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FEEDING ECOLOGY OF NEAR THREATENED ORIENTAL DARTER (*Anhinga melanogaster*) IN THE POKKALI WETLANDS OF ERNAKULAM DISTRICT, KERALA, INDIA

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1.ABSTRACT

The Pokkali wetlands of Ernakulam District, Kerala are highly nutritive, biodegradable and biodiverse ecosystem providing plenty of services. They are Important Bird Areas that lies under the Central Asian Flyway and Vembanad Ramsar site of India. Intense study was carried out on the feeding ecology of the Near Threatened Oriental Darter (*Anhinga melanogaster*) from 01 January 2016 to 01 January 2020 in the selected Pokkali wetlands of Ernakulam District, Kerala. In India, the bird is legally protected under the Wildlife (Protection) Act, 1972. Data collection on this Near Threatened avifauna is essential for the implementation of conservation strategies. Presence of the Near Threatened avifauna in the study area indicates the healthy nature of the ecosystem and the environment.

Keywords: Pokkali wetlands; Central Asian Flyway; Vembanad Ramsar site; Feeding ecology; Near Threatened; Oriental Darter *Anhinga melanogaster*

2.INTRODUCTION

Wetlands commonly referred as the 'Kidneys of earth' are ecosystems with unique features. These environments are at the interface between truly terrestrial and aquatic ecosystems (Mitsch and Gosselink 1999). Wetlands alone support 20% of the known range of biodiversity in India (Deepa and Ramachandran 1999). Kerala state has the largest area under wetlands (Nayar and Nayar 1997).

Pokkali is a special, traditional, sustainable, organic cultivation is practised in the water-logged coastal regions of Ernakulam, Alappuzha and Thrissur Districts of Kerala, India. The paddy cultivation is carried out during the low saline phase (May-October/mid November) followed by shrimp cultivation in the high saline phase (October/mid November-April) (4). This natural system of cultivation strictly relies on the nature and climate. The Pokkali wetlands are part of Central Asian Flyway and Vembanad Ramsar site of India (5). They are highly nutritive, biodegradable and biodiverse areas providing plenty of services (6).

Birds are excellent ecological indicators (7). They indicate the health of the ecosystem and the environment. The Oriental Darter *Anhinga melanogaster* (Pennant 1769) also known as Indian Darter is a globally Near Threatened water bird (IUCN 3.1) of the family Anhingidae in the order Suliformes (8). They are cormorant-like species, but differ with their long, slender, snake-like neck. Hence also known as snake-bird. In India, the

bird is legally protected under Schedule IV of the Indian Wildlife (Protection) Act, 1972. They are distributed across Asia, Pakistan, India, Nepal, Sri Lanka, Bangladesh, Myanmar, Lao People's Democratic Republic, Thailand, Cambodia, Vietnam, Malaysia, Singapore, Indonesia, Brunei, Philippines, Sulawesi and Sunda Islands (8). Data collection on this Near Threatened avifauna is essential for the implementation of conservation strategies.

3.STUDY AREA AND METHODOLOGY

A study on the Feeding ecology of the Near Threatened Oriental Darter (*Anhinga melanogaster*) was carried out from 01 January 2016 to 01 January 2020 in the five selected Pokkali wetlands of Ernakulam district, Kerala. The selected Five Pokkali wetlands are: 1. Kandakkadavu (9°51'34.182"N) (76°16'6.4668"E) 2. Kadamakudy (10°01'53"-10°4'21" N) (76°14'25.7"-76°16'46" E) 3. Kumbalangi (9°51'01"-9°54'02" N) (76°16'11"-76°11'49" E) 4. Kuzhupilly (10°05'01"-10°06'18" N) (76°11'23"-76°13'08" E) 5. Palliyakkal (10°6'0"N) (76°13'0"E). Fortnightly visits were carried out in a month. Observations on the feeding behaviour was carried out with the help of spotting scope (10-45X) and binocular (7×50). Direct observation method was used for the study (9). The observation was done from 06.00 a.m. to 6.30 p.m. The list of food items consumed, size of the prey, feeding techniques, interaction with other birds and water depth were recorded. Most of the observations were carried out from a distance of 50-200 m. Fishes collected using Dip net, Cast net and Scoop net were identified and recorded (10).

4.RESULTS AND DISCUSSION

The Oriental darter exhibits diurnal feeding pattern. Hence it was easy to study the feeding ecology. It usually preferred places with abundant water. During the study it was observed that, it usually foraged solitarily. No flocks or groups of Oriental Darters were recorded. It was recorded that they always kept a distance from other birds without showing any aggressive behaviour. The selection of feeding ground mainly depends on the food availability and less disturbances. In response to habitat conditions the bird displayed local movements.

During the present study it was recorded that oriental darters were fairly common in the study area, but are not abundant. They are recorded from all the five selected study stations. Both adults and juveniles were recorded. The adults are with black plumage. Their wing coverts and tertials have silver streaks. The neck and crown has a brown shading and underparts are dark brown. It has a white streak along the side of the neck. The chin and throat are white. The iris is white with a yellow ring around. Their upper mandible is dark and the lower mandible is yellow. The base of the bill is light brown, the legs and webbing are yellow. Their four toes and webbing can't be seen during swimming or flying but can be seen while resting over nearby trees. Their long narrow neck, sharp pointed beak, wettable feathers are adaptations for feeding from wetlands.

Adults during breeding and non-breeding periods were recorded from the study area. The oriental darter in their breeding season can be easily identified by observing their iris. The yellow ring around their white iris are much brighter. The neck was in reddish brown colour. The juveniles can be distinguished easily with their size. Their neck has light colouration. They lack long pointed scapulars and white streak on the side of the neck.

The behaviour of the Oriental Darter was similar to the behaviours recorded by Abdulali (11), Bates (12) and Kamsuk (13). The Oriental Darters were found to prefer prey of medium size. The maximum size of the prey depends on the ability of the birds to catch and handle (14). Large prey is avoided due to increase in handling time (15) and (16).

On analysing their diet and mode of feeding, it was found that they are carnivores (17). They mostly prefer fishes. They are fast swimmers. While swimming the entire body was submerged except the neck. The captured fish is tossed in the air and then swallowed. The head is swallowed first. Sometimes it engulfs the prey as a whole. It spends 3-4 minutes under water in search of prey. Their favourite diet includes *Penaeus indicus, Penaeus monodon* and *Etroplus suratensis*. The most preferred feeding hours are between 6.00 a.m.-10.30 a.m. and 3.30 p.m.-6.00 p.m. The feeding time depends on light. They choose sunny areas rather than shady areas. It was observed that after morning feeding they change their feeding ground. It was observed that Oriental darters spent more time in vegetated areas. After feeding they exhibits behaviours like preening and sun bathing. Sometimes they rest on the nearby trees like *Acacia nilotica, Cocos nucifera* or mangroves like *Rhizophora mucronata* and *Rhizophora apiculata*. It also rests over poles or towers in the fields. Sometimes they snoar at thermals during hot climate. They preferred foraging areas with shallow water of less than (<) 1.5

m depth. They rarely walk through the fields. On standing, their long tail touches the ground. They love light rains.

No breeding or nesting was reported during the study period. They usually avoid human interaction. When disturbed they dive into the water and appears above the surface on reaching a safe distance. They prefer less noisy areas. Their flight resembles a cormorant. Sometimes they glide through the air. No threats were recorded during the study period.

5.CONCLUSION

The people in the study areas have much conservative feeling towards the avifauna. The area is free from much disturbances. Hence large number of Oriental darters were found in the study area. These birds are excellent tool in monitoring the ecosystem health. Hence their presence indicates the healthy nature of the ecosystem and environment.

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