Vertical Gradient and Resource Partitioning of Migratory Birds on *Barringtonia* Tree in Nelapattu Bird Sanctuary

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Abstract: Nelapattu bird sanctuary is one of the biggest pelicanary and also a breeding and roosting site for long distant and local migrant birds is located in Nellore District, Andhra Pradesh, India. The sanctuary area is approximately 458.92 Ha and consists of freshwater ponds in core area of 82.56 Ha with *Barringtonia trees* which grow in water bodies where the birds roost. The water body also consists of *Prosopis juliflora* thorny plants. Both these plants are nesting and or roosting sites for Pelicans, Open bill storks, White Ibis, Cormorants, Large Egrets, Small Egrets, Dab Chicks, Pond Herons etc. The niches of these birds appear to overlap but each species roosts and nests in specific areas of trees thus partitioning the space resource and minimizing overlap and reduce competition among different species. The resource partitioning by vertical gradient of birds is an evolutionary adaptation that reduces the harmful effects of interspecific competition.

Key words: Long distant migratory birds - Vertical gradient - Resource partitioning - *Barringtonia* trees

INTRODUCTION

Nelapattu bird sanctuary located in Nellore district, Andhra Pradesh, India is one of the biggest Pelicanary attracting more than one thousand two hundred Grey Pelicans (*Pelecanus philippensis*). Besides Pelicans, Open bill storks (*Anastomus oscitans*), White Ibis (*Threskiornis aethiopica*), Little Cormorant (*Phalacrocorax niger*), Large Cormorant (*Phalacrocorax carbo*), Small Egrets (*Egretta garzetta*), Large Egrets (*Ardea elba*), Dab chick (*Tachybaptus ruficollis*), Pond Heron (*Ardeola grayii*) etc. The birds visit for nesting, breeding and roosting from September/October to April/May every year. Ecological gradient or strata is common phenomena in major ecosystems like mountains, forests, terrestrial and marine ecosystems [1-6]. In the present investigation the vertical gradient of birds on *Barringtonia* and *Posophys* trees for partitioning the resource in Nelapattu bird sanctuary is being reported and literature in this direction is very meagre or not reported.

MATERIALS AND METHODS

The birds are observed with binoculars and photographed using digital camera. The birds are identified as described by Ali and Ripley [7]. The birds are photographed between 5.30 p.m. to 6.30 p.m. when all migratory birds return to nesting/roosting site in Nelapattu bird sanctuary after feeding in Pulicat Lake [8].

RESULTS AND DISCUSSION

The migratory birds Pelicans, Open bill storks, White Ibis, Cormorants, Large Egrets, Small Egrets, Dab Chicks etc. occupy different specific areas of trees and show a vertical gradient or strata (Fig. 1 and 2). The top branches of the tree or canopy are occupied by Pelicans and the next strata consists Open bill storks, followed by White Ibis, Egrets, Herons and Cormorants. The Dab chicks are observed in the lower most strata i.e., the water surface containing water weeds or wild grass. Thus a vertical gradient is visualised. The Ecologists Mac Arthur [9] described vertical gradient of five species of Warblers in Northern America, *Spruce* trees. Mac Arthur [9] found that each species concentrates in specific areas of *Spruce* trees and also nests at slightly different times. He suggests that the Warblers partition the resource and reduce competition among the different species. The present situation in Nelapattu bird sanctuary the tree space partitioning is observed. It is interesting to note that the Pelicans and Open bill storks occupy canopy branches at highest level or stratal level one,
birds occupying lower branches of the trees. This phenomenon, called resource partitioning is an evolutionary adaptation thus reduces the harmful effects of interspecific competition as described by Mac Arthur.

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