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Birds Associated with the Coconut Palm *Cocos nucifera* in an Agroecosystem in the Western Ghats Region of Kerala, southern India

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Abstract
Birds visiting coconut palms (*Cocos nucifera*) were studied using the direct observation method in the village of Kizhakkoth panchayath. Thirty one species of birds, belonging to seven orders were recorded in coconut palms for foraging/breeding/roosting purposes. The intense use of palm trees by birds in the agroecosystem is attributed to the scarcity of native wild plants and the availability of preferred prey species on the palm. Conversion of coconut plantation to rubber plantation will lead to the disappearance of common birds from the rural agroecosystems of Kerala.

1. Introduction

Since natural vegetation is uncommon in agroecosystems, the majority of birds depend cultivated areas such as palm plantations and paddy fields for survival. Birds in agricultural belts are generally small groups of opportunists which are able to exploit the changing environment caused by agricultural practice and are human commensals (McKay 1980). The present study provides details of the birds directly associated with coconut palms at a rural agroecosystem in Kerala.

2. Materials and Methods

Kizhakkoth Panchayath, (11° 24.5' N; 75° 54.4' E) is a rural agricultural village (19.85 sq. km) in the Kozhikode district which is situated in the Malabar Coast moist deciduous forest ecoregion. Intensive deforestation during the 1960s–70s led to replacement of all the forests by coconut, areaca nut plantations and rice paddies, except small remnant patches in sacred groves. Ten coconut palms in the area were selected for the study. The direct observation method (Altman, 1974) was followed for the study during the period of 1 December 2010 to 30 November 2011. Birds visiting coconut palms were observed with binoculars (8×40, Zenith prismatic) once a week and identified using Grimmett *et al.* (1998). Common names and classification follow Manakadan & Pittie (2001). Birds foraging the coconut palms are categorised into crown foragers, base foragers and trunk foragers. Birds breeding on coconut palms are categoriszed as base breeders and trunk breeders (Table 1).

3. Results

Thirty one species of birds, belonging to seven orders were recorded visiting coconut palms. Among these, 21 species utilise the palms for foraging activities, 23 species for roosting and 11 species for breeding purposes (Table 1). Six species of birds; Greater Coucal *Centropus sinensis*, Oriental Magpie-Robin *Copsychus saularis*, Common Myna *Acridotheres tristis*, Indian Treepie *Dendrocitta vagabunda*, House Crow *Corvus splendens* and Jungle Crow *Corvus macrorhynchos* depend on coconut plantations for their foraging, breeding and roosting activities.

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Table 1. Bird species and numbers observed on coconut palms during foraging, breeding and roosting activities at Kizhakkoth Panchayath from 1 December 2010 to 30 November 2011.

Common name	Scientific name	Foraging			Breeding		Roosting
		Base	Trunk	Crown	Trunk	Crown	
Order: Ciconiformes							
Phalacrocoracidae							
1. Little Cormorant	*Phalacrocorax niger*						4
Ardeidae							
2. Little Egret	*Egretta garzetta*						2
3. Intermediate Egret	*Mesophoyx intermedia*						18
4. Cattle Egret	*Bubulcus ibis*						4
5. Indian Pond-Heron	*Ardeola grayii*						28
Accipitridae							
6. Brahminy Kite	*Haliastur indus*					1	1
Order: Gruiformes							
Rallidae							
7. White-breasted Waterhen	*Amaurornis phoenicurus*					1	
Order: Psittaciformes							
Psittacidae							
8. Rose-ringed Parakeet	*Psittacula krameri*				2		8
Order: Cuculiformes							
Cuculidae							
9. Greater Coucal	*Centropus sinensis*	23		11		2	6
Order: Coraciformes							
Alcedinidae							
10. White-breasted Kingfisher	*Halcyon smyrnensis*						8
Order: Turniciformes							
Capitonidae							
11. White-cheeked Barbet	*Megalaima viridis*				2		
Picidae							
12. Common Golden-backed Woodpecker	*Dinopium javanense*		17	9	2		
Order: Passeriformes							
Irenidae							
13. Common Iora	*Aegithina tiphia*			2			
Turdinae							
14. Oriental Magpie-Robin	*Copsychus saularis*	29		18	2		6
Timaliinae							
15. Jungle Babbler	*Turdoides striatus*	98		32			16
Sylviinae							
16. Common Tailorbird	*Orthotomus sutorius*			4			1
Muscicapinae							
17. Asian Brown Flycatcher	*Muscicapa dauurica*			3			1
Monarchinae							
18. Asian Paradise-Flycatcher	*Terpsiphone paradisi*			1			1
Dicaeidae							
19. Tickell's Flowerpecker	*Dicaeum erythrorhynchos*			15			2
Nectariniidae							
20. Purple-rumped Sunbird	*Nectarinia zeylonica*			12			3
21. Purple Sunbird	*Nectarinia asiatica*			6			2
22. Little Spiderhunter	*Arachnothera longirostra*			4			1
Zosteropidae							
23. Oriental White-Eye	*Zosterops palpebrosus*			8			3
Sturnidae							
24. Common Myna	*Acridotheres tristis*	45		21	4		38
Oriolidae							
25. Eurasian Golden Oriole	*Oriolus oriolus*			3			
26. Black-headed Oriole	*Oriolus xanthornus*			19			
Dicruridae							
27. Black Drongo	*Dicrurus macrocercus*			41			
28. Greater Racket-tailed Drongo	*Dicrurus paradiseus*		16	24			

Common name	Scientific name	Foraging			Breeding		Roosting
		Base	Trunk	Crown	Trunk	Crown	
Corvidae							
29. Indian Treepie	*Dendrocitta vagabunda*			48		2	7
30. House Crow	*Corvus splendens*			56		4	19
31. Jungle Crow	*Corvus macrorhynchos*			37		2	9
TOTAL species number		**4**	**2**	**21**	**5**	**6**	**23**

The crown of live trees and the dried trunk of dead coconut palms provide suitable breeding sites for many platform nesters such as Brahminy Kite *Haliastur indus*, White-breasted Waterhen, *Amaurornis phoenicurus*, Greater Coucal, Indian Treepie, House Crow and Jungle Crow and cavity nesters such as Rose-ringed Parakeet *Psittacula krameri*, White-cheeked Barbet *Megalaima viridis*, Common Golden-backed Woodpecker *Dinopium javanense*, Oriental Magpie-Robin and Common Myna.

4. Discussion

The wide canopy of the coconut palm together with its many fronds protect the nest and nestlings from predators. Similarly, hole nesting birds are able to construct their nest in the trunk with minimum effort, especially when it is dead and therefore dry. The preference of coconut palms for roosting may be due to the foliage structure and the height of the tree, which provides protection from enemies. The intense use of palm trees by birds in the agroecosystem is attributed to the scarcity of native wild plants and the availability of preferred prey species on the coconut palm.

The decline in the coconut price and the unavailability of coconut collectors have resulted in farmers beginning to convert coconut plantations to rubber plantations. This will lead to the disappearance of common birds which are dependent on palm plantations in the rural agroecosystem. Communal roosting of birds on the coconut palms in human residential areas and cities result in the killing of many birds due to their droppings creating hygiene problems. Farmers drive away roosting birds from plantations by using fireworks due to the damage caused by communally roosting birds to the coconut flowers and fronds. People kill wetland birds such as Little Egret *Egretta garzetta*, Intermediate Egret *Mesophoyx intermedia*, Cattle Egret *Bubulcus ibis* and Indian Pond-Heron *Ardeola grayii* for their meat at these roosting sites. Harvesters destroy the nest and nestlings of the breeding birds found in the tree during coconut collection.

Usually very less amount of pesticide is using for the coconut plantation so it is an ecofriendly system which indirectly conserve a habitat of resident bird fauna. Promotion of coconut cultivation in villages and programmes about the role of birds in agriculture to farmers and villagers will helps to conserve these coconut palm and associated birds.

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