Designation date: 17/11/2004 **Ramsar Site no. 1431**

Information Sheet on Ramsar Wetlands (RIS) – 2009-2014 version

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

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

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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

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17	11	04			1	4	3	1	
Designation date			Site Reference Number						

Mr. Win Naing Thaw
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2. Date this sheet was completed/updated:

20 March 2013

3. Country:

Republic of the Union of Myanmar

4. Name of the Ramsar site:

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

Moeyungyi Wetland Wildlife Sanctuary

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

This RIS is for (tick one box only)**:**

a) Designation of a new Ramsar site ❑; or

b) Updated information on an existing Ramsar site ✓

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

a) Site boundary and area

The Ramsar site boundary and site area are unchanged: ❑

or

If the site boundary has changed:

i) the boundary has been delineated more accurately ✓; or

ii) the boundary has been extended ❑; or

iii) the boundary has been restricted** ❑

and/or

If the site area has changed:

i) the area has been measured more accurately ✓; or

ii) the area has been extended ❑; or

iii) the area has been reduced** ❑

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

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

[None]

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7. Map of site:

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

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

i**) a hard copy** (required for inclusion of site in the Ramsar List): ❑; ✓

ii**) an electronic format** (e.g. a JPEG or ArcView image) ❑; ✓

iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** ❑.

b) Describe briefly the type of boundary delineation applied:

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

The boundary coincides exactly with the nationally-established Moyingi Wetland Wildlife Sanctuary. On three of its four sides the boundary follows linear water-retention embankments, and on the eastern (upstream) side it follows the outer boundary of wetland habitat (linked to elevation contours).

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

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

Centre: 17º 32'57" N ; 96º 36' 58" E.

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

The site is situated in the Bago region, 114 km from Yangon city, approximately 24 km west of the Sittaung River and 45 km north of the coast. It is 1.2 km east of the Yangon-Mandalay highway and Pyinbongyi village in the Bago Township. The villages of Wunbe-in and Payagale are also close by, along the highway to the south of Pyinbongyi.

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

The elevation ranges from 7-11m above sea level.

11. Area: (in hectares)

10,359 hectares.

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12. General overview of the site:
Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The site is a shallow rectangular human-made reservoir bounded on three sides by embankments. It floods in the wet season (May - October), and from October to March hosts over 20,000migratory waterbirds. These include the globally threatened Baer's Pochard *Aythya baeri*, Sarus Crane *Grus antigone* and Greater Spotted Eagle *Aquila clanga,* as well as >1% of the regional population of the Northern Pintail *Anas acuta.* The site is also important for supporting the vulnerable Burmese Eyed Turtle *Morenia ocellata.*

The water at the site is drawn down through sluice-gates to irrigate rice-fields downstream, and the site becomes progressively drier through the dry season leaving flat areas of mud, grassland, marsh and some permanent open water to a maximum depth of 2m. The local communities use the site for fishing, grazing, duck-rearing and some rice-growing; and there is a small tourist facility for visiting birdwatchers.

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

1	2	3	4	5	6	7	8	9
☐	✓	☐	☐	✓	✓	☐	☐	☐

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14. Justification for the application of each Criterion listed in 13 above:
Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

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

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

Species Name	Common Name	IUCN Red List	CITES	CMS
Aythya baeri	Baer's Pochard	CR		I,II
Grus antigone	Sarus Crane	VU	II	II
Aquila clanga	Greater Spotted Eagle	VU	II	I, II
Morenia ocellata	Burmese Eyed Turtle	VU	I	

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

Six waterbird count totals from the period 1994-2001 (Davies *et al*., 2004) averaged 9,063 and no individual year's total topped 20,000, indicating that the site did not meet this criterion over that period. More recently however there is a survey from November 2009 to March 2010 (Wildlife Sanctuary data, unpublished) which gave an average of 23,937 and a peak of 32,861; and a survey from February 2012 (Wildlife Sanctuary data, unpublished) which gave a total of 21,927 waterbirds. Peak numbers normally occur in January, and these surveys are transect-based, so they may underestimate the true total numbers currently supported.

The site may even qualify under Criterion 5 on the basis of one species alone, since the 2009-2010 survey includes a count of 20,000 Northern Pintail *Anas acuta*.

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").

The East and South-East Asian population of Northern Pintail *Anas acuta* is estimated at 200,000-300,000, and the commonly accepted 1% threshold for this species is 2,400birds (5th Edition Waterbird Pop. Estimates http://wpe.voidwalkers.nl/view/2270).

Unpublished Wildlife Sanctuary data for Moyingi in 2009-2010 include a monthly Northern Pintail average of 15,000 (6%) and peak of 20,000 (8%); while a survey in February 2012 (January is normally the month of peak numbers) gave a figure of 8,000 birds (3.2%). .

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15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):
Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Sitang (Sittaung) - Irawaddy.

b) biogeographic regionalisation scheme (include reference citation):

Sitang-Irawaddy is Ecoregion 720 in Abell *et al.* (2008) - Freshwater ecoregions of the world: a new map of biogeographic units for freshwater biodiversity conservation. Bioscience 58(5): 403-414.

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

The entire site consists of a shallow rectangular man-made freshwater storage reservoir in a mostly flat floodplain area, constructed in 1878 by bunding. It is bounded on three of its four sides by linear water-retention embankments of up to 9 m in height.

Water flows in from the west, from two main streams and one smaller one (the Pyinpon, Pha Yar Ka Lay and Wanbei In). Outflow is through one main stream in the south-east (Zwebat), another smaller one in the north-east (Kabin/Binchidaing), and some small channels to the south.

The monsoon climate features temperatures ranging from 20-33º C and average annual rainfall of around 3,000 mm, most of which falls in the wet season from May to October, with a peak in July and August.

In the wet season the site floods over its entire surface area, with maximum water levels of around 4.3 m being reached in September, and minimum depths of around 0.8 m at this time. Water is drawn down through sluice-gates on the outflow channels to irrigate rice fields downstream, and the site becomes progressively drier through the dry season leaving flat areas of mud, grassland, marsh and some

permanent open water to a maximum depth of 2 m. Earlier maps show only a small area of this permanent open water in the centre of the northern part of the site, but in reality a larger area of some 1,500 ha persists year-round, in the north-western part. The water has pH6.5

17. Physical features of the catchment area:

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

The site is surrounded by agricultural land, much of which is flat and seasonally flooded in the prevailing monsoonal climate. The original vegetation of lowland tropical rainforest or moist deciduous forest was probably cleared several hundred years ago. The geology of the area is predominantly alluvial, and soils are mostly sandy loams. There are four other water storage reservoirs in the upstream catchment. The catchment rises to the Bago Yoe Ma hills, where the headwaters have their source.

18. Hydrological values:

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

Originally constructed as a reservoir to provide water to the Bago-Sittaung canal (linking the Bago and Sittaung rivers) for transport of timber by boat, the site now functions as a source of fresh water for downstream areas where rice cultivation takes place.

The reservoir also provides some incidental flood control benefit, and there is a flood protection embankment adjacent to the site on its northern edge (outside the designated area).

19. Wetland Types

a) presence:

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

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

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

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

b) dominance:

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

The whole of the site comprises a human-made reservoir and thus 100% of the area is type **6**. Inundation however varies seasonally, so this type 6 reservoir is made up of the following inland types, in descending order of dominance: **P** (11.72%) and O (88.28%).

20. General ecological features:

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

The site is a human-made seasonally-flooded freshwater reservoir, consisting entirely of open water, reedbeds and emergent aquatic vegetation in the height of the wet season (August-September), and at other times of year having a varying mix of exposed mud, marsh plant communities (lotus, water lilies, reeds and aquatic grasses), areas of rice cultivation and some permanent open water. A few trees and shrubs grow on the embankments. Clumps of vegetation periodically break free to form floating islands.

There is a varied breeding bird community, and from October to March the site supports large congregations of migratory waterbirds. It performs an important role for birds in the wider landscape by providing a roost-site (in trees) for egrets and (on floating islands) for raptors, and some of the waterbird groups move on a daily basis between the site and the nearby Gulf of Mottoma.

Principal ecosystem services include irrigation water supply, subsistence fishing and farming, and tourism (see section 25 below).

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21. Noteworthy flora:

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

Several species of lotus *Nymphaea* spp and *Netumbo* spp occur widely in the site.

Invasive species include the Giant Sensitive Tree *Mimosa pigra* growing along the northern boundary, and a modest extent of Water hyacinth *Eichhornia crassipes*.

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22. Noteworthy fauna:

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

Over 70 species of waterbirds have been recorded at the site (see species list appended), with large congregations of migrants being present during the northern winter. This includes especially high numbers of Northern Pintails (up to 20,000), with up to 5,000 Little Egrets, 5,000 Purple Swamphens, 2,000 Asian Openbilled Storks, and 2,000 Little Cormorants (most of these recent figures are from one year only). Other species include Painted Stork, Spot-billed Pelican, Black-headed Ibis, Lesser Whistling Duck, Baer's Pochard, Cotton Pygmy Goose, Pheasant-tailed Jacana, Bronze-winged Jacana, Whiskered Tern, Greater Spotted Eagle, Oriental Pratincole and Pacific Golden Plover. Sarus Cranes are resident.

Three of the bird species are globally threatened: Sarus Crane, Baer's Pochard and Greater Spotted Eagle; while Black-headed Ibis and Spot-billed Pelican are classified as near-threatened.

At least 48 fish species occur in the site (see species list appended), including Striped Snakehead, Great Snakehead, Grey Featherback, Walking Catfish, Swamp Eel and Spotted Spiny Eel.

Two species of turtle that are endemic to Myanmar are present: Burmese Eyed Turtle *Morenia ocellata* (IUCN Red List status: Vulnerable), and Burmese Flapshell Turtle *Lissemys scutata* (IUCN Red List status: Data Deficient).

Snakes include the Reticulated Python *Python reticulatus (= Broghammerus reticulatus)* and the Burmese Python (Rock Python) *Python molurus bivittatus*; both of which are listed on CITES Appendix II.

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23. Social and cultural values:

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

There are cultural traditions associated with the use of the site (and surrounding area) for fishing; such as ceremonies to propitiate against harm to fishermen from snakes (though these ceremonies are not unique to this area).

Pyinbongyi village, adjacent to the site, is well-known for its production of dried fish (*Channa* spp) from the area.

A small Buddhist temple is situated on an island in the northern part of the site.

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?

No.

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

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

a) within the Ramsar site:

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 the use of ponds can be auctioned.

25. Current land (including water) use:

a) within the Ramsar site:

The site formerly stored and supplied water for timber transport by boat. Nowadays it is used as a source of fresh water for adjacent rice-growing areas, enabling the fields to yield two crops per year. Water storage is managed by sluice gates under the control of the Ministry of Agriculture Irrigation Department in conjunction with the regional government of Bago Region. Inflow from the western side of the site is through two main gates and one smaller one (the Pyinpon, Wanbei In and Pha Yar Ka Lay streams). Outflow is through two gates on the rivers leaving the site to the east (the main one being the Zwebat in the south-east, and the smaller being the Kabin/Binchidaing in the north-east); with around six smaller gates on the streams leaving the site to the south.

There are long-established small-scale fishing activities, using traps, nets and hook & line, some small incidental collection of freshwater shellfish and some poaching of other wildlife at an insignificant level.

An area of up to 400 ha within the western part of the Ramsar Site is subject to rice cultivation by villagers from the adjacent village of Pyinbongyi.

There is some small-scale (but rapidly increasing) domestic duck-rearing, and some cattle/water-buffalo grazing.

Some use is made of fibres from the lotus plants in weaving cloth, but the extent of this use in the Ramsar site is small.

b) in the surroundings/catchment:

The wider area around the reserve is inhabited by around 30,000 people in some 15 villages who depend on fishing and rice farming for their livelihood. Frogs are also collected for food. Fishing rights are licensed by the Ministry of Livestock & Fisheries by competitive tender. At times of low water levels some redistribution of water in areas surrounding the site takes place by sluice management and pumping.

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

a) within the Ramsar site:

Management of the site is not fully coordinated. While the Forest Department in the Ministry of Environmental Conservation and Forestry is responsible for the conservation of the Wildlife Sanctuary, the Irrigation Department in the Ministry of Agriculture and Irrigation is responsible for the upkeep of the reservoir dykes walls and sluice gates. Each year in February the Irrigation Department releases water from the reservoir to supply the surrounding rice fields. The Forest Department have had no formal role in influencing the decision-making on this, and there are concerns that excessive draw-down dries the site too much and for too long, negatively impacting the waterbird populations that are present in the site at this time of year.

The Irrigation Department plans (2012) to repair and increase the height of the retaining embankments by about 0.6m, with a view to increasing water levels in the site. The potential environmental impacts (positive or negative) of this have not yet been assessed.

Sedimentation is said to be progressively increasing in the site.

Local authorities have allowed expansion of rice-growing inside the site against the recommendations of the Forest Department.

The small-scale fishing activities with traps, nets and hook & line are not regarded as having an adverse effect on fish populations, although the disturbance caused to birds when this takes place in prohibited core areas can be a problem. Instances of illegal electro-fishing occur and these are more harmful.

The unofficial (though long-established) domestic duck-rearing which takes place in the site is also regarded as undesirable, and the extent of this is rapidly increasing.

The impact of the uncontrolled cattle/water-buffalo grazing is unknown.

Lack of resources for management of the Sanctuary is cited as a key negative factor, including a shortage of funds, equipment, trained staff and capacity to undertake biological monitoring and enforcement wardening patrols.

b) in the surrounding area:

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

Pesticide use in rice fields in the surrounding area is said to be increasing. Most of this relates to areas downstream of the Ramsar site, but the situation needs to be monitored.

Some unlicensed fishing activities take place.

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27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:
In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

The site was established as a Wetland Wildlife Sanctuary in 1988 for the protection of waterbirds and their habitats.

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

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

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

There is no management plan for the site.

d) Describe any other current management practices:

The sanctuary is wardened by up to six field staff, with others looking after the education centre, office and other facilities.

Wardens patrol the site to deter and detect unauthorised activities, and a guard post (there were formerly three) is maintained at the entry point in the north-west of the site. Capacity for this is low, with at present only one boat available for patrols.

A broad zonation approach is adopted for guiding visitor access and fishing use. No access or fishing is allowed in the *core zone* (in the central-eastern part of the site, where waterbird nesting takes place). Research can be undertaken in the *transition zone*, and access for other authorised purposes is permitted in the *buffer zone*.

Officially no fishing is permitted in the core and transition zones of the Ramsar site but the low-level use of nets and hook & line in the buffer zone is generally tolerated as its impact is small. Enforcement action is however taken against instances of electrofishing when these are detected, generally involving instruction to leave the area but also including confiscation of equipment.

Water hyacinth is native but invasive. This is not a major problem to date but occasionally its growth blocks the channels used by boats, and it is then removed manually.

Surveys and monitoring of birds and fish are also carried out.

28. Conservation measures proposed but not yet implemented:

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

Proposals are being drawn up in 2012 for a package of externally-supported management capacity support measures. It is hoped that this may lead to the development of a long-term management plan for the site.

Discussions have begun in 2012 to put in place a negotiation process between the Forest Department and Irrigation Department concerning water level management in the site.

Management options in the upper catchment are being considered by the Forest Department of Forests to address concerns about increasing sedimentation in the site.

29. Current scientific research and facilities:

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

In 1999 the Wild Bird Society of Japan, supported by the Ministry of the Environment of Japan, carried out a baseline study of the site, including research on the fauna and flora, and water quality.

Midwinter bird counts are undertaken (though data are yet to be collated in an available form), and bird surveys have been carried out by the Biodiversity and Nature Conservation Association of Myanmar (BANCA) and the Myanmar Bird and Nature Society (MBNS).

Students and staff from the Universities at Yangon and Bago conduct fish surveys and other research at the site.

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

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

A small education centre has been established but it is need of renovation, new equipment, additional literature and posters etc. Some information on fauna, flora and geography is provided, but the Ramsar status of the site is not yet referred to, either in the centre or in external signage.

Some CEPA activities are being conducted for local students. The sanctuary staff wish to initiate similar programmes for the wider local community

Local awareness of the fishing restrictions in the site is said to be good; although adherence to these is variable.

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

In 1998, the Forest Department contracted the private Shwe Pyi Aye Travel & Tour Company to develop the site for wildlife tourism and operate it as a joint venture with the Department. Boardwalks, a restaurant and accommodation for visitors have been installed near to an entry point in the north-west of the site.

Visitors come mainly for birdwatching, including being taken around the site by small open boat. The main visitor season is generally from around November until January, February or March (depending on the seasonal fall in water levels). Overnight stays have averaged around 60 per year since 2007, with up to an additional 50 day-visitors recorded at the visitor centre; (excluding local school groups etc), although casual visitors to other parts of the site are likely to make for a higher total overall.

A viewing tower for birdwatching was constructed close to the accommodation area but was destroyed by Cyclone Nargis in May 2008. Subject to funding being found, the intention is to build up to three new towers of the same kind.

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

Bago Region.

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

Mr. U Khin Maung Hla (Park Warden),
Nature and Wildlife Conservation Division, Forest Department, Ministry of Environmental Conservation and Forestry, Nay Pyi Taw.

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

Abell *et al.* (2008). Freshwater Ecoregions of the World: a new map of biogeographic units for freshwater biodiversity conservation. Bioscience 58(5): 403-414.

Das, I (2010). A field guide to the reptiles of Thailand and South-East Asia. Asia Books Co Ltd.

Davies J, Sebastian AC and Chan S (2004). A Wetland Inventory for Myanmar. Ministry of the Environment, Japan.

Delany S and Scott D (2006). Waterbird Population Estimates, fourth edition. Published by Wetlands International.

Istituto Oikos and Biodiversity and Nature Conservation Association of Myanmar (2011). Myanmar protected areas: context, current status and challenges. Ancora Libri, Milan.

Partnership for the East Asian-Australasian Flyway (2010). Flyway Species Population Estimates. Available at http://www.eaaflyway.net/population-estimates.php .

Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
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Annex 1: List of waterbirds recorded at Moyingyi Wetland Wildlife Sanctuary

Over 130 bird species in total have been recorded in the Moyingi Wetland Wildlife Sanctuary Ramsar site. The waterbirds are as follows:

	English name	Scientific name	Myanmar name
1	Little Grebe	*Tachybaptus ruficollis*	Tazi Hmout
2	Sarus Crane	*Grus antigone*	Gyo Gya
3	Glossy Ibis	*Plegadis falcinellus*	Hkayu Sok
4	Black-headed Ibis	*Threskiornis melanocephalus*	Hkayu Sok Ahpa
5	Red-naped Ibis	*Pseudibis papillosa*	Hkayu Sok Ahpya
6	Spot-billed Pelican	*Pelecanus philippensis*	Wun Po
7	Great White Pelican	*Pelecanus onocrotalus*	Setkatwet
8	Painted Stork	*Mycteria leucocephala*	Hnget Kya
9	Asian Openbill	*Anastomus oscitans*	Hnget Kya
10	Woolly-necked Stork	*Ciconia episcopus*	Ghi Gyin Sut
11	Eurasian Spoonbill	*Platalea leucorodia*	
12	Little Egret	*Egretta garzetta*	Byaing
13	Great Egret	*Casmerodius albus*	Byaing Ngan
14	Intermediate Egret	*Mesophoyx intermedia*	Tharrawaddy Byaing
15	Eastern Cattle Egret	*Bubulcus coromandus*	Kyew Kyaung
16	Grey Heron	*Ardea cinerea*	Nga Hit
17	Purple Heron	*Ardea purpurea*	Nga Hit Mwe
18	Indian Pond Heron	*Ardeola grayii*	Byaing Auk
19	Chinese Pond Heron	*Ardeola bacchus*	Byaing Auk
20	Black-crowned Night Heron	*Nycticorax nycticorax*	Lin Wet
21	Cinnamon Bittern	*Ixobrychus cinnamomeus*	Sat Byaing
22	Darter	*Anhinga melanogaster*	Uban
23	Little Cormorant	*Phalacrocorax niger*	Din Gyi
24	Great Cormorant	*Phalacrocorax carbo*	Din Gyi
25	Lesser Whistling Duck	*Dendrocyna javanica*	Sit Sali
26	Comb Duck	*Sarkidiornis melanotos*	
27	Ruddy Shelduck	*Tadorna ferruginea*	Hintha
28	Northern Pintail	*Anas acuta*	Be Yit
29	Garganey	*Anas querquedula*	Be Bya Galay
30	Common Teal	*Anas crecca*	Be Gaung Gya
31	Northern Shoveler	*Anas clypeata*	
32	Baer's Pochard	*Aythya baeri*	
33	Tufted Duck	*Aythya fuligula*	
34	Spot-billed Duck	*Anas poecilorhyncha*	Wun Be
35	Cotton Pygmy Goose	*Nettapus coromandelianus*	Kalaget
36	Purple Swamphen	*Porphyrio porphyrio*	Baung Dok
37	Common Moorhen	*Gallinula chloropus*	Ye Gyet
38	White-breasted Waterhen	*Amaurornis phoenicurus*	Ye Gyet Ma
39	Common Coot	*Fulica atra*	Ye Gyet Don
40	Watercock	*Gallicrex cinerea*	
41	Pheasant-tailed Jacana	*Hydrophasianus chirurgus*	Kyar Phat Ninn
42	Bronze-winged Jacana	*Metopidius indicus*	Bi Gya
43	Ruddy-breasted Crake	*Porzana fusca*	
44	Slaty-breasted Rail	*Gallirallus striatus*	
45	Eastern Water Rail	*Rallus indicus*	
46	Common Snipe	*Gallinago gallinago*	Sanaik
47	Pintail Snipe	*Gallinago stenura*	
48	Spotted Redshank	*Tringa erythropus*	
49	Common Greenshank	*Tringa nebularia*	
50	Black-tailed Godwit	*Limosa limosa*	
51	Marsh Sandpiper	*Tringa stagnatilis*	
52	Green Sandpiper	*Tringa ochropus*	
53	Wood Sandpiper	*Tringa glareola*	
54	Common Sandpiper	*Actitis hypoleucos*	

	English name	Scientific name	Myanmar name
55	Black-winged Stilt	*Himantopus himantopus*	Daung Lan Chidauk
56	Little Ringed Plover	*Charadrius dubius*	
57	Kentish Plover	*Charadrius alexandrinus*	
58	Greater Sand Plover	*Charadrius leschenaultii*	Dilone Gaung
59	Pacific Golden Plover	*Pluvialis fulva*	Talaing Gaung
60	Oriental Pratincole	*Glareola maldivarum*	Thaung Din
61	Grey-headed Lapwing	*Vanellus cinereus*	Tit Tit Du
62	Temminck's Stint	*Calidris temminckii*	
63	Little Tern	*Sterna albifrons*	Myit Hwe
64	Whiskered Tern	*Chlidonias hybridus*	Myit Hwe
65	White-winged Tern	*Chlidonias leucopterus*	
66	Brown-headed Gull	*Chroichocephalus brunnicephalus*	Zin Yaw
67	Western Marsh Harrier	*Circus aeruginosus*	Daung Sun
68	Eastern Marsh Harrier	*Circus spilonotus*	Daung Sun
69	Osprey	*Pandion haliaetus*	Wun Let
70	Common Kingfisher	*Alcedo atthis*	Bein Nyin
71	White-throated Kingfisher	*Halcyon smyrnensis*	Bein Nyin
72	Black-capped Kingfisher	*Halcyon pileata*	Bein Nyin
73	Grey wagtail	*Motacilla cinerea*	Mi Nyanut Hnget
74	Black-browed Reed Warbler	*Acrocephalus crochalus*	
75	Blunt-winged Warbler	*Acrocephalus concinens*	
76	Oriental Reed Warbler	*Acrocephalus orientalis*	
77	Pallas' Grasshopper Warbler	*Locustella certhiola*	

Annex 2: List of fish recorded at Moyingyi Wetland Wildlife Sanctuary

	Family	Scientific name	Myanmar name	English name*
1	Adrianichthyidae	*Oryzias minutillus*	Nga chi kha	Dwarf medaca
2	Ambassidae	*Parambassis ranga*	Nga zin zat	Glass fish
3	Anabantidae	*Anabas testudineus*	Nga pyae ma	Climbing perch
4	Anguillidae	*Anguilla bicolor*	Nga lin ban	Indonesian shortfin eel
5	Badidae	*Badis ruber*	Nga mee laung	Red chameleon fish
6	Bagridae	*Aorichthys aor*	Nga gyaung	Long-whiskered catfish
7	Bagaridae	*Mystus bleekeri*	Nga zin yine	Day's mystus
8	Bagaridae	*Mystus cavasius*	Nga zin yine	Gangetic mystus
9	Bagaridae	*Mystus pulcher*	Nga zin yine	Pulcher mystus
10	Bagaridae	*Mystus vittatus*	Nga zin yine	Stripped dwarf catfish
11	Bagridae	*Mystus microphthalmus*	Nga ike	Freshwater cat fish
12	Belonidae	*Xenentodon cancila*	Nga phaung yoe	Freshwater gar fish
13	Channidae	*Channa gachua*	Nga gaung doe	Dwarf snakehead
14	Channidae	*Channa marulius*	Nga yant dainn	Great snake head
15	Channidae	*Channa orientalis*	Nga yant	Walking snakehead
16	Channidae	*Channa panaw*	Nga panaw	Snakehead fish
17	Channidae	*Channa striata*	Nga yant	Striped snakehead
18	Cichilidae	*Oreochromis niloticus*	Tilapia	Nile tilapia
19	Clariidae	*Clarias batrachus*	Nga khu	Walking catfish
20	Cobitidae	*Lepidocephalichthys berdmorei*	Nga tha le doe	Burmese loach
21	Cobitidae	*Lepidocephalichthys hasseltii*	Nga tha le doe	Loach
22	Cyprinidae	*Amblypharyngodon mola*	Nga be phyu	Mola carplet
23	Cyprinidae	*Cyprinus carpio*	Shwe wa nga gyin	Carp
24	Cyprinidae	*Esomus danricus*	Nga mort tort	Flying barb
25	Cyprinidae	*Oreichthys cosuatis*	Nga khonema daung shae	Hi-fin barb
26	Cyprinidae	*Osteobrama belangeri*	Nga phant ma	Manipur osteobrama
27	Cyprinidae	*Osteobrama cunma*	Nga phant ma	Cunma osteobrama
28	Cyprinidae	*Puntius chola*	Nga khone ma	Swamp barb
29	Cyprinidae	*Puntius sophore*	Nga khone ma	Pool barb
30	Cyprinidae	*Puntius tetrarupagus*	Nga khone ma	Swamp barb
31	Cyprinidae	*Rasbora neilgherriensis*	Nga daung zin	Slender rasbora
32	Gobiidae	*Glossogobius giuris*	Ka tha boe	Bar eyed goby, Tank goby
33	Heteropneustidae	*Heteropenustes fossilis*	Nga gyee	Stinging catfish
34	Latidae	*Lates calcarifer*	Ka ka dit	Barramundi
35	Mastacembelidae	*Macrognathus aculeatus*	Nga mway doe	Lesser spiny eel
36	Mastacembelidae	*Macrognathus zebrinus*	Nga mway doe	Zebra spiny eel
37	Mastacembelidae	*Mastacembelus armatus*	Myawe na ga, Nga mway htoe kyar	Zig-zag eel
38	Nandidae	*Nandus marmoralus*	Nga wat ma	Gangetic leaffish
39	Notopteridae	*Notopterus notopterus*	Nga phe	Bronze feather back
40	Osphronemidae	*Osphronemus goramy*	Nga phyinn thalat	Giant gourami
41	Osphronemidae	*Trichogaster labiosus*	Go yar mee	Thick lipped gourami
42	Osphronemidae	*Trichogaster pectoralis*	Be larr, Go yar mee lay	Snakeskin gourami

	Family	Scientific name	Myanmar name	English name*
43	Schilbeidae	*Pseudeutropius auctirostris*		Schilbid catfish
44	Siluridae	*Ompok bimaculatus*	Nga nu than	Butter catfish
45	Siluridae	*Wallago attu*	Nga bat	Wallago, Boal, Freshwater shark
46	Synbranchidae	*Monopterus albus*	Nha shint ni	Asian swamp eel
47	Synbranchidae	*Monopterus cuchia*	Nga shint mwe	Spotted spiny eel, Cuchia eel
48	Tetraodontidae	*Monotrete leiurus*	Nga pu tin	Puffer fish

**Source: Fishbase*