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LIFE HISTORY TRAITS OF *TALICADA NYSEUS* (LEPIDOPTERA: LYCAENIDAE) BUTTERFLY UNDER LABORATORY CONDITIONS¹

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The butterfly *Talicauda nyseus* G. (Lepidoptera: Lycaenidae) is abundant in India and Sri Lanka (Karunaratne, et al., 2002). In India, this butterfly is chiefly found in the peninsular area, Maharashtra, Karnataka, Punjab and foothills of the Himalayas (Singh, 2005). The host plants of this butterfly include *Kalanchoe* spp. (Saxifragales: Crassulaceae). Adult *Talicauda nyseus* feed on nectar of surrounding flowering plants but are also reported to feed on lichens (Karunaratne, et al., 2002).

Recently it has been discovered that *Talicauda nyseus* is infected with maternally inherited *Wolbachia* bacteria (Ankola, et al., 2011; Salunke, et al., 2012) and exhibits a female biased sex ratio (Ankola, et al., 2011). It is suspected that the presence of the female biased sex ratio in this butterfly is caused by its endosymbiont *Wolbachia*. As an endosymbiont, *Wolbachia* is known to cause female biased sex ratio in butterfly hosts by inducing two distinct reproductive anomalies: feminization of genetic males (Hiroki et al., 2004) and male killing (Jiggins et al., 2001; Charlat et al., 2005). It is essential to record scientific data regarding the life history traits of *Talicauda nyseus* naturally infected with *Wolbachia*. In the present report life history traits of *Talicauda nyseus* which harbor *Wolbachia* infection were studied under controlled conditions.

The individual *Talicauda nyseus* specimens used for the study were collected from a laboratory reared population which was previously confirmed to be heavily infected with *Wolbachia*. Five individual mated pairs were used separately for the present study. The life cycle was analyzed at $28.09 \pm 0.564^\circ$ C. The data collected were statistically analyzed by paired t-test with the help of SPSS 7.5.

Wolbachia infection in this butterfly was previously documented by Ankola et al. (2011). The fecundity of *Talicauda nyseus* was found to be ranging from 61.6 ± 12.08 to 66.4 ± 17.75 (Table 1). The fecundity data obtained from the present study is in agreement with our previous report (Ankola et al., 2011). More than 95% hatchability was recorded during the present investigation indicating that there might not be male-killing induced by *Wolbachia* in *Talicauda nyseus* (Jiggins et al., 2000; Charlat et al., 2007). The hatching time required for eggs ranged from 7.4 ± 1.83 to 9.6 ± 2.71 (Table 1). Furthermore, the time required for the

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Table 1: Developmental times for *Talicauda nyseus* reared in the laboratory. Numbers are mean \pm standard deviation.

Fecundity	Days required for eggs to hatch	Days required for larvae to pupate	Days required for adult emergence
63.93 \pm 15.55	8.4 \pm 2.19	8.73 \pm 1.36	12.73 \pm 2.14

larvae to completely metamorphose into pupae ranged from 8.4 ± 0.84 to 9.2 ± 1.22 days. In the present study the imagoes of *Talicauda nyseus* emerged 11.8 ± 1.39 to 13.6 ± 2.27 days after pupation. The longevity of adult male and female *Talicauda nyseus* was also measured separately. In butterflies, adult longevity is greatly influenced by pattern of larval (Oberhauser, 1997) and adult food. In the present investigation 10% sucrose was used as a food source. It was found that longevity of males was considerably less than that of females (Fig. 1). The data obtained are statistically significant ($t=5.826$, $P < 0.05$). The prolonged longevity of the females helps them to copulate more with the existing males and lay eggs. The main function of the males is to fertilize the females and hence they die immediately after mating.

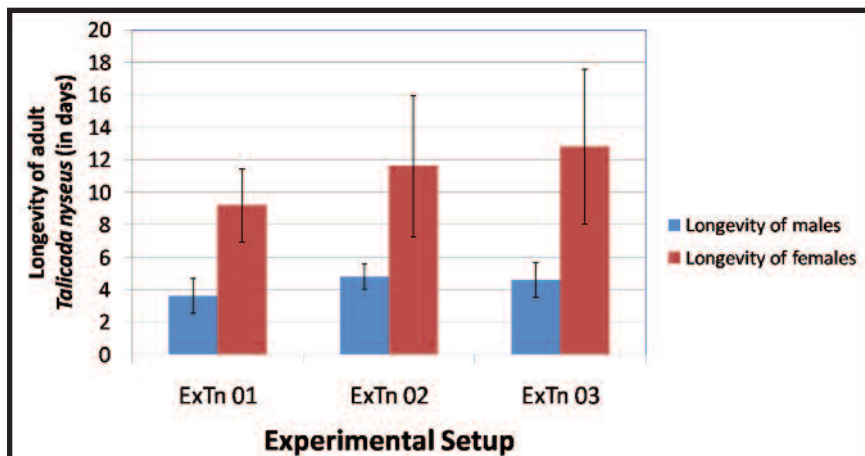


Fig. 1. Longevity of *Talicauda nyseus* in three experiments. There is remarkable variation in longevity, and females outlive males.

Talicauda nyseus completed its life cycle (eggs to adult) in an average of 29.86 days in the laboratory. Furthermore, the longevity of adult males was considerably less than that of the females. The males were observed to die sometime after mating. The data given in the present report can be best used for the conservation of these butterflies in butterfly conservatories. The data is also helpful in further investigations of the interaction of this butterfly with its natural endosymbiont *Wolbachia*.

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