

アカバオオキノコムシ (甲虫目: オオキノコムシ科) の 生活環と産卵習性

説 田 健 一

The Life Cycle and Ovipositional Habits of *Neotriplax lewisii* (CROTCH) (Coleoptera: Erotylidae)

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1. Introduction

Species of the family Erotylidae are fungivorous, and feed on the macro-fruiting bodies of Aphyllophorales and Agaricales. To my knowledge, there are very few reports on the life cycle of the Erotylidae. OHYA (1992, 1993) described the bionomics of *Dacne japonica* CROTCH and *D. picta* CROTCH, and suggested that *D. japonica* is univoltine, whereas *D. picta* is bivoltine.

Neotriplax lewisii (CROTCH) is a red erotylid belonging to the subfamily Tritominae (MORIMOTO and HAYASHI, 1986). Adults have been recorded from the fruiting bodies of a few polypores: *Trametes versicolor* (FR.) PIL.; *Trametes hirsuta* (WULF.: FR.) PIL.; *Lenzites betulina* (FR.) FR.; *Phellinus torulosus* (PERS.) BOURD. et GALZ (NOBUCHI, 1954; CHÛJÔ 1969; SETSUDA, 1993). Most larvae of the Erotylidae are internal feeders on the context tissue of the fruiting body (LAWRENCE, 1988), but the larvae of *Neotriplax* are surface feeders on the trama tissue of the fruiting body (SETSUDA, 1993).

Field observations of *N. lewisii* were carried out in a secondary forest at Seki City, Gifu, Japan, from 1992 to 1993. On the basis of the results, I discuss the life cycle and ovipositional habits of this species.

2. Materials and Methods

1) Observation of developmental stages and rearing

The developmental stages of *N. lewisii* on five patches of the fruiting bodies of *T. versicolor* and in the soil below these patches were observed three times a month from Jan. 1992 to Dec. 1993. Some of these were collected for identification. Adults were pinned, and larvae were preserved in 80% ethyl alcohol. Adults and larvae were identified on the basis of the descriptions by KUROSAWA *et al.* (1985), and NOBUCHI (1954), respectively.

Twenty larvae collected from the fruiting bodies of *T. versicolor* on March 20, 1992 were reared in 500-ml glass vials containing a 2-cm layer of moistened sand at room temperature in a laboratory. The top of each vial was covered with fine mesh secured with rubber bands. The larvae were checked every 1 to 3 days.

2) Observation of ovipositional behaviour

The ovipositional behaviour of females on *T. versicolor* was observed on November 14, 1992.

3) Observation of larvae

To confirm the oviposition of *N. lewisii*, the author observed the feeding of *N. lewisii* larvae on the patches of various fungi: *T. versicolor* (N=25); *L. betulina* (N=19) and mixed *T. versicolor* + *L. betulina* (N=8) on March 4 and 18, 1993. These fungi have been reported to be hosts of *N. lewisii* (NOBUCHI, 1954; CHÛJÔ, 1969; SETSUDA, 1993). The fruiting body of *L. betulina* has gilled trama tissue, and that of *T. versicolor* has the pores. Fungi were identified using the criteria of IMAZEKI and HONGÔ (1989). The scientific names of the fungi were based on GILBERTSON and RYVARDEN (1986, 1987).

3. Results

1) Developmental stages

The observational data for the two years of the study are shown in Table 1.

The eggs covered with white frass (Fig. 1) were observed on the pore surface from mid November to late January. The larvae were observed on the pore surface (Fig. 2) of the fruiting bodies from early February to early April. The mature larvae ate the trama tissue of the fruiting bodies and began to crawl under the soil from late March. The pupae were observed in the soil from early to mid April. Rearing larvae pupated in the soil from March 28 to April 3 at room temperature, and they emerged in mid April. The adults were observed on the fruiting bodies from early April to early May and from late October to early January, and

Table 1. Observational data of every stage of *Neotriplax lewisii* around five patches of the fruiting bodies of *Trametes versicolor* from 1992 to 1993. ○ : on the fruiting bodies. ● : in the soil. * : These specimens are preserved in the Gifu Prefectural Museum.

Eggs	5-Jan. 1993 (○) , 17-Jan. 1993 (○) , 14-Nov. 1992 (○) 9-Dec. 1992 (○) , 12-Dec. 1992 (○) ,
Larvae	28-Feb. 1992 (○)* , 6-Feb. 1993 (○) , 20-Feb. 1993 (○) , 8-Mar. 1992 (○)* , 20-Mar. 1992 (○)* , 26-Mar. 1992 (●) , 4-Mar. 1993 (○) , 14-Mar. 1993 (○) , 1-Apr. 1993 (○) ,
Pupae	8-Apr. 1992 (●)* , 14-Apr. 1992 (●) ,
Adults	17-Jan. 1993 (○) , 20-Jan. 1993 (○) , 1-Apr. 1993 (○) , 14-Apr. 1993 (●) , 4-May 1993 (○)* , 6-May 1992 (○) , 6-June 1992 (●) , 15-June 1992 (●) , 26-Oct. 1993 (○) , 14-Nov. 1992, 9-Dec. 1992 (○) ,

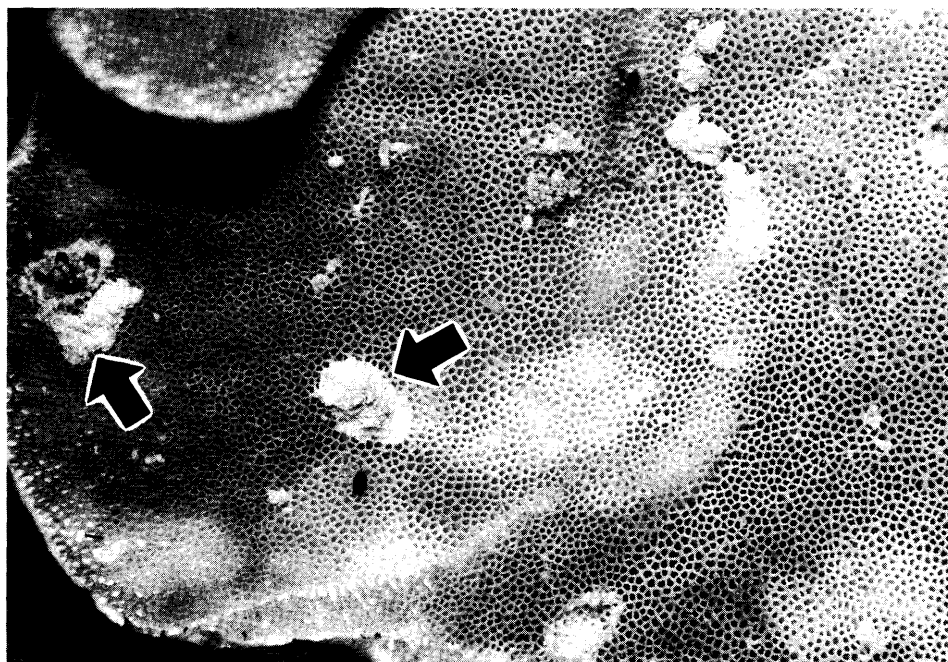


Fig. 1. The eggs of *Neotriplax lewisii* covered with the white frass on the trama tissue of *Trametes versicolor*.

Table 2. The *Neotriplax lewisii* larvae on the patchy habitats of various fungi.

The larvae of <i>N. lewisii</i>	The patchy habitats of the fungus			Total
	<i>Trametes versicolor</i>	<i>Lenzites betulina</i>	The mixed <i>T. versicolor</i> + <i>L. betulina</i>	
Present	12	2	4	18
Absent	13	17	4	34
Total	25	19	8	52

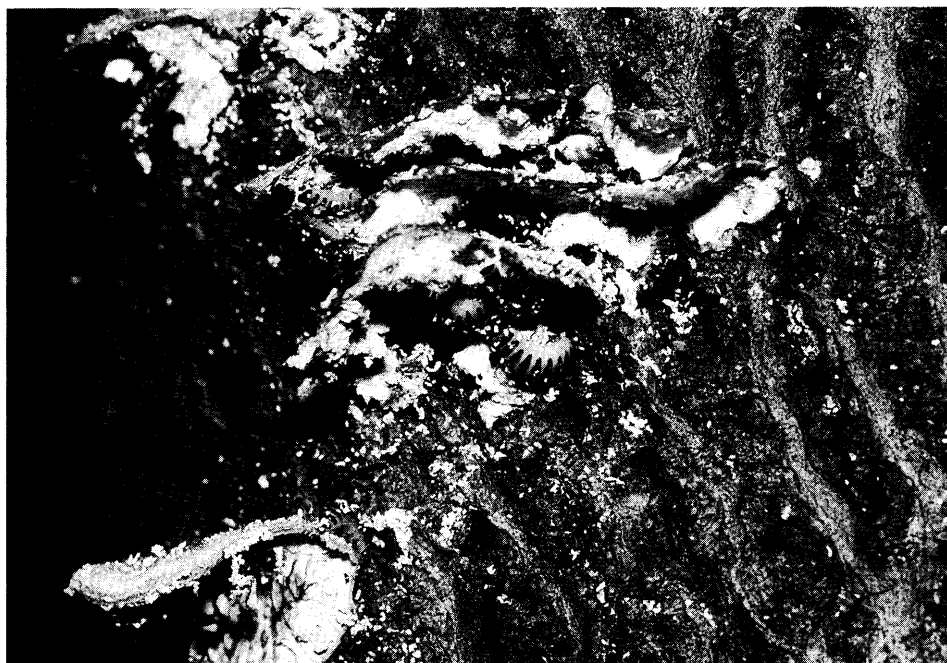


Fig. 2. The larvae of *Neotriplax lewisii* on the trama tissue of *Trametes versicolor*.

in the soil from early to mid June. The adults did not breed in spring.

2) Ovipositional behavior

The female gnawed a little into the trama tissue and laid eggs one by one. Then she covered them with the white fungal frass (Fig. 1).

3) Feeding of larvae

The *N. lewisii* larvae were confirmed in 12 of 25 patches of *T. versicolor*, 2 of 19 patches of *L. betulina* and 4 of 8 patches of mixed *T. versicolor* + *L. betulina* (Table 2). The larvae fed on the trama tissue of *T. versicolor* and *L. betulina*. The presence of larvae differed significantly in the patches between *T. versicolor* and *L. betulina* (Fisher' exact probably test, $P < 0.01$), and *L. betulina* and mixed *T. versicolor* + *L. betulina* (Fisher' exact probably test, $P < 0.05$). The difference in the presence of *N. lewisii* between *T. versicolor* and mixed *T. versicolor* + *L. betulina* was not statistically significant (Fisher' exact probably test, $P > 0.05$).

4. Discussion

1) Life cycle

The life cycle of *N. lewisii* deduced from the results is as follows.

Adults fly to and breed on the mature fruiting bodies of *T. versicolor* from October. Larvae of the next generation hatch from late January and pupate in the soil from late March to early April. Adults of this generation emerge from mid April. They do not breed then, and may diapause in the soil until late autumn. *N. lewisii* is thought to be univoltine. The life span of adults has not been determined.

Some Japanese erotyids are known to breed from spring to summer (OHYA, 1992, 1993), whereas *N. lewisii* breeds in winter. The main host fungus of *N. lewisii*, *T. versicolor*, is used by many insects, as food, a breeding site and for shelter (BENICK, 1952; SETSUDA, 1993; etc.). Predators such as ants may easily find *N. lewisii* larvae on the pore surface of the fruiting bodies. *N. lewisii* breed in winter when other fungivorous competitors and predators are limited.

2) Ovipositional habits

PAVIOUR-SMITH (1960) and LAWRENCE (1973) indicated that the hyphal systems and physical structure of fruiting bodies are the decisive factors for host preference among the Ciidae. Many erotyids as well as the Ciidae are macrophagous beetles on the trama and the context tissue of the fruiting bodies (LAWRENCE, 1989). Host records of *N. lewisii* adults suggest that this species may have a strong preference for the leather-like and thin Polyporaceae (e.g., *Trametes*, *Lenzites*) (NOBUCHI, 1954; CHÛJÔ, 1969). However, the results in Table 2 indicate that the females of *N. lewisii* might prefer to oviposit on patches containing *T. versicolor*. Though *N. lewisii* larvae can feed on *L. betulina*, the females might prefer not to oviposit on this fungus, since the

gilled structure of the trama tissue may interfere with their successive ovipositional behavior.

Abstract

Field observations of *Neotriplax lewisii* (CROTCH) were carried out in a secondary forest at Seki City, Gifu, Japan, in 1992 and 1993. Adults of the first generation flew to and bred on the mature fruiting bodies from October. Larvae of the next generation hatched from late January and pupated in the soil from late March to early April. Adults of the next generation emerged from mid April. However, they did not breed in spring to summer, and may diapause in the soil until late autumn.

Females preferred to oviposit on the fruiting bodies of the pored polypore, *Trametes versicolor* (FR.) PIL. rather than the gilled polypore, *Lenzites betulina* (FR.) FR.

Key words: Coleoptera; Erotylidae; Fungi; Life cycle; Ovipositional habits

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