

EXTENDED ABSTRACT

ECOTOURISM POTENTIAL OF CHUNDIKULAM NATIONAL PARK IN JAFFNA PENINSULA, SRI LANKA

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Abstract

The main objective of this study was to evaluate the ecotourism potential in Chundikulam National Park in Jaffna District. Suitability analyses were based on the three aspects such as Greater Flamingo (*Phoenicopterus roseus*), other birds, and Sand Dunes. Six criteria viz. bird species diversity, tourist preferences, proximity to residential areas, proximity to accommodation, distance from roads, and scenic beauty were used to evaluate potential sites in Jaffna. Based on multi-criteria analysis, Chundikulam was considered a high potential area. Natural features such as Thondamanaru and Elephant Pass lagoons, Lagoon mouth, sand dunes, and ponds were identified as potentials and animals such as birds (107 species), crocodiles, and monkeys were identified through the study. Traditional fishing villages and fishing activities are culture based potentials in the Park. Lack of promotion and inadequate infrastructure facilities negatively impact on ecotourism development. However, there is a great potential for the participation of local people which would support the local economic development.

Keywords: Chundikulam national park, ecotourism potential, greater flamingo, bird diversity

1. Introduction

Ecotourism is traveling to undisturbed natural areas with the specific objective of studying, admiring, enjoying the scenery and observing wild plants and animals, including cultural manifestations (both past and present) found in these areas (Ceballos-Lascurain, 1987). Chundikulam National Park is located in the Northern Province. Until 2015 it was sanctuary, and then it was upgraded as a national park. There are different types of natural features such as the lagoon, lagoon mouth, sand dunes and sandy beaches and animals such as birds, reptiles and mammals that are significant potentials for promotion of ecotourism. In the cultural side, traditional fishing villages, fishing activities and natural vegetation and Palmyra resources are the major potentials of Ecotourism. The potential of this park has not been evaluated probably due to the three decade long civil war. Hence the objective of the present study was to evaluate the ecotourism potential of Chundikulam National Park.

2. Materials and Methods

2.1 Study area

Ecotourism potentials analysis was done based on a field study carried out from 2013 to 2018. We used point counts to determine this bird diversity and abundance. To observe birds, binoculars

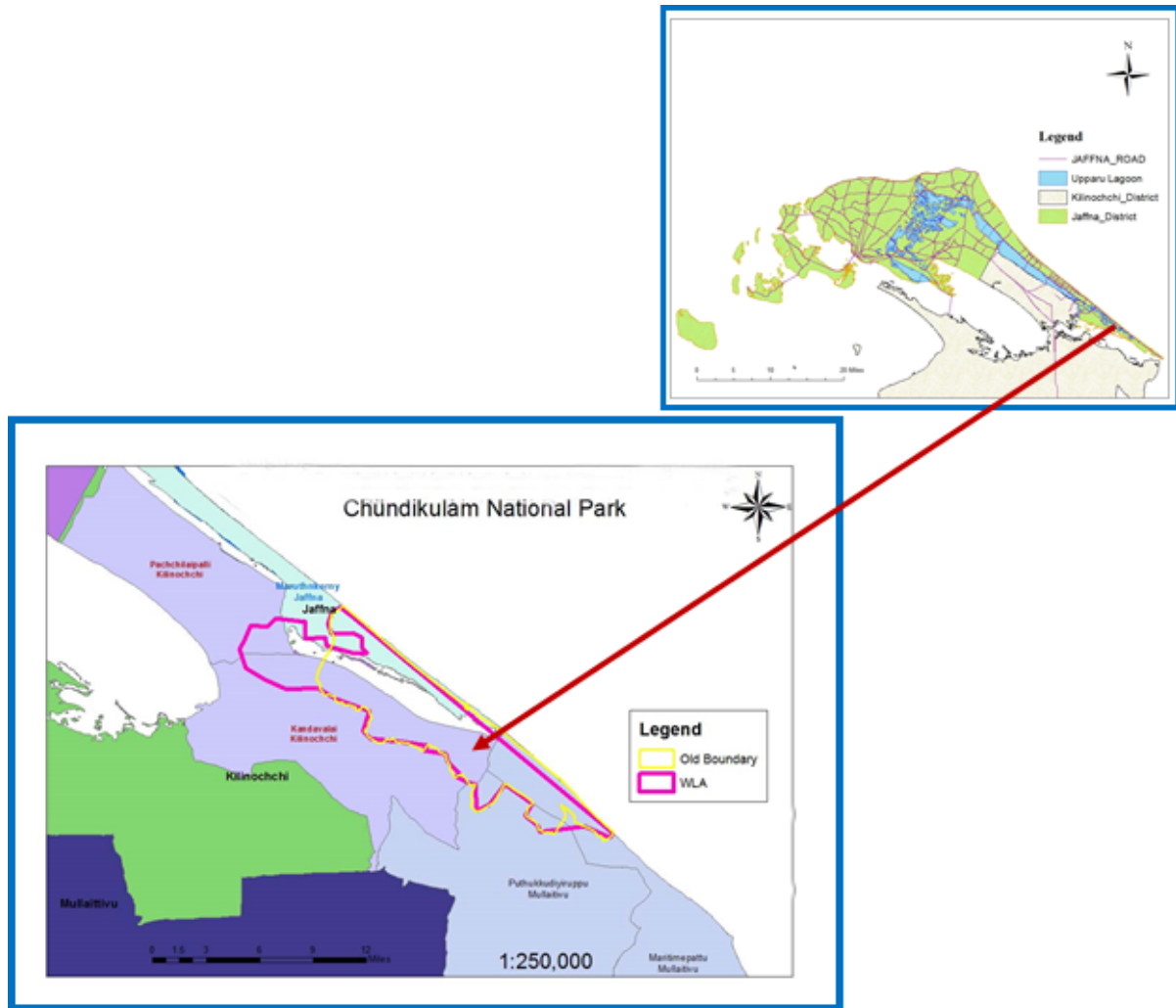


Figure 1. Study area

(Nikon 8×40 Action Extreme and Nikon Monarch 10×42) and a spotting scope (Vixen 25×50) were used. Peak counting hours were between 0630–0830 h and 1530–1830 h each day. Each site was visited multiple times throughout the study period. The aim of this research was to study the birds' diversity, natural features, vegetation, mammals and reptiles in the Chundikulam area to evaluate ecotourism potentials. Multi Criteria Decision Method and criteria ranking method were used in GIS (Bunruamkaew, 2011). Six criteria viz. bird species diversity, tourist preferences, proximity to residential areas, proximity to tourists' accommodation, distance from roads, and scenic beauty were used to evaluate potential sites in the Jaffna District (Tables 1 and 2). In this process, experts' opinions were obtained to calculate the relative importance of each criterion. The calculation of ranking tables and computation of consistency ratio for each natural and cultural sites are given in Tables 3 and 4. From these sites, potential status of Chundikulam National Park was derived. Suitability analysis was based on three aspects such as Greater Flamingo, other birds and Sand Dunes.

The ranking levels were applied within the criterion and among criteria. A suitability map was produced by overlaying six thematic maps. The potential status of Chundikulam National Park area was derived from analyzing the potential sites in the entire Jaffna district.

3. Results

The major birding area of Chundikulam comes under high potential. Other areas and lagoon mouth are of low potential. Figure 2 shows potential status of birds in the Chundikulam area. Based on

Table 1. Considered factors and criteria for the ranking of the aspects, greater flamingo and other birds in suitability analysis

Factors		Criteria	Unit	Suitability Ranking		
				High	Moderate	Low
Wildlife	Other Birds	Species diversity	Number value	>30	15-30	<15
	Flamingo			700-2500	300 - 700	< 300
Accessibility	Proximity to Accommodation	Distance (km)	Area within 3-5 km from accommodation	Area within 5 to 7 km from accommodation	Over 7 km	
	Distance from the Roads	Distance (km)	Area within 500 m from All Roads	Area within 1 km from All Roads	Area within 1.5 km from All Roads	
Community Characteristics	Proximity to Residential area	Distance (km)	Area within 2 km from residential	Area within 2-5 km from residential	Area within 5-10 km from residential	
Esthetic Value	Scenic Beauty	Likert scale	3.5 - 4	3.5 - 2.5	< 2.5	
Social	Tourist preferences	Likert scale	3.5 - 4	3.5 - 2.5	< 2.5	

Table 2. Considered factors and criteria for the ranking of the aspects sand dunes in suitability analysis

Factors		Criteria	Unit	Suitability Ranking				
				Very High	High	Moderate	Low	Very Low
Physical	Sand Dune	Distribution	%		> 70%	35%-70%	< 35%	< 35%
Accessibility		Proximity to Accommodation	Distance (km)	Within 3 km (M)	3-5 km (M) within 5 km (SM,S)	5-7 km (M), 5-10 km (SM, S)	7-10 km (M), over 10 km (SM,S)	Over 10 km (M)
		Distance from the Roads	Distance (km)	Area within 300 m (M)	300 m-1 km (M), within 1 km (SM, S)	1-2 km, 1-2 km (SM, S)	2-3 km (M), Over 2 km (SM, S)	Over 3 km (M)
Community Characteristics		Proximity to Residential area	Distance (km)	Area within 1 km (M)	2 (M), 2 km (SM, S)	2-5 km (M), 2-5 km (SM,S)	5-10 km (M), Over 5 km (SM,S)	Area within 5-10 km (M)
Social		Tourist preferences	Likert scale	> 4 (M)	3.5-4 (M), > 3.5 (SM, S)	2.5 -3.5(M), (SM,S)	1.5-2.5 (M), 2.5 (SM, S)	<1.5

M - Mangrove S - Sand Dunes

Table 3. Development of ranking matrix for birding grounds and greater flamingo

N	Criteria	Straight Rank	Weight (n- rj+1)	Normalized weights	Prioritization
C1	Birds Richness (Species Diversity)	1	6	0.285714286	1
C2	Tourist Preferences	6	1	0.047619048	6
C3	Proximity to community	3	4	0.19047619	3
C4	Proximity to accommodation	4	3	0.142857143	4
C5	Road Accessibility	2	5	0.238095238	2
C6	Scenic beauty	5	2	0.095238095	5
			21		

Table 4. Development of ranking matrix for sand dunes

N	Criteria	Straight Rank	Weight (nrj+1)	Normalized weights	Prioritization
1	Distribution and Height	1	5	0.333333333	1
2	Road Distance	2	4	0.266666667	2
3	Community characteristics	3	3	0.2	3
4	Proximity to accommodation	4	2	0.133333333	4
5	Tourist Preferences	5	1	0.066666667	5
			15		

the analysis considering aspects such as the greater flamingo (Figure 3) and sand dunes (Figure 4), Chundikulam represents high potential area. One hundred and seven species of birds were identified.

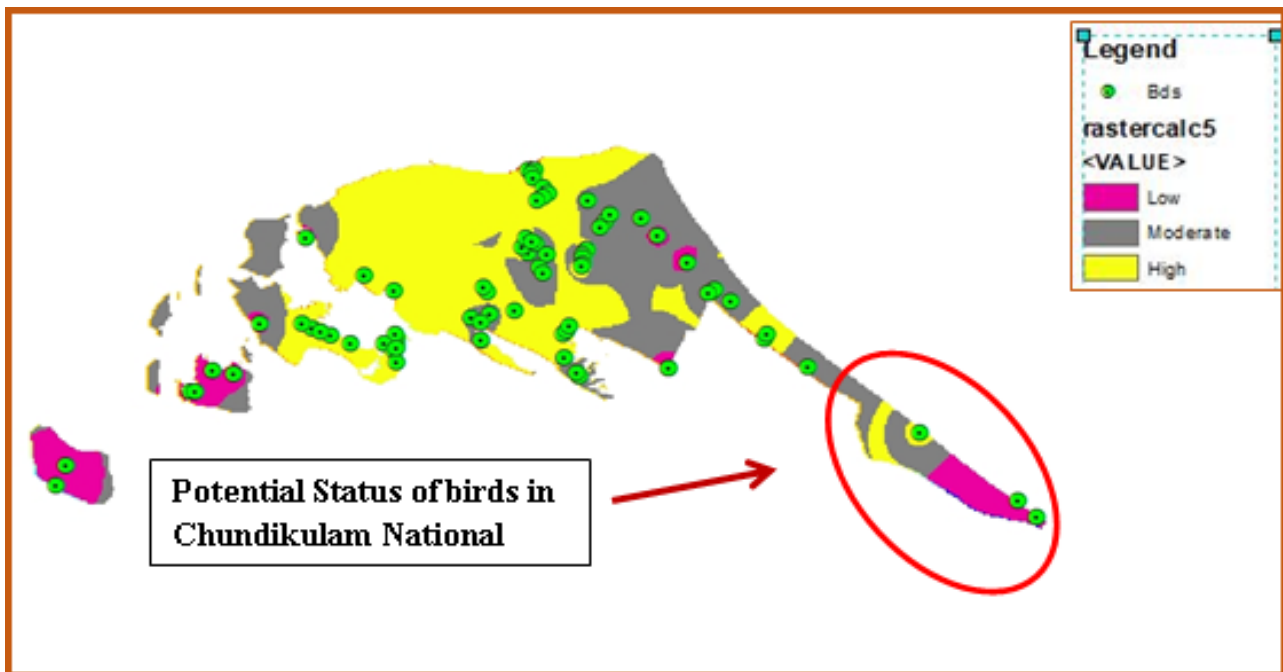


Figure 2. Potential status of birding ground in the Chundikulam area among the other birding sites in the Jaffna District which was the final output of Multi-criteria analysis (High is indicated as yellow, moderate is indicated as grey and low is indicated as purple in colour)

Margalef’s Index was 4.53. Over 1000 flamingos were recorded through the study from 2013 – 2018 (Wijesundara et al. 2016). Two primate species, viz. Gray Langur (*Semnopithecus priam*) and toque macaque (*Macaca sinica*), and marsh crocodiles (*Crocodylus palustris*) were identified through the study. Apart from these species, Palmyra resources and ponds were identified as important potentials. Furthermore, fishing and other communities are living close to the National Park.

4. Discussion

Based on the abundance of flamingos and other bird species, Chundikulam National Park comes under high potential areas. Considering the distribution and height of sand dunes, Chundikulam comes under high potential areas. Also, according to the multi criteria analysis (Figure 2, 3, and 4),

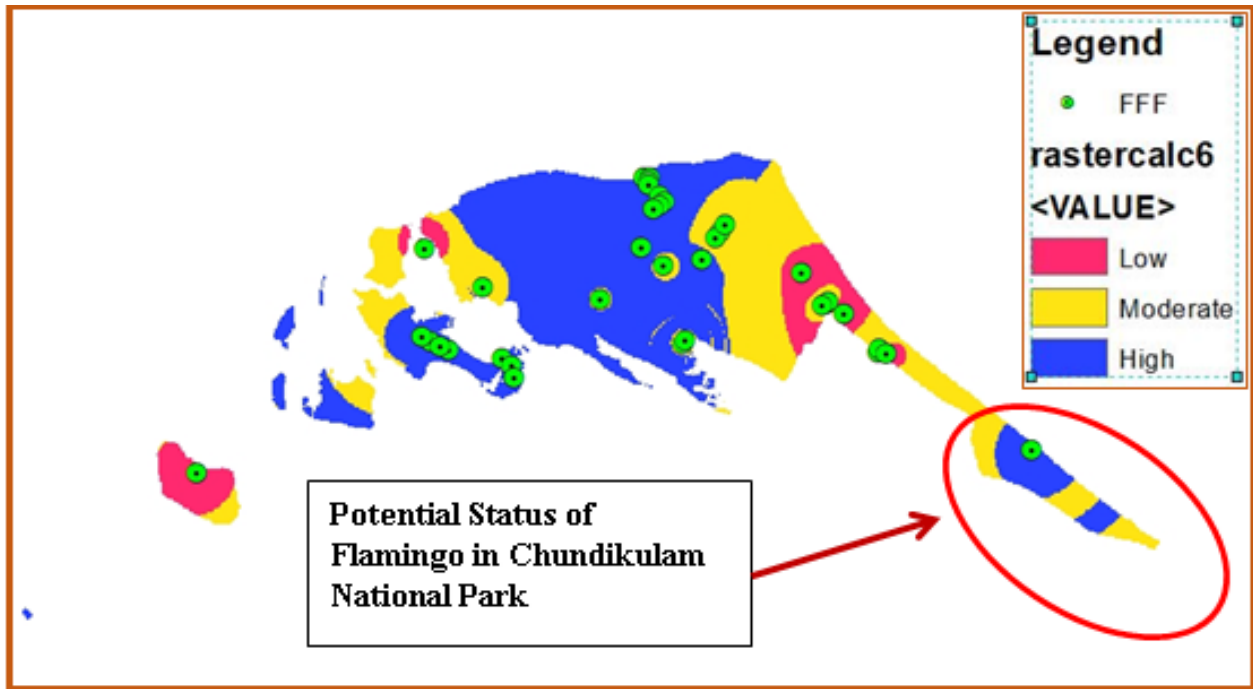


Figure 3. Potential status of Flamingo area in the Chundikulam National Park among the other flamingo sites in the Jaffna District which was the final output of Multi-criteria analysis (High is indicated as blue, moderate is indicated as yellow and low is indicated as red in colour)

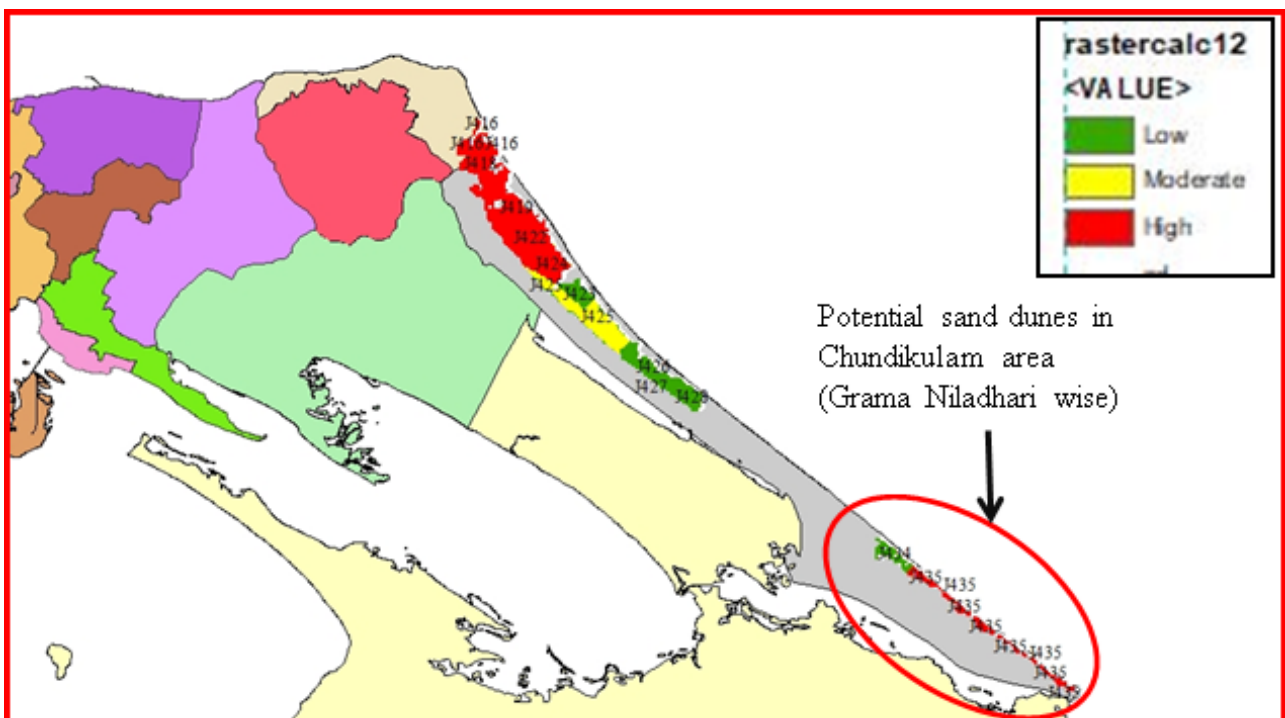


Figure 4. Potential status of sand dunes in the Chundikulam National Park of Vadamarachchy East of Jaffna District which was the final output of Multi-criteria analysis.(High is indicated as red, moderate is indicated as yellow and low is indicated as green in colour)

these areas come under high potential areas. The Park is well-known for the greater flamingo for a long time (Wijesundara et al. 2016). Gray Langur is very common in the study area. Toque macaque is endemic to Sri Lanka. Mugger or Marsh crocodile is one of the largest reptiles in Sri Lanka and it

was found in the ponds of the park. Sand dunes are densely distributed and the height is over 10m. The sand dunes are covered with natural vegetation. The lagoon mouth has a great scenic beauty, and, as Jaffna and Thondamanaru lagoons, is connected with deep sea. One side is connected with the Indian Ocean, and the other side represents lagoons. The ocean side has sandy beaches, and fishing activities are being carried out. There are a lot of Palmyra trees in the park. The Palmyra products enhance the tourism potential to attract tourists. There are traditional fishing communities and other communities that are living close to the park. There are opportunities to enjoy the traditional activities and cultural aspects in the area. Lack of easy accessibility and promotion activities have a negative impact on the ecotourism development. The area is far from main road and there is roughly about a distance of 12 km from the park office to the mouth area. Therefore, road accessibility has an impact on promoting these sites as ecotourism sites.

5. Conclusions and Recommendations

The study area is home to a large number of resident and migrant bird species as well as a number of reptiles and mammals. These areas are potentially very good ecotourism destinations given the large extent of the lagoon and marsh land habitats and the presence of rare and very rare bird species, both residents and migrants. Natural features such as the lagoon, lagoon mouth, sand dunes and sandy beach, and animals such as birds, reptiles and mammals have a significant potential for promotion of ecotourism. On the cultural side, traditional fishing villages, fishing activities, natural vegetation and Palmyra resources are major potentials in ecotourism. Lack of accessibilities, promotion activities and inadequate infrastructure facilities negatively impact on ecotourism development. There is also a great potential for local people participation for promotion of ecotourism in Jaffna peninsula, elevating their standards of livelihood.

References

- Wijesundara, C. S., Chathuranga, D., Hettiarachchi, T., Perera, N., Wanniarachchi, S., & Weerakoon, G. (2016). Population size of the Greater Flamingo in the Jaffna Peninsula, Sri Lanka. In *Postgraduate Institute of Science Research Congress. Postgraduate Institute of Science, University of Peradeniya* (p. 80).
- Dhami, I., Deng, J., Burns, R. C., & Pierskalla, C. (2014). Identifying and mapping forest-based ecotourism areas in West Virginia—Incorporating visitors' preferences. *Tourism management* 42: 165-176.
- Khwanruthai, B. and Yuji, M. (2011). Site Suitability Evaluation for Ecotourism Using GIS & AHP: A Case Study of Surat Thani Province, Thailand. *Procedia - Social and Behavioral Sciences* 21: 269-278.
- Ceballos-Lascurain, H. (1987). The future of "ecotourism". *Mexico Journal* 1: 13-14.