Ramsar Information Sheet

Published on 3 August 2022

India

Satkosia Gorge

Designation date	12 October 2021
Site number	2470
Coordinates	20°34'20"N 84°49'56"E
Area	98 196,72 ha

Color codes

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

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

1 - Summary

Summary

Satkosia (Lat: 20 degrees 25' -20 degree 45' N Long; 84 degree 40' - 85 degrees 05' E) spreads along the magnificent gorge over the mighty river Mahanadi in Odisha. Established in 1976 as a wildlife sanctuary, Satkosia supports a rich ecosystem, representing a diverse population of floral and faunal species. The name Satkosia originates from two words, sat meaning seven and kos meaning two miles, indicating the length of the gorge as 14 miles or 22.4 km. The area was declared as Satkosia Tiger Reserve in 2007, comprising two adjoining wildlife sanctuaries, the Satkosia Gorge sanctuary and Baisipalli sanctuary. The wetland is spread over 4 districts namely Angul, Cuttack, Nayagarh, and Boudh, and has an area of 98196.72 ha. The area is also a part of the Mahanadi elephant reserve. Satkosia is the meeting point of two biogeographic regions of India; the Deccan Peninsula and the Eastern Ghats, contributing immense biodiversity. Satkosia Gorge wetland is a mosaic of marshes and evergreen forests. The permanent freshwater, marshes, and rivers are the major wetland habitat types, which support a variety of plant and animal communities. The forests of these catchments play a vital role in the prevention of the gorge siltation. It also helps in maintaining a specific desirable depth of water crucial for the endangered gharial population and spawning of commercially important carps and prawns species.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Responsible compiler

Institution/agency: Forest, Environment & Climate Change Department, Government of Odisha

Postal address: DFO, Satkosia(WL) Division, Angul

National Ramsar Administrative Authority

Institution/agency: Ministry of Environment, Forest & Climate Change(MoEF&CC), GOI

Postal address: Office of the Additional Secretary (Wetlands), Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi 110003

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

From year: 2018

To year: 2020

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish): Satkosia Gorge

2.2 - Site location

2.2.1 - Defining the Site boundaries

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

Former maps: 0

Boundaries description

Satkosia Gorge Sanctuary is situated at its heart on either side of River Mahanadi, including the Gorge portion. The gorge is narrow but very deep with strong undercurrents of water. Its length, as the name speaks is '7 Kosa', which is equivalent to 22.4 Kms (1 Kosa = 2 miles). The part of the sanctuary north of river Mahanadi comes under Angul and Cuttack revenue Districts and the part south of it comes under Boudh and Nayagarh Revenue Districts. The Ramsar Site boundary aligns with Satkosia Gorge Wildlife Sanctuary, which is also a tiger reserve and forms the catchment of the fourteen-mile-long, deep gorge.

2.2.2 - General location

a) In which large administrative region does the site lie? Angul, Nayagarh,Boudha, Cuttack District,Odisha

b) What is the nearest town or population centre? Angul

2.2.3 - For wetlands on national boundaries only

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

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

2.2.4 - Area of the Site

Official area, in hectares (ha): 98196.72

Area, in hectares (ha) as calculated from GIS boundaries: 98151.112

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Freshwater Ecoregions of the World (FEOW)	Northern Deccan Plateau

Other biogeographic regionalisation scheme

According to Rodgers and Panwar (1988) biogeographic classification, Satkosia Gorge Sanctuary forms the meeting point of two biotic provinces of 19 Deccan Peninsula biogeographic zones (6). The area north of Mahanadi is classed under Garhjat hills and that of South under the Eastern Ghats. This sanctuary is in fact the meeting point of Chhotnagpur plateau (6B) and Eastern Ghats (6C) biotic provinces. Ecologically, the vegetation of Satkosia largely conforms to Northern tropical moist deciduous forests and moist peninsular low-level sal.

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

<no data available>

☑ Criterion 2 : Rare species and threatened ecological communities

☑ Criterion 3 : Biological diversity

Justification: Satkosia Gorge sanctuary has tremendous genetic and ecological importance as it is the wet portion of the Deccan region. It has a significant elephant population in deciduous forests. The sanctuary is also an important natural habitat for two endangered species of freshwater crocodiles viz. Gharial and Mugger, and a sizeable population of tiger, leopard, gaur, sambar, chousingha, barking deer, and giant squirrels. Rare and endangered birds and butterflies are very common. 22.4 Km long stretch of Satkosia Gorge of Mahanadi river harbors a large population of varied fishes and aquatic fauna. Satkosia also represents the endemic life forms of both the biotic provinces in its transitional zone. Geologically speaking, the ghats formed the land bridge for faunal migration between the Holarctic, Indo-Chinese, and Indo Malayan regions on one hand and the Western Ghats on the other. Therefore, the presence of floral and faunal species significant for conservation as listed in relholdst tables hold importance in maintaining the biological diversity of the region as a whole and therefore justifies being placed under category 3.

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

☑ Criterion 5 : >20,000 waterbirds

Overall waterbird numbers: 39850

Start year: 2018

Source of data: Census

☑ Criterion 7 : Significant and representative fish

Justification: The wetland serves as a breeding ground as well as the nursery of a large number of fish species. The deciduous leaves of the adjoining forest type wither facilitating nutrition for the larvae helping in growth and development. Some of the larger species depend entirely on the wetland for attaining their adult stage. The site supports the following fishes:Cirrhinus reba, Gibelion catla, Mastacembelus armatus, Pangasius pangasius, and Puntius ambassis.

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

Phylum	Scientific name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
Plantae								
TRACHEOPHYTA / MAGNOLIOPSIDA	*Barringtonia acutangula acutangula*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.

Phylum	Scientific name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
TRACHEOPHYTA / MAGNOLIOPSIDA	*Butea superba*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / LILIOPSIDA	*Caryota urens*	☐	☑	☐	LC	☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / MAGNOLIOPSIDA	*Combretum albidum*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / MAGNOLIOPSIDA	*Dalbergia latifolia*	☐	☑	☑	VU	☐		Important for maintaining the biological diversity of the particular biogeographic region. VU IUCN category.
TRACHEOPHYTA / LILIOPSIDA	*Dendrocalamus strictus*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / LILIOPSIDA	*Eulaliopsis binata*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / MAGNOLIOPSIDA	*Grewia eriocarpa*	☐	☑	☐	LC	☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / MAGNOLIOPSIDA	*Ocimum tenuiflorum*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / LILIOPSIDA	*Phoenix paludosa*	☐	☑	☐	NT	☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / LILIOPSIDA	*Saccharum bengalense*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / LILIOPSIDA	*Smilax zeylanica*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / MAGNOLIOPSIDA	*Symplocos racemosa*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / LILIOPSIDA	*Thysanolaena latifolia*	☐	☑	☐		☐		Important for maintaining the biological diversity of the particular biogeographic region.
TRACHEOPHYTA / MAGNOLIOPSIDA	*Xylia xylocarpa*	☐	☑	☐	LC	☐		Important for maintaining the biological diversity of the particular biogeographic region.

The wetland supports numerous plant species including the vulnerable species Dalbergia latifolia

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

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
Others																	
CHORDATA / MAMMALIA	*Axis axis*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / REPTILIA	*Batagur kachuga*	☑	☐	☐	☐	☐	☐	☐	☐				CR	☐	☐		CR IUCN category.
CHORDATA / REPTILIA	*Chitra indica*	☑	☐	☐	☐	☐	☐	☐	☐				EN	☐	☐		EN IUCN category.
CHORDATA / REPTILIA	*Crocodylus palustris*	☑	☐	☐	☐	☐	☐	☐	☐				VU	☑	☐		VU IUCN category.
CHORDATA / MAMMALIA	*Elephas maximus*	☑	☐	☐	☐	☐	☐	☐	☐				EN	☑	☐		EN IUCN category.
CHORDATA / REPTILIA	*Gavialis gangeticus*	☑	☐	☐	☐	☐	☐	☐	☐				CR	☑	☑		CR IUCN category.
CHORDATA / REPTILIA	*Lissemys punctata punctata*	☐	☐	☐	☐	☑	☐	☐	☐					☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / MAMMALIA	*Muntiacus muntjak*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / REPTILIA	*Naja naja*	☐	☐	☐	☐	☑	☐	☐	☐					☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / MAMMALIA	*Panthera tigris*	☑	☐	☐	☐	☐	☐	☐	☐				EN	☑	☐		EN IUCN category.
CHORDATA / MAMMALIA	*Rusa unicolor*	☑	☐	☐	☐	☐	☐	☐	☐				VU	☐	☐		VU IUCN category.
CHORDATA / MAMMALIA	*Sus scrofa*	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / REPTILIA	*Varanus bengalensis*	☐	☐	☐	☐	☑	☐	☐	☐				NT	☑	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / REPTILIA	*Varanus flavescens*	☑	☐	☐	☐	☐	☐	☐	☐				EN	☑	☐		EN IUCN category.
Fish, Mollusc and Crustacea																	
CHORDATA / ACTINOPTERYGII	*Cirrhinus reba*	☐	☐	☐	☐	☐	☐	☑	☐				LC	☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / ACTINOPTERYGII	*Gibelion catla*	☐	☐	☐	☐	☐	☐	☑	☐				LC	☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / ACTINOPTERYGII	*Mastacembelus armatus*	☐	☐	☐	☐	☐	☐	☑	☐				LC	☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
CHORDATA / ACTINOPTERYGII	*Pangasius pangasius*	☐	☐	☐	☐	☐	☐	☑	☐				LC	☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA / ACTINOPTERYGII	*Puntius ambassis*	☐	☐	☐	☐	☐	☐	☑	☐				DD	☐	☐		Important for maintaining the biological diversity of the particular biogeographic region.
Birds																	
CHORDATA / AVES	*Actitis hypoleucos*	☐	☐	☐	☐	☐	☑	☐	☐	1400	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Amaurornis phoenicurus*	☐	☐	☐	☐	☐	☑	☐	☐	2700	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Anas acuta*	☐	☐	☐	☐	☐	☑	☐	☐	2100	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Anastomus oscitans*	☐	☐	☐	☐	☐	☑	☐	☐	300	2020		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Anhinga melanogaster*	☐	☐	☐	☐	☐	☑	☐	☐	900	2020		NT	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Ardeola grayii*	☐	☐	☐	☐	☐	☑	☐	☐	1600	2020		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Ceryle rudis*	☐	☐	☐	☐	☐	☑	☐	☐	900	2020		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Charadrius dubius*	☐	☐	☐	☐	☐	☑	☐	☐	2200	2020		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Ciconia episcopus*	☐	☐	☐	☐	☐	☑	☐	☐	1500	2018		NT	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Dendrocygna javanica*	☐	☐	☐	☐	☐	☑	☐	☐	1400	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Egretta garzetta*	☐	☐	☐	☐	☐	☑	☐	☐	1700	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Egretta intermedia*	☐	☐	☐	☐	☐	☑	☐	☐	1600	2018			☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Esacus recurvirostris*	☐	☐	☐	☐	☐	☑	☐	☐	1400	2018		NT	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Halcyon albiventris*	☐	☐	☐	☐	☐	☑	☐	☐	700	2020		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Halcyon coromanda*	☐	☐	☐	☐	☐	☑	☐	☐	1400	2020		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Halcyon smyrnensis*	☐	☐	☐	☐	☐	☑	☐	☐	2900	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Himantopus himantopus*	☐	☐	☐	☐	☐	☑	☐	☐	1700	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Microcarbo niger*	☐	☐	☐	☐	☐	☑	☐	☐	600	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Nycticorax nycticorax*	☐	☐	☐	☐	☐	☑	☐	☐	450	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Rynchops albicollis*	☑	☐	☐	☐	☐	☑	☐	☐	800	2018		EN	☐	☐		EN IUCN category. Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Sterna acuticauda*	☑	☐	☐	☐	☐	☑	☐	☐	1600	2018		EN	☐	☐		EN IUCN category. Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Sterna aurantia*	☑	☐	☐	☐	☐	☑	☐	☐	1500	2018		VU	☐	☐		VU IUCN category.Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Threskiornis melanocephalus*	☐	☐	☐	☐	☐	☑	☐	☐	2100	2018		NT	☐	☐		Significant constituent of 20,000 or more waterbirds.

Phylum	Scientific name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
		2	4	6	9	3	5	7	8								
CHORDATA / AVES	*Upupa epops*	☐	☐	☐	☐	☐	☑	☐	☐	1900	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Vanellus albiceps*	☐	☐	☐	☐	☐	☑	☐	☐	2100	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Vanellus duvaucelii*	☐	☐	☐	☐	☐	☑	☐	☐	700	2018		NT	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Vanellus indicus*	☐	☐	☐	☐	☐	☑	☐	☐	600	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.
CHORDATA / AVES	*Vanellus malabaricus*	☐	☐	☐	☐	☐	☑	☐	☐	1100	2018		LC	☐	☐		Significant constituent of 20,000 or more waterbirds.

1) Percentage of the total biogeographic population at the site

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

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
Floral and faunal communities	☑	Unique, rare biodiversity with high conservation significance is a part of the community.	A major portion of plant and animal species are under EN, CR and VU categories.

Optional text box to provide further information

About 400 species of plants have been recorded in the sanctuary out of which 126 are trees, 98 shrubs, 125 herbs, and 51 climbers. Sal (Shorea robusta) is the dominant species intensified mainly by selective removal of less valuable species under the planned forest management.

Rampant forest fire, excessive grazing, and increasing illegal removal of timber pose a threat to the species of this moist forest. However, no systematic research has been taken up to enumerate all the plant species in the area to date. According to the forest department Hinjal (Barringtonia acutangula), Kochila 15 (Strychnos nuxvomica), Rosewood (Dalbergia latifolia), Patal garuda (Rauwolfia serpentina), Gila (Entada phoseoloides), Mirigichara (Grewia elastica), Kangada (Xylia xylocarpa), Patuli (Stereospspermum chelonoides) and Kantachira (Acacoa fruginia) are threatened.

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

4.1 - Ecological character

Satkosia Gorge is a mosaic of marshes and evergreen forests. The permanent freshwater, marshes, and rivers are the major wetland habitat types, which support a variety of plant and animal communities. The wet meadows, seasonal/intermittent marshes, pools and steams form minor wetland types in which ecological communities from riparian forest and vernal pools survive. During peak monsoon, the entire wetland barring the reserved forest area is inundated. The floral diversity includes over 126 trees, 98 shrubs, 125 herbs and 561 climbers species. The forest vegetation comprises of north Indian tropical moist deciduous forests and moist peninsular low level sal forest, the main tree species being sal which grows in gregarious formations. Other associate species are asan (Terminalia alata), dhaura (Anogeissus latifolia), and simal (Bombax ceiba). Two species of bamboo, namely Bambusa arundinaceae and Dendrocalamus strictus are common to this wetland. The faunal diversity is tremendous and around 38 species of mammals, 161 species of birds, 27 species of reptiles and 183 species of fishes have been reported from the site. The wetland is an important natural habitat of two endangered species of freshwater crocodiles namely gharial and mugger. It also supports a sizeable population of tiger, leopard, gaur, sambar, barking deer and giant squirrels. Along with mammals and reptiles the sanctuary is also an important habitat for several rare and endangered birds species. The 22.4 km long stretch of Satkosia Gorge of Mahanadi river harbors a large population aquatic fauna. Satkosia is famous for its unique gorge ecosystem and it serves also as a major watershed for the entire region. The wetland is also known for providing a variety of ecosystem services like regulating services (recharging of groundwater, climate regulation, safety from floods), supporting services (facilitating nutrient recycling, soil formation, providing habitat to flora and fauna), and cultural services (providing recreational and tourism opportunities, supporting spiritual and cultural practices, facilitating scientific research). Satkosia also represents the endemic life forms of both the biotic provinces in its transitional zone. It forms an important catchment of the lower Mahanadi basin. The positive role of these catchment forests in the prevention of the gorge siltation and maintenance of a specific desirable depth of water can hardly be overemphasized, particularly for the endangered gharial and for spawning sites of commercially important carps and prawns species. The spiritual and cultural association with local deities namely Binikei, Kankei, Baigani Parbata, Bhimdhara provides higher degree of cultural and inspirational values. The rich biodiversity and aesthetic value of the gorge attract tourists into the sanctuary throughout the year.

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

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks	Satkosia Gorge	1	98196.72	

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/MAGNOLIOPSIDA	*Aegle marmelos*	
TRACHEOPHYTA/LILIOPSIDA	*Bambusa bambos*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Careya arborea*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Ficus benghalensis*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Kydia calycina*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Mangifera indica*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Mimosa pudica*	
TRACHEOPHYTA/MAGNOLIOPSIDA	*Phanera vahlii*	

Invasive alien plant species

Phylum	Scientific name	Impacts
TRACHEOPHYTA/LILIOPSIDA	*Phragmites karka*	Potential

Optional text box to provide further information

There is a vast number of lower plants that occur in the sanctuary seasonally. These plants are prominent in the wet season. The cryptgams of Nostac, and other microorganisms are prevalent in the creek where stagnant water accumulates. In certain areas bryophytes, pteridophytes and gymnosperms are very common. Riccia, Cyathidium and general liverworts are the common bryophytes found while ferns belonging to pteridophytes are also widely observed in the sanctuary. Cycas cerinalis ver. Orixensis belonging to gymnosperms are prevalent throughout the sanctuary. In addition to this, the smallest angiosperm plant-like wolfia and camara are seen in Kantrasingha game tank. Thus the sanctuary comprises the vast biodiversity stratification.

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/MAMMALIA	*Boselaphus tragocamelus*				
CHORDATA/MAMMALIA	*Cuon alpinus*				
CHORDATA/MAMMALIA	*Felis chaus*				
CHORDATA/MAMMALIA	*Hyaena hyaena*				
CHORDATA/MAMMALIA	*Melursus ursinus*				
CHORDATA/MAMMALIA	*Prionailurus bengalensis*				

Optional text box to provide further information

There are carnivorous animals such as tiger, leopard, jungle cat, civet, small Indian mongoose, wolf, jackal, stripped hyena, wild dog found in Purunakote, Tikarapada, Pampasar, Raigoda, Jillinda and Chhamundia and Kusanga ranges of the sanctuary. Herbivorous animals such as elephants, common langur, sloth bear, sambar, chital, chausingha, mouse deer, barking deer, wild pig, gaur (Gayal) and rodents like Malabar giant squirrels, five striped palm squirrel, common hare and porcupines are found in the sanctuary. Nilgai was noticed few years back in Satkosia Wildlife Division.

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
A: Tropical humid climate	Am: Tropical monsoonal (Short dry season; heavy monsoonal rains in other months)

Three distinct seasons are experienced in the sanctuary area. The winter starts from November and lasts till the middle of February when summer starts and it continues up to the middle of June. This is followed by the rainy season which continues up to September. The month of October and the first half of November may be treated as the post-monsoon season when some rains are occasionally experienced.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres): 37

a) Maximum elevation above sea level (in metres): 932

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

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

Mahanadi River Basin

4.4.3 - Soil

- Mineral ☐
- Organic ☑
- No available information ☐

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

4.4.4 - Water regime

Water permanence

Presence?	
Usually permanent water present	No change

Source of water that maintains character of the site

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

Water destination

Presence?	
To downstream catchment	No change

Stability of water regime

Presence?	
Water levels fluctuating (including tidal)	No change

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site ☐

Significant accretion or deposition of sediments occurs on the site ☐

Significant transportation of sediments occurs on or through the site ☐

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

Sediment regime unknown ☐

4.4.6 - Water pH

Acid (pH<5.5) ☐

Circumneutral (pH: 5.5-7.4) ☐

Alkaline (pH>7.4) ☐

Unknown ☑

4.4.7 - Water salinity

Fresh (<0.5 g/l) ☑

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

Euhaline/Eusaline (30-40 g/l) ☐

Hyperhaline/Hypersaline (>40 g/l) ☐

Unknown ☐

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic ☐

Mesotrophic ☑

Oligotrophic ☐

Dystrophic ☐

Unknown ☐

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

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

Surrounding area has greater urbanisation or development ☐

Surrounding area has higher human population density ☑

Surrounding area has more intensive agricultural use ☑

Surrounding area has significantly different land cover or habitat types ☐

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	High

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	High

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	High

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part	High

Within the site: 20,00,000

Outside the site: 50000

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

4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland ☑

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

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

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

4.6 - Ecological processes

<no data available>

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

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	☑	☑

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Foundation/non-governmental organization/trust	☑	☑
Other types of private/individual owner(s)	☐	☑

Other

Category	Within the Ramsar Site	In the surrounding area
Commoners/customary rights	☐	☑

Provide further information on the land tenure / ownership regime (optional):

The Satkosia landscape consists of Satkosia Tiger Reserve and adjoining forest areas of Athamallik Forest Division (Hatidhara RF), Athagarh Division (Balikiary RF, Nuagarh RF), Dhenkanal Division (Nandinia RF, Kandhara RF), and Angul Division (Nuakheta RF, part of Balang RF). At present, the core, buffer, and its adjoining areas of the Satkosia landscape are under the unified command of the Regional Chief Conservator of Forests-cum- Field Director, Satkosia Tiger Reserve, Angul. The river Mahanadi nearly divides the reserve into two parts, north of river Mahanadi is managed by D.F.O. Satkosia WL Division and south by D.F.O. Mahanadi W.L. Division. Coordination between both the divisions as well as with the adjoining D.F.O.s is an important aspect of strengthening protection mechanism and other issues of the park.

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site: Divisional Forest Officer(DFO), Satkosia(WL) Division, Angul

Provide the name and/or title of the person or people with responsibility for the wetland: Saroj Kumar Panda, Divisional Forest Officer, Satkosia Wildlife Division, Angul, Odisha, India, Contact No. 8280146664, Email: dfosatkosiawl@yahoo.co.in

Postal address: Office of the Divisional Forest Officer(DFO), FPR9+5H3, Hakim Pada Udyan, Hakimapada, Angul, Odisha 759106.

E-mail address: satkosiawl@yahoo.co.in

5.2 - Ecological character threats and responses (Management)

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

Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Tourism and recreation areas	Low impact		☑	☑

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Drainage	High impact		☑	☑
Water releases	High impact		☑	☑

Agriculture and aquaculture

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

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Gathering terrestrial plants	High impact		☑	☑

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Recreational and tourism activities	Low impact		☑	☑

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Fire and fire suppression	High impact		☑	☑

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Agricultural and forestry effluents	Medium impact		☑	☑

Climate change and severe weather

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

5.2.2 - Legal conservation status

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Satkosia Gorge		whole

5.2.3 - IUCN protected areas categories (2008)

Ia Strict Nature Reserve ☐

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

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

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

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

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

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

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Implemented

Habitat

Measures	Status
Catchment management initiatives/controls	Implemented

Species

Measures	Status
Threatened/rare species management programmes	Implemented

Human Activities

Measures	Status
Harvest controls/poaching enforcement	Implemented

5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

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

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

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No need identified

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Animal community	Implemented
Water quality	Proposed
Plant species	Implemented

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

1. A Manual for Planning Wildlife Management in Protected Areas and Managed forests by Vishwas. B.Sawarkar, WII, D. Dun.
2. Dr. C.R. Mohapatra's Working Plan for Angul (T) Division for the period 1970 – 1990.
3. Sri B.P.Singh's Working Plan for Angul (T) Division for 1990- 91 to 1999- 2000.
4. Mr. S.B.Das's Working for Rairakhol Division for the period 1965 to 1985.
5. Mr. Dinesh Singh's Working Plan for Athamallik Division for 1985 to 2005.
6. Sri N.C. Bal's Working Plan for Nayagarh Division for the period 1983-84 to 2002-03.
7. Sri Basudev Mohapatra's Plan for Boudh Division for 1975-76 to 1994-95.
8. Sri G. Mohapatra's Working Plan for Athgarh Division for
9. First Management Plan for Satkosia Gorge Sanctuary prepared by Sri A.K.Mishra for the period 2000 to 2010.
10. Rainfall, Temperature Data from Central Water Commission at Tikarapada.
11. Rainfall, Temperature, Humidity data from Office of Collector, Angul District.

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)
<no file available>

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

iii. a description of the site in a national or regional wetland inventory
<1 file(s) uploaded>

iv. relevant Article 3.2 reports
<no file available>

v. site management plan
<1 file(s) uploaded>

vi. other published literature
<3 file(s) uploaded>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:


Gharials (*DFO, SATKOSIA, 09-09-2020*)


Indian Skimmer (*Soroj Panda, 25-12-2020*)


Brown-headed Gull (*Soroj Panda, 25-12-2020*)


Great Cormorant (*Soroj Panda, 25-12-2020*)


Great Egret (*Soroj Panda, 25-12-2020*)


Indian Skimmer (*Soroj Panda, 25-12-2020*)


View of Satkosia Gorge (*Soroj Panda, 25-12-2020*)


View of Satkosia Gorge (*Soroj Panda, 25-12-2020*)


Satkosia Gorge (*Soroj Panda, 25-12-2020*)

6.1.4 - Designation letter and related data

Designation letter
<1 file(s) uploaded>

Date of Designation: 2021-10-12