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Life Cycle of the Lime Blue Butterfly *Chilades Lajus* (Stoll) (Lepidoptera: Rhopalocera: Lycaenidae) from Sri Lankamalleswara Reserve Forest in the Eastern Ghats of Southern Andhra Pradesh

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ABSTRACT

The *Chilades lajus* (Stoll) Lime blue was univalent and seasonal. It was on wing almost throughout the year breeds with high frequency during the periods of monsoon and post monsoon seasons. Studies were conducted during January 2014 to December 2014 at Sri Lankamalleswara Reserve forest study area in the Eastern Ghats of Southern Andhra Pradesh. The growth from egg to adult was 19 - 22 days with four larval instar stages. There was no dormancy stage in the life history. Short life cycle and high success development of life stages suggest the production of more number of broods yearly. Besides, the population index of *Chilades lajus* on same ovipostion host plant leaves was discussed.

Key Words: *Chilades lajus* , Life cycle, Population index, Sri Lankamalleswara Reserve forest, Eastern Ghats.

INTRODUCTION

The lime blue butterfly *(Chilades lajus)* was a small butterfly found in India belongs to Lycaenidaes or blue family. *Chilades lajus* was chiefly tropical and subtropical in distribution (Kehimkar, 2008). The genus *Chilades* with three species occur in India. One of the species *Chilades lajus* was common in South India (Kunte, 2000 and Venkata Ramana, 2011). There was an increasing interest all over the world in butterfly conservation (New *et. al.*, 1995). Lack of complete Zoological knowledge of the concerned species including the breeding habitat was considered to be the reason for such declines and extinctions. Total knowledge of The 'Species biology' help to define management needs. In India where the exact status of several species of butterflies is not clearly known and where there was accelerated distribution of forests and other natural areas giving way to urbanization, the need for complete knowledge of the butterfly 'Species Biology' is becoming more urgent for taking up appropriate conservation measures (Bingham C.T. 1907, Harinath *et. al.*, 2014). Nearly 76 species of butterflies occur in the environment of Sri Lankamalleswara Reserve forest region and a complete study of their cycles

was in progress. Now we describe here the life cycle and population index for the lime blue butterfly *Chilades lajus* dry season form (Fig1).

Classification of Lime Blue Butterfly *Chilades lajus:*

Kingdom	: Animalia
Phylum	: Arthropoda
Class	: Insecta
Order	: Lepidoptera
Family	: Lycaenidae
Subfamily	: Polyommatinae
Tribe	: Polyommatini
Genus	: *Chilades*
Species	: *C.Lajus*
Binomial name	: *Chilades lajus* (Cramer 1782)

MATERIAL AND METHODS

Study areas were searched for the reproductive activity of the *Chilades lajus* and were found laying eggs on *Citrus aurantifolia*. The leaf material along with eggs and different larval stages were brought to the laboratory and incubated and further development stages were recorded and the success rates of hatching, larval and pupal development was also recorded. Young leaves were supplied daily to the growing larvae. Searches were made every month for recording the different life stages - egg, larvae, and pupae on the available 48 plants of *Citrus aurantifolia* to work out the population index.

Distribution (Fig: 2): This butterfly normally requires a tropical to subtropical environment but sometimes ranges into sheltered, hot temperate areas. In Southern Andhra Pradesh the butterfly was encountered at Sri Lankamalleswara Reserve forest, of the Eastern Ghats. The host plant, *Citrus aurantifolia plants* have been widely recorded in the Sri Lankamalleswara Reserve forest areas of Southern Andhra Pradesh and it occurs uncommonly in the tropical Southern Andhra Pradesh (Venkata Ramana *et. al.*, 2014, Harinath *et.al*., 2015, Surya *et.al.*, 2015), and in the hot, humid, open grass land areas of Eastern Ghats of Southern Andhra Pradesh.

The early stages of the breeding populations of this butterfly in the reserve forest are heavily parasitized by flies and wasps, and this would suggest that these populations are relatively sedentary (Harinath *et. al*., 2012, Harinath *et. al*., 2014).

Habitats: This was a common species, mainly associated with dry forest and accasia and *Citrus aurantifolia* scrub on the low lands.

Measurements of adults, eggs, larvae and pupae given here are based on ten samples each.

Fig 1. Dry season form

♀ **Male**: It shows a cyclical variation and in the dry season from having a darker brown on the underside of the hind wing. It was violet blue on the upper-side marked with tornal spot.

♂ **Female:** It is high blue at the basal area of the wings and has board bands with a series of tonal spots. The underneath was heavily speckled and black spots on the hind wing.

RESULTS AND DISCUSSION

Oviposition Host Plants (Fig. 3)

This butterfly was active in late monsoon and winter, but it occurs in probably throughout the year flying close to shrubs and small trees and settles often. They are univalent lays eggs singly on the underside of young *Citrus aurantifolia* leaves. They lay eggs during 1100-1600hr.

Life History Stages: (Fig. 4)

Adult:

It was a light green tail less blue. The underside has numerous dark spots, but the most prominent of these are two and that are joined to each other at a right angle, forming an "L". In the males the upper side of the wings was dull purplish blue, in the female it was brown with blue bases. Found in the moist deciduous, semi evergreen and evergreen forests, but only in open areas.

Eggs: (c)

The eggs are laid singly underside of the young citrus leaves. The eggs are disc shaped and greenish with a blue tinge. The eggs are incubated at room temperature of about 29 ^{0} C hatched in about 3 days. The hatched larva feed on the egg shell.

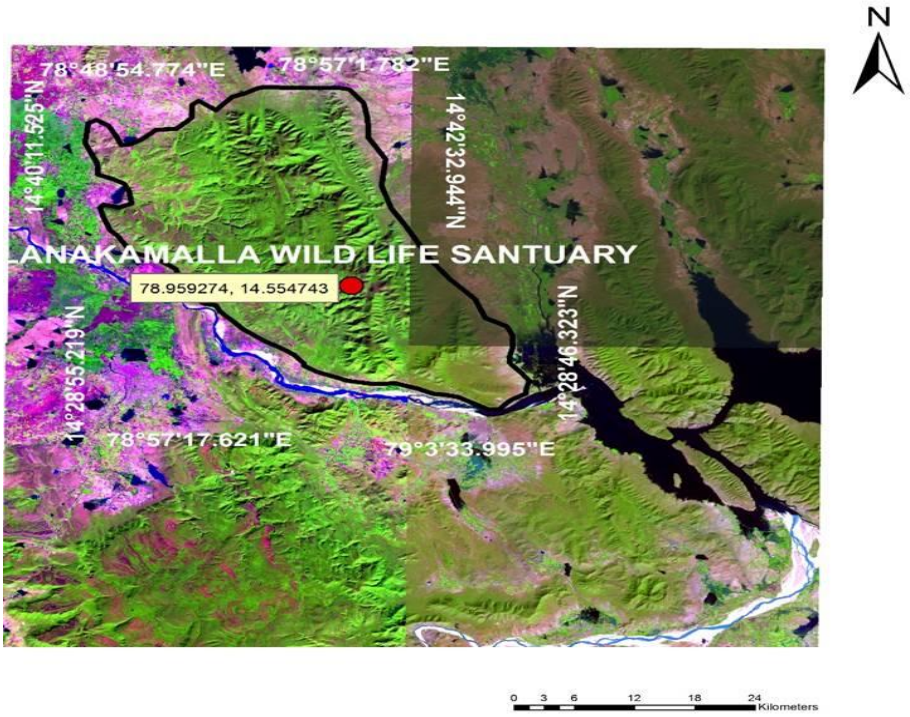

Fig 2. Study Area

Fig 3. larval host plant *Citrus aurantifolia* relatively young leaves

Instar I: (d) The caterpillar was pale green in colour lies underside of the young leaves. It was semi-circle with flat bottom and curved on dorsal side. 1.9 – 2.3 mm (2.2+ 0.02 mm). This stage lasts for 2 days. The most unique aspect of this group was that caterpillars of several species share a very special relationship with ants in return for the protection that they receive from the ants

Instar II : (f) This stage lasted for two days; it measures around 2.9 – 3.3 mm (3.2 + 0.02). It was light green with a mid-dorsal line. The head was black in colour.

Instar III: (g) This stage lasted for 2 to 3 days. It reached a length of 4 - 4.5 (4 + 0.5 mm) and a width of 1.00 to 1.50mm. The larva was green in colour, has greenish brown hairy with mid dorsal line.

Instar IV: (h) This stage lasted for 2 to 3 days and grows to a length of 8 – 8.5 mm (8.3 + 0.02 mm) in length and 1.8 – 2.00 mm in width. It was brown to green in colour with clear segments and reddish brown form on young leaves. A prominent dark spot was seen at the posterior end.

Pre-pupal stage: (i) This stage lasted for 2 days. At this stage the larva stops feeding get shortened in length and appears common hudge blue in colour.

Pupal stage: (j) This stage lasted for 6-7 days; humped portion was seen in the middle region,

abdomen was broader than the anterior part. It was common hudge blue coloured with black spots.

Population Index: (Fig: 5)

The numerical frequency of the natural occurrence of the life stages – eggs, larvae, pupae and adult on the host plants are given in Fig 4. All the stages were spotted out throughout the year in the study locality. However, there was a higher frequency of occurrence of the life stages during August to November and March to May which corresponds with the warmer temperature.

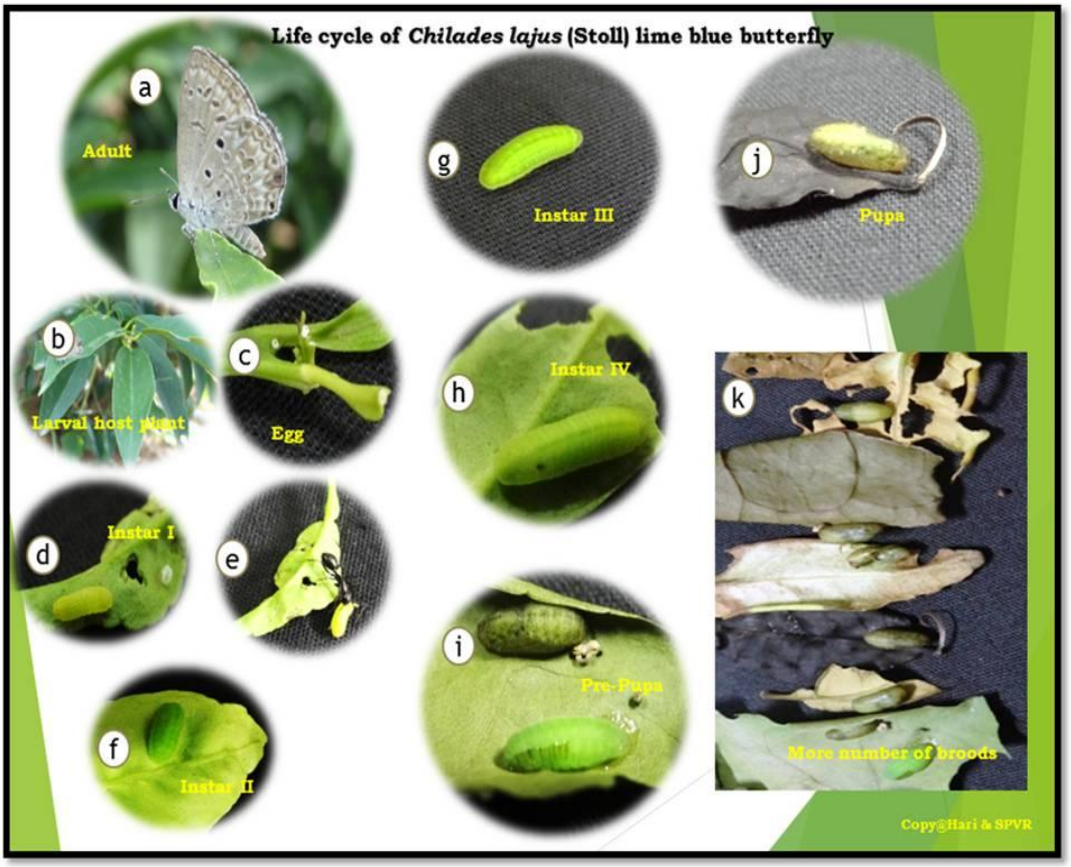

Fig. 4. Life cycle of *Chilades lajus* (Stoll) lime blue butterfly

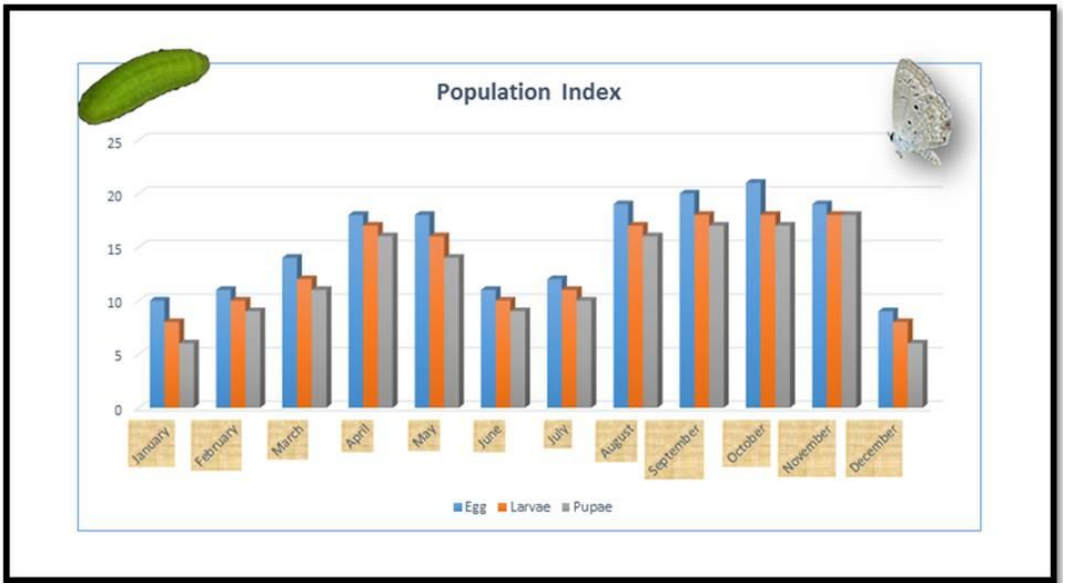

Fig. 5. Population index of eggs, larvae and pupae of *Chilades lajus* based on the searches of 48 *Citrus aurantifolia*.

CONCLUSION

Complete development from egg to adult formation was 19-22 days with 4 larval instar stages at laboratory conditions. Assuming a short life span of 3-6 days for the adults with more number of broods produced yearly (Gunathilakaraj 1998, Kunte 2000). This was exactly the condition revealed by population enumeration of eggs, larvae and pupae over the entire year. The availability of *Chilades lajus* with its year round distribution showing up better during March- May and August – December with the prediction of Owen (1971) that tropical butterflies breed thought the year with better performance in a certain period of the year.

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