☒	☐
Human intrusions and disturbance			
recreational activities	☐	☐	☐
war, civil unrest and military exercises	☐	☐	☐
work and other activities	☐	☐	☐
Natural system modifications			
fire and fire suppression	☐	☐	☐
dams and water management/use	☐	☐	☐
other ecosystem modifications	☐	☐	☐
Invasive and other problematic species and genes			
invasive non-native/alien species	☐	☐	☐
problematic native species	☐	☐	☐
introduced genetic material	☐	☐	☐

Pollution			
household sewage and urban waste water	☐	☐	☐
industrial and military effluents	☐	☒	☐
agricultural and forestry effluents	☐	☒	☐
garbage and solid waste	☐	☐	☐
air-borne pollutants	☐	☐	☐
excess energy	☐	☐	☐
Geological events			
volcanoes	☐	☐	☐
earthquakes/tsunamis	☐	☐	☐
avalanches/landslides	☐	☐	☐
Climate change and severe weather			
habitat shifting and alteration	☒	☒	☒
droughts	☐	☐	☐
temperature extremes	☒	☒	☒
storms and flooding	☒	☒	☒

Please write here any additional threats and comments/queries you have on the threats.

Annex 1: Criteria for the inclusion of sites in the Flyway Site Network

(From the Partnership Text)

To be considered for inclusion in the Flyway Site Network, this Partnership adopts the following criteria:

a. Convention on Wetlands (Ramsar, Iran, 1971) criteria for internationally important sites for migratory waterbirds. That is:

   Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

   Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.

   Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

b. The staging criteria as applied under the Asia - Pacific Migratory Waterbird Conservation Strategy. That is:

   i. A staging site should be considered internationally important if it regularly supports 0.25% of individuals in a population of one species or subspecies of waterbirds on migration.

   ii. A staging site should be considered internationally important if it regularly supports 5,000 or more waterbirds at one time during migration.

c. Under exceptional circumstances a site can be nominated if it supports migratory waterbirds at a level or stage of their life cycle important to the maintenance of flyway populations. Justification of such nominations will be considered by the Partnership on a case by case basis.

Annex 2: Ramsar Classification System for Wetland Type

The codes are based upon the Ramsar Classification System for Wetland Type as approved by Recommendation 4.7 and amended by Resolutions VI.5 and VII.11 of the Conference of the Contracting Parties. The categories listed herein are intended to provide only a very broad framework to aid rapid identification of the main wetland habitats represented at each site.

To assist in identification of the correct Wetland Types to list in section 19 of the RIS, the Secretariat has provided below tabulations for Marine/Coastal Wetlands and Inland Wetlands of some of the characteristics of each Wetland Type.

Marine/Coastal Wetlands

A -- **Permanent shallow marine waters** in most cases less than six metres deep at low tide; includes sea bays and straits.

B -- **Marine subtidal aquatic beds**; includes kelp beds, sea-grass beds, tropical marine meadows.

C -- **Coral reefs**.

D -- **Rocky marine shores**; includes rocky offshore islands, sea cliffs.

E -- **Sand, shingle or pebble shores**; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.

F -- **Estuarine waters**; permanent water of estuaries and estuarine systems of deltas.

G -- **Intertidal mud, sand or salt flats**.

H -- **Intertidal marshes**; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.

I -- **Intertidal forested wetlands**; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.

J -- **Coastal brackish/saline lagoons**; brackish to saline lagoons with at least one relatively narrow connection to the sea.

K -- **Coastal freshwater lagoons**; includes freshwater delta lagoons.

Zk(a) – **Karst and other subterranean hydrological systems**, marine/coastal

Inland Wetlands

L -- **Permanent inland deltas**.

M -- **Permanent rivers/streams/creeks**; includes waterfalls.

N -- **Seasonal/intermittent/irregular rivers/streams/creeks**.

O -- **Permanent freshwater lakes** (over 8 ha); includes large oxbow lakes.

P -- **Seasonal/intermittent freshwater lakes** (over 8 ha); includes floodplain lakes.

Q -- **Permanent saline/brackish/alkaline lakes**.

R -- **Seasonal/intermittent saline/brackish/alkaline lakes and flats**.

Sp -- **Permanent saline/brackish/alkaline marshes/pools**.

Ss -- **Seasonal/intermittent saline/brackish/alkaline marshes/pools**.

Tp -- **Permanent freshwater marshes/pools**; ponds (below 8 ha), marshes and swamps on inorganic soils; with emergent vegetation water-logged for at least most of the growing season.

Ts -- **Seasonal/intermittent freshwater marshes/pools on inorganic soils**; includes sloughs, potholes, seasonally flooded meadows, sedge marshes.

U -- **Non-forested peatlands**; includes shrub or open bogs, swamps, fens.

Va -- **Alpine wetlands**; includes alpine meadows, temporary waters from snowmelt.

Vt -- **Tundra wetlands**; includes tundra pools, temporary waters from snowmelt.

W -- **Shrub-dominated wetlands**; shrub swamps, shrub-dominated freshwater marshes, shrub carr, alder thicket on inorganic soils.

Xf -- **Freshwater, tree-dominated wetlands**; includes freshwater swamp forests, seasonally flooded forests, wooded swamps on inorganic soils.

Xp -- **Forested peatlands**; peatswamp forests.

Y -- **Freshwater springs; oases**.

Zg -- **Geothermal wetlands**

Zk(b) – **Karst and other subterranean hydrological systems**, inland

Note: "**floodplain**" is a broad term used to refer to one or more wetland types, which may include examples from the R, Ss, Ts, W, Xf, Xp, or other wetland types. Some examples of floodplain wetlands are seasonally inundated grassland (including natural wet meadows), shrublands, woodlands and forests. Floodplain wetlands are not listed as a specific wetland type herein.

Human-made wetlands

1 -- **Aquaculture** (e.g., fish/shrimp) **ponds**

2 -- **Ponds**; includes farm ponds, stock ponds, small tanks; (generally below 8 ha).

3 -- **Irrigated land**; includes irrigation channels and rice fields.

4 -- **Seasonally flooded agricultural land** (including intensively managed or grazed wet meadow or pasture).

5 -- **Salt exploitation sites**; salt pans, salines, etc.

6 -- **Water storage areas**; reservoirs/barrages/dams/impoundments (generally over 8 ha).

7 -- **Excavations**; gravel/brick/clay pits; borrow pits, mining pools.

8 -- **Wastewater treatment areas**; sewage farms, settling ponds, oxidation basins, etc.

9 -- **Canals and drainage channels, ditches.**

Zk(c) -- **Karst and other subterranean hydrological systems**, human-made

Annex 3: IUCN Protected Areas Categories System

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation.

Ia Strict Nature Reserve

Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

Ib Wilderness Area

Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

II National Park

Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

III Natural Monument or Feature

Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

IV Habitat/Species Management Area

Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

V Protected Landscape/ Seascape

A protected area where the interaction of people and nature over time has produced an area of distinct charcter with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

VI Protected area with sustainable use of natural resources

Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems.

Annex 1: List of birds recorded at Gulf of Mottama.

Over 140 bird species in total have been recorded in the Gulf of Mottama site. :

Sr.no	Family	*Scientific name*	Common Name	IUCN Status
1	**ANATIDAE**	*Dendrocygna javanica*	Lesser Whistling-Duck	
2		*Anas strepera*	Gadwall	
3		*Anas penelope*	Eurasian Wigeon	
4		*Anas acuta*	Northern Pintail	
5		*Aythya nyrca*	Ferruginous Pochard	
6	**CICONIIDAE**	*Mycteria leucocephala*	Painted Stork	NT
7		*Anastomus oscitans*	Asian Openbill	
8	**THRESKIORNITHIDAE**	*Threskiornis melanocephalus*	Black-headed Ibis	NT
9	**ARDEIDAE**	*Nycticorax nycticorax*	Black-crowned Night-Heron	
11		*Ardeola bacchus*	Chinese Pond-Heron	
12		*Bubulcus coromandus*	Eastern Cattle Egret	
13		*Ardea cinerea*	Grey Heron	
14		*Ardea purpurea*	Purple Heron	
15		*Ardea alba*	Great Egret	
16		*Mesophoyx intermedia*	Intermediate Egret	
17		*Egretta garzetta*	Little Egret	
18	**PHAETHONTIDAE**	*Phaethon lepturus*	White-tailed Tropicbird	
19	**PHALACROCORACIDAE**	*Phalacrorax niger*	Little Cormorant	
20	**FALCONIDAE**	*Falco peregrinus*	Peregrine Falcon	
21		*Pernis ptilorhynchus*	Oriental Honey-Buzzard	
22		*Elanus caeruleus*	Black-shouldered Kite	
23		*Milvus migrans*	Black Kite	
24		*Haliastur indus*	Brahminy Kite	
25		*Circus spilonotus*	Eastern Marsh-Harrier	
26		*Circus melanoleuco*	Pied Harrier	
27		*Butastur teesa*	White-eyed Buzzard	
28		*Buteo burmanicus*	Himalayan Buzzard	
29	**RALLIDAE**	*Rallina fasciata*	Red-legged Crake	
30		*Gallirallus striatus*	Slaty-brasted Rail	
31	**PLUVIALIDAE**	*Pluvialis fulva*	Pacific Golden Plover	
32		*Pluvialis squatarola*	Grey Plover	
33	**VANELLIDAE**	*Vanellus cinereus*	Grey-headed Lapwing	
34		*Vanellus indicus*	Red-wattled Lapwing	
35	**CHARADRIIDAE**	*Charadrius placidus*	Long-billed Plover	
36		*Charadrius dubius*	Little Ringed Plover	
37		*Charadrius alexandrinus*	Kentish Plover	
38		*Charadrius mongolus*	Lesser Sand-Plover	
39		*Charadrius leschenaultii*	Greater Sand-Plover	
40	**SCOLOPACIDAE**	*Limosa limosa*	Black-tailed Godwit	NT
41		*Limosa lapponica*	Bar-tailed Godwit	
42		*Numenius phaeopus*	Whimbrel	
43		*Numenius arquata*	Eurasian Curlew	NT
44		*Xenus cinereus*	Terek Sandpiper	
45		*Actitis hypoleucos*	Common Sandpiper	
46		*Tringa ochropus*	Green Sandpiper	

47		*Tringa erythropus*	Spotted Redshank	
48		*Tringa nebularia*	Common Greenshank	
49		*Tringa guttifer*	Nordman's Greenshank	EN
50		*Tringa stagnatilis*	Marsh Sandpiper	
51		*Tringa glareola*	Wood Sandpiper	
52		*Tringa totanus*	Common Redshank	
53		*Calidris alba*	Sanderling	
54		*Eurynorhynchus pygmeus*	Spoon-billed Sandpiper	CR
55		*Calidris minuta*	Little Stint	
56		*Calidris ruficollis*	Red-necked Stint	
57		*Calidris temminckii*	Temminck's Stint	
58		*Calidris subminuta*	Long-toed Stint	
59		*Calidris ferruginea*	Curlew Sandpiper	
60		*Limicola falcinellus*	Broad-billed Sandpiper	
61		*Philomachus pugnax*	Ruff	
62		*Arenaria interpres*	Ruddy Turnstone	
63	**GLAREOLIDAE**	*Glareola maldivarum*	Oriental Pratincole	
64		*Glareola lactea*	Small Pratincole	
65	**STERNIDAE**	*Onychoprion fuscatus*	Sooty Tern	
66		*Sternula albifroms*	Little Tern	
67		*Gelochelidon nilotica*	Gull-billed Tern	
68		*Hydroprohgne caspia*	Caspian Tern	
69		*Chlidonias leucopterus*	White-winged Tern	
70		*Chlidonias hybrida*	Whiskered Tern	
71		*Sterna aurantia*	River Tern	NT
72		*Sterna dougallii*	Roseate Tern	
73	**LARIDAE**	*Larus heuglini*	Heuglin's Gull	
74		*Larus ichthyaetus*	Pallas's Gull	
75		*Chroicocephalus*	Brown-headed Gull	
76		*Chroicocephalus ridibundus*	Black-headed Gull	
77	**COLUMBIDAE**	*Columba livia*	Rock Pigeon	
78		*Streptopelia chinensis*	Spotted Dove	
79	**PSITTACIDAE**	*Psittacula alexandri*	Red-breasted Parakeet	
80	**CUCULIDAE**	*Cacomantis merulimus*	Plaintive Cuckoo	
81		*Centropus sinensis*	Greater Coucal	
82	**TYTONIDAE**	*Tyto alba*	Common Barn-Owl	
83	**STRIGIDAE**	*Glaucidium cuculoides*	Asian Barred Owlet	
84	**APODIDAE**	*Aerodramus germani*	Germain's Swiftlet	
85		*Cypsiurus balas*	Asian Palm-Swift	
86		*Apus affinis*	House Swift	
87	**CORACIIDAE**	*Coracias benghalensis*	Indian Roller	
88	**ALCEDINIDAE**	*Halcyon smyrnensis*	White-throated Kingfisher	
89		*Halcyon pileata*	Black-capped Kingfisher	
90		*Alcedo atthis*	Common Kingfisher	
91	**MEROPIDAE**	*Merops orientalis*	Little Green Bee-eater	
92		*Mecops philippinus*	Blue-tailed Bee-eater	
93	**UPUPIDAE**	*Upupa epops*	Common Hoopoe	
94	**RAMPHASTIDAE**	*Megalaima haemaccephala*	Coppersmith Barbet	
95	**PITTIDAE**	*Pitta megarhyncha*	Mangrove Pitta	NT
96	**ARTAMIDAE**	*Artamus fuscus*	Ashy Woodswallow	
97	**AEGITHINIDAE**	*Aegithina tiphia*	Common Iora	
98	**RHIPIDURIDAE**	*Rhipidura albicollis*	White-throated Fantail	
99	**DICRURIDAE**	*Dicrurus macrocercus*	Black Drongo	
100	**CORVIDAE**	*Corvus splendens*	House Crow	

101		*Corvus japonensis*	Large-billed Crow	
102	**LANIIDAE**	*Lanius cristatus*	Brown Shrike	
103		*Lanius schach*	Long-tailed Shrike	
104	**PLOCEIDAE**	*Ploceus manyar*	Streaked Weaver	
105		*Ploceus philippinus*	Baya Weaver	
106	**ESTRILDIDAE**	*Lonchura punctulata*	Scaly-breasted Munia	
107		*Lonchura atricapilla*	Chestnut Munia	
108	**PASSERIDAE**	*Passer domesticus*	House Sparrow	
109		*Passer montanus*	Eurasian Tree-Sparrow	
110	**MOTACILLIDAE**	*Anthus rufulus*	Paddyfield Pipit	
111		*Motacilla alba*	White Wagtail	
112		*Motacilla tschutschensis*	Yellow Wagtail	
113	**STURNIDAE**	*Acridotheres fuscus*	Jungle Myna	
114		*Acridotheres tristis*	Common Myna	
115		*Gracupica contra*	Asian Pied Starling	
116		*Sturnus malabaricus*	Chestnut-tailed Starling	
117	**MUSCICAPIDAE**	*Saxicola maurus*	Eastern Stonechat	
118		*Saxicola caprata*	Pied Bushchat	
119		*Ficedula albicilla*	Taiga Flycatcher	
120		*Copsychus saularis*	Oriental Magpie-Robin	
121	**ALAUDIDAE**	*Alauda gulaula*	Oriental Skylark	
122	**PYCNONOTIDAE**	*Pycnonotus blanfordi*	Streak-eared Bulbul	
123		*Pycnonotus jocosus*	Red-whiskered Bulbul	
124		*Pycnonotus cafer*	Red-vented Bulbul	
125	**HIRUNDINIDAE**	*Delichon dasypus*	Asian House-Martin	
126		*Riparia diluta*	Plae Sand-Martin	
127		*Hirundo rustica*	Barn Swallow	
128		*Hirundo smithii*	Wire-tailed Swallow	
129		*Hirundo tahitica*	House Swallow	
130		*Cecropis daurica*	Red-rumped Swallow	
131	**PHYLLOSCOPIDAE**	*Phylloscopus borealis*	Artic Warbler	
132		*Phylloscopus trochiloides*	Greenish Warbler	
133		*Phylloscopus fuscatus*	Dusky Warbler	
134	**TAMALIIDAE**	*Zosterops palpebrosus*	Oriental White-Eye	
135		*Turdoides gularis*	White-throated Babbler	
136	**ACROCEPHALIDAE**	*Acrocrphalus orientalis*	Oriental Reed-Warbler	
137	**CISTICOLIDAE**	*Cisticola juncidis*	Zitting Cisticola	
138		*Orthotomus sutorius*	Common Tailordbird	
139		*Prinia flaviventris*	Yellow-bellied Prinia	
140		*Prinia inornata*	Plain Prinia	

Annex 2: List of fish recorded at a part of east coast of Gulf of Mottama

Sr.	Family	Scientific Name	Local Name
1	ARIIDAE	*Nemapteryx caelata* (Valenciennes, 1840)	Nga yaung
2	BELONIDAE	*Strongylura strongylura* (Van Hasselt, 1823)	Nga phaung yoe
3	CARANGIDAE	*Megalaspis cordyla* (Linnaeus, 1758)	Pyi daw tha
4	CARCHARHINIDAE	*Scoliodon laticaudus* (Muller & Henle, 1838)	The nga mann
5	CENTROPOMIDAE	*Lates calcarifer* (Bloch, 1790)	Ka ka dit
6	CHIROCENTRIDAE	*Chirocentrus dorab* (Fosskal, 1775)	Nga da lwe
7	CLUPEIDAE	*Anodontostoma chacunda* (Hamilton, 1822)	Nga wun pu
8		*Ilisha novacula* (Valencinnes, 1847)	Nga zin byar
9		*Tenualosa ilisha* (Hamilton, 1822)	Nga tha lauk
10		*Tenualosa toli* (Valenciennes, 1847)	Nga par mee
11	CYNOGLOSSIDAE	*Cynoglossus cynoglossus* (Hamilton, 1822)	Khwe sha lay
12	DREPANIDAE	*Drepane punctata* (Linnaeus, 1758)	Nga pa le
13	ELOPIDAE	*Megalops cyprinoides* (Broussonet, 1782)	Ka law lae
14	ENGRAULIDAE	*Setipinna wheeleri* (Wongratana, 1983)	Nga byar
15		*Coilia dussumieri* (Valenciennes, 1848)	Mee tan thwe
16		*Thryssa mystax* (Bloch & Schneider, 1801)	Nga par shar
17	GOBIIDAE	*Odontamblyopus rubicundus* (Hamilton, 1822)	Nga byet ni
18		*Pseudapocryptes elongatus* (Cuvier, 1816)	Nga byet
19	HEMIRAMPHIDAE	*Hyporhamphus limbatus* (Valenciennes, 1847)	Nga phaung yoe gaung toe
20	HERPODONTIDAE	*Harpadon nehereus* (Hamilton, 1822)	Nga hnat
21	LEIOGNATHIDAE	*Leiognathus equulus* (Forsskal, 1775)	Nga wine
22	LOBOTIDAE	*Lobotes surinamensis* (Blach, 1790)	Pin le nga byay ma
23	MUGILIDAE	*Chelon parsia* (Hamilton, 1822)	Ka ba loo
24		*Sicamugil hamiltonii* (Day, 1870)	Ka ba loo
25		*Rhinomugil corsula* (Hamilton, 1822)	Nga zin lone
26	PANGASIDAE	*Pangasius pangasius* (Hamilton, 1822)	Nga dan
27	PLATYCEPHALIDAE	*Platycephalus indicus* (Linnaeus, 1758)	Nga sin ninn
28	PLOTOSODAE	*Plotosus lineatus* (Thunberg, 1787)	Pin le nga khu
29	POLYNEMIDAE	*Eleutheronema tetradactylum* (Shaw, 1804)	Za yaw gyi, Mee na kwa
30		*Leptomelanosoma indicum* (Shaw, 1804)	Ka ku yan
31		*Polynemus paradiseus* (Linnaeus, 1758)	Nga pon nar
32		*Polydactylus sextarius* (Bloch & Schneider, 1801)	Zayaw
33	SCIAENIDAE	*Otolithoides biauritus* (Cantor, 1849)	Nat ga daw
34		*Otolithoides pama* (Hamilton, 1822)	Nga poke thin
35		*Protonibea diacanthus* (Lacepede, 1802)	Kat tha hmyin
36	SILLAGINIDAE	*Sillago sihama* (Forsskal, 1775)	Nga pa lway
37	TERAPONTIDAE	*Terapon jarbua* (Forsskal, 1775)	Gon kyar
38	TETRAODONTIDAE	*Chonerhinos naritus* (Richardson, 1848)	Nga pu tin
39	TRICHUIDAE	*Lepturacanthus savala* (Cuvier, 1829)	Nga da gun