

NOTES

**DEVELOPMENT OF *DICHROMOTHRIPS CORBETTI*
(PRIESNER) (THYSANOPTERA: THRIPIDAE)
ON VANDA FLOWERS****Gliceria A. Hirao¹, Bernardo P. Gabriel^{1,2} and Henry T. Facundo^{1,3}**

The genus *Dichromothrips* Priesner apparently originated from the Malayan region and has a fairly rich speciation (Sakimura, 1955, Proc. Haw. Ent. Soc. 15(3): 583-600). The genus is represented in the Philippines by *D. corbetti*, *D. dendrobii*, *D. phalaenopsidis* and *D. semicognitus*, all of which infest various orchid species (Baltazar, 1986, unpublished report; PCARRD, 1994, The Philippines Recommends for Orchids, pp. 87-98; Reyes, 1994, Raffles Bull. Zool. 42: 206-212; Sakimura, 1955). *Dichromothrips corbetti* was described by Priesner in 1936 as *Anaphothrips corbetti* (Swezey, 1945, Proc. Haw. Ent. Soc. 12(2): 343-403) but was later assigned to the genus *Dichromothrips* by Sakimura in 1955 after examining male specimens. Sakimura (1951, Pacific Orchid Soc. Hawaii. 9(4): 155-158) called it vanda thrips since it was first discovered on *Vanda* 'Miss Joaquim' flowers in Kuala Lumpur, Malaysia. This thrips is distributed from India eastward in the Pacific Islands to the Indonesian archipelago, Malaysia, Singapore, Thailand and Hawaiian Islands (Reyes, 1994; Sakimura, 1955).

The host range of *D. corbetti* includes various species of *Vanda*, *Cattleya*, *Dendrobium*, *Miltonia* and *Renanthera* (Baltazar, 1986, unpublished report; Sakimura, 1951). It may not breed and survive on plant species other than the abovementioned orchids. Sakimura (1951) observed that it essentially feeds on flower and no other part is attacked under ordinary conditions. Kamjaipai (1984, Diseases and Pests of Orchids, 117 p) recognized *D. corbetti* as an important pest of orchids in Thailand, along with *Thrips palmi*.

We report here the life history of *D. corbetti* on *Vanda* flowers in the laboratory. Field collected adult thrips from infested *Dendrobium* and *Vanda* hybrids were allowed to oviposit on *Vanda* flowers for 24 hours. After this period, the adults were removed and the eggs were allowed to develop. Newly hatched larvae were cultured individually on *Vanda* petals in petri dishes. Observations were done daily. Fresh *Vanda* petals were provided as needed. Measurements (mm) of different stages were taken from slide mounted specimens using an ocular micrometer mounted on a stereoscope.

The duration and measurements of each stage are summarized in Tables 1 and 2, respectively. The egg is cylindrical in shape with smooth white shell. It was laid singly in plant tissues and appeared as brown swellings on the surface of the flower. Two bright red eyes were visible through the chorion a few hours before hatching.

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Table 1. Duration of the different life stages of vanda thrips, *Dichromothrips corbettii* (Priesner), under laboratory conditions (28 - 35°C).

Life stage	No. of samples	Range (days)	Mean \pm S. E.
A. Developmental stages			
Egg (incubation period)	100	3 - 5	3.61 \pm 0.65
Larva I	100	1 - 3	2.06 \pm 0.58
Larva II	100	1 - 4	2.44 \pm 0.68
Prepupa	100	1 - 3	1.44 \pm 0.61
Pupa	100	1 - 3	1.39 \pm 0.58
Total development (egg to adult)			
Male	50	9 - 14	10.44 \pm 1.19
Female	50	10 - 17	12.26 \pm 2.19
B. Post-development			
Preoviposition	25	0 - 3	0.64 \pm 0.91
Oviposition	25	3 - 23	12.08 \pm 4.45
Post-oviposition	25	0 - 5	0.48 \pm 1.08
Longevity			
Male	62	2 - 22	9.27 \pm 4.29
Female	49	4 - 23	10.04 \pm 4.26
Fecundity			
Daily	25	0 - 38	4.44 \pm 6.43
Total	25	11 - 118	48.60 \pm 28.49

Table 2. Measurements (mm) of the different stages of vanda thrips, *Dichromothrips corbettii* (Priesner).¹

Life stage	Length		Width	
	Range	Mean \pm S.E.	Range	Mean \pm S.E.
Egg	0.25 - 0.30	0.28 \pm 0.03	0.10 - 0.17	0.13 \pm 0.03
First instar larva	0.30 - 0.55	0.43 \pm 0.08	0.08 - 0.15	0.11 \pm 0.02
Second instar larva	0.70 - 1.00	0.82 \pm 0.10	0.15 - 0.25	0.22 \pm 0.03
Prepupa	0.90 - 1.05	1.01 \pm 0.05	0.25 - 0.30	0.28 \pm 0.02
Pupa	1.05 - 1.35	1.19 \pm 0.07	0.25 - 0.30	0.29 \pm 0.02
Adult				
Male	0.75 - 1.00	0.90 \pm 0.07	0.15 - 0.22	0.20 \pm 0.01
Female	1.00 - 1.40	1.22 \pm 0.11	0.25 - 0.40	0.30 \pm 0.04

¹ Measurements are based on 30 randomly selected specimens.

The newly hatched first instar larva is translucent in color then later becoming white to yellowish white. Eyes red, ocelli lacking, few antennal segments, and with tarsal claws. The early second instar larva has dusky yellow pigmentation that turns orange after a few hours, which is retained throughout its later development except in the brownish to black mature adults.

The prepupa and pupa neither fed nor moved except when disturbed. The pupa has long antennae that are bent backwards over the body and wing buds that extend beyond the third abdominal segment. These are shorter in the prepupa. Pupae that will develop into males are much smaller and have slender bodies and short wing buds that extend only up to the metathoracic region. A few hours before the cessation of the pupal period, the distal end of wing buds turned grayish and the eyes black. Adult males are brachypterous and smaller than the macropterous female. The teneral adult assumed an orange pigmentation then turned brownish to black after a few hours. Reyes (1994, *ibid.*) gave detailed descriptions of adults. Total developmental period was 10.44 and 12.26 days for males and females, respectively. Adult females laid a total of 11–118 eggs throughout their life or a daily rate of 0–38 eggs (Table 1).

Vanda thrips prefer to attack unopened flowers or overlapping petals, which results in deformed inflorescence with white streaks. Extensive silvery and necrotic feeding scars usually occur on petals. Scattered black specks among the damaged tissues are markings after thrips excrements dry up. *D. corbettii* is rather stationary, unless disturbed. Thus, intense injuries occur in localized areas, although extensive injuries covering the whole flower also occur. In severe infestation, petals dry up and stick to each other and do not spread normally (Sakimura, 1951).

Promising results were obtained when we evaluated *Orius tantillus* (Motschulsky), a predatory anthocorid bug, and Perla[®] detergent soap for the control of *D. corbettii*. Several *Beauveria bassiana* isolates, however, did not show such potential in preliminary trials (Gabriel and Hirao, unpublished data). Further studies on *O. tantillus* are ongoing for its eventual integration with other control tactics with the aim of developing an effective pest management scheme for orchids.