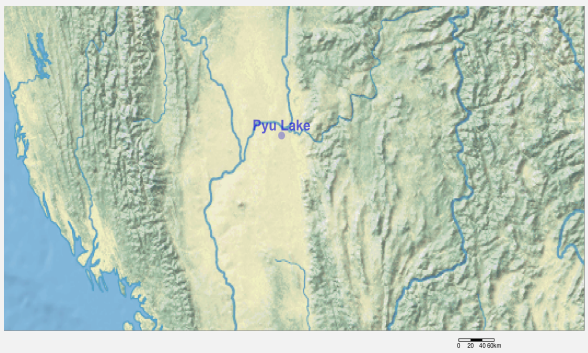
Ramsar Information Sheet

Published on 1 February 2024

Myanmar

Pyu Lake



Designation date	13 June 2023
Site number	2533
Coordinates	21°45'57"N 95°53'22"E
Area	234,00 ha

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

The Pyu Lake is a man-made permanent freshwater wetland constructed mainly for irrigational purposes in central Myanmar. Since it's establishment, it has always provided important resources to species such as Baer's Pochard (a critically endangered species). The Site comprises >1% of the biogeographical population of Baer's Pochard and shelters other migratory diving duck species as well as a high population of common coot due to the presence of abundant aquatic invertebrates such as worms, molluscs and crustaceans. In addition, reed mace plants' roots and leaves in the wetland are of great importance to support the nesting and resting areas of waterfowls. The water of Pyu Lake has been supplied for agriculture to the local people who are living around the lake. The local people utilize the Site for fisheries as well. The Site also helps to mitigate effects of drought, flood and climate change in central Myanmar.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency: Biodiversity and Nature Conservation Association (BANCA)

Postal address:
Building (F),
Room (102),
Parami Condo,
Hlaing Township, 11051
Yangon
Myanmar

National Ramsar Administrative Authority

Institution/agency: Forest Department, Ministry of Natural Resources and Environmental Conservation

Postal address:
Office No (39), Zay Ya Htar Ni Road
15011 Nay Pyi Taw
Myanmar

2.1.2 - Period of collection of data and information used to compile the RIS

From year: 2016

To year: 2022

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish): Pyu Lake

Unofficial name (optional): Pyu Kan

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image
<1 file(s) uploaded>

Former maps: 0

Boundaries description

Coordinates are: N21 46.247 E95 53.858. The Site is located at south-west part of the Mandalay city, near Tada – U Township in the Mandalay Region, central Myanmar. It lies in a semi-urban area adjacent to seven villages (Pyu kan, Moenan chon, Ywaetaw lay, Myinthae kalay, Yaega moe, Sintae and Thangae) and provides irrigation to the surrounding agricultural lands. It is a seasonally flooded wetland and its boundary is allocated on the basis of its highest water level observable in rainy season. In the north, the Site is bordered by Pyu Kan village while in the south, east and west; it is bordered by some farmlands. There is a railway track to its west. When the water level comes down in dry season, a relatively larger area of land is exposed in the west and south side of the Site. Pyu Lake is supplied with water from a cannel coming from Kinda Dam which is located on the Pan Laung River. It is a man-made permanent freshwater lake, which was mainly constructed as a reservoir for storing the overflow water of Kinda Dam. According to the irrigation department's and survey department's data, the Site is about 234 hectares in area.

2.2.2 - General location

a) In which large administrative region does the site lie? Mandalay Region in central Myanmar

b) What is the nearest town or population centre? Tada-U Township in south-western part of the Mandalay City

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes ○ No ◉

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes ○ No ◉

2.2.4 - Area of the Site

Official area, in hectares (ha): 234

Area, in hectares (ha) as calculated from GIS boundaries: 233.764

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
WWF Terrestrial Ecoregions	Irrawaddy moist deciduous forests -Ecoregion IM0117

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Hydrological services provided	The Pyu lake is a near-natural man-made wetland which was constructed around a thousand year ago for irrigational purposes. In the 1980s, the water to the Lake was brought from the Kinda Dam, which lies on the Pan Laung River. Rain water is also one of the major water sources of the Lake. The Site is one of major water sources for irrigation in central Myanmar. Its water is being supplied to more than 1562.89 hectares of agricultural land (mainly used for rice cultivation) spread over seven villages in the Tada –U township. It also helps in storing overflow water coming from the Kinda Dam and in alleviating flood and drought effects.
Other ecosystem services provided	The Site provides habitat to various birds such as Baer's pochard, which is also a critically endangered species. The abundant availability of aquatic macroinvertebrates as prey and dense reed mace plants attract more than 1% of the biogeographical population of Baer's pochard and a high population of common coot. The Site supports local livelihoods of surrounding seven villages by supporting various agricultural and fisheries activities. Rice, pigeon pea, green gram, groundnuts and other seasonal crops are mainly grown in the adjacent agricultural lands."

☑ Criterion 2 : Rare species and threatened ecological communities

Optional text box to provide further information	Pyu Lake has regularly supported Baer's pochard (Critically Endangered) populations. At least 12 individuals are reported from Asian Waterbird Census annually. Baer's pochard populations has declined rapidly worldwide in the last 20 years; it's IUCN Redlist status dropped rapidly from near threatened to critically endangered. In Myanmar, this Site holds the last wintering population of Baer's pochard. This species is also listed in Appendices I and II of the CMS (Convention on Migratory species). Water pollution and heavy abstraction of water from the lakes to irrigate the surrounding farmlands threatens the pochard's habitats. Other globally threatened species such as Common Pochard (Vulnerable), Ferruginous Pochard (Near Threatened), Flacated Duck (Near Threatened), Black – headed Ibis (Near Threatened) and Oriental Darter (Near Threatened) and the other migratory water bird species with high density. 26 individuals of Common Pochard (Aythya ferina) were found in the Site but the population is declining since 2016. This species is also listed on Appendix II of the CMS (Convention on Migratory Species). Similarly, 110 individuals of Ferruginous Pochard have been found here.

☑ Criterion 4 : Support during critical life cycle stage or in adverse conditions

Optional text box to provide further information	The Site regularly supported 8331 individuals of waterbirds from 56 species between 2016-2022 (Asian Water Bird Census 2016-2022). Small size fish such as Amblypharyngodon atkinsonii and Glossogobius giuris, and shrimps are important food organisms for several kinds of bird species. The Site comprises the last wintering population of Baer's pochard in Myanmar; this species is also listed in Appendices I and II of the CMS (Convention on Migratory Species).
End year	2022

Optional text box to provide further information	Baer's pochard: Local surveys reveal that a small population of Baer's Pochard has been regularly wintering at this Site. The average total population of this species at the Site from 2016 to 2022 was 4.6, which is less than the 1% threshold provided by Wetland International (WPE, 2012). Future surveys may however reveal that this species may fulfil this Criterion. Note: surveys during 2019 and 2020 were not conducted due to the Covid-19 Pandemic.

3.2 - Plant species whose presence relates to the international importance of the site

<no data available>

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
Birds																	
CHORDATA / AVES	*Aythya baeri*	☑	☑	☐	☐	☐	☐	☐	☐	5	2016-2022	0.9	CR	☑	☑		Migratory rare species. Site provides wintering habitat for this species It is completely protected species in Myanmar.
CHORDATA / AVES	*Aythya ferina*	☑	☑	☐	☐	☐	☐	☐	☐	50	2022	0.001	VU	☐	☐		Migratory rare species. Site provides wintering habitat for this species It is completely protected species in Myanmar.

1) Percentage of the total biogeographic population at the site

3.4 - Ecological communities whose presence relates to the international importance of the site

<no data available>

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

Pyu Lake is a man-made permanent freshwater lake connected with the Kinda Dam, which is located on the Pan Laung River in central Myanmar. The Lake was primarily used as a reservoir to store water from the Kinda Dam during water overflow or floods. The Site also helps in mitigating the effects of floods, drought and climate change. The Site has abundant green algae, reed mace (Typha angustifolia), Ottelia chordata and water lily. The reed mace plants are particularly important to maintain the populations of aquatic invertebrates and small fishes in the Site. The high abundance of aquatic invertebrates such as worms, molluscs and crustaceans, supports the populations of critically endangered Baer's pochard and other waterbirds including common coot, common moohern, little grebe and pheasant- tailed jacana. In addition, Nymphoides Species (Nymphoides/ Hydrocharis dubia) also provide habitat and food resources for the waterbirds. Populations of Baer's pochard at this Site exceeds its 1% biogeographical population. After the drying of wetlands such as Banaw Inn and Paleik Lake due to unsustainable agricultural practices, this Site has become an important area for wintering birds. Agriculture is one of the primary livelihood sources of the local people. Water from this Lake is abstracted for cultivating rice, vegetables (pigeon pea, green gram and groundnuts) and other seasonal crops. Fishing also takes place here. Presently, large areas around the lake and across the wider Ayeyarwaddy floodplains in Mandalay have been heavily cultivated with crops, while other areas around the undisturbed wetlands are now being encroached upon for settlements and agriculture. Unsustainable agricultural activities such as heavy abstraction of water from the lakes for irrigation and water pollution threatens the Site and the prevailing Baer’s pochard’s habitat.

4.2 - What wetland type(s) are in the site?

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Lakes and pools >> O: Permanent freshwater lakes	Pyu Kan (or) Pyu Lake	1	234	Representative

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/LILIOPSIDA	*Hydrocharis dubia*	Species is not globally threatened but its root and leaves are important to support life cycle of aquatic fauna.
TRACHEOPHYTA/LILIOPSIDA	*Typha angustifolia*	Species is not globally threatened but its root and leaves are important to support life cycle of aquatic fauna.

Invasive alien plant species

Phylum	Scientific name	Impacts
TRACHEOPHYTA/LILIOPSIDA	*Eichhornia crassipes*	Actual (minor impacts)

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
CHORDATA/AVES	*Anas acuta*	280	2016-2022		It is completely protected species in Myanmar and migratory.
CHORDATA/AVES	*Anas clypeata*	187	2016-2022		It is completely protected species in Myanmar and migratory.
CHORDATA/AVES	*Anas crecca*	55	2016-2022		It is seasonal protected species in Myanmar.
CHORDATA/AVES	*Anas falcata*				IUCN: NT
CHORDATA/AVES	*Anas penelope*	110	2016-2022		It is completely protected species in Myanmar and migratory.
CHORDATA/AVES	*Anas poecilorhyncha*	32	2016-2022		It is completely protected species in Myanmar and migratory.
CHORDATA/AVES	*Anas strepera*	182	2016-2022		It is completely protected species in Myanmar and migratory
CHORDATA/AVES	*Anastomus oscitans*	58	2016-2022		It is completely protected species in Myanmar.
CHORDATA/AVES	*Anhinga melanogaster*				IUCN: NT
CHORDATA/AVES	*Anser anser*	60	2016-2022		It is completely protected species in Myanmar and migratory.
CHORDATA/AVES	*Aythya nyroca*				IUCN: NT
CHORDATA/AVES	*Gallinula chloropus*	50	2016-2022		It is completely protected species in Myanmar.
CHORDATA/AVES	*Himantopus himantopus*	150	2016-2022		It is completely protected species in Myanmar.
CHORDATA/AVES	*Hydrophasianus chirurgus*	60	2016-2022		It is completely protected species in Myanmar.
CHORDATA/AVES	*Microcarbo niger*	170	2016-2022		It is seasonally protected species in Myanmar.
CHORDATA/AVES	*Netta rufina*	42	2016-2022		It is completely protected species in Myanmar and migratory.
CHORDATA/AVES	*Nettapus coromandelianus*	109	2016-2022		It is completely protected species in Myanmar.
CHORDATA/AVES	*Phalacrocorax carbo*	60	2016-2022		It is seasonally protected species in Myanmar.
CHORDATA/AVES	*Plegadis falcinellus*	120	2016-2022		It is completely protected species in Myanmar.
CHORDATA/AVES	*Porphyrio porphyrio poliocephalus*	28	2016-2022		It is a protected species in Myanmar
CHORDATA/AVES	*Sarkidiornis melanotos*	8	2016-2022		It is completely protected species in Myanmar and migratory
CHORDATA/AVES	*Tadorna ferruginea*	102	2016-2022		It is seasonally protected species in Myanmar.
CHORDATA/AVES	*Threskiornis melanocephalus*				IUCN: NT

Invasive alien animal species

Phylum	Scientific name	Impacts
CHORDATA/ACTINOPTERYGII	*Oreochromis niloticus*	Actual (major impacts)

Optional text box to provide further information

The Conservation of Biodiversity and Protected Areas Law was enacted in 2018 by the Republic of the Union of Myanmar. According to this law, there are three categories for wild fauna; completely, normally and seasonally protected wild fauna.

Fish diversity:
28 fish species, one shrimp species, one crab species, one snail and one mussel species were recorded in a quick assessment during Winter. Several fish species, including Oreochromis niloticus, Notopterus notopterus, Puntius sp. and Glossogobius sp. have been caught in the lake in recent years.

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
B: Dry climate	BWh: Subtropical desert (Low-latitude desert)

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres): 105

a) Maximum elevation above sea level (in metres): 111

- Entire river basin ☐
- Upper part of river basin ☐
- Middle part of river basin ☐
- Lower part of river basin ☐
- More than one river basin ☐
- Not in river basin ☑
- Coastal ☐

4.4.3 - Soil

- Mineral ☐
- Organic ☑
- No available information ☐

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes ○ No ◉

4.4.4 - Water regime

Water permanence

Presence?	
Usually permanent water present	No change

Source of water that maintains character of the site

Presence?	Predominant water source	
Water inputs from precipitation	☑	No change
Water inputs from surface water	☑	No change

Water destination

Presence?	
To downstream catchment	No change

Stability of water regime

Presence?	
Water levels largely stable	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

Generally, the water level in the Pyu Lake used to be very low between March to June but after being connected with the Kinda Dam, the water level became stable between July to September. Nowadays the lake's water level is reliant on the water discharge from the upstream Kinda Dam. The lake is managed by the Irrigation and Water Utilization Management Department, and the local Water Users Group collaborate to distribute the water to agriculture areas through a network of irrigation canals. The lake is hydrologically connected with the Ayeyarwady River through the irrigation canals and downstream tributary network.

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site ☐

Significant accretion or deposition of sediments occurs on the site ☐

Significant transportation of sediments occurs on or through the site ☐

Sediment regime is highly variable, either seasonally or inter-annually ☐

Sediment regime unknown ☑

4.4.6 - Water pH

Acid (pH<5.5) ☐

Circumneutral (pH: 5.5-7.4) ☐

Alkaline (pH>7.4) ☐

Unknown ☑

4.4.7 - Water salinity

Fresh (<0.5 g/l) ☐

Mixohaline (brackish)/Mixosaline (0.5-30 g/l) ☐

Euhaline/Eusaline (30-40 g/l) ☐

Hyperhaline/Hypersaline (>40 g/l) ☐

Unknown ☑

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic ☐

Mesotrophic ☐

Oligotrophic ☐

Dystrophic ☐

Unknown ☑

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself: i) broadly similar ○ ii) significantly different ◉

Surrounding area has greater urbanisation or development ☐

Surrounding area has higher human population density ☐

Surrounding area has more intensive agricultural use ☑

Surrounding area has significantly different land cover or habitat types ☐

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	not relevant for site
Fresh water	Water for irrigated agriculture	High
Wetland non-food products	Fuel wood/fibre	Medium
Biochemical products	Extraction of material from biota	Medium

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Climate regulation	Local climate regulation/buffering of change	High

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Recreational hunting and fishing	High
Recreation and tourism	Nature observation and nature-based tourism	High
Spiritual and inspirational	Spiritual and religious values	High
Scientific and educational	Educational activities and opportunities	not relevant for site
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	High
Scientific and educational	Long-term monitoring site	High
Scientific and educational	Major scientific study site	High

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part	High
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	High
Nutrient cycling	Carbon storage/sequestration	High

Optional text box to provide further information

This Site provides ecosystem services that are critical for the livelihoods of some of the poorest people in the dry zone of Myanmar such as food, regular water supply for crop cultivation and protection from extreme weather. Presently, large areas around the lake and across the wider Ayeyarwaddy floodplains in Mandalay have been heavily cultivated with crops, while other areas around the undisturbed wetlands are now being encroached upon for settlements and agriculture. Unsustainable agricultural activities such as heavy abstraction of water from the lakes for irrigation and water pollution threatens the Site and the prevailing Baer's pochard's habitat.

Outside the site: 10000s R, 1000s V

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes ○ No ◉ Unknown ○

4.5.2 - Social and cultural values

i) the site provides 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) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland ☐

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples ☐

iv) 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 ☐

<no data available>

4.6 - Ecological processes

(ECD) Primary production	The seasonal, marginal vegetation and green algae are found and reeds are stable as there is no agriculture expansion. It is growing faster and naturally in shallow water or even wet mud. Water lily covers a small portion of the lake.
(ECD) Notable species interactions, including grazing, predation, competition, diseases and pathogens	The seasonal emergent vegetation and open water with green algae, Nymphaea (water lily) and Ottelia cordata provide food for various species. Typha angustifolia provides a roosting area for migratory and nesting sites for residence waterbird species.
(ECD) Notable aspects concerning migration	Pyu Lake seldom gets too dry as water is drained by agriculture for plantation of seasonal crops in dry season. Then, renovation of lake by doing Irrigation Department has caused the loss of the habitat of migratory bird species as their feeding ground.
(ECD) Pressures and trends concerning any of the above, and/or concerning ecosystem integrity	Marginal and seasonal vegetation are the most vulnerable to climate change mainly drought, and migratory bird species are not able to migrate and survive in the lake. Due to sedimentation, the quality of vegetation is degraded and slowly becomes shallow.

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	☑	☐
Provincial/region/state government	☑	☐

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Cooperative/collective (e.g., farmers cooperative)	☐	☑

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site: Irrigation Department, General Administration Department , Mandalay Regional Government , Forest Department

Provide the name and/or title of the person or people with responsibility for the wetland: Director, Irrigation Department, Mandalay Region

Postal address: Tada U Township, Postal code- 05131, Kyeiksee District, Mandalay Region

E-mail address: admin@bancanmm.org

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Annual and perennial non-timber crops	Medium impact	Medium impact	☑	☑

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Fishing and harvesting aquatic resources	Medium impact	Medium impact	☑	☑

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Invasive non-native/ alien species	High impact	High impact	☑	☑

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Garbage and solid waste	High impact	High impact	☑	☑

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Droughts	High impact	High impact	☑	☑

5.2.2 - Legal conservation status

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Other non-statutory designation	Pyu Lake - EAAFP Flyway Network Site	https://www.eaaflyway.net/wp-content/uploads/2023/11/EAAF155-SIS_Pyu-Lake-270923.pdf	whole

5.2.3 - IUCN protected areas categories (2008)

Ia Strict Nature Reserve ☐

Ib Wilderness Area: protected area managed mainly for wilderness protection ☐

II National Park: protected area managed mainly for ecosystem protection and recreation ☐

III Natural Monument: protected area managed mainly for conservation of specific natural features ☐

IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention ☐

V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation ☐

VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems ☐

<no data available>

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Partially implemented

Habitat

Measures	Status
Catchment management initiatives/controls	Implemented

Species

Measures	Status
Threatened/rare species management programmes	Partially implemented

Human Activities

Measures	Status
Management of water abstraction/takes	Partially implemented
Communication, education, and participation and awareness activities	Partially implemented
Research	Partially implemented

5.2.5 - Management planning

Is there a site-specific management plan for the site? No

Has a management effectiveness assessment been undertaken for the site? Yes ○ No ◉

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes ○ No ◉

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No, but restoration is needed

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Birds	Implemented
Animal species (please specify)	Proposed
Water quality	Proposed

Monitoring of animal species (fish) is proposed. Climate change Vulnerability Assessment (VA).

Main Objectives of the Vulnerability Assessment:
The main objectives of the assessment were to conduct Climate Change Vulnerability Assessments for Pyu and Paleik Lakes, assessing the vulnerability of livelihoods, ecosystems and species to climate threats, and to work with stakeholders to develop adaptation solutions to mitigate the identified risks. The assessment incorporated community workshops and expert consultations with WWT and IUCN, to predict the potential implications of climate change on habitats, species and livelihoods. The assessment also covered villages that rely on wetland resources for their livelihoods, and assessed how these resources are affected by climate change. Based on the present vulnerabilities and the future climate change predictions, the study anticipates further vulnerabilities in the future at least up to 2079. The assessment has also provided recommendations for adaptation to avoid the worst cast future scenario.

Results of the Vulnerability Assessment:
The results highlighted a number of threats to the wetlands including increased risk of floods and drought from climate change, loss of habitat due to agricultural encroachment, illegal hunting and unsustainable fishing methods, pollution resulting from agricultural run-off and poor sanitation, and invasive species. All of the wetland habitats are under moderate level of climate vulnerability and threat from agricultural conversion.

With climate change, the monsoon season is shortening, temperatures are getting warmer with frequent extreme heat days, and groundwater availability has lessened in dry areas. The Pyu lake in particular is being exposed to increasing higher temperatures in the dry season and droughts in the rainy season. Droughts in the rainy season has began to affect the local livelihoods and the habitats of migratory waterbirds. These changes also poses a risk to livestock, human health, and wetland species including Nga-phal, Typha angustifolia, Ottelia chordata, Aythya baeri, Anser anser, Aythya ferina and Aythya nyrca. However, seasonal emergent and marginal vegetations were found to be more resilient to future effects of climate change. Overall, the assessment shows that decision-makers in Pyu lake need to plan for the variability of rainfall that is being caused from climate change.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

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.
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.
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. Biodiveristy And Nature Conservation Association report. 31pp.
The Conservation of Biodiversity and Protected Areas Law 2018. The Pyidaungsu Hluttaw Law No 12/2018.
Zaw, T.S, L.Win, M.T.Zaw, T.D.W. Aung 2020. The status of non-breeding Baer's Pochard at key sites in central Myanmar. Biodiversity And Nature Conservation Association report

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)
<1 file(s) uploaded>

ii. a detailed Ecological Character Description (ECD) (in a national format)
<no file available>

iii. a description of the site in a national or regional wetland inventory
<no file available>

iv. relevant Article 3.2 reports
<no file available>

v. site management plan
<no file available>

vi. other published literature
<no file available>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:


waterbird habitat in Pyu Lake (*Thiri Dae We Aung, 09-05-2019*)


Northeast part of the lake. Open water, green algae and diving duck species are visible. (*BANCA, 02-06-2020*)


waterbird habitat in Pyu Lake (*BANCA, 01-01-2021*)


Southern part of the Lake during rainy season (*Thiri Sandar Zaw, 10-10-2022*)


Eastern part of Pyu Lake during dry season. Open water with algae and tall grasses are visible. (*Thiri Sandar Zaw, 04-04-2022*)


East to west part of the Lake Visible. Area with open water where villagers bathe and wash clothes during dry season. (*Thiri Sandar Zaw, 09-05-2023*)


Northern part of the Lake. Open water with green algae visible. (*Thiri Sandar Zaw, 07-10-2022*)


Southern part of the Lake. Stands of reed mace and tall grasses with few waterbirds are visible. (*Thiri Sandar Zaw, 07-01-2022*)

6.1.4 - Designation letter and related data

Designation letter
<1 file(s) uploaded>

Date of Designation: 2023-06-13