

Extended Abstract

International Symposium of Sabaragamuwa University of Sri Lanka (ICSUSL) – 2017 Diversity of butterflies in different Ecosystems related to Pitadeniya area of Sinharaja Forest

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Abstract:

The Sinharaja rainforest is the largest forest in Sri Lanka, having higher biological values and it is located in the Southwestern part in low country wet zone of Sri Lanka. Several natural forests in south western part were denominated as “Sinharaja” in the past and such forests as Dellawa, Walankanda, Warkalgoda, Diyadawa are now represented the Sinharaja complex. Butterflies are one of the beautiful groups of insects in forests like this, having a high biodiversity. In Sri Lanka about 245 butterfly species can be seen, and 26 species are endemic to Sri Lanka. About 65 species out of the all species can be seen in Sinharaja and a few of them are endemic to Sri Lanka. The key objective of this project is to study the diversity of butterflies in different ecological systems in Pitadeniya associated area of Sinharaja. Within the methodology of this study, primary and secondary sources were used in data collection and field observations were taken under primary sources. In here, data recording was done by observations of river basin areas, dense forests and home gardens. By the sides of the route, approximately 25 m away from the way is subjected to focus on direct observations for four times. Internet guidebooks were used under secondary sources. For data analysis, there were used the quantitative and qualitative methods and the descriptive method was used as qualitative method. Percentages and charts analysis were used under quantitative methods and also charts, tables, photographs and maps are used in presentation of data. Butterflies are abundant in river basins of the study area. Plenty of them there are identified as common species. In the dense forest, the butterfly population is low and similar population of the endemic butterfly species can be found there. In relation to Home gardens, in dense forests, the butterfly population became higher value. When considering about the diversity of the butterflies in the Sinharaja rainforest, there can be identified the spatial difference, which was changing according to the Ecological system. Similarly, it was identified that the size of the butterflies, their colours, Shapes, flight times are different from each other according to the ecosystems. It is concluded that the differences of spatial duration of the forest directly affect the changes of the behavior of the butterflies.

Key Words: Sinharaja, Pitadeniya, Butterflies, Ecosystem, Bio diversity

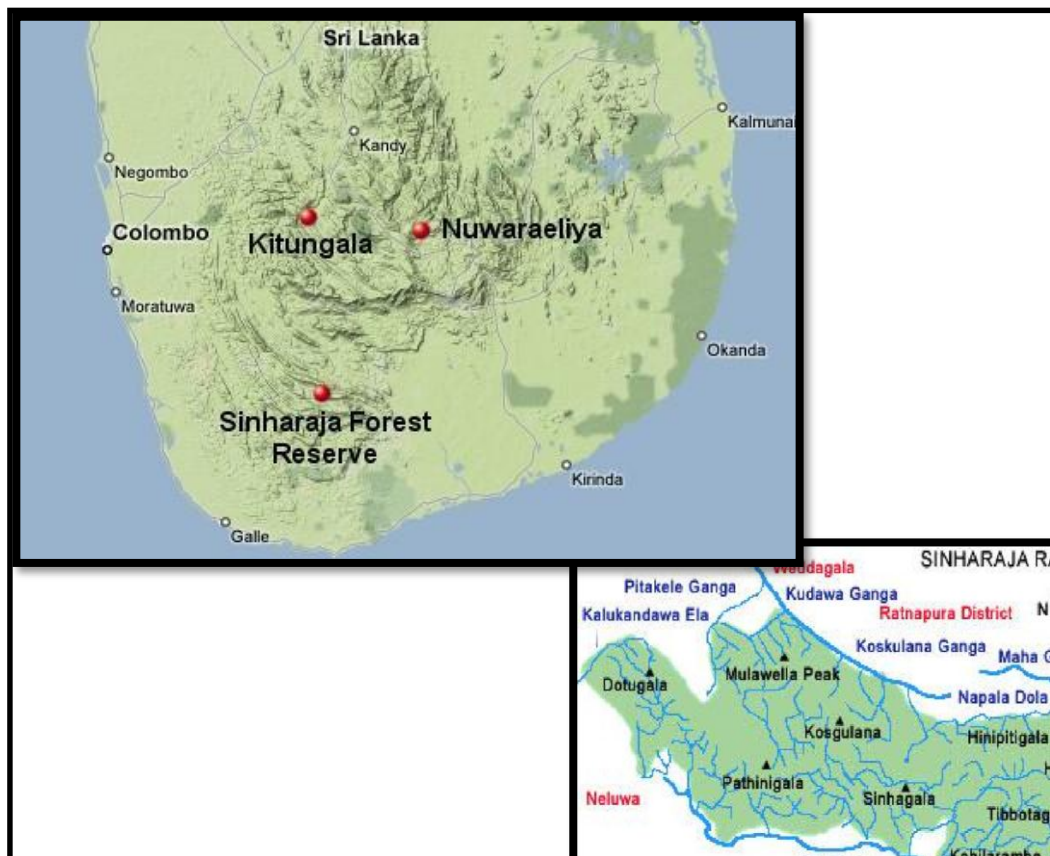
1. . Introduction and research problem/ issue :

The Sinharaja is the largest forest in Sri Lanka consists of higher biological values, located in South-western part of low country wet zone. Napoladola and Kosgulana River run in the north , Mahadola and Ginganga flow in South, Kalukandawa Ela and Pitakele river run in West direction and Birashwood Hena is bounded on the East. The total extent of the Sinharaja Forest is 11187 ha, and it lies between 6^o21'-6^o27'N and 80^o21'-80^o37'E.(Gunawardhana,2007)

Source: sinharaja world heritage rain forest srilanka (2010),sinharajathe fames rain in srilanka, <http://nalkajayawardana.blogspot.com> accessed on 2017/01/23.

It is positioned at 100m-1200m elevation from the sea level and extended through the 10^o-35^o steep area. Excessive part of the forest is belongs to low country wet zone which less than 1000m from sea level. One of its parts belongs to sub rocky area, which is more than 100m in elevation. The Sinharaja receives rain mainly from South West and North East Monsoons and its annual rainfall range is about 3000mm-6000mm. Annual Temperature of the Sinharajais about 18^o-27^o Centigrade. Relative Humidity Value is about 75% - 80%. Butterflies can be identified as an attractive bio species in Sinharaja which have higher biodiversity values. About 243 butterfly species including with 11 families are existing in Sri Lanka and 26 species of them are endemic to here. About 65 species out of the all species can be seen in Sinharaja and few of them among this, are endemic to Sri Lanka. Our selected

Map 1



problem of this study is how does the spatial Changes of the forest affected to the behavior of the butterflies.

Objectives:

The main objective of this research is to study the diversity of butterflies in different ecological systems in related to areas in pitadeniya of Sinharaja. In here, as the extra objectives of the research are to identify the nature of the butterflies, colour, size and the spatial diversity and to identify the factors that affected to create the differences between those features in the eco systems of River basin areas, dense forests and homesteads.

Research Methodology

For data collection, in study methodology, primary and secondary data sources are used; and under primary data sources field observations are taken. Field observations are interpret by observing the ecological systems of the river bands and dense forest and homesteads .Direct observations are taken about 25mof by the side of the route in four times. Under secondary data Books, Internet and guidebooks are used. In data analysis

quantitative and qualitative methods are used and under qualitative method descriptive method and under quantitative method percentages and chart analysis are used and in data presentation charts, tables, photographs and maps are used.

Results and findings

Our main objective is to study the diversity of the butterflies in different ecological systems related to pitadeniya area of Sinharaja forest. In here, clear differences could be identified by direct observations in the behavior of butterflies. Mainly, the activeness of the butterflies could be identified after 8a.m. after sun rises, their wings are dry up and they become more active. Clear differences could be identified in size, color, shape, active times and behavior of the butterflies among the ecological systems of river basins, dense forests and homesteads. It was identified that the population of butterflies is high in the eco system of river basins and their population relatively low in dense forests. A considerable amount of population retains in the homestead ecological system.

About 65 species can be identified in Sinharaja and most of them are endemic to Sri Lanka.(Gunawardhana,2007).Sri Lanka Terri Nymph, Glassy Tiger, Common Bush Brown, Sri Lanka Common Birdwing, Common Banded Peacock, Sri Lanka Blue

Mormon ,Sri Lanka Red Helen, Sri Lanka Blue Ouklef, Sri Lanka Five-bar sword Tail, Great Egg flyRed spot Duke, Fan aidEgg fly, The Chipper Blue Bottle of species can be identified as the reported butterflies in Sinharaja. Within the study period, Sri Lanka Tree Nymph, Sri Lanka Roes, Sri Lanka Read Helen, which are endemic to Sri Lanka, can be identified in River basins and dense forests. According

to the data collected, -----(what) can be presented as below.

Table 01: Data of Observed Butterflies.

Date	Time	Eco System	Size	Colour	Name	Scientific Name
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2016-12-21	11.35a m	Riversid e	3 cm	Yello w	Small Grass yellow	Euremabrigitta rubella
	11.40a m	Riversid e	2cm	yellow mixed with brown	Common durtlet	Oriensyoloides
	11.45a m	Riversid e	3cm	Blue	Plaino hedge blue	Celastrinallaevendularis
	11.48a m	Riversid e	7cm	yellow mixed with white	Little orange tip	Colitis etridalimbata
	12.10p m	Riversid e	5cm	dark yellow	Common emigrant	Catopsiliaacrocalecroc ale
	12.20p m	Riversid e	4cm	dark blue and black	Fordet- me-not	Catochoysops Strabo
	12.30p m	Homeste ad	2cm	light yellow light blue	Lemon emigrant	Catopsilia Pomona
	12.34p m	Riversid e	2cm	light blue	Ceylon hedge blue	Udaralanka
	12.40p m	Riversid e	2cm	white colour ed with black	Mattled emigrant	Catopsiliapyrantham inna

				spots and strips		
	1.05pm	Riverside	6cm	black and white	Common gull	Ceporanerissaevagete
2016-12-22	9.43am	Wilderness	6cm	black and blue colour	Blue Mormon	Papiliopolymnestorparinda
	10.10am	Wilderness	5cm	brown colour	Brown chocolate solidier	Junoniaiphitapluiatalis
	10.11am	Riverside	10cm	black in white color wings	Ceylon terr nymph	Idea iasonia
	10.20am	Riverside	5cm	yellow colour	Common albatross	Appiasalbinadaronda
	10.35am	Riverside	4cm	Black and white	Milkg cerulean	Jamideslacteata
	10.56am	Riverside	6cm	with bay, white and	Common cerulean	Jamidescelenotissama

	International Conference of Sabaragamuwa University of Sri Lanka - 2017			orange dots		
11.53am	Riverside	7cm	black and golden colour	Ceylon Rose	Pachlioptajophonjophon	
12.05pm	Riverside	10cm	black wings with red spots	Red helen	Papiliohelenusmoorea	
12.51pm	Riverside	1cm	Purple and Ash beneath the wings	Common hedge blue	Acytolepisuspafelder	
1.00pm	Riverside	2.5cm	Blue and around the wings black	Dark Ceralion	Janidesbochusbochus	
1.38pm	Wildness	5cm	black spots and strips in	Common sealers	Neptishy das warmona	
			black wings			

Source: Field observation 2016, Gamage, 2007

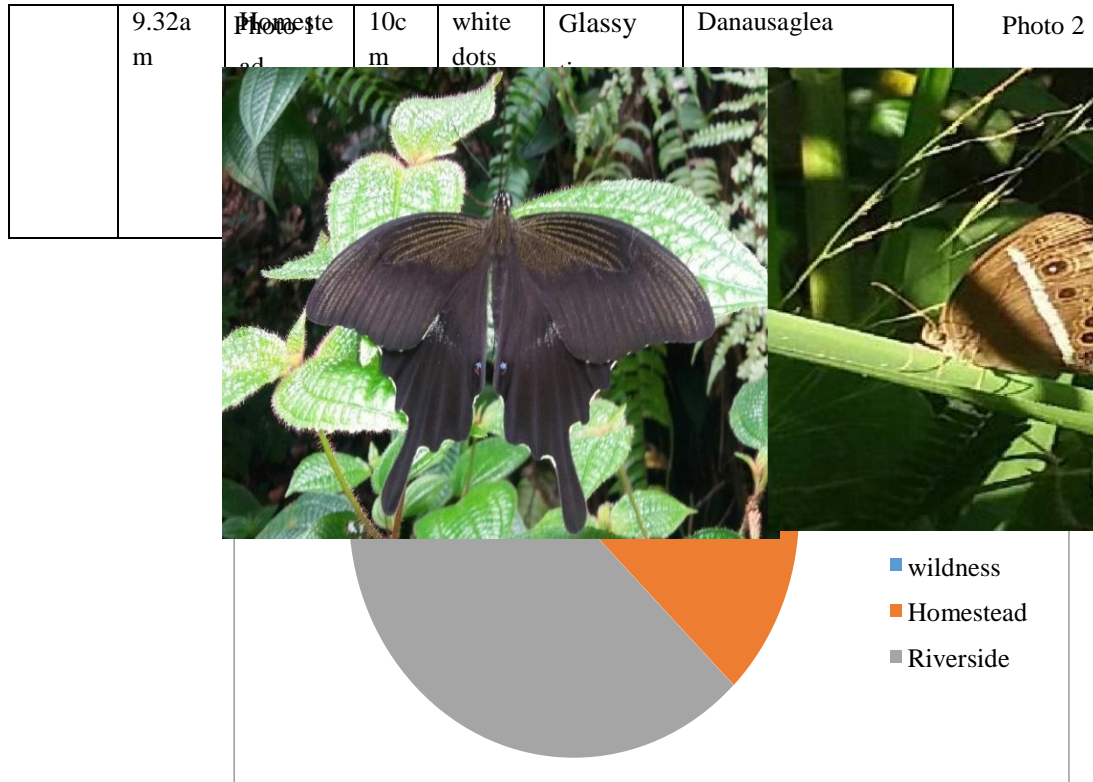
According to the table depicted above, the butterflies met us near the river basins,

Homesteads;dense forests can be presented as below according to their percentages.

	1.57p m	Wildness	10cm	. black spots and strips in black wings	Sri Lanka Tree nymph	Idea iasonia
	2.45p m	Riverside	2cm	black in white wings	Common pierrot	Castaliusrosimon
2016-12-23	7.56a m	Homestead	3cm	bay and white	White four ring	Ypthimaceylonica
	7.58a m	Homestead	2cm	white spots in brown wings	African BabalBlue	Azanusjesousgamra
	8.11a m	Homestead		Black dots and white wings	Ceylon indigoRoyal	Tajaraarida
	8.16a m	Homestead	6cm	Yellow, red white	Common yezebel	Delies eucharis
				dots and black wings		
	9.18a m	Homestead	5cm		The Migger	Orsotrienedusman data

Chart 1

Diversity of butterflies
Riverside,
Homestead and
wildness in
Pitadeniya Site



Source: Field Observation 2016

According to the chart depicted above, the collected and reported data by observing the ecosystems of River basins, homesteads within our research, butterfly percentage that could be seen in related river basins was about 62.5%; homesteads, it was 21.88% and near the Dense forests, it was about 15.62%. Thus, the study revealed by observations, the population of butterfly was high in river basins and common species are abundant there. In the dense forest, butterfly population was low and endemic butterflies species are high. In relation to homesteads comparatively, the quantity of butterflies was high. The significant feature here is that the butterflies in homesteads and river basins were small and bright in color. However, in the dense forest they are large in quantity and dark in color.

Observed of butterflies



Photo 3



Photo 4

hedge Small grass yellow:

deri *Euremabrigittarublla*(2016/12 /



Photo 5

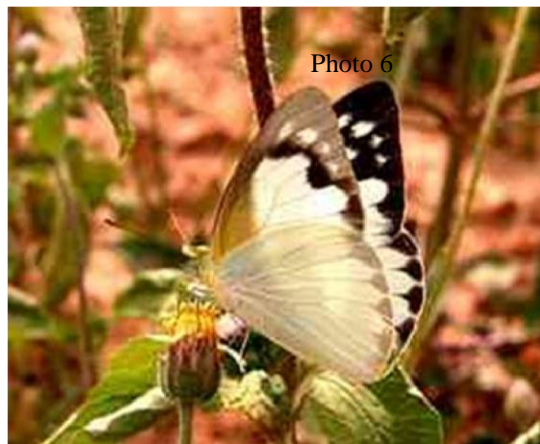


Photo 6

edge blue: Common

albatross:*Appias*

s(2016/12/21-11.35am)

albino daronda(2016/12/22-

Conclusions and Recommendation

According to the research conducted through the river basins, home gardens and dense forests related to the Pitadeniya area of the Sinharaja forest, there can be identified a prominent difference of behavior of the butterflies by direct observations. By the research we have done, the diversity of the butterflies is high. Similarly, the population of the butterfly is comparatively lower in the homestead and forests than the river basins. Butterflies in the home gardens and river basins are small in

size and colorful. But inside the forests, they are large in size and dark in color. They are active in this ecosystem after sunrise, in the morning and noon hours of the day. It can be concluded that the changes of the spatial duration in forest can be seen as a factor that clearly affected the behavior of the butterflies.

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