

Activity Patterns of Adult *Anoplophora glabripennis* in China

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Abstract

Activity patterns of adult Asian longhorned beetles (ALB), *Anoplophora glabripennis* (Motschulsky) were monitored in a shelterbelt of *Populus* and *Ulmus* spp. in Ningxia A. R., P. R. of China. Trees were searched daily at each of four time periods (0800-1100, 1100-1300, 1400-1600, and 1700-1900 hours) on each of 18 d during July and August, 2001. At each check, the following data were taken on all adult beetles that were located: sex, type of activity, substrate (stem >2 cm diameter, twig, leaf), height off of the ground, height of tree, and whether the beetle was in sunlight or shade. Data were recorded on averages of 9.7 ± 2.8 (S.D.) females (total = 1398) and 16.2 ± 3.6 males (total = 2333) per observation period.

Environmental conditions appeared to affect choice of microhabitat by the beetles. The beetles showed a strong tendency to remain in the shade; also percentages of beetles in direct sunlight decreased from 17-20% (overall) at temperatures of 25° C and below to <5% when temperatures were 29°C or higher ($P < 0.01$, Kruskal-Wallis test). Beetles also showed a lesser (though significant) tendency to be found lower on trees (measured as percentage of tree height) during the hotter 1100-1300 and 1400-1600 hour periods than at other times of day (ANOVA; *d.f.* = 3, 51; $P < 0.01$). There were also some significant differences in percentages of beetles on different substrates at different times of day, although most beetles (65-85%) were on larger stems, with higher proportions of the remaining insects on twigs than on leaves, at all time periods.

At all times of day, more beetles were observed resting (includes feeding) than in any other activity. Roughly half of the males were either walking or participating in mating or mate-guarding at all time periods. Almost half of females observed in this study were either mating or being mate guarded, and this activity peaked in the 1400-1600 period (53% of females). Females spent approximately 20% of their time chewing oviposition pits and 5% ovipositing.

Overall activity levels of beetles and their choice of microhabitat suggest that spot-applied insecticides on limbs or within-tree traps could potentially be valuable to ALB eradication programs. Such systems could be either “passive” or incorporate short-range attractants.