Benjakhun Sangtongpraow 2011: Biological Aspect of Eucalyptus Gall Wasp, *Leptocybe invasa* Fisher & La Salle (Hymenoptera: Eulophidae) and Its Parasitoids in *Eucalyptus camaldulensis* Dehnh. Plantations, Tha Muang and Phanom Thuan Districts, Kanchanaburi Province. Doctor of Philosophy (Entomology), Major Field: Entomology, Department of Entomology. Thesis Advisor: Associate Professor Kosol Charernsom, M.S. 228 pages.

The objectives of this research were to study the biological aspect of *Leptocybe invasa* and its parasitoids and to assess their population dynamics in *Eucalyptus camaldulensis* plantations, Kanchanaburi province. The experiments were undertaken in laboratory, greenhouses and plantations.

It was found both female and male *L. invasa*. Their morphologies were described. By feeding with 6 different diets, honey solution could prolong the largest mean longevity of female (7.67 days) and male (5.67 days). Different diets had significant effects on the means of their longevities at P=0.05. The average potential fecundity of female of all sizes and ages was 158.70 eggs per a female. There was significant positive relationship between female sizes and egg loads (R^2=0.772). The mean realized fecundity of a female was 61.53 progenies per a female. *L. invasa* is a pro–ovigenic species. The female oviposited eggs in vascular bundles in young tissues of *E. camaldulensis*. Eggs development stimulated gall development. The mean development time from eggs to adult was 45.96 days. This research found two local parasitoids of *L. invasa*; namely *Aprostocetus* sp. (abbreviated to Asp) and *Megastigmus* sp. (abbreviated to Msp). Their morphologies of both female and male were described. By feeding with six different diets, honey solution could prolong largest mean longevity with 18.67 and 13.33 days for female and male Asp; and 9.83 and 7.83 days for female and male Msp. Different diets had significant effects on the means of their longevities at P=0.05. The average potential fecundity of female Asp, of all size and ages, was 6.31 eggs per a female; and that of female Msp was 2.98 eggs per a female. There was significantly positive relationship between female sizes and egg loads (R^2=0.250 for Asp and R^2=0.156 for Msp). The mean realized fecundity of a female Asp was 51.10 progenies per female while that of a female Msp was 13.20 progenies per female. Asp and Msp are synovigenic species. Asp was a solitary endoparasitoid and Msp was a solitary ectoparasitoid. Mean development time of Asp was 12.92 days while that of Msp was 17.00 days. The populations of *L. invasa*, Asp and Msp were monthly fluctuated. The population of each species showed the peak on May and declined later in rainy period. The insect similarity, index of insect diversity and evenness index were also determined. The findings suggest that *Aprostocetus* sp. is more suitable than *Megastigmus* sp. to be used as biocontrol agent of *L. invasa.* However, the potential combination of these parasitoids to control *L. invasa* is recommended.

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