

Mattimu (1997) was found 108 butterflies species and few of them in dangerous species condition including *Troides hypolitus cellularis* Rothschild (Lepidoptera : Papilionidae). Objectives of this research : to study a behavior of *T. hypolitus cellularis* and kept them from habitat destruction. We hope this research can give some information to rearing *T. hypolitus cellularis* for conservation. Methods of this research : rearing the couple of butterfly in net cages and study their behavior for eggs laying, larval, pupae and copulating of an adult butterflies. All of data we found was recorded. The result showed : the butterflies need *Aristolochia tagala*/sirih hutan (food sources for larval) and *Ixora paludosa*/asoka (nectar sources for adult). Female butterflies laying their eggs under the leaves of host to avoid sunlight. One female produces about 600 eggs. The larval hatched from eggs protect themselves from predator in the same colour to their habitat. Larval development about 25-35 days and depend on the presence of food sources and humidity. Butterflies pupae found in the stem of their host and need 40 days to be an adult. After hatched from pupae, adult need 4-6 hours to dried their wings, and searching their couple for copulation. Conclude of this research : we must prepare the plant as a nectar for adult and food sources for larval. Adult and larval have a specific host for their development. The flower that we recommended for nectar sources of adult butterfly : *Lantana camara*, *Ixora paludosa* (asoka) and *Hibiscus rosa-sinensis* (kembang sepatu).

Key words: T. hypolitus, nectar, behavior

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WITHOUT BLACK ANT , *Dolichoderus bitubercularis*, NO CACAO

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In 1908, in the Cacao plantation in Malang, East Java had observed that Cacao ant, *D tuberculatus*, had protected Cacao pods against

H. antonii. In Cacao plantation with well populated of black ants and malybugs, the number of *H. antonii* were considerably lower. *H. antonii* will immediately stop feeding and the adults will be interrupted during oviposition at the slightly disturbance by black ants. Therefore, when *H. antonii* is frequently disturbed they gradually become starved and produced few eggs.

Key words: *D. tuberculatus*, *H. antonii*, Mealybugs, Cacao

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**BIOLOGICAL CONTROL OF *Helopeltis antonii*
(HEMIPTERA: REDUVIIDAE) TOWARD
SUSTAINABLE AGRICULTURE**

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Helopeltis antonii is a serious pest on Cacao plantation that feed mainly on pod and young leaves. Crop losses caused by *H. antonii* have been calculated to be about 20 % of the yiled. Sybthetic insecticides have been used satisfactorily to control this [est. However, it has been known that not all chemical substances have always been used correctly and some of them are particularly highly toxic. It has caused of resistance phenomena, very wide spread pollution and sometimes caused serious in balances within ecosystem. Biological control isa methodwhich can be utilized to over come these problems. Tha cacao black ant *Dolichoderus tuberculatus*, has been proven as a useful insect in controlling *H. antonii* (Roepke and van der Goot, 1908). The aim of this study was to determine the types of nests which is suitable for natural breeding of *D. tuberculatus* and to study *D. tuberculatus* as useful insect for controlling *H. antonii* at Cacao plantation. The result showed that the coconut leaves nests was the most suitable nests for breeding *D. tuberculatus* at cacao plantation and *D. tuberculatus* has proven as a beneficial insect to protect cocoa pods against *H. antonii*.

Key words: *D. tuberculatus*, *H. antonii*, Cacao