



Paleik Lake
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 <https://eaaflyway.net/about-us/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 *:

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2. Date this sheet was completed *:

DD/MM/YYYY

25/05/2023

3. Country *:

Republic of the Union of Myanmar

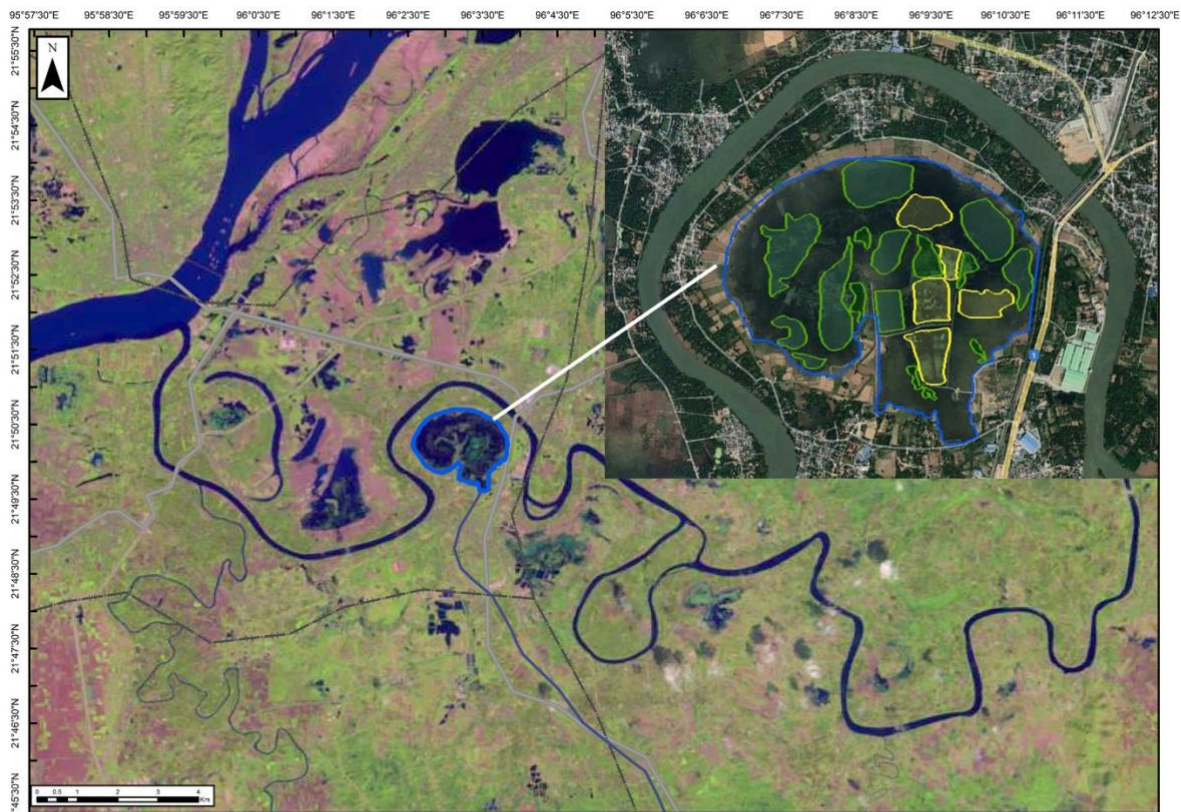
4. Name of the Flyway Network site *:

Accepted English transcription of the Site's name.

Paleik Lake

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](#).



Legend		Data Sources: MIMU ,EarthExplorer, Google Earth pro, BANCA Datum : WGS84 Map Layout: BANCA, https://www.banca-env.org	
	Paleik Lake		
	Water Body		
	Open Water With Aquatic Plants		
	Tall Grassland		
	Road		
	Railway		

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.

N 21 50.031 E 96 03.329

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

89 metres

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.

480 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.

Paleik Lake (in local terms, it is called Paleik Inn, where 'Inn' means 'Lake') is a natural freshwater wetland and an oxbow lake. It connects with the Ayeyarwaddy River through the Myit Nge River and provides significant riverine ecosystem services to the agriculture by river irrigation process. It is recognized as Important Bird and Biodiversity Area (IBA) and Key Biodiversity Area (KBA). The wetland habitat mainly provides as food and shelter for globally threatened migratory waterbird species such as Baer's Pochard (*Aythya baeri*) (CR), Common Pochard (*Aythya ferina*) (VU), and other more abundant species including Greylag Goose (*Anser anser*) (LC), Glossy Ibis (*Plegadis falcinellus*) (LC) and Black-headed Ibis (*Threskiornis melanocephalus*) (NT) and also provides a breeding ground for other waterbird species. In recent years up to 49 waterbird species have occurred, with total waterbird numbers counted of between 2,449 and 4,426 birds. The local communities mainly utilize the site for agriculture such as rice and seasonal crop plantation in the receding waterbody and for fish farming in inundated pools and small streams around the lake at subsistence income level.

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.

EAAFP Criterion: A wetland should be considered internationally important if it supports appreciable numbers of an endangered or vulnerable population of migratory waterbird

The site regularly supports populations of two Globally Threatened species on the IUCN Red List: Baer's Pochard (*Aythya baeri*) a Critically Endangered (CR) species; Common Pochard (*Aythya ferina*) a Vulnerable (VU) species). Baer's Pochard has occurred in four of five recent years in small numbers (1-3 birds); and Common Pochard in all five recent years (1-14 birds).

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

From the most recent five years (between 2016-2022) of counts, Paleik Lake qualifies for Greylag Goose: numbers (323-1087 birds) exceeded the 1% threshold of 320 birds in all five most recent years.

Species/population	1% threshold (from CSR1 ¹)	2016	2017	2018	2021	2022	Average 2016-2022
Greylag Goose	320	765	1087	750	323	935	772

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.

Inland Wetland

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

Human made Wetland

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

12. Jurisdiction *:

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

Territorial: Government of Mandalay Region, Kyaukse Township, Myanmar
 Functional: Ministry of Natural Resources and Environmental Conservation, Department of Fishery, Department of Agriculture, General Administration Department, Department of Irrigation.

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.

1. Government of Mandalay Region
2. Nature and Wildlife Conservation Division, Forest Department, Ministry of Natural Resources, Environmental Conservation (MONREC) (email: nwcdmof@gmail.com),
3. Irrigation and Water Utilization Management Department, Ministry of Agriculture, Livestock and Irrigation (MOALI),

¹ <https://www.wetlands.org/download/24099/>

4. Department of Fishery, Ministry of Agriculture, Livestock and Irrigation (MOALI).

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. Aguilar L. (2021) *Guidance on mainstreaming gender under the Ramsar Convention on Wetlands*. Gland, Switzerland: Secretariat of the Convention on Wetlands.
2. Aung, T.D, T.Z. Naing, S. Moses, L. Win, A.M. Tun, T.S. Zaw & S. Chan. 2016. *An assessment of the wintering population of Baer's Pochard in central Myanmar*. Biodiversity And Nature Conservation Association report to Wildfowl & Wetlands Trust. 48 pp.
3. Aung, T.D, T.Z Naing, S. Moses, L. Win, A.M Tun, T.S. Zaw, M.T.Htet, K.T.T.Cho and R. Hearn 2017. *Monitoring on the status of Baer's Pochard in Pyu Lake and Paleik Inn, central Myanmar*.
4. BANCA (2018): *Strengthening on the capacity of civil society for conservation of Baer's Pochard in Pyu Lake, central Myanmar*. Report to Wildlife Conservation Society (WCS).
5. Aung, T.D, T.S. Zaw, L.Win, S. Moses, M.T Zaw, P.E. Nyein, Nike 2019. *The Study of Baer's Pochard in central Myanmar*. Biodiversity And Nature Conservation Association report. 31pp.(unpublished)
6. Davidson, N. C. & McInnes, R. J. (2020): Draft report on conservation of biodiversity and improved management of protected areas in Myanmar: Assessment of Myanmar wetlands currently qualifying for waterbirds for designation under Ramsar Criteria 2, 5 and 6
7. Davies, J., Sebastian, A.C. & Chan, S. (2004): *A Wetland Inventory for Myanmar*. Ministry of Environment Japan.
8. Lunn.Z, Chan. N (2021): *Fish diversity and Fisheries survey in the Paleik Lake and surrounding areas in February 2021*. Unpublished report to BANCA.
9. Markus Ihalainen & Bimbika Sijapati Basnett : [CIFOR.org/gender-climate](https://www.cifor.org/gender-climate)
10. Myanmar Bird And Nature Society (2019): *Identifying Priorities for Wetland Conservation in Myanmar's Dry Zone*.
11. RIS form of Paleik Lake. BANCA - November 2020
12. Win, L, Zaw, T.S, Nyein, P.E, Aung, T.D (2017). *Community based conservation of Baer's Pochard in Pyu Lake*. Unpublished report to Biodiversity And Nature Conservation Association.
13. Yu Ito, Anders S. Barfod (2014): *An updated checklist of aquatic plants of Myanmar and Thailand*. Biodiversity Data Journal.
14. Zaw, T.S, Win, L, Zaw, M.T.H, Aung, T.D (2020): *Report on the status of non-breeding Baer's Pochard at key sites in central Myanmar*. Biodiversity And Nature Conservation Association unpublished report.

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.

Paleik Lake is a natural freshwater and inundated wetland from the Myit Nge River in the rainy season and irrigated into three rivers, namely Thayar Kyun river, Saittaya river and Myauk Kaing river in dry season for agriculture and fish farming.

16. Physical features of the catchment area:

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

Paleik Lake is a permanent open water type. Marginal vegetation and tall grasses are grown in surface area and the bottom soil type is clay. The season is tropical monsoon climate type, seasonally divided March to May as summer, June to September as rainy and November to February as northern winter seasons.

17. Hydrological values:

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

The Myit Nge river is a significant tributary of the Ayeyarwaddy river and its floodplain areas are essential part of an irrigated cultivation in central Myanmar. Paleik Lake is an oxbow lake and there is a flood gate for and overflow of water from the Ayeyarwaddy river through the Myit Nge river. Paleik Lake water level depends on the water inundation nature and time of the Ayeyarwady River. Generally, the highest water level of Paleik Lake is August – December and lower water level is March to June. The water quality of Paleik Lake is 9.2 ph level.

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 habitats of Paleik Lake are open water with aquatic plants and include *Ottola chordata*, Water Lily, Water Hyacinth (*Eichhornia crassipes*), *Ka – na – phot* (*Enhydra fluctuans lour*) and Water Spinach (*Ipomoea aquatica*).

The wetland habitats support a broad ecological diversity of fish species such as *Channa*, small *Puntius*, *Rhotee* and *Notopterus* and other invertebrate species such as worm, molluscs and crustaceans. Being one of the floodplain areas of Myit Nge river, Paleik Lake supports the riverine ecosystem services of the Myit Nge river and provides feeding and sheltering habitat to large and diverse populations of waterbird species such as Baer's Pochard (Critically Endangered), Greylag Goose, Glossy Ibis, Black-headed Ibis and Oriental Darter and also diving duck species due to abundant aquatic invertebrates.

Paleik Lake provides a variety of riverine ecosystem services to local people for their livelihoods such as food production, through supply of water for rice cultivation and growing of vegetables such as cabbages, corns and other seasonal crops around the lake margin and for fishery, as well as drought prevention and from floods in climate mitigation against extreme weather.

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)

The Paleik Lake has crowded with the aquatic flora species in winter. *Ottelia chordata* and Water Spinach (*Ipomoea aquatic*) are densely blooming in water and covering a large area in the winter season and its plant roots and leaves are a valuable food source and provide resting areas for significant numbers of waterbirds and fish species. Furthermore, the seasonally tall grasses cover nearly one third of the wetland and provides nesting habitat for waterbird species such as Painted Snipe and Pheasant-tailed Jacana and a breeding ground of fish species such as *Notopterus notopterus* and *Anguilla bengalensis* and aquatic invertebrates as snails, worms, molluscs and crustaceans. In addition, the invasive species, Water Hyacinth (*Eichhornia crassipes*) grows densely with Water Lily (*Nymphoides sp.*) in the northern winter season.

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)

Paleik Lake has regularly supported Critically Endangered bird species: Baer's Pochard. Its population has declined rapidly in the last 20 years; its IUCN Red List status changed rapidly from Near Threatened to Critically Endangered, and this site is one of only two remaining wetlands (the other being Pyu Lake) in Myanmar which continue to regularly support a northern wintering population of Baer's Pochard. The other globally threatened species present is Common Pochard (Vulnerable). Note that because of recent droughts affecting Paleik Lake, some waterbirds, including Baer's Pochard and Grey-lag Goose appear to have moved to the nearby Banaw Lake.

In addition, Ferruginous Pochard, Falcated Duck, Black-headed Ibis and Oriental Darter (all Near Threatened) occur regularly and other migratory waterbird species are found in high numbers.

A total of 59 of waterbird species use Paleik Inn (2016-2019 data). Paleik Lake has always provided habitat for diving duck and other waterbird species as well as wetland ecosystem services to local people. At least 56 fish species and one shrimp species have been recorded based on interviews and field surveys (FFI, 2021).

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 Paleik Lake supports threatened species such as Baer's Pochard and other waterbird species and economically important fish species. This habitat provides food for local people, waterbirds and fish species. The Lake is flooded from August to January by water from the Myit Nge river and this is the main period for local fishing. Rice farming is undertaken after the flood period from February and continues until June. Aquatic plants such as *Ottelia cordata* and others are collected whilst the paddies are plowed. Grasses are also harvested in the wet season.

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: X
- 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: X
- 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 Mandalay Region, Government of Myanmar

b) In the surrounding area:

The land is state-owned but some villagers have certain rights of tenure and rights associated with auctioning the use of ponds.

23. Current land (including water) use:

a) Within the Flyway Network site:

Leasable fisheries and farmers

b) In the surroundings/catchment:

Farmers

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:

Past: Before the construction of the Ye Ywar Hydropower dam, the Paleik Lake was flooded regularly from two water sources, the Ayeyarwady river and Myit Nge river.
Present: The water inundation patterns have changed and only dependent on the Ayeyarwaddy river after completion of the Ye Ywar dam in the upstream of Myit Nge river. It has negatively affected native populations of the freshwater fish species such as *Anguilla bengalensis*, *Tenulosa ilisha*, *Osteobrama belangeri* and *Wallago attu*, all of which have rapidly declined. Therefore, leasable fisheries owners regularly stock hatchery-produced fish species into the lake. This has caused a change to the fish community composition from a wild fish dominated one, to a flourishing system of four invasive fish species such as *Pterygoplichthys disjunctivus*, *Oreochromis niloticus*, *Gambusia affinis* and *Trichopodus pectoralis*.
 Furthermore, many small ponds now get dry because the annual temperature has increased from 36 deg C up to 39 deg C in central Myanmar. As a result, drought has affected livelihoods of local communities dependent on agriculture and plantations and loss of habitats for migratory waterbird species.

b) In the surrounding area:

Factors affecting the site’s ecological character are not recorded.

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.

Paleik Lake is recognized as an Important Bird and Biodiversity Area (IBA) and Key Biodiversity Area (KBA), reflecting its national and international importance.

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 ; X V ; VI ; N/A

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

No management plan exists.

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

Plans are underway to develop a management plan.

d) Describe any other current management practices:

Ministry of Natural Resources and Environmental Conservation constituted the Mandalay Region Wetlands Conservation Committee. The current management practices are as below:

- Annual wintering survey and Asian Waterbird Census,
- Education awareness activities on migratory waterbird species and law enforcement in public,
- Identified Paleik Lake as a priority inland wetland to conserve species and habitat by the Mandalay Region Wetlands Conservation Committee.

Furthermore, BANCA has implemented monitoring of migratory waterbirds in Paleik Lake since, 2016. A local conservation group, Paleik Bird Lover Association was established to conserve the biodiversity of Paleik Lake.

26. Conservation measures proposed but not yet implemented:

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

- Ongoing plan to officially designate Paleik Lake as a Ramsar site by the Head of Ramsar Administrative Authority, Forest Department
- Plan to develop a management plan for Paleik Lake

27. Current scientific research and facilities:

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

A Climate Change and Vulnerability Assessment on Paleik Lake was implemented for the conservation of Bear’s Pochard and long-term sustainable of wise use of Paleik Lake. The assessment showed that the habitat is strongly exposed to climatic changes in the dry season, i.e. increased evaporation due to higher temperatures and extended droughts. These can result in lower water levels and habitats shrinking and reduced habitat availability for migratory waterbird species .

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.

A CEPA program has been conducted in the villages and local conservation group in Paleik Lake. It is observed that the local people recognize and understand about the importance of conservation of migratory bird species and the vital role of the wetland. The local villagers and students from three villages near Paleik Lake have attained the awareness of bird and wetland conservation through the information shared about Baer's Pochard conservation and about wetland status, dissemination of booklets on waterbirds of Paleik Lake and wetland conservation talks. Recently, Paleik Bird Lover Association has been working for the wetland conservation in Paleik Lake.

29. Current recreation and tourism:

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

Domestic visitors are low in number.

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		C	P
wood and pulp plantations			
livestock farming and ranching		C	
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	C	P
gathering terrestrial plants	C	P
logging and wood harvesting		
fishing and harvesting aquatic resources	C	P
Human intrusions and disturbance		
recreational activities		P
war, civil unrest and military exercises		
work and other activities		
Natural system modifications		
fire and fire suppression		
dams and water management/use	C	P
other ecosystem modifications		
Invasive and other problematic species and genes		
invasive non-native/alien species	C	P
problematic native species	C	P
introduced genetic material		
Pollution		
household sewage and urban waste water	C	P
industrial and military effluents		
agricultural and forestry effluents	C	P
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	C	P

droughts	C	P
temperature extremes	C	P
storms and flooding		

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

During the bird migration season (from January to April), some local communities usually use poison (by mixing Potassium Cyanide and seeds from the buds of Water Hyacinth (*Eichhornia crassipes*)) to hunt migratory bird species especially diving duck species. Sometimes, electric shock fishing was found in Paleik Lake. Water of Paleik Lake is mainly used for agriculture and over-extraction may reduce water availability for the migratory birds and fishes.

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.

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

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