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LIFE HISTORY NOTES FOR THE PALLID EMPEROR MOTH, CIRINA FORDA (SATURNIIDAE) IN NIGERIA

Additional key words: phenology, hostplants, Africa.

Cirina forda Westwood has long been known as a serious pest of the sheanut tree, Vittelaria paradoxa (Sapotaceae) in Nigeria (Golding 1929). Packard (1914) described the larva, and Boorman (1970) and Leloup and Beams (1969) provided brief accounts of the biology and phenology of this moth. Leloup and Beaum (1969) reported Erythropleum africanum as a larval host in northern Zaire, but that the tree does not occur in Nigeria. The dried larvae of C. forda are referred to locally as “manimani,” and are of economic
importance as a food item among the Nupe tribe of Nigeria. For many decades, wild larvae have been collected, dried and sold to neighboring states within and outside the country, and the insect is considered a delicacy (Ande 1991, Fasonanti & Ajiboye 1993). We report here on the life history and biology of C. forda in Nigeria, and its association with Vittelaria paradoxa.

About 900 late instar C. forda were collected from V. paradoxa plants in August 1988, between km 107 and 108 on the Mokwa-Bida road in Niger State, Nigeria (9°05’N, 5°59’E). Subsequently, rearings were conducted in the laboratory at the University of Ilorin between 1989 and 1991. Egg clusters laid in the laboratory were observed daily for hatching. Larvae from the same egg clutch were reared separately on cut and potted twigs of V. paradoxa and again on V. paradoxa plants outside in an ornamental garden. Twigs were replaced as necessary to maintain freshness, and larvae were transferred carefully by hand and placed on the mid rib or leaf margin of new foliage. A wooden cage (30 cm x 30 cm x 50 cm) with ten compartments was filled to a depth of 20 cm with soil. Ten larvae were then placed in each compartment. As soon as pupation began, the soil was in all compartments examined for pre-pupae and pupae. Pre-pupa duration was defined as the pe-


Figs. 2–6, 2, egg cluster. 3, pre-pupa. 4, fully formed pupa. 5, late instar. 6, adults (female above, male below).
period between soil penetration and actual pupation (in days). Subsequently, 30 pre-pupae were randomly selected and placed individually in soil 10 cm deep, each in cylindrical paper eclosion chambers (8 cm diam × 15 cm deep × 2 cm thick). The open end of the cylinder was covered with a nylon mesh secured by a rubber band. Each compartment was examined daily for emerging adults. Pupal duration was calculated as the mean number of days between pupal formation and date of adult emergence. Notes were also kept on adult longevity.

Fig. 1 shows the phenology of *C. forda* for the period between 1988 and 1991. Adult moths lived for between 36 and 48 hours (mean = 39.7) and were found primarily in May, with peak oviposition at the end of the month. Figs. 2–6 show the immature stages of *C. forda*. The egg (Fig. 2) hatches after an incubation period of 30 to 34 days (mean = 31.8) into an active and voraciously feeding larva, and passes through 5 to 6 instars (Fig. 5) in 42 to 50 days (mean = 47.5) between June and August. By the first few days in August, most of the larvae reach the pre-pupal stage (Fig. 3) and burrow into the soil. The pre-pupa develops into a pupa (Fig. 4) in 6–7 days and remains in diapause for 9 months (261 to 296 days, mean = 267.5). Adult moths (Fig. 6) emerge in May of the following year.

The life cycle of *C. forda* is tightly linked to the biology of its host, *Vittelaria paradoxa*. The only savanna tree species of the family Sapotaceae in Nigeria, *V. paradoxa* blossoms fully between May and August when mature fruits become available, and sheds leaves between November and February (Kaay et al. 1964). May and August is when the majority of *C. forda* larvae are developing in the field, and pupation takes place during the dry months of November and April. *C. forda* is univoltine in Nigeria and the phenology reported here agrees with those given by Golding (1929) and Boorman (1978). However, Leleup and Deams (1969) indicate that the active period for *C. forda* in Zaire is between June and September during dry months. In Nigeria, the active periods occur during the wet months of May and August.

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LITERATURE CITED


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SUPPLEMENT TO THE LIST OF THE BUTTERFLIES OF MICHIGAN

Additional key words: Hesperiidae, Lycaenidae, Nymphalidae, faunal surveys, checklists.

The following contribution represents an addition to the previously published faunal lists for Michigan Lepidoptera (Moore 1960, Perkins 1968, Nielsen 1970). Records range from 1941 to the present time, and represent collecting by myself. Two state zones (NLP = Northern Lower Peninsula; SLP = Southern Lower Peninsula) are recognized, and county names are given for individual records. A date with a trailing asterisk represents the earliest date captured whereas a leading asterisk represents the latest date of capture in a zone. Nomenclature follows Hodges (1983).

*Erynnis icelus* (Scudder & Burgess) (Hesperiidae) SLP: Barry; *June 26

*Erynnis horatius* (Scudder & Burgess) (Hesperiidae) SLP: Oakland

*Carterocephalus palaemon mandan* (Edwards) (Hesperiidae) SLP: Oakland; *June 20*

*Thymelicus lineola* (Ochsenheimer) (Hesperiidae) NLP: Newaygo. SLP: Huron

*Hesperia sas saeus* Harris (Hesperiidae) SLP: Barry

*Polites coras* (Cramer) (Hesperiidae) SLP: Barry

*Wallengrenia egeremet* (Scudder) (Hesperiidae) NLP: Newaygo

*Pompeius verna* (Edwards) (Hesperiidae) SLP: *July 11

*Poanes hobomok* (Harris) (Hesperiidae) SLP: Barry; *August 19

*Euphyes bimacula* (Grote & Robinson) (Hesperiidae) NLP: Newaygo; *July 15

*Euphyes ruricola metacomet* (Harris) (Hesperiidae) SLP: *August 19

*Papilio polyxenes asterius* Stoll (Papilionidae) SLP: Huron

*Papilio troilus* Limnaeus (Papilionidae) NLP: Newaygo

*Artogeia rapae* (Linnaeus) (Pieridae) SLP: Lapeer, Sanilac, Tuscola

*Colias philodice* Godart (Pieridae) NLP: Newaygo. SLP: Sanilac, Tuscola; May 4*

*Colias eurytheme* Boisduval (Pieridae) SLP: Huron, Lapeer, Sanilac, Tuscola

*Lycaena phlaeas americana* Harris (Lycaenidae) NLP: Newaygo. SLP: *October 1

*Hyllolycaena hyllus* (Cramer) (Lycaenidae) SLP: Tuscola

*Epidemia dorcas* (Kirby) (Lycaenidae) SLP: June 13; *August 19

*Epidemia hel lioides* (Boisduval) (Lycaenidae) NLP: Newaygo

*Harkenclenus titus* (Fabricius) (Lycaenidae) NLP: Newaygo

*Satyrium edwardisi* (Grote & Robinson) (Lycaenidae) SLP: *August 19

*Satyrium caryaeorum* (McDunnough) (Lycaenidae) SLP: June 26*

*Satyrium liparops strigosum* (Harris) (Lycaenidae) SLP: *August 19

*Everes comyntas* (Godart) (Lycaenidae) NLP: Newaygo. SLP: Huron

*Celastrina ladon* (Cramer) (Lycaenidae) NLP: Newaygo

*Aglais milberti* (Godart) (Nymphalidae) SLP: Barry

*Vanessa virginiensis* (Drury) (Nymphalidae) SLP: Barry

*Vanessa cardui* (Linnaeus) (Nymphalidae) SLP: Huron

*Phyciodes tharos* (Drury) (Nymphalidae) SLP: Lapeer; *Oct 1

*Euphydryas phaeton* (Drury) (Nymphalidae) SLP: *August 7

*Basilarchia archippus* (Cramer) (Nymphalidae) SLP: Tuscola

*Cercyonis pegala nephele* (Kirby) (Satyridae) SLP: *July 3*

LITERATURE CITED


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REDISCOVERY OF LETHE EUROPA TAMUNA WITH NOTES ON OTHER THREATENED BUTTERFLIES FROM THE ANDAMAN AND NICOBAR ISLANDS

Additional key words: Legal protection, status reassessment.

Drawing on data from the IUCN Conservation Monitoring Centre, the United Nations Environment Program (UNEP) (1987) listed six species of butterflies as threatened from the Indian coastal region. Four of these—one species and three subspecies—are endemic to the Andaman and Nicobar islands (Table 1). Three of these taxa have been termed “very rare” while Graphium epaminondas Oberthür was termed “locally common” by both Evans (1932) and Ferrar (1948). Khatri (1996) recently reported that two of these taxa, Lethe europa tamuna de Niceville and Neptis sankara nar de Niceville, were extirpated on these islands. We present here new information on three of the four taxa rated “threatened” from the Andaman and Nicobar islands, including biological notes on the rediscovery of Lethe europa tamuna.

Lethe europa tamuna de Niceville (Nymphalidae: Satyrinae). This is one of the rarest butterflies from the islands, being known previously from a single female specimen collected on Little Nicobar. Ferrar (1948) reported observing another female on Great Nicobar some time before he left the islands in 1931. On a collecting trip to Great Nicobar Island in December 1996, the senior author observed four females, and found two eggs and two larvae of this butterfly at three localities in the Campbell Bay area of Great Nicobar. Both the adults and immatures were found along roadsides where the forests had been disturbed by human activity. One of the females was seen resting on moist sand on the banks of a stream. Another female was observed ovipositing on the upper surface of a leaf of the climbing bamboo, Dinochloa andamanica Kurz. Eggs were laid on leaves well within the clump, not on the fringes. The larvae (Fig. 1B) were sleeved and observed periodically for about two weeks. They fed and passed through several instars, and confirmed D. andamanica as a host plant that supports development. We suspect this butterfly is not as rare as previously thought, but its status can be reliably assessed only after further studies are conducted.

Doleschallia bisaltide andamana Fruhstorfer (Nymphalidae: Nymphalinae). This butterfly has been considered rarer in the Nicobars (Car and Central Nicobar) than in the Andaman islands (Evans 1932, Ferrar 1948). Its cryptic habits have perhaps contributed to an underestimate of its abundance. We have observed eggs, larvae and adults of this butterfly at S. Andaman and at Great Nicobar. The larvae completed their life cycles on the plants on which they were found, when sleeved (see Table 1). We found from 1.5 to 58 adults feeding on the small white blossoms of medium sized trees of Ligustrum glomeratum Blume (Oleaceae) at Chidyatapu (Fig. 1D) in S. Andaman in 1994, 1995 and 1996. At Campbell Bay on Great Nicobar, 16 eggs were observed on P. album (Nees) Merr. (located in less than 30 min of search); 3 females were also observed in flight.