Designation date: 02/02/2013 Ramsar Site no. 2095

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 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.

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

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DD MM YY

Designation date | Site Reference Number

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2. Date this sheet was completed/updated:

July 22nd 2012

3. Country:

Sri Lanka

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.

Wilpattu Ramsar Wetland Cluster
(Wilpattu Thethbim Samuhaya - *in Sinhala*)
(Wilpattu Sathappu Nilankal - *in Tamil*)

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 ❑

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:

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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:
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.

Entire Wilpattu National Park, marine wetlands in western coast up to 10 km , Kalaoya estuary, Modaragam aru estuary and Mahawilachchiya fresh water reservoir fall within the Ramsar site. The Ramsar site is larger and extends beyond the National Park, especially on the seaward side..

Northern Boundary: Moderagam Ara River, Kalu Ara River, Mannar-Anuradhapura District Boundary
Southern Boundary: Kalaoya River and Estuary
Western Boundary: Indian Ocean (up to 10km from western coast, to include Battalangunduwa and Palliyawatte Islands).
Eastern Boundary: Main Park Entrance and Office in Hunuwilagama, and Malwatu-oya River

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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.

Geocoordinates of Center of Site: 8º 32’ 27’’ N and 80º 10′ 1’’ 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.

With an area of 131,693 ha, the Wilpattu National Park (WNP) is the largest in Sri Lanka and lies across the North Western, and North Central provinces in Sri Lanka, 30km west of the city of Anuradhapura.

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

The altitude ranges from mean sea level to 152 m asl.

11. Area: (in hectares)

The area of Ramsar site is 165,800ha, of which Wilpattu National Park is the major component.

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 landscape of WNP is primarily composed of dry zone high forest with lianas and thorny scrub, interrupted by extensive open plains and some 40 major water holes known as Villus or "Vill" rimmed by sand dune and/or sandy plains. Although these Villus resemble lakes, they are flat saucer-shaped basin like depressions on the earth surface containing rain water, with no water inlet or outlet. All these villus are situated in WNP and their size ranges from 10 ha to 160ha. The western sector of Wilpattu is covered with dense forests, plains, grasslands and a few large water bodies. Many species of flora can be seen in Wilpattu National Park. The vegetation in the park includes littoral vegetation, including salt marsh and low scrub immediately adjacent to the beach and further inland, monsoon forest. Two main rivers border the Wilpattu National Park – the Kalaoya in the South, and the Moderagam Ara in the North. The mangroves form the prominent coastal vegetation type in Wilpattu, mainly confined to the Kala-oya estuary in the south-western border of the park. This healthy estuarine mangrove system is the largest mangrove forest in the island and extends upstream 2 km from the river mouth, with its extent estimated to be ca. 621.1 ha. The near-shore marine area is a highly productive area for fisheries, while it also harbors sea grass beds that attract the globally endangered Dugong for feeding. The site supports at least 347 (i.e. as recorded to date) inland vertebrate species, which includes 23 species of fresh water fish, 17 species of amphibians, 57 species of reptiles, 204 species of birds, and 41 species of mammals.

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
☑	☑	☐	☑	☐	☐	☐	☑	☐

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 1:

Wilpattu functions as a unique ecotone that consists of a mixture of natural coastal and inland wetlands, terrestrial natural vegetation types, and ancient man-made irrigation systems. The site is also the only place in the Ceylonese Monsoon Forest bioecoregion and in Sri Lanka where the unique 'Villu' wetland system is found. Villus are natural shallow depressions of the landscape. The shape may be circular, oval or irregular with no outlet for the accumulated water, hence villus are periodically filled with water. From periphery to the center, the terrain is of very low gradient, often not exeeding 10 degrees. Wilpattu supports two types of villu units, brackish and freshwater, and they are juxtaposed in the central part of the site making the area conducive for a large array of wild fauna and flora

Criterion 2:

Among the fauna in the site, 23 species appear in CITES appendices, while 12 are listed in CMS appendices (see Table below).

Scientific Name	English Name	IUCN Status	CITES Status	CMS Status	National Status
Fish					
Hippocampus kuda	Common Sea Horse	VU	II		
Reptiles					
Crocodylus palustris	Freshwater Crocodile	VU	I		LC
Birds					
Leptoptilos javanicus	Lesser Adjutant	VU			VU
Mammals					
Elephas maximus	Asian Elephant	EN	I		VU
Bubalus arnee	Wild Water Buffalo	EN			VU
Panthera pardus ssp. kotiya	Sri Lankan Leopard	EN	I		VU
Prionailurus viverrinus	Fishing cat	EN	II		VU
Prionailurus rubiginosus	Rusty Spotted Cat	VU	I		VU
Melursus ursinus	Sloth Bear	VU	I		EN
Macaca sinica	Toque Macaque	EN	II		NT
Dugong dugon	Dugong	VU	I	II	
Balaenoptera musculus	Blue Whale	EN	I	I	EN
Physeter macrocephalus	Sperm Whale	VU	I	I, II	VU
Rhincodon typus	Whale shark	VU			VU

Criterion 3:

The proposed area harbours breeding populations of 21 species of vertebrates that are endemic to Sri Lanka, hence contributing to maintaining the biological diversity at a regional as well as global level. These include several endemic species of birds: the Sri Lanka Junglefowl (*Gallus lafayetti*), Sri Lanka Green Pigeon (*Treron pompadora*), Grey Hornbill (*Ocyceros gingalensis*), Black-capped Bulbul (*Pycnonotus melanicterus*), Brown-capped Babbler (*Pellorneum fuscocappilum*), Ceylon Hanging-parrot (*Loriculus beryllinus*), Ceylon Small Barbet *(Megalaima rubricapillus),* Crimson-backed Flameback (*Chrysocolaptes stricklandi),* Ceylon Swallow *(Hirundo hyperythra),* Ceylon Woodshrike (*Tephrodornis affinis)*.

The proposed area is a known as a 'paradise' for avifauna, with over 50% of the bird species occurring regularly in Sri Lanka being recorded here. The diversity of wetland and terrestrial habitats within this area contributes to sustain a high diversity of bird species.

Criterion 4:

The Kalaoya estuary serves as important refuge areas for the juvenile stages of commercially important crustaceans such as *Penaeus* spp., and *Macrobrachium* spp.

Sri Lanka is the final, and a major, destination for many species of migratory aquatic birds along the Central - South Asian Migratory Flyway. The array of inland and coastal wetlands in the proposed area provides ideal feeding and resting habitats for over 30 species of migratory aquatic birds, e.g., waterfowl such as Northern Pintail *Anas acuta,* Garganey *Anas querquedula*; shorebirds such as Lesser Sand Plover *Charadrius mongolus*, Black-tailed Godwit *Limosa limosa*, Marsh Sandpiper *Tringa stagnatilis*; gulls and terns such as Great Black-headed Gull *Larus ichthyaetus,* Brown-headed Gull *Larus brunnicephalus,* Lesser Crested Tern *Thalasseus bengalensis,* Whiskered Tern *Chlidonias hybrida*, which arrive here to avoid the cold seasons in their breeding areas in numerous localities across a large part of the Asian continent to its Arctic North.

The proposed area is home to over 40 species of resident waterbirds. It provides nesting for diverse species of many families, e.g. Spot-billed Pelican *Pelecanus philippensis*, Oriental Darter *Anhinga melanogaster*, Woolly-necked Stork *Ciconia episcopus*, Lesser Adjutant *Leptoptilos javanicus* (VU in the National Red List), Pheasant-tailed Jacana *Hydrophasianus chirurgus*, Greater Painted-snipe *Rostratula benghalensis*, Black-winged Stilt *Himantopus himantopus*, Indian Stone-curlew *Burhinus indicus* and Lesser Pied Kingfisher *Ceryle rudis*. Wilpattu NP is one of the best-known areas in the country to observe the White-bellied Sea-eagle *Haliaeetus leucogaster*, a large raptor which feeds in the sea and inland waters, indicating a healthy, rich food chain.

The sea grass beds in the Indian ocean adjoining Wilpattu are a feeding habitat of the globally vulnerable Dugong (*Dugong dugon*), and the globally vulnerable sea horse (*Hippocampus kuda*)**.**

Criterion 8:

The Kalaoya and Moderagam ara estuaries, fall within the the Ramsar site, in the area serve as important spawning areas of commercially important crustaceans such as *Penaeus* spp., and *Macrobrachium* spp, and also offer refuge to their juvenile stages. The Indian Ocean adjacent to Wilpattu, as a part of Ramsar site, supports a thriving near-shore fishery, due to the release of nutrients accumulated in the estuaries, especially during rainy seasons.

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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:

Ceylonese Monsoon Forest of Indomalayan Realm (Biome: Tropical and Subtropical Dry Broadleaf Forests)

b) biogeographic regionalisation scheme (include reference citation):
Udvardy, M. D. F. (1975). *A classification of the biogeographical provinces of the world*. IUCN Occasional Paper no. 18. Morges, Switzerland: IUCN.
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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.

Geology and mineralogy: On the west coast a high cliff of two strata of tertiary sandstone forms Kudiremalai and in the upper series and it overlays with littoral sands forming some dunes, but interspersed with rich alluvial earth. Towards the interior, the rocks change in character from Jaffna limestone to Vijayan series, which is a complex conglomerate of super-crystal rocks, including crystalline limestone and granitic gneiss (Cooray, 1984; Modder, 1908). Other soil types include clays, in areas of major river systems and their tributaries (Eisenberg and Lockhart, 1972). The central portion is dominated by a series of natural waterholes or 'Vil', some of which are permanent. Among them, Kokkari vila is an enormous sheet of water and saline and Nalla-tani vila is pure fresh water (Modder, 1908).

Climate: The general climatic features resemble that of adjoining areas in the dry and arid zone of the island. Based on rainfall, the year can be subdivided into four periods; (1) the great dry monsoon extending from about the beginning or middle of May to middle of October; (2) the first rains from the middle of October to end of December; (3) the lesser dry season from the beginning of January to the middle or end of March; and (4) the latter rains from that time till the beginning of middle of May (Modder, 1908). The mean annual temperature is 27.2 ºC, average mean relative humidity is 85%, and total annual precipitation is 1000mm, based on long-term records at Pomparippu (Modder, 1908; Mueller-Dombois, 1968).

Surface waters: The Wilpattu National Park is situated between two river basins (Kala Oya and Modara Gam Aru) and both rivers are fresh water and perennial. The national parks

surface water resources include natural and ancient irrigation water resources. The natural water sources include perennial rivers, streams (perennial and seasonal), villus (perennial and seasonal), and seasonal (temporary) water holes. Ancient irrigation water resources include tanks (perennial and seasonal) and seasonal (temporary) water holes. There are 40 major villus and water holes and five rivers and tributaries in the Wilpattu National Park (Eisenberg and Lockhart, 1972). In addition the Department of Wildlife Conservation has dug up several water holes after the park was reopened in 2003. All the water sources, except for 8 villus are fresh water. These 8 villus are brackish and they are the only brackish water inland water bodies in Sri Lanka. There are no observations made on eutrophication at any of these water bodies in Wilpattu National Park. Furthermore as reported in the archaeological resources section, 205 water bodies were identified within the boundary of the park (both natural and man-made). The archaeological investigations carried out revealed that at least 87 of them are man-made ancient tanks. However most of them have been abandoned for a long period of time.

Major perennial and seasonal water sources

Perennial	**Seasonal**
Kok Ariya Tank	Maila Villu
Maradan maduwa Tank	Periya Villu
Marawila (Marai Villu)	Maha Pathassa
Lunuwila	Periya Naga Villu
Thalawila	

Note: Tank refers to an ancient irrigation reservoir

When considering the areas that are open to visitors, the main villu (also includes tanks and temporary water holes) system is situated in the middle of the park where a cluster of more than 20 large and small villus and water holes are concentrated. This cluster of water bodies includes Kokkariya villu, Kanchuran villu, Kumbuk vila, Maha Pathassa, Kuda Pathassa, Demata vila and Lunu Vila. There are concentrations of large mammals in this cluster of water bodies frequently.

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17. Physical features of the catchment area:
Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

Kala Oya, and Modaragam ara are the main rivers flowing along the boundaries of the Wilpattu National Park. Kala Oya catchment extends up to Naula hills. These mountain ranges physiographically belong to uplands with elevations ranging from 305 m to 915 m and slope varying from 10° to 35°. Lower catchment of Kala Oya and entire catchment of Modaragam ara are generally flat except for some scattered inselbergs. Physiographically lower catchment belongs to coastal lowlands with elevation ranging from sea level to 305 m and slope ranging up to 15° (Vitanage 1972).

Geologically eastern part of the lower catchment belongs to the Wanni complex lithotectonic unit while the western coastal areas underlain by Miocene limestone and Red beds. Flood

plains and estuaries of these rivers are filled with alluviul clay and beach sand. Upper catchment of Kala Oya belongs to the Highland Complex and mainly composed of metasedimentary rocks such as quartzite, marble, pelitic gneisses. Structurally NNE-SSW trend can be recognized in rock bands and fold axes. Reddish brown earths and low humic gley soils and red yellow latosols are the main soil types of the catchment areas (Irrigation Department Sri Lanka, 1988).

The catchment area of both Kala Oya and Modaragam ara rivers belongs to the dry zone of Sri Lanka. North-eastern monsoon and inter monsoon are the main sources of rainfall in the area. Mean annual rainfall of the lower catchment is 1000mm (Pomparippu) whereas in the upper catchment it increases up to 1265 mm (Naula). Mean annual temperature varies between 27.2^{0}C (Pomparippu) and 25.6 ^{0}C (Naula) across the catchment area.

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

The two perennial rivers – Kalaoya and Modaragam ara provide fresh water for villages bordering the park, for domestic water needs, and irrigation of agricultural lands. A cluster of sinkholes located in the karst terrain form water bodies such as Kokkariya villu, Kanchuran villu, Kumbuk vila, Maha Pathassa, Kuda Pathassa, Demata vila and Lunuvila. They have varying depths and mostly filled with sand and clay. These water bodies are favored by large mammals such as the elephant, sambar, deer, and buffalo. These wetlands also harbor a rich aquatic biodiversity. The extensive tract of mangrove along Kalaoya contributes to stabilize the bank of these rivers, and provides nesting habitats for water birds and the mugger crocodile. Ground water table highly fluctuate in the area depending on the seasonal rainfall continuous high evaporation. Sink holes and solution cavities in the karst terrain are the main groundwater reservoirs in the western part of the national park. On the eastern part the fracture zones in the metamorphic hard rock helps recharge water bodies.

The only barrier islands found in Sri Lanka are located north of Kalpitiya peninsular. They are formed by northward migrating sand, discharged to the western coast by the rivers. Ridge and runnel topography and coastal ponds can be observed on newly developing barrier islands. Uninterrupted gradual growth of these islands will extend the Kalpitiya peninsular further north resulting in a northward migration of the Puttalam lagoon.

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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.

A>O>M>6>F>E>I>Tp>Xf>H>2>Others

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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.

Main Habitats, Vegetation Types, and Plant Communities:

A description of the wetland and terrestrial habitats is provided below. The characteristic plants in these habitats are provided in Annex 1.

(a) Inland wetland ecosystems

The flood plain habitat has forests that are almost similar to riverine forest, in structure and composition. Forest canopy height is about 20m-30m with a fairly closed canopy. Sub-canopy (12m) and shrubs/herbs (0.5m-3m) layers can also be distinguished. Unlike in riverine forests, relatively large patches of grass can be found in these floodplain forests.

Swamps occur as isolated depressions in the Wilpattu landscape. The soil in swamps consist of hydric soil – a soil that is saturated long enough to develop anaerobic conditions that favor the growth and regeneration of water loving vegetation. Swamps are characterized by mainly two vegetation cover types; Swamp forests dominated by trees growing up to 15m-25m and Herbaceous swamps with 1m-2m high dominant herb cover. Unlike herbaceous swamps, swamp forest have three basic strata; A closed canopy (15m-25m), Shrubs layer (3m-5m) and herb layer up to 1m.

Some of the ponds and reservoirs in Wilpattu are man-made (i.e., Maradanmaduwa tank) irrigation structures. Unlike villus, they have a clearly visible water outlet channel(s) and the body of water is surrounded by a narrow belt of wetland vegetation even during dry months. These are found in association with the stream network of Wilpattu. Several sub habitat types can be recognized in these wetlands, in relation to the temporal and spatial availability of water, from the edge to the center of the water body; occasionally/seasonally flooded edge forest, occasionally/seasonally flooded dryland grassland, seasonally flooded damp grassland, swamp community, marsh community, and lentic community.

Wet Villu or "Vill" grassland habitat are the most ecologically significant and aesthetically unique landscape unit of Wilpattu. It is found in natural shallow saucer-shaped depressions of the landscape. The shape may be circular to oval with no outlet for accumulating water, hence Villus are semi-permanently or periodically filled with water. From the periphery to the center, the terrain is of very low gradient, often not exceeding 10 degrees, hence in response to fluctuating water levels, several vegetation belts or zones have established from edge to the center of the water body. These include occasionally flooded edge forest, occasionally flooded

dryland grassland, seasonally flooded damp grassland, swamp community, marsh community, and the lentic community. The perimeter area of villus harbour a rare primitive fern allies such as *Isoetes coromandelina* (Isoitacae).

(b) Coastal and marine ecosystems

Mangroves: The mangroves of Wilpattu are mainly confined to the south-western part of the park where Kala Oya river meets the sea. This healthy estuarine mangrove system is the largest patch in the country and extends upstream 2 km from the river mouth (IUCN & CEA, 2006), with its extent estimated to be ca. 621.1 ha (Vithanage, 2006). As in many other mangrove ecosystems in the dry coastal regions of Sri Lanka, *Rhizophora mucronata* and *Avicinnia marina* are the major constituent species. Apart from Kala Oya estuarine mangrove system, some other smaller isolated pockets of mangroves could be located in certain locations along the western coastal belt, especially at Palugahature.

Salt marshes: Saltmarsh is an intertidal complex plant community dominated by herbs (up to 0.25m) and low growing shrubs (upto 1.5m). There is a clear structural distinction between saltmarsh and mangroves - which is an intertidal community dominated by trees. The sites become extremely dry during the prolonged dry period (April-August) and consequently excessive evaporation intensifies salinity. Often crystallized free salt can be seen. Plant communities in these habitats include perennial herbs including *Salicornia brachiata* and *Suaeda maritima* as the dominant ones that cover the bare ground, with prostrate and upright shoots. Usually, the ground is 75% bare soil and sedges such as *Cynodon dactylon* and *Cyperus* spp. are found in an intermixed manner.

Sea grasses beds: Extensive sea grass patches are common in and around river estuaries and shallow sea bed off the coast of WNP and around of two off shore islands Battalangunduwa, and Palliawatta. Sea grass communities are considered as one of the most productive ecosystems in the world. The sea grass *Siringodium isoetifolium* is found in the deeper areas, while 1-4 m deep areas mostly dominated by *Enhalus acaroids*, and two Cymodocea species. Among the smaller species *Halodule uninervis* and *Halophila ovalis* grows in shallower area (<0.5m), and the community changes to much smaller species such as *Halodule pinifolia* and *Halophila decipiens.* Around coastal waters in of Battalangunduwa island, a rare sea grass species *Halophila baccarii* was recorded.

The beach vegetation is found in western part of the park in places where the land is gently sloped towards the sea. The physiognomy and floristic composition of the beach flora and associated minor sand dunes depend on the extent and steepness of the shore and the degree of ground stability. The vegetation is located in the zone beyond the direct impact of waves and tides and supports a tree cover (4m-6m) , scattered creepers (0.5m) and small shrubs(1m) which help consolidation of surface soil by restricting wind induced erosion and by providing resistance to removal of sand by occasional sea water.

(c) Forest and forest-related plant communities

The Tropical dry mixed evergreen forests (DEF) are the typical dry zone climax forests found in Wilpattu, which consist of three recognizable vegetation strata; 20m-30m high continuous tree canopy, sub canopy up to 15 m, shrubs up to 5m and herbaceous plants below 1m. Based

on the species composition and height of vegetation, several sub-types of the DEF occur in Wilpattu. These include the tall forests with a canopy layer of >20m, medium-height forests, dwarf forests and rock-outcrop forests.

The tropical thorn forests (scrublands) are thick impenetrable thorny or spiny and woody vegetation growing up to 4m-6m in height. Two major strata can be recognized; shrub canopy and the herbaceous (up to 0.5m) plants growing underneath. The ground layer abounds with herbaceous life forms since it receives intense sun light.

The riverine forests occur as narrow as a few meters when located in association with minor streams, and over 10m wide in the flat areas on the lower reaches of rivers. Vegetation height is about 15m-25m with almost a closed canopy belt of forests. Sub-canopy (10m) and shrubs/herbs (0.5m-3m) layers can also be distinguished. General luxuriance compared to other forests makes it more akin to rain forests, where lianas are an important constituent of the forest structure. This vegetation type also has a considerably high floristic richness, with tall evergreen species such as *Terminalia arjuna, Madhuca longifolia* and *Diospyros malabarica*, being dominant. Well developed riverine forests are associated with Kala Oya and Modaragan Ara rivers.

The Dry Patana grasslands are common towards the western part of the WNP, especially in association with scrublands. They occur in a patchy manner, mostly on lands where the localities have been disturbed in historical times. These grasslands have a simple vegetation structure; just the sea of closely grown grassy cover ranging between 0.1m-1m in height. Often, isolated and scattered trees (up to 20m) and shrub (up to 3m) species can also be seen.

Animal Communities:

Systematic surveys on fauna carried out by IUCN in 2004-2005, and observations on avifauna carried out by the Ceylon Bird Club in 2003-2012 have enabled to document a total of 347 vertebrate species, belonging to 112 families, which represents 46% of the inland indigenous vertebrate species composition in the island. These included 29 endemics and 27 nationally threatened species (see Table 1). The vertebrate fauna consisted of 29 species of fresh water fish belonging to 9 families (Annex 3), 17 species of amphibians belonging to 4 families (Annex 4), 57 species of reptiles belonging to 15 families (Annex 5), 204 species of birds belonging to 64 families (Annex 6), and 41 species of mammals belonging to 21 families (Annex 7). The only invertebrate group surveyed was butterflies, which included 86 species belonging to five families (Annex 8). Of them one species is endemic, while five species are considered as nationally threatened.

Table 1: Species richness of fauna in Wilpattu National Park

Group	Total Species	Endemic Species	Threatened Species
Freshwater fish	29	04	02
Amphibians	17	03	--
Reptiles	56	08	07
Birds	204	10	05
Mammals	41	04	13
Butterflies	86	01	05

Ecosystem Services of the Site:

This undisturbed and continuous stretch of coastal belt with a mixture of wetland and terrestrial ecosystems/habitats offer numerous ecosystem services, as summarized below:

Ecosystem service category	Service types	Details
Provisioning services	Fisheries Resources (coastal and near-shore fin fish and shell fish)	Many local communities in the area depend on fisheries related livelihoods
	Non-timber forest products	Local communities harvest seasonal fruits and other leafy vegetables from the forest and wetlands
	Freshwater	The scattered water holes, irrigation tanks, and rock outcrop ponds provide drinking water for local communities, domestic cattle, and other wildlife.
	Fodder for domestic cattle	The villagers tender cattle in patches of coastal grasslands in the area
Supporting services	Sustenance of a rich biodiversity	The area supports a rich diversity of plants and animals, and provides resting and feeding habitats for large populations of migratory water birds.
	Breeding grounds for marine fish	The coastal wetlands such as mangrove and estuaries offer spawning grounds for marine fish
Regulating services	Groundwater recharge	The streams, rivers, tanks, water holes scattered in the area contributes towards groundwater recharge.
Cultural services	Sites of religious significance	Several historical Buddhist stupas and aranyas are located in Wilpattu.
	Recreation	Being the largest National Park in Sri Lanka, Wilpattu is a popular destination to observe wildlife.
	Archaeological sites	The area was settled by an ancient civilization dating back to 2nd century BC. Several archaeological sites are scattered in the area.

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.*

Wilpattu functions as an important gene bank for a number of economically useful plants, such as medicinal plants (i.e., *Asparagus falcatus*, *Coccinia grandis*, *Crinum defixum* , *Eclipta prostrata*, *Gymnema sylvestra*, *Tylophora indica*), wild crop relatives (i.e., *Oryza eichingeri* and *Oryza perrinis*), fruit plants (i.e., *Schleichera oleosa*, *Syzygium cumini*, *Tamarindus indica*, *Walsura trifoliolata*, *Ziziphus rugosa*), and dry zone timber species (i.e., *Chloroxylon swietenia*, *Diospyros ebenum*, *Manilkara hexandra*). About 21 species of nationally threatened plant species occur in Wilpattu (see Annex 2 for list of threatened plants). Two rare mangrove species, *Scyphiphora hydrophyllacea*, Gaertn.f. (Rubiaceae) and *Cynometra iripa* Kostel (Fabaceae) have been recorded in Gange wadiya (south-western border of WNP). The sand dunes harbour a rare endemic tree species - *Cassine balae (Celastraceae) ('Neralu').*

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.*

See information under Section 14.
At the villus, the varying salt content offering a corresponding range of floral and faunal food, are communities of waterbird species, both resident and migrant, representative of their diversity throughout Sri Lanka. Several of these are named in Section 14 under Criterion 4. Maradanmaduwa Tank in Wilpattu NP is a well-known site in the country to observe a nesting community of the larger waterbirds - Spot-billed Pelican *Pelecanus philippensis*, Painted Stork *Mycteria leucocephala*, Asian Openbill *Anastomus oscitans*, Black-headed Ibis *Threskiornis melanocephalus*, etc.

The Black-necked Stork *Ephippiorhynchus asiaticus* is rated CR in the National Red List, and probably has been for the last 50 years the rarest bird in Sri Lanka, with a population estimated at less than 20. Its stronghold is the forest complex in the S-E. of the country. Wilpattu NP (in the N-W.) is one of only 3 other sites in which it has been recorded during that period.

More than 130 non-aquatic bird species occur in Wilpattu NP; its importance for these, too, is reflected above. The extensive tracts of fine monsoon [or appropriate alternative term] forest and the plains provide excellent nesting and feeding habitats for the resident taxa among them
In the forest at Wilpattu mixed-species feeding flocks occur with a compositions typical of the dry zone of Sri Lanka, ranging from a few to most of the following resident, endemic and migrant spp.: Ceylon Jungle fowl *Gallus lafayetii*, Chestnut-winged Cuckoo *Clamator coromandus*, Black-rumped and Crimson-backed Flamebacks *Dinopium benghalense* and *Chrysocolaptes stricklandi*,, Small Minivet *Pericrocotus cinnamomeus*, Pied Flycatcher-shrike *Hemipus picatus*, Ceylon Woodshrike *Tephrodornis affinis*, the resident and migrant spp. of Asian Paradise Flycatcher *Terpsiphone paradisi*, Black-naped Blue Monarch *Hypothymis azurea*, Black-capped Bulbul *Pycnonotus melanicterus*, Common Iora *Aegithina tiphia*, Gold-fronted and Jerdon's Leafbirds *Chloropsis aurifrons* and *C. jerdoni*, Asian Brown and Brown-breasted Flycatchers *Muscicapa dauurica* and *M. mutttui*, Dark-fronted Babbler *Rhopocichla atriceps*, Bright-green and Large-billed Warblers *Phylloscopus nitidus* and *P. magnirostris*, Velvet-fronted Nuthatch *Sitta frontalis*, Purple-rumped Sunbird *Leptocoma zeylanica*, Oriental White-eye *Zosterops palpebrosus*, Black-hooded Oriole *Oriolus xanthornus*, Black and Greater Racket-tailed Drongos *Dicrurus macrocercus* and *D. paradiseus*. Others, e.g. Tickell's Blue Flycatcher *Cyornis tickelliae* and Brown-capped Babbler *Pellorneum fuscocapillus* join "waves" within their territories.

Wilpattu NP is the only site where the rare Malabar Trogon *Harpactes fasciatus* has been recorded in dry-zone non-riverine habitat in recent times, an indicator of the quality of its tall monsoon forest.

The marine area of the proposed Ramsar site harbors many species of marine mammals. About 15 species of marine mammals have been recorded within the proposed Ramsar site boundary and the adjoining Kalpitiya bar reef sanctuary area and off the coast of Kandakuliya, Talawila area. These include the Blue Whale (*Balaenoptera musculus*), the largest living animal in the world. The rare Bryde's Whale *(Balaenoptera edeni*) sightings have also been confirmed

recently. The shallow marine area is also a refuge for over 1000+ resident pod of Spinner Dolphin (*Stenella longirostris)*. Rare Rough-toothed Dolphin (*Steno bredanensis)*have also been recorded recently in this area. In the area around Kalpitiya, an unusually large gathering (200+) of Sperm whales (*Physter macrocephalus*) was recorded in April 2012, which is the largest group citing of this species around Sri Lankan waters ever recorded. The sea grass beds bordering the shallow coastal waters of WNP is an important habitat of the globally threatened Dugong (*Dugong dugon*).

Apart from the marine mammals, the largest fish in the world, Whale shark *(Rhincodon typus)* frequently visit this area for feeding. Another rare deep sea living shark species, Crocodile shark *(Pseudocarcharias kamoharai)* which is a specialized inhabitant of the mesopelagic zone (ca. 200m) have also been recorded on several occasions from this area.

Wilpattu harbors breeding populations of the nationally threatened large mammals; Elephant (*Elephas maximus maximus*), Wild Water Buffalo (*Bubalus amee*), Leopard (*Panthera pardus kotiya*) and the Sloth Bear (*Melursus ursinus*). The shallow marine region within the proposed Ramsar site harbors many species of globally significant marine mammals.

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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:

A total of 68 archaeologically important sites were recorded in Wilpattu during the survey carried out by IUCN. Four of them were Miocene fossil sites. Eleven sites belonged to prehistoric periods (Paleolithic, and Mesolithic). Several sites represent evidences of both prehistoric and historic periods. Forty-three (BRW sites, Burials, settlements, and monasteries) were identified as a combination of proto-historic and historical sites.

Much legend and history is associated with the park and its immediate surroundings.
Tammanna Nuwara, where King Vijaya is said to have landed in about 500BC and founded the Sinhalese race, is said to be between Kudiramalaya point and Moderagam Ara mouth in Wilpattu. According to legend, Vijaya married Kuveni, the Yaksha Princess, whose palace lies in ruins at Kali Vila (a villu wetland in Wilpattu), and ruins near the Kokmotai bungalow are also sojourned by Kuveni. Galbendi Neeravia which is located north-east of Maradanmaduwa tank, is supposed to be the place where the Prince Saliya, the son of King Dutugamuu, lived with his bride, Asokamala, some 2000 years ago (Samaraweera, 1970).

Kudiremalai, or "*Hippurus protum*" has to be a port to which a freedman of Annius Plocamus (who farmed the customs of the Red Sea in the region of Emperor Claudius of Rome), was unexpectedly driven after having been blown off the coast of Arabia in a violent tempest, and whose passage is said to have been fifteen days (Modder, 1908). According to another legend, the gulf of Kalpitiya had no opening to the northward, but communicated with the sea by canal running through in the line of present Chilaw canal; the queen called

Alliarasani used to proceed from Kudiremalaya to Akkaripattu by land; and that a great flood came, buried her palace under the waves, and busting through a neck of land, converted the lake in to a gulf, which from it still retains (Modder, 1908). Mukuwas is tribal people who call themselves as a "Mukuger" from "Kuga", migrated in to Kudiremalaya, and they emigrated to other part of the Island, and in course of time formed several settlements (Modder, 1908).

Present socio-economic values in the fringing areas show greater diversity; communities in southeastern part and western islands totally depend on fishing, those in other parts mainly depend on agriculture. In those agricultural areas man made reservoirs are utilized for one important secondary purpose, inland fishing.

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?

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:

The proposed area was once a thriving civilization based on irrigated agriculture, as evident from the structures scattered in Wilpattu. Nearly 205 water bodies are found in the 1:63000 survey maps within the park premises. Among them 87 sites can be traced as ancient tanks, most of which are abandoned at present. Twelve marshy sites which are located downstream of the tanks can be identified as ancient paddy lands. During the survey carried out by IUCN, two wild rice species (*Oryza rufipogon* and *Oryza rhizomatis*) were recorded from several of these locations.

Other archaeological structures that depict the ancient civilizations in Wilpattu include ruins of several Buddhist monasteries, stupas, and rock inscriptions.

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:

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24. Land tenure/ownership:

a) within the Ramsar site:

State (under the jurisdiction of the Department of Wildlife Conservation)

b) in the surrounding area:

North, South, and East – private lands.

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25. Current land (including water) use:
a) within the Ramsar site:

Biodiversity conservation (National Park under the Department of Wildlife Conservation).

b) in the surroundings/catchment:

Western marine area: Commercial and subsistence fisheries
Terrestrial areas: Mainly agricultural land

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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:

The main conservation issues documented during a survey carried out by IUCN in 2005-2006 included the following:

Encroachments and habitat destruction: Some blocks of land in the south western part of the park have been encroached by people for subsistence agriculture and settlements. Usually, they indulge in slash and burn cultivations, which leads to degradation of forest, and soil erosion. Other issues associated with such encroachments include the use of agrochemicals in the buffer zone, collection of firewood, livestock grazing, and poaching.

Timber extraction: According to the local informants and field evidence, illegal timber extraction activities for commercial purposes are common especially in the south western part of the park. The Palugahatura and Kudiramalaya fishing sites consume a significant amount of fire wood and timber from adjacent forest for their daily cooking needs and camp sites.

Poaching: Poaching is carried out by individuals and organized gangs, in the peripheral areas of the park, especially in south, south west and west. Evidence of hunting was found even in deep inside the park, where several hunting points frequented by illegal poachers were observed during the study. This situation was aggravated due to the park being closed for visitors for two decades, as a result of terrorist activities. However, poaching has been reduced significantly due to the regular patrol of the park by rangers of the Department of Wildlife Conservation, subsequent to its reopening in February 2010.

Spread of invasive alien species: Peripheral areas of the water bodies were scantily infested with invasive alien species such as *Eupatorium odoratum, Imperata cylindrica, Lantana camara, Mikania cordata, Panicum maximum* and *Xanthium indicum.* Under-brushed areas flanking jeep tracks are being gradually invaded by several weed species.

The spread of aquatic invasive flora is a major threat to the surface water resources of WNP. Several water bodies (ponds and Villus) were infested with invasive species such as *Ceratophyllum demersum, Eichhornia crassipes, Hydrilla verticillata, Ludwigia adscendens, Ludwigia hyssopifolia, Ludwigia perennis, Najas marina, Phragmites karka, Salvinia molesta,*

Typha angustifolia and *Xanthium indicum*. The invasive alien fish Mossambique Tilapia (*Oreochromis mossambicus*) was also observed in the villus and water holes in the park, and according to Saparamadu (2006), this species has been introduced to the villus of Wilpattu in 1954. Being a prolific breeder and a superior competitor for resources, this species can be a great threat to the native fish species that occur in the wetland habitats of the park.

Destruction of archaeological sites: The closure of the park for two decades may have encouraged nearby residents or organized treasure hunters to venture into the park in search of riches. It was observed that almost all the significant archaeological sites in Wilpattu have been looted.

Subsequent to the survey completed by IUCN in 2006, an additional conservation issue has emerged in the Wilpattu National Park. This is related to the construction of a road through the park, which has led to the destruction and fragmentation of natural habitats in the Park. At present, a law suit has been filed by several conservation organizations against this road.

b) in the surrounding area:

The use of detrimental fishing practices (e.g., push nets, drags nets which damage sea grass beds) has been observed in the marine area.

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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.

This area was declared as a National Park in 1938, as one of first two National Parks of Sri Lanka.

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?:

A resource inventory was conducted for Wilpattu in 2005-2006. Based on the findings, a management plan for Wilpattu is currently being prepared by the Department of Wildlife Conservation. It will be completed by end of 2013, allowing its implementation for 5 years from 2014.

d) Describe any other current management practices:

Department of Wildlife Conservation staff deployed at the Park headquarters and at the Eluwankulama entrance carry out patrolling and other protective measures. Groups of Park visitors are issued with entry permits at the entrance to the Park and provided with a Guide to accompany them while within the Park.

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28. Conservation measures proposed but not yet implemented:

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

IUCN Sri Lanka has proposed the following recommendations, based on a field survey conducted in 2005-2006:

- A management plan should be prepared for Wilpattu, which clearly identifies areas under different management categories, such as core zones and buffer zones.
- The number of beat stations ,the smallest management unit of a protected area of Sri Lanka, in the southern, south-western and western boundaries of the Park, to curtail illegal hunting and logging operations.
- The capacity of the park managers should be developed through training programmes, to implement biodiversity monitoring activities, habitat management activities and also to enhance their knowledge on legislation related to biodiversity conservation in Sri Lanka.
- The park managers should be provided with essential equipment (i.e., binoculars, weapons and communication equipment) and vehicles to facilitate their work.
- The wildlife guides recruited from surrounding villages should also be trained on wildlife interpretation for visitors.
- The Park authorities should take immediate action to demarcate the Park boundaries, and evict the illegal encroachers in the south-western part.
- A programme should be initiated to manage the spread of invasive alien species within the Wilpattu, including regular monitoring of such species.
- A detailed research programme should be initiated to study the ecology of Villu wetlands in Wilpattu.
- Develop awareness and education material related to Wilpattu.
- A detailed exploration on the archaeological sites within Wilpattu should be carried out, and measures should be taken to preserve such sites documented up to now. An interpretation centre at should be established at Manikka Pola Uttu where the landscape features represent an ancient human habitation.

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29. Current scientific research and facilities:
e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The Department of Wildlife Conservation encourages researchers to conduct management oriented researches, in this area, and provides necessary logistical for research.

The Ceylon Bird Club includes Wilpattu NP in its annual water bird census, but due to national security restrictions visiting this site had been possible only in very few years, and there have also been constraints in availability of personnel.

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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 visitor centre is located at the Park entrance in the east (in Hunuwilagama), which can accommodate 50 participants in one programme, frequented for training ,education and awareness programmes for the students, surrounding community, public servants and various other spheres of the society. A map with all important places, water sources and road network of the park is also available for visitors. Park information leaflet and wildlife department's

publications are available for visitors at the souvenir shop established adjacent to visitor centre.

The majority of the permanent park staff is from the surrounding community. All the volunteer guides employed for visitor services management activities are selected from fringing communities.

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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.

The Wilpattu National Park was closed for the general public due to safety concerns during the period of the civil war, which ended in May 2009. The park was reopened for the visitors on February 27, 2010. It is a popular destination among local as well as foreign visitors. The park has a network of motorable routes. The park has 14 designated campsites, 8 bungalows, and 1 large dormitory (under construction). Data related to monthly visitor numbers - locals and foreigners are provided below

Month	2010		2011	
	Local	**Foreign**	**Local**	**Foreign**
January	0	0	1050	281
February	77	0	1356	242
March	897	64	1256	248
April	2204	67	2299	148
May	1394	29	1606	175
June	1107	50	1222	58
July	1256	105	1806	207
August	2690	142	3419	210
September	1790	80	2266	123
October	1428	77	1992	120
November	778	104	1112	198
December	2535	194	3588	312
Total	**16156**	**912**	**22972**	**2322**

Annual income from visitors to Wilpattu (Park Entry Fees):

Year	Annual Income		Total Income	
2010	**Foreign**	**Local**	**SL Rs.**	**US$**
	1,503,635.00	876,140.00	2,379,775.00	20,693
2011	3,881,279.00	1,309,710.00	5,190,989.00	45,139

1US$=115 SL Rs.

Annual income from Park Bungalows and Camp Sites rented for visitors:

Year	Income (LKR)	Income (US$)

2010	4,603,495.06	40,030
2011	14,905,324.49	129,611

1US$=115 SL Rs.

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

The proposed Ramsar site is State territory, and is administered by the Department of Wildlife Conservation as national protected areas, under the Fauna and Flora Protection Ordinance of Sri Lanka.

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.

Local Office:
W.A.Sarath
Park Warden
Wilpattu National Park
Hunuwilagama
Pahala Maragaswewa
Sri Lanka
Phone: +94-25-3855691

Head Office:
Director General
Department of Wildlife Conservation
Bodhiraja Mawata
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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.

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