



Nanthar Island and Mayyu Estuaries Myanmar

EAAF NETWORK SITE CODE FOR OFFICE USE ONLY:

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Site Information Sheet on East Asian-Australasian 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 Secretariat. Compilers should provide an electronic (MS Word) copy of the Information Sheet and, where possible, digital versions (e.g. shapefile) of all maps.

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

Compiler 1

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2. Date this sheet was completed *:

DD/MM/YYYY

20/06/2018

3. Country *:

Myanmar

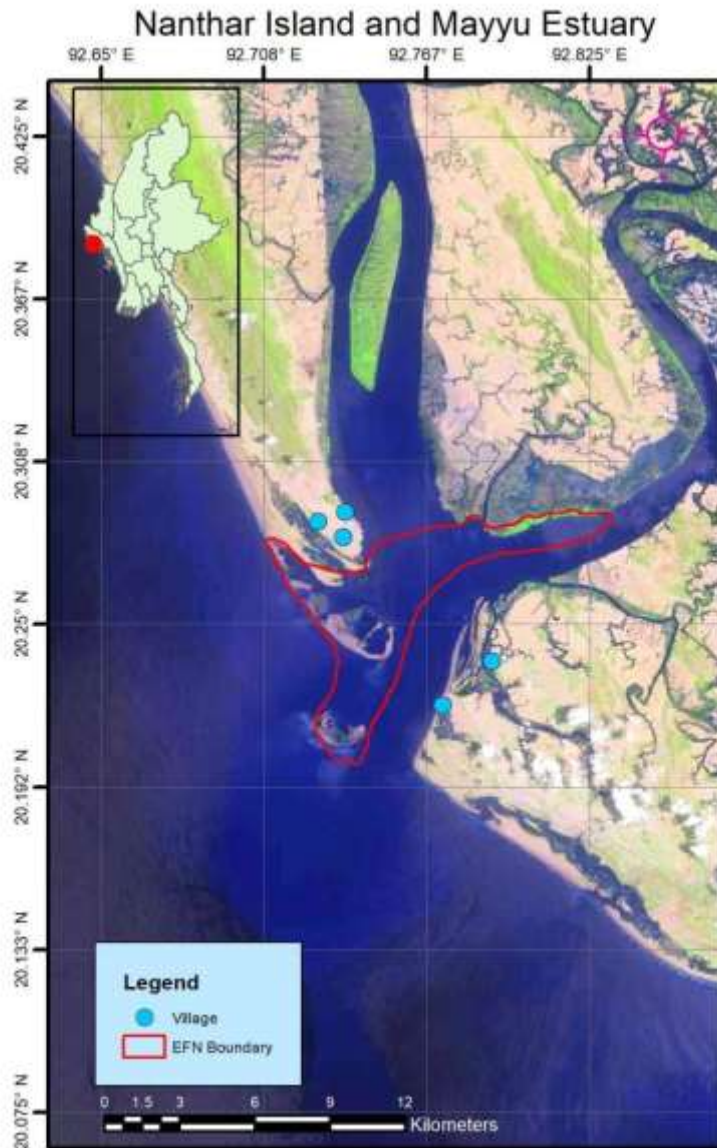
4. Name of the Flyway Network site *:

Accepted English transcription of the Site's name.

Nanthar Island and Mayyu Estuaries

5. Map of site *:

The most up-to-date available and suitable map of the wetland should also 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.

20°14'37.7" N, 92°44'24.7" E

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

0-10 metres asl

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.

3,608 ha

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.

Nanthar Island is located on the coast of Rakhine (formerly Arakan) State in western Myanmar, not far from the state capital, Sittwe city, and the international border with Bangladesh. Rakhine is bounded to the north by Chin State, and to the east by Magway, Bago and Ayeyarwady divisions. Nanthar Island (c. 3608 ha) consists of a mosaic of mangrove forests, low-lying sand banks and intertidal mudflats at the mouth of Mayu, Lemyo and Kalendan River. There are five villages close to Nanthar and the local fishing communities often ply the inshore waters surrounding the island. The Critically Endangered Spoon-billed Sandpiper *Calidris pymaeus* has been recorded annually on Nanthar since 2008, with counts of 23-36 individuals (c. 10 % of the global population, based on a global population estimate of 242-378 individuals, circa. Zöckler et al. 2016). Other globally threatened migratory species includes the Nordmann's Greenshank *Tringa guttifer* (Endangered) (max. 5 individuals), and up to 150 Great Knot *Calidris tenuirostris* (Endangered) in small congregations.

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.

The site qualifies as an EAAFP Network Site, under:
- supporting >1% of individuals of a population; and

- supporting globally threatened species (Critically Endangered, Endangered or Vulnerable under IUCN Red List criteria).

Spoon-billed Sandpiper (CR) ca. 20 birds annually
 Nordmann's Greenshank (EN) ca. 4-5 birds annually
 Great Knot (EN) ca, 150
 Indian Skimmer (VU) up to 9 until 2013

The site supports four globally threatened 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
<i>Calidris pygmeus</i>	Spoon-billed Sandpiper	CR		I
<i>Tringa guttifer</i>	Nordmann's Greenshank	EN		II
<i>Calidris tenuirostris</i>	Grat Knot	EN		
<i>Rhynchops albigollis</i>	Indian Skimmer	VU		

Ramsar Criterion 5 does not apply as the total number is around 4,000-5,000 water birds in recent years, down from around 10,000 in 2008-2010 period.

Ramsar Criterion 6 applies for the **Spoon-billed sandpiper** of which with 20 birds 4% of the global population is regularly visiting and wintering at the site. For other species the 0.25% criteria for a staging site is fulfilled for **Nordmann's Greenshank** (4-5 ind. = 0.5% of the flyway population. Also for **Bar-headed Goose**, the 2008-2012 figures of over 1,000 birds surpass the 1% Ramsar criteria and still for recent minimum of 400 birds = 0.8 % of the flyway population The **Black-headed Ibis** might with just 24 = 0.24% bird have met the „staging site“ criteria of 0.25%. The **Kentish Plover** with 550 is reaching 0.75% of the flyway population reaching „staging site“ level. In 2009 the **Black-tailed Godwit** reached over 1% of the Ramsar criteria but recently did not manage even the 0.25 for the „staging site“ criteria.

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, E, F, G, H, I

12. Jurisdiction *:

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

Rakhine 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.

Rakhine State 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.

Biodiversity and Nature Conservation Association (BANCA), National Species Action Plan for the Conservation of the Spoon-billed Sandpiper (*Calidris pygmaea*) in Myanmar January 2017-2020. <http://banca-env.org/index.php/species-conservation-national-action-plan>

Important Bird and Biodiversity Areas (IBAs) in Myanmar

URL:<http://datazone.birdlife.org/site/results?thrlev1=&thrlev2=&kw=®=0&cty=145&snm=&fam=0&gen=0&spc=&cmn=>

Pyae Phyo Aung et al. (2016) Monitoring Programme for Critically Endangered Spoon-billed Sandpiper on its Globally Most Important Wintering Grounds in Myanmar.

Pyae Phyo Aung et al. (2016) Communication Education Participation Awareness (CEPA) Programme in Nanthar Island, Rakhine State.

Pyae Phyo Aung et al. (2017) Monitoring Migratory Shore Birds Survey in Nanthar Island <http://banca-env.org/images/pdf/monitoring-of-migratory-nanthar-island.pdf>

Spoon-billed Sandpiper Task Force (various). News bulletins - accessible at <http://www.eaaflyway.net/spoon-billed-sandpiper.php>

Zöckler, C., T. Htin Hla, N. Clark, E. Syroechkovskiy, N. Yakushev, S. Daengphayon & R. Robinson. 2010. Hunting in Myanmar: A major cause of the decline of the Spoon-billed Sandpiper. Wader Study Group Bulletin, 117: 1-8

Zöckler, C. & P. Frew (2011): Unusual feeding behaviour of Nordmann's Greenshank *Tringa guttifer*. Wader Study Group Bulletin 118(1): 68.

Zöckler, C. T. Htin Hla & A. Bräunlich (2012) Status of Bar-headed Geese (*Anser indicus*) wintering in Western Myanmar. *Kasarcia* 15(1): 63-65.

Zöckler, C., T. Zaw Naing, S. Moses, R. Nou Soe & T. Htin Hla (2014): The importance of the Myanmar Coast for Water Birds. *Stilt* 66: 37-51.

Zöckler, C., Beresford, A. E., Bunting, G., Chowdhury, S. U., Clark, N. A., Fu, V. W. K., Htin Hla, T., Morozov, V.V., Syroechkovskiy, E.E, Kashiwagi, M., Lappo, E. G, Tong, M., LeLong, T., Yat- Tung Y., F. Huettmann, F., Akasofu, H. K., Tomida, H. and G. M. Buchanan (2016) The winter distribution of the spoon-billed sandpiper *Calidris pygmaeus*. *Bird Conservation International* 26:476–489.

Zöckler, C., D. Li, S.U. Chowdhury, M. Iqbal & C. Yu. 2018. Winter distribution, habitat and feeding behaviour of Nordmann's Greenshank *Tringa guttifer*. *Wader Study* 125(1): 7–14

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.

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). Nanthar Island is located between Sittwe and Yaethadaung Township and isolated from the Bay of Bengal. The wide and low-lying deltaic region on the Sittwe plain is formed by the tributaries and distributaries of Mayu, Kalandan and Lemyo rivers. The whole coastline is indented by spacious inlets and lagoons. Nanthar Island contains extensive mudflats, sandy beaches and mangrove forest.

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 Mayu, Kalandan (Kispanadi) and Lemyo rivers with their many tributaries form the boundary between India's easternmost states (Meghalaya), Bangladesh and western Myanmar. These major rivers flow north- south into the Bay of Bengal and forms the lower watershed of the forested Rakhine (Arakan) Yoma and the Chin Hills, being bounded on the east and west by separate spurs of these low mountains. The deltaic plains of Sittwe and the surrounding regions are built by alluvial deposits along the lower tributaries and distributaries of the Mayu, Kalandan and Lemyo rivers. The climatic character of this region is tropical wet, based on the Koppen climate classification. As with much of Myanmar, rainfall patterns in Rakhine is highly seasonal, being concentrated in the months of the southwest monsoon (May-October). During the northwest monsoon (December-March), much of the region is relatively cool and dry.

17. Hydrological values:

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

Nanthar Island's dynamic environment provide sediment trapping benefits through the formation of shifting channels. Due to upwelling, the waters off Nanthar support rich feeding ground for the waders, and its nutrient rich environment also support traditional aquaculture. Sediment accumulation

has led to the constant formation of shifting channels and new sand banks, which plays a role in stabilising of the coastline.

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 main habitat types on Nanthar Island are coastal intertidal mudflats, sandy beaches (on sand banks and spits) and mangrove forests (small remnants), as well as man-made fish ponds. Collectively, these coastal environments support a rich intertidal assemblage of fish and marine invertebrates, and significant numbers of waterbirds. A total of 67 water bird species has been recorded at the site to date, including the globally threatened Indian Skimmer *Rhynchops albigollis*, and a number of globally Near Threatened (waterbird species) such as Black-headed Ibis *Threskiornis melanocephalus*, Eurasian Curlew *Numenius arquata*, Black-tailed Godwit *Limosa limosa*, Bar-tailed Godwit *Limosa lapponica*, Red Knot *Calidris canutus*, Red-necked Stint *Calidris ruficollis* and Curlew Sandpiper *Calidris ferruginea*.

Due to upwelling from the Bay of Bengal, the coastal waters immediately around Nanthar Island is very nutrient-rich, which helps nurture local fisheries. Local communities harvest these rich coastal fisheries using traditional aquaculture means. Large congregations of migratory waterbirds such as waders also benefit from these rich feeding grounds.

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)

Little information is available on the sand dune flora and the coastal mangroves. Small pockets of mangrove forests are present on the surrounding Rakhine coastline. They are dominated by genera typical of Southeast Asia such as *Rhizophora* and *Sonneratia* spp., and falls under the Myanmar Coastal Rain Forests [IM0132] ecoregion, identified by the World Wildlife Fund.

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)

Three species of sea turtle, Green Turtle (EN), Logger headed (EN) and Olive Ridley Turtle (VU) are recorded nesting on Nan Thar Island.

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:

Five villages around Nanthar Island supports 971 households and a combined population of 5,320, based on recent census data.
 The main access point to Nanthar Island is the city of Sittwe. Three villages (Kone Dan, Magyi Chaung and Angu Maw village) can be accessed by road during the summer and monsoon seasons). Two villages in Sittwe Township (Palin Pyin and Aung Dine village) can be accessed by road during the summer and monsoon seasons.
 The dominant groups in the region are Burmese and Rakhine, and the main religion is Theravada Buddhism.
 Every village contains at least one monastery and as in much of traditionally Buddhist areas in Myanmar, local villagers respect and follow the sermons and advice of the monks.
 The dominant socio-economic activity in and around Nanthar is fishing, aquaculture and small-scale agriculture. Crops such as paddy, corn, water melon, chili, betelnut are commonly planted.

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)

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:

The Union 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- the Administrative Department and Ministry of Livestock & Fisheries are tolerant of 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 around Nanthar is dominated by cultivated land, and scrub. The lower hills of the Arakan Yoma are lightly forested.

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, Forest Department, Irrigation Department in the Ministry of Agriculture and Irrigation and Ministry of Livestock & Fisheries are the government agencies responsible for the site.
The small-scale fishing activities with traps, nets and hook & line are not regarded as having adverse impacts on fish populations, although this do cause disturbance to waterbird populations.

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. Most of the local people inhabiting the areas around Nanthar Island live at the subsistence level and have poor awareness of the ecological values of the site. Some unlicensed fishing activities, sea turtle egg collection and sand mining take place at the site.

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.

Proposed for designation as Ramsar Site and Protected Area / Community Conservation Area.

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

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

Yes

d) Describe any other current management practices:

Capacity building to the Local Conservation Group (LCG)
Birdwatching training
Annual migratory bird and turtle nest monitoring.
Patrol and guarding activities to prevent hunting activities

26. Conservation measures proposed but not yet implemented:

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

N/A

27. Current scientific research and facilities:

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

With the support of international organisations (ArcCona Consulting, Royal Society for the Protection of Birds, Spoon-billed Sandpiper Task Force, International Conservation Fund of Canada), the Biodiversity and Nature Conservation Association (BANCA; BirdLife International partner in Myanmar) and a team with its local partner, the Sittwe Nature Conservation Association (BECAR) will coordinate with the Rakhine State Government to organise a conservation workshop in August 2018.

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.

BANCA team carried out CEPA activities in five villages near Nanthar Island.

29. Current recreation and tourism:

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

N/A

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	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
commercial and industrial areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tourism and recreation areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agriculture and aquaculture			
annual and perennial non-timber crops	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
wood and pulp plantations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
livestock farming and ranching	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
marine and freshwater aquaculture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Energy production and mining			
oil and gas drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mining and quarrying	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
renewable energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transportation and service corridors			

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roads and railroads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
utility and service lines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
shipping lanes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
flight paths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Biological resource use

hunting and collecting terrestrial animals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
gathering terrestrial plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
logging and wood harvesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fishing and harvesting aquatic resources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Human intrusions and disturbance

recreational activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
war, civil unrest and military exercises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
work and other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Natural system modifications

fire and fire suppression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
dams and water management/use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other ecosystem modifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Invasive and other problematic species and genes

invasive non-native/alien species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
problematic native species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
introduced genetic material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Pollution

household sewage and urban waste water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
industrial and military effluents	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
agricultural and forestry effluents	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
garbage and solid waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
air-borne pollutants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
excess energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Geological events

volcanoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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earthquakes/tsunamis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
avalanches/landslides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Climate change and severe weather

habitat shifting and alteration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
droughts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
temperature extremes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
storms and flooding	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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

Appendix 1. Selected Waterbirds counted at Nanthar island, 2008-2018 (January/March).

Species	2008	2009	2010	2011	2012	2013	2018
Bar-headed Goose	400+	1400	900		1100		400
Ruddy Shelduck	2	92	4				34
Northern Pintail	1500	1600	3000				15
Eurasian Wigeon	?	1150	1200				13
Grey Heron		7	?				6
Great Egret	6	11	?				153
Little Egret		31	?				1230
Black-headed Ibis (NT)		13	20				24
Grey Plover	52	195	40				25
Pacific Golden Plover	12	30	?				32
Greater Sand Plover	440	250	?				40
Lesser Sand Plover	380	1000	?				66
Kentish Plover	55	13	?				550
Eurasian Curlew	41	69	20				90
Whimbrel	10	10	14				65
Black-tailed Godwit (NT)	326	1800	400			250	216
Bar-tailed Godwit (NT)	4	5	2				
Northern Greenshank	7	20	10				8
Marsh Sandpiper	1	1	-				2
Common Redshank	335	300	60				136
Terek Sandpiper	50	85	20+				85
Nordmann's Greenshank (EN)		2	5			4	4
Great Knot (EN)	13	40	-			30	156
Red Knot (NT)	3	8	-			35	4
Broad-billed Sandpiper	63	330	80			100	40
Curlew Sandpiper	87	130	150			32?	82
Red-necked Stint (NT)	68	280	200			200	125
Spoon-billed Sandpiper (CR)	34	14	14	22	25	20	23
Sanderling	90	215	20			45	16
Ruddy Turnstone	19	35					37
Brown-headed Gull	50	340					80
Gull-billed Tern	97	130	60				34
Little Tern	200	365	100				36
Lesser Crested Tern	2	20					12
Whiskered Tern	103	14	200				60
Small (unidentified) Pratincole		3				14	23

Appendix 2: List of waterbirds recorded at Nanthar Island

Sr.no	Family name	No.	Scientific name	Common New Name	IUCN
	ANTIDAE: DENDROCYGNINAE:				
1	Whistling-ducks	1	<i>Dendrocygna javanica</i>	Lesser Whistling-Duck	
		2	<i>Anser indicus</i>	Bar-headed Goose	
	ANATIDAE: TADORNINAE:				
	Comb Duck, shelducks & allies	3	<i>Tadorna ferruginea</i>	Ruddy Shelduck	
	ANATIDAE: ANATINAE:				
	Typical ducks and pygmy-geese	4	<i>Anas penelope</i>	Eurasian Wigeon	
		5	<i>Anas clypeata</i>	Northern Shoveler	
		6	<i>Anas acuta</i>	Northern Pintail	
		7	<i>Anas querquedula</i>	Garganey	
		8	<i>Aythya fuligula</i>	Tufted Duck	
	ARDEIDAE: ARIDEINAE:				
2	Hérons & egrets	9	<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	
		10	<i>Ardeola grayii</i>	Indian Pond-Heron	
		11	<i>Ardeola bacchus</i>	Chinese Pond-Heron	
		12	<i>Bubulcus coromandus</i>	Eastern Cattle Egret	
		13	<i>Ardea cinerea</i>	Grey Heron	
		14	<i>Ardea alba</i>	Great Egret	
		15	<i>Mesophoyx intermedia</i>	Intermediate Egret	
		16	<i>Egretta garzetta</i>	Little Egret	
	PHALACROCORACIDAE:				
3	Cormorants	17	<i>Phalacrocorax niger</i>	Little Cormorant	
	Ciconidae: Storks and Ibisses	18	<i>Mycteria leucocephala</i>	Painted Stork	NT
		19	<i>Anastomus oscitans</i>	Asian Openbill	
		20	<i>Threskiomis melanocephalus</i>	Black-headed Ibis	NT
	RALLIDAE: Rails, crakes, Gallinules & coots				
4	BURHINIDAE: Thick- knees	18	<i>Porphyrio poliocephalus</i>	Grey-headed Swampphen	
5	PLUVIALIDAE: Pluvialis	19	<i>Esacus recurvirostris</i>	Great Thick-Knee	
6	Plovers	20	<i>Pluvialis fulva</i>	Pacific Golden Plover	
		21	<i>Pluvialis squatarola</i>	Grey Plover	
	VANELLIDAE: Lapwings & allies				
7		22	<i>Vanellus indicus</i>	Red-wattled Lapwing	
	CHARADRIIDAE: Charadrius plovers & allies				
8		23	<i>Charadrius hiaticula</i>	Common Ringed Plover	
		24	<i>Charadrius dubius</i>	Little Ringed Plover	
		25	<i>Charadrius alexandrinus</i>	Kentish Plover	
		26	<i>Charadrius mongolus</i>	Lesser Sand-Plover	
		27	<i>Charadrius leschenaultii</i>	Greater Sand-Plover	
	SCOLOPACIDAE: GALLINAGININAE:				
9	Snipes	28	<i>Gallinago stenura</i>	Pintail Snipe	
	SCOLOPACIDAE: TRINGINAE: Godwits, dowitchers, curlews, sandpipers & allies	29	<i>Gallinago gallinago</i>	Common Snipe	
		30	<i>Limosa limosa</i>	Black-tailed Godwits	NT
		31	<i>Limosa lapponica</i>	Bar-tailed Godwit	NT
		32	<i>Numenius phaeopus</i>	Whimbrel	

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		33	<i>Numenius arquata</i>	Eurasian Curlew	NT
		34	<i>Xenus cinereus</i>	Terek Sandpiper	
		35	<i>Actitis hypoleucos</i>	Common Sandpiper	
		36	<i>Tringa erythropus</i>	Spotted Redshank	
		37	<i>Tringa nebularia</i>	Common Greenshank	
		38	<i>Tringa guttifer</i>	Nordmann's Greenshank	EN
		39	<i>Tringa stagnatilis</i>	Marsh Sandpiper	
		40	<i>Tringa glareola</i>	Wood Sandpiper	
		41	<i>Tringa totanus</i>	Common Redshank	
	SCOLOPACIDAE: CALIDRIDNAE: Calidris sandpiper & allies				
		42	<i>Calidris tenuirostris</i>	Great Knot	EN
		43	<i>Calidris canutus</i>	Red Knot	
		44	<i>Calidris alba</i>	Sanderling	
		45	<i>Calidris pygmeus</i>	Spoon-billed Sandpiper	CR
		46	<i>Calidris minuta</i>	Little Stint	
		47	<i>Calidris ruficollis</i>	Red-necked Stint	NT
		48	<i>Calidris alpina</i>	Dunlin	
		49	<i>Calidris ferruginea</i>	Curlew Sandpiper	NT
		50	<i>Limicola falcinellus</i>	Broad-billed Sandpiper	
		51	<i>Philomachus pugnax</i>	Ruff	
	SCOLOPCIDAE: ARENARINAE: Turnstones & allies				
		52	<i>Arenaria interpres</i>	Ruddy Turnstone	
	GLAREOLIDAE: GLAREOLINAE: Pratincoles				
10		53	<i>Glareola lactea</i>	Small Pratincole	
	STERNIDAE: Noddies & terns				
11		54	<i>Sternula albifrons</i>	Little Tern	
		55	<i>Gelochelidon nilotica</i>	Gull-billed Tern	
		56	<i>Hydroprogne caspia</i>	Caspian Tern	
		57	<i>Chlidonias leucopterus</i>	White-winged Tern	
		58	<i>Chlidonias hybrida</i>	Whiskered Tern	
		59	<i>Sterna hirundo</i>	Common Tern	
		60	<i>Thalasseus bengalensis</i>	Lesser Crested Tern	
		61	<i>Thalasseus bergii</i>	Great Crested Tern	
12	LARIDAE: Gulls & allies	62	<i>Larus ichthyaetus</i>	Pallas's Gull	
		63	<i>Chroicocephalus</i>	Brown-headed Gull	
		67	<i>Rynchops albicollis</i>	Indian Skimmer	VU

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 recognized 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 character 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

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