

ADDITIONS TO THE KNOWN LARVAL HOST PLANTS OF *LEPTOSIA NINA* (FABRICIUS, 1793), AND *RAPALA MANEA* (HEWITSON, 1863) (INSECTA: LEPIDOPTERA, PIERIDAE, LYCAENIDAE) FROM BANKURA, WEST BENGAL, INDIA.

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ABSTRACT

This paper reports *Brassica juncea* (L.) Czern. (1859) as a new larval host plant of *Leptosia nina* (Fabricius, 1793) and *Spondias pinnata* (L.f.) Kurz as a new larval host plant of *Rapala manea* (Hewitson, 1863) from Raibaghini, Bankura district of West Bengal, India.

INTRODUCTION

Major documentation of butterfly larval host plants from India has been carried out by T.R. Bell (1909-1927). A comprehensive list of larval host plants from Western Ghats has been listed by Nitin *et al.* (2018). There is no complete list of larval host plants available from West Bengal, although some scattered work has been reported from some parts of West Bengal. Early stages and larval host plants of some northeastern Indian butterflies have been reported by Karmakar *et al.* (2018), a new larval host plant of the Hesperiidae family has been reported by Dey (2020) from North 24-Pargana district, West Bengal, India. During their research in West Bengal's Neora Valley National Park, Sengupta *et al.* (2014) compiled a list of 143 larval

host plants from West Bengal and the Himalayan states of the northeast. The western part of West Bengal is less explored (Mirza & Mondal, 2018) but there are some notable works. A new larval host plant of *Papilio crino* (Fabricius, 1793) has been reported by Mukherjee & Ghosh (2018), Butterflies of heterogeneous places of Bankura have been reported by Mukherjee & Mondal (2020), and recently reports of new larval host plants of the Slate Flash, Black Rajah and Tiny Grass Blue butterflies are reported from Bankura by Mukherjee (2021).

STUDY AREA

Raibaghini is a small village under the Kotulpur block of Bankura district in West Bengal (23.029°N, 87.557°E) (Fig. 1). The survey site is located between the Damodar and Darokeswar Rivers. Raibaghini has an average annual rainfall of 1236 millimeters and an average temperature of 26.6° C. In the summer the area reaches the maximum temperature up to 42° C and in winter, the minimum temperature is between 4-6° C.

MATERIAL AND METHODS

The survey was carried out from January 2022 to April 2022. The eggs and some larvae were collected at the author's home to observe the life cycle. The larvae were kept in a plastic box and leaves, flowers, and soft branches of the food plants were supplied, and proper hygiene was maintained. The plant was recognized using regional flora publications (Hooker, 1875–1897; Kanjilal *et al.*, 1934–1940; Haridasan and Rao, 1985–1987). The information about the early stages of butterflies has been collected from Bhakare & Ogale (2018) and the Butterflies of India website, <https://www.ifoundbutterflies.org>. The English common name and scientific name of the butterflies have followed Varshney & Smetacek (2015). The larvae size was determined using a vernier caliper scale made by Laboratory World. The photographic documentation was done by Canon EOS 77D camera and Tamron 90 mm. non-VC. macro lens.

RESULTS AND DISCUSSION

1. *Leptosia nina*

A *Leptosia nina* was fluttering and laying eggs on the leaves of *Brassica juncea*, which is commonly known as the Mustard plant in the author's backyard (Fig. 2). The plant was 15.25 cm. long with full of flowers (Fig. 3). One of the eggs was collected and kept in a plastic box at room temperature. The egg hatched on 01.ii.2022, and the size of the larva was 0.1 cm. The size of the larva in the last instar was 1.8 cm. After spending 13 days as a larva, it prepared a green pupa on 14.ii.2022. The length of the pupa was 1.4 cm. The adult *Leptosia nina* came out after 8 days from the date of pupation i.e. on 22.ii.2022. It spent its whole larval stage feeding on the leaves of the *Brassica*

juncea, which is not reported before as a larval host plant of *Leptosia nina*. The observation of the life cycle of *Leptosia nina* is furnished in Fig. 4. Previously reported larval host plants of *Leptosia nina* are presented in Table 1.

2. *Rapala manea*

On 22.iii.2022, a female *Rapala manea* was observed ovipositing on a flowering branch of *Spondias pinnata* (L.f.) Kurz in the backyard of the author's home. *S. pinnata* is commonly known as Hog plum and belongs to the Anacardiaceae family. It is a glabrous tree with edible fruit. Hog plum is a deciduous tree with fruit of high nutritional value and abundant in vegetable proteins, zinc, chitin, starch, vitamins, and minerals (Mondal *et al.*, 2021). On the same day, the author found 4 larvae, which were in different instars. Those larvae were feeding on the flowers of *S.pinnata* (Fig. 5a & 5b). The egg was collected and kept in a plastic box for observation at home, and those 4 larvae were left on the plant. The egg hatched on 25.iii.22 and started feeding on the buds, and flowers along with the soft branches of the *S. pinnata* plant. It pupated on 6.iv.2022 and emerged as an adult on 12.iv.2022. The insect took 21 days to complete its lifecycle on the *S. pinnata* plant (Fig. 6). Previously *Spondias pinnata* was not reported as a larval host plant of *Rapala manea*. The existing larval host plant list of *Rapala manea* is provided in Table 2.

These studies conclude that *Brassica juncea* is a hitherto unreported larval host plant of *Leptosia nina*, and *Spondias pinnata* is a new larval host plant for *Rapala manea*.

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Table 1. Previously reported host plant of *Leptosia nina* .

S.N	Host Plant Name	Family name	References
1	<i>Capparis baduka</i>	Capparaceae	Kunte (2000), Robinson <i>et al.</i> (2010), Nitin <i>et al.</i> (2018)
2	<i>Capparis spinosa</i>	Capparaceae	Kunte (2000), Nitin <i>et al.</i> (2018), Robinson <i>et al.</i> (2010)
3	<i>Capparis zeylanica</i>	Capparaceae	Kunte (2006), Nitin <i>et al.</i> (2018), Das (2014)
4	<i>Capparis heyneana</i>	Capparaceae	Wynter- Blyth (1957), Robinson <i>et al.</i> (2010)
5	<i>Crateva adansonii</i>	Capparaceae	Kunte (2000), Nitin <i>et al.</i> (2018)
6	<i>Crateva religiosa</i>	Capparaceae	Wynter-Blyth (1957), Robinson <i>et al.</i> (2010), Nitin <i>et al.</i> (2017)
7	<i>Capparis sepiaria</i>	Capparaceae	Das (2014)
8	<i>Capparis rheedii</i>	Capparaceae	Haribal, (1992), Kunte (2000)
9	<i>Cleome rutidosperma ver.burmannii</i>	Cleomaceae	Kalesh & Prakash (2015), Nitin <i>et al.</i> (2018)
10	<i>Cleome viscosa</i>	Cleomaceae	Kunte (2000), Nitin <i>et al.</i> (2018), Das (2014)

Table 2. Previously reported host plants of the *Rapala manea*.

S N	Host Plant Name	Family name	References
1	<i>Lantana camara</i>	Verbenaceae	Nitin <i>et al.</i> (2018)
2	<i>Camellia sinensis</i>	Theaceae	Wynter-Blyth (1957); Kunte (2000)
3	<i>Clerodendrum infortunatum</i>	Lamiaceae	Saji <i>et al.</i> (2018)

4	<i>Mangifera indica</i>	Anacardiaceae	Robinson <i>et al.</i> (2010)
5	<i>Combretum indicum</i>	Combretaceae	Wynter-Blyth (1957); Kunte (2000)
6	<i>Acacia pennata</i>	Fabaceae	Wynter-Blyth (1957); Kunte (2000)
7	<i>Mimosa invisa</i>	Fabaceae	Nitin <i>et al.</i> (2018)
8	<i>Urena lobata</i>	Malvaceae	Saji <i>et al.</i> (2018)
9	<i>Ziziphus sp.</i>	Rhamnaceae	Wynter-Blyth (1957); Kunte (2000)
10	<i>Sorbaria sorbifolia</i>	Rosaceae	Wynter-Blyth (1957); Kunte (2000)
11	<i>Lepisanthes tetraphylla</i>	Sapindaceae	Saji <i>et al.</i> (2018)
12	<i>Antidesma ghaesembilla</i>	Phyllanthaceae	Wynter-Blyth (1957); Kunte (2000)
13	<i>Antidesma acidum</i>	Phyllanthaceae	Wynter-Blyth (1957); Kunte (2000)
14	<i>Acacia megaladena</i>	Fabaceae	Wynter-Blyth (1957); Kunte (2000)
15	<i>Calliandra heamotocephala</i>	Fabaceae	Mukherjee (2021)
16	<i>Litchi chinensis</i>	Sapindaceae	Mukherjee (2021)

Fig-1. Location of the study site Raibaghini in the map of Bankura District, West Bengal, India (23.029°N, 87.557°E). (Source – Google image)

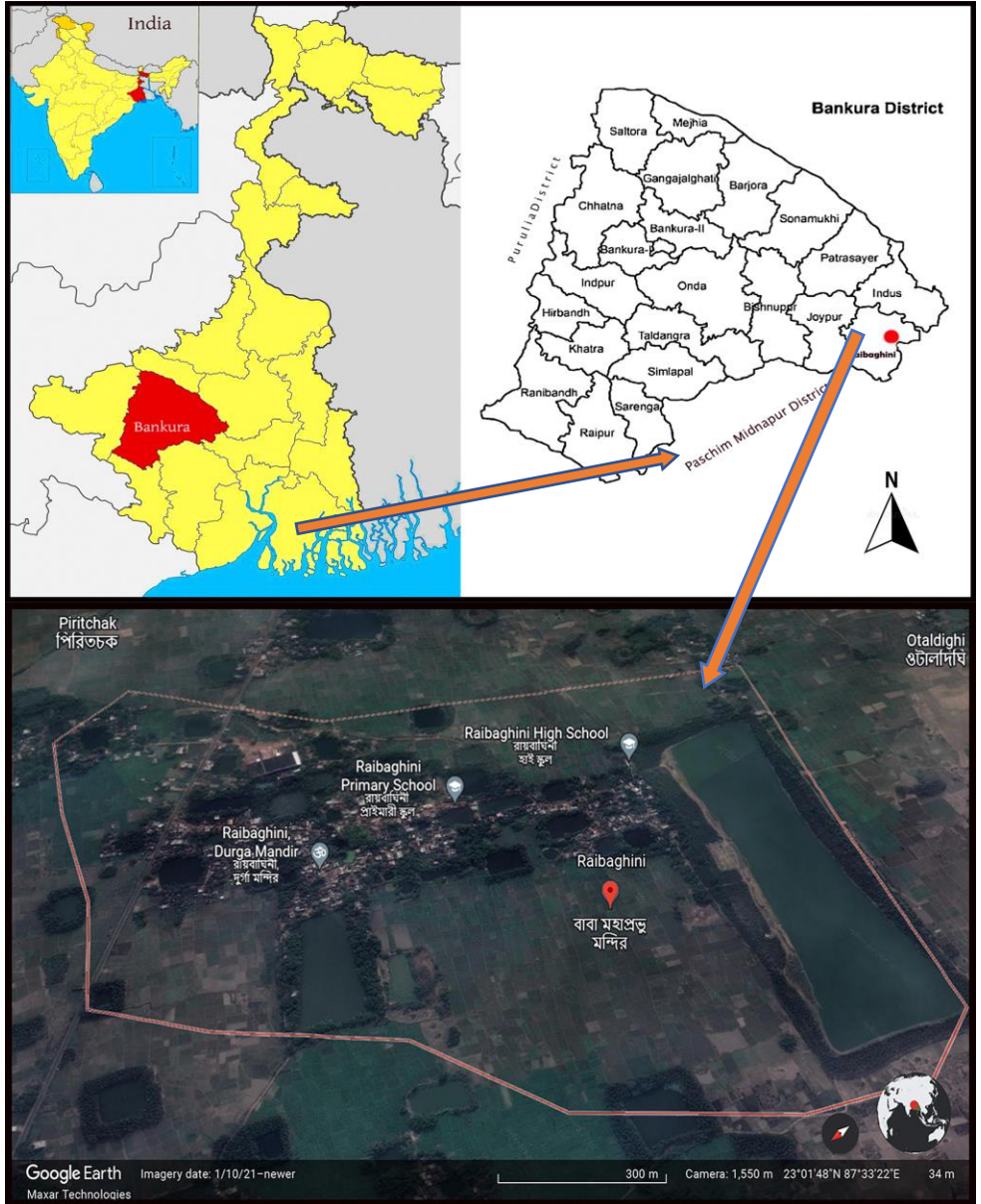


Fig- 2. Image of the author's backyard at Raibaghini, Bankura, West Bengal, India (23.029°N, 87.557°E).



Fig- 3. *Brassica juncea* plant with flowers at Raibaghini, Bankura, West Bengal, India (23.029°N, 87.557°E).



Fig- 4. Different stages of the life cycle of *Leptosia nina*. a. Egg of *Leptosia nina*, b. 1st instar larva, c. 3rd Instar larva, d. 4th instar larva, e. pre- pupation, f. Pupa, g. Mature pupa, h. Newly eclosed adult, i. Another image of the fresh adult.

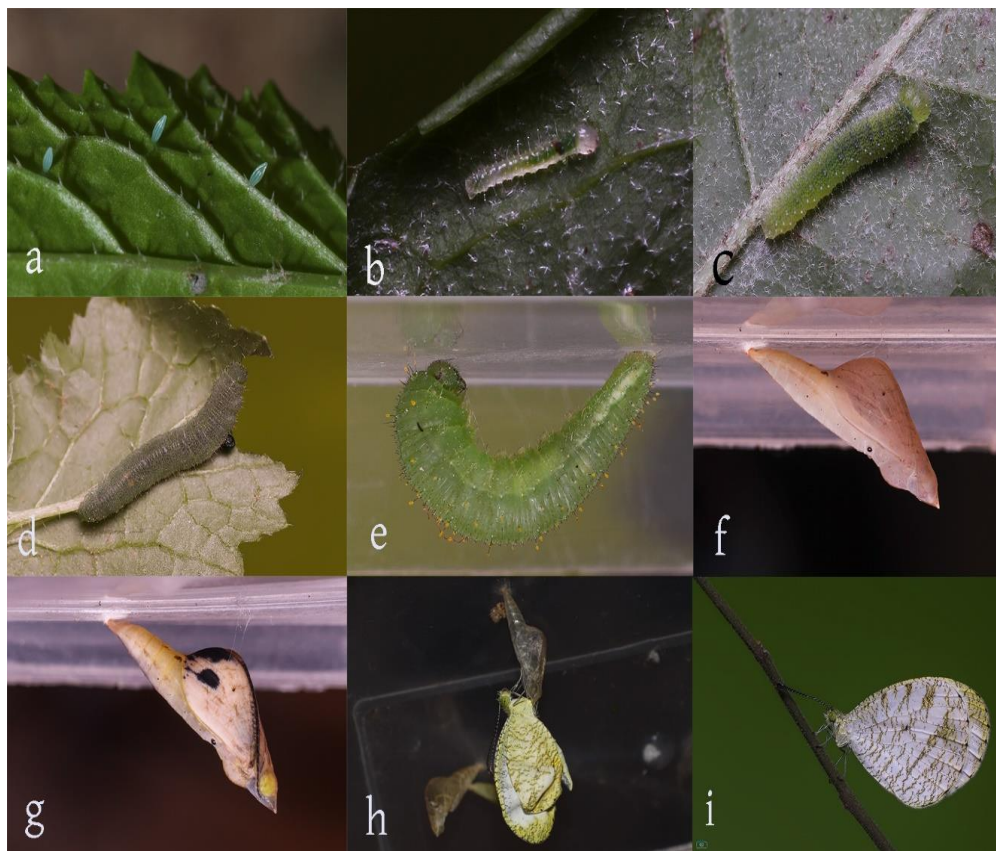


Fig- 5a & 5b. Flowers of the *Spondias pinnata* plant at Raibaghini, Bankura, West Bengal (23.029°N, 87.557°E).



Fig- 6. Different stages of the life cycle of *Rapala manea* on *Spondias pinnata*. a. Egg, b. 2nd instar larva, c. 4th Instar larva d. pre- pupation, e. Pupa, f. Newly eclosed adult.

