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**A COMPARATIVE STUDY**

**ON THE ECOLOGY OF**

**WOODY VEGETATION OF**

**FOREST TYPES**

**IN THE**

**MADURU OYA NATIONAL PARK**

by

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requirement for the degree of

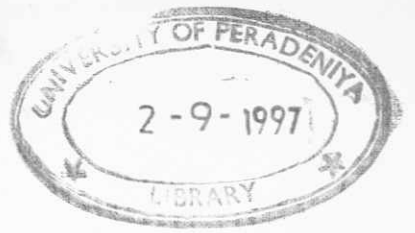
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(i)

ABSTRACT

The western portion of the Maduru Oya National Park was selected to study the ecological characteristics of four different types of dry zone forest.

The initial cursory survey which was conducted on the vegetation of the study area enabled to categorize the vegetation into two opened types, two semi-opened types and four closed types. The four closed types of vegetation considered as forest types of the National Park are;

- High forest - dense form of dry mixed forest, the typical type of forest of the Park,
- Riparian forest - vegetation along the banks of the streams, the typical forest type has been influenced by high soil moisture levels.
- Hill forest - vegetation on the hill slopes and crests in the Park, the typical forest type has been influenced by the elevation, and

(ii)

Disturbed forest - degraded form of the dry mixed forest,

This forest type has been affected by the human influence.

The main objective of the present study is to compare the physiognomy, floristics and structure of the above mentioned four types of forests found in the study area.

The partial randomization method was followed in the present study to collect data. Plot sampling was done to collect data for ecological survey and transect sampling was done to gather details to draw profile diagrams. The number of woody individuals in plots was taken into account according to their species, diameter classes and height classes.

The herbarium samples were collected and identified to prepare a herbarium of woody species in the Maduru Oya National Park. A map of vegetation of the study area was prepared based on the cursory survey done at the initial stage of the field research.

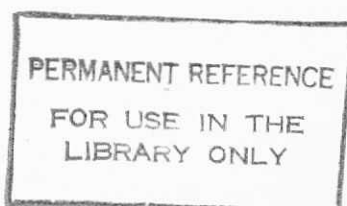
Data were analyzed to gather details on the physiognomy of the forests found in the Maduru Oya National Park. The density and frequency of the individuals, according to their species, were calculated for all the woody individuals while the basal area was calculated only for woody individuals of dbh  $> 5$  cm. Relative

Importance Values were calculated for each and every species.

During the present study 116 species were enumerated out of 7,218 woody individuals  $\geq 5$  cm dbh and 118 species out of 37,163 woody individuals  $< 5$  cm dbh in the four forest types at the Maduru Oya National Park.

Data show that the high forest type has the well established overstory as it has high density in  $> 25$  cm dbh stems. High forest of Maduru Oya Park is physiognomically, structurally and floristically much closer than the other forest types to the dry mixed forest community typical of the dry zone of Sri Lanka. However, the forest in Maduru Oya National Park is poor in Manilkara hexandra, Mischodon zeylanica and Alseodaphne semecarpifolia, which are common in dry zone forests. The prominent species with high density and frequency values found in the Maduru Oya National Park are Euphoria longana, Pterospermum canescens and Dimprphocalyx glabellus.

Several endangered species were found within the Maduru Oya National Park viz; Vatica obscura, Diospyros ebenoides and Zanthoxylum caudatum.



The riparian forest found in the National Park has the highest density and basal area values, while the disturbed type of forest has the lowest values. Higher basal area in the riparian and high forest types mainly due to the abundance of Ficus species and Terminalia arjuna. The highest species richness in understory woody individuals is found in the disturbed forest. According to the data, the hill forest of Maduru Oya National Park does not show the typical dry zone hill forest characters as in the Ritigala Strict Nature Reserve.

The data show that there is no significant difference in physiognomy between the hill forest and the high forest. Data also show that the soil moisture and the human impacts cause some differences in the physiognomy of riparian and disturbed forests as compared with that of the high forest. However, the disturbed forest may develop into a high forest in physiognomy if adequate protection is given.

Present comparative study shows that the forest of Maduru Oya National Park is dominated by dry zone mixed forest of varying degrees of disturbance and the riparian forest.