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Litsea glutinosa (Lauraceae), a larval host plant of the Common Mime, *Chilasa clytia* L. (Papilionidae)

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ABSTRACT

Litsea glutinosa is a potential larval host plant for *Chilasa clytia* in deciduous forest ecosystems. Since it is a semi-evergreen tree, it bears leaves nearly throughout the year and this trait enables *C. clytia* to display multi-voltinism but it breeds mostly during early wet season when new leaves emerge and become available. Nevertheless, *C. clytia* can be maintained by planting *L. glutinosa* in butterfly parks and farms. This butterfly in adult stage utilizes *L. glutinosa* flowers as a source of nectar.

Key words: *Litsea glutinosa*, larval host, *Chilasa clytia*.

1. INTRODUCTION

The genus *Chilasa* belongs to the family Papilionidae, subfamily Papilioninae and tribe Papilionini. It represents five species groups, namely, *agestor*, *clytia*, *elwesi*, *veiovis* and *laglaizei* (Collins and Morris, 1985) of which only the first two groups are distributed in the Indian region (Revathy and Mathew, 2014). In *clytia* group, *C. clytia* has been reported to be distributed in habitats ranging from woody plains to moist deciduous areas where it is quite abundant during wet and post-wet season (Revathy and Mathew, 2014). It has two forms, *clytia* and *dissimilis* which mimic two different species of Nymphalids; the former mimics *Euploea core* while the latter mimics *Tirumala limniace* (Revathy and Mathew, 2014). The larval host plants of this species include *Cinnamomum zeylanicum*, *C. camphora*, *C. macrocarpum*, *Litsea chinensis*, *L. deccanensis*, *Persea macrantha* and *Alseodaphne semecarpifolia*, all belonging to Lauraceae family (Kehimkar, 2008). *L. coriacea* has been reported to be a larval host plant of *C. clytia* by Revathy and Mathew (2014). *C. clytia* larvae use mostly *Cinnamomum* species, *C. zeylanicum* and *C. cassia*. The larvae feed voraciously on the tender and maturing leaves of these species (Anandaraj and Devasahayam, 2004; Rajapakse et al. 2007). With this backdrop, field observations on *Chilasa clytia* have been made to record whether *Litsea glutinosa* acts as a larval host plant in the forest pockets of Chittoor district in Andhra Pradesh, India.

2. MATERIALS AND METHODS

Litsea glutinosa growing as a semi-evergreen tree species in the forest area of Chittoor District of Andhra Pradesh in Peninsular India (13°42. 539 N latitude and 079°20. 566 E longitude, and 2,541 ft altitude) was used for the study during June-October 2019. Based on the previous reports on the larval host plant species of the Common Mime, *Chilasa clytia*, this butterfly was carefully observed at the trees of *L. glutinosa*. Field observations indicated that this butterfly was found to be using *L. glutinosa* as its larval host plant. The feeding activity of its caterpillar instars was closely observed on the leaves of this tree species and noted certain observations in this work.

3. OBSERVATIONS AND DISCUSSION

Litsea glutinosa is a medium-sized semi-evergreen tree species (Figure 1a). It is fast growing and displays dioecious sexual system by separate staminate and pistillate individuals. Leaves are spiral with variable blade shape and size. Leaf fall and flushing events occur in quick succession during late dry season (Figure 1b) while flowering during wet season. *Chilasa clytia* butterfly (Figure 1c) early instars (Figure 1d) began to appear on the leaves during late dry season and gradually later stages of caterpillar instars began to appear during wet season. The caterpillars were found to be voraciously feeding on the leaves leaving behind mid ribs and veins. Field observations indicated that the instars of this butterfly use newly emerging tender leaves in preference to the aged and/or old leaves as their food. The adults emerge within 4-5 weeks and visit flowers to collect nectar. As the flowers are shallow with nectar almost exposed to sunlight, the adults of this butterfly probe the flowers with great ease to collect nectar and in the process carry out the process of pollination. *C. clytia* forms mimic the danaine butterflies *Euploea core* and *Tirumala limniace* to avoid their predators. Because, these butterflies are avoided by their predators due to their distastefulness (Thube and Pandian 2021).



Figure 1. a. *Litsea glutinosa*, b. Leaf flushing in full swing, c. Adult *Chilasa clytia*, d. 5th instar stage caterpillar of *Chilasa clytia* feeding on the leaves.

The present study reports that *L. glutinosa* is an additional larval host plant for *C. clytia* forms. Previous workers noted that this butterfly uses different species of Lauraceae family as its larval host plants which include *Cinnamomum zeylanicum*, *C. camphora*, *C. cassia*, *C. macrocarpum*, *Litsea chinensis*, *L. coriacea*, *L. deccanensis*, *Persea macrantha* and *Alseodaphne semecarpifolia* (Anandaraj and Devasahayam, 2004; Kehimkar, 2008; Revathy and Mathew, 2014; Rajapakse et al. 2007). Recently, Ghosh et al. (2019) from Bangladesh reported that *C. clytia* uses *L. glutinosa* as its larval host plant and these authors also standardized the rearing protocol for this butterfly. These studies including the present study suggests that *C. clytia* is oligophagous because it utilizes a limited

number of taxonomically related plant species from a single plant family. Wiklund (1974) reported that monophagy is favored by butterflies to maintain their existence in predictable habitats because in each such habitat, it is possible to maximize reproductive success using only one host plant species. Polyphagy is favored by butterflies in unpredictable habitats because 2 or more host plant species are required to maintain their existence in each such habitat. Oligophagous butterflies lead a life intermediate between mono- and polyphagy, and utilize a few taxonomically related host plant species in a limited number of habitats. The present study also agrees with the finding of Wiklund (1974) that oligophagous butterflies use a limited number of taxonomically related host plants. The list of larval host plants reported by previous workers and in this study indicates that *C. clytia* is typically oligophagous and maintains its species in limited habitats which include both predictable and unpredictable habitats, in this study, it is an unpredictable habitat as it represents a deciduous forest system. Therefore, *L. glutinosa* growing in deciduous forest ecosystems is a potential larval host plant for *C. clytia* and also it can be used for rearing this butterfly in butterfly parks/gardens/farms.

4. CONCLUSIONS

Litsea glutinosa is a semi-evergreen tree species that grows in deciduous forest ecosystems. It is a potential larval host plant for the papilionid butterfly, *Chilasa clytia* although it uses other taxonomically related plants from the same family, Lauraceae. *C. clytia* can be maintained by planting *L. glutinosa* in butterfly parks and farms. Further, the adults of this butterfly also use the flowers of *L. glutinosa* as nectar source during the entire period of flowering season.

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The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

- Anandaraj, M. and Devasahayam, S. 2004. Pests and diseases of *Cinnamomum* and *Cassia*. In: *Cinnamomum and Cassia*, P.N. Ravindran, K.N. Babu and M. Shylaja (Eds.), pp. 239-258, CRC Press, New York.
- Collins, N.M. and Morris, M.G. 1985. Threatened Swallowtail butterflies of the world. The IUCN Red Data Book.
- Ghosh, A., Abedin, M.S. and Hossain, Md. M. 2019. Captive rearing of *Papilio polymnestor* and *Chilasa clytia* butterflies in the campus of Jahangirnagar University, Bangladesh. *J. Entomol. Zool. Stud.* 7: 1046-1051.
- Kehimkar, I. 2008. *The Book of Indian Butterflies*. Bombay Natural History Society.
- Rajapakse, R.H.S. and Kumara, W.K.L. 2007. A review of identification and management of pests and diseases of Cinnamon (*Cinnamomum zeylanicum* Blume). *Trop. Agric. Res. Ext.* 10: 1-10.
- Revathy, V.S. and Mathew, G. 2014. Identity, biology and bionomics of the Common Mime *Chilasa clytia* Linnaeus (Lepidoptera: Papilionidae). *J. Threatened Taxa* 6: 6719-6722.
- Thube, S.H. and Pandian, R.T.P. 2021. Camouflage and mimicry - an evolved strategy of common mime *Chilasa clytia* Linnaeus. *Insect Env.* 24: 149-152.
- Wiklund, C. 1974. The concept of oligophagy and the natural habitats and host plants of *Papilio machaon* L. in Fennoscandia. *Ent. scand.* 5: 151-160.