

[1189] POPULATION FLUCTUATION AND INFESTATION LEVELS OF THE CUPUAÇU FRUIT BORER, *CONOTRACHELUS HUMEROPICTUS*, IN AGROFORESTRY SYSTEMS IN STATE OF RONDONIA, BRAZIL

M. J. Thomazini¹, ¹Embrapa Acre, P. O. Box 392, 69908-970, Rio Branco, AC., Brazil, E-mail marcelio@cpafac.embrapa.br.

The cupuaçu fruit is one of the most promising crop to be explored commercially in the agroforestry systems at Brazilian North Region. Among the pests related to this crop, the fruit borer, insect belonging to the *Conotrachelus* genera, is the most important one due to its damages and for being disseminated in several states of the North Region. The *C. humeropictus* population was evaluated weekly during the period from March/98 to January/00 in 20 cupuaçu plants in two areas of the RECA Project, Nova California, RO, Brazil. In one of the areas, ten plants were chosen near to the forest to verify the influence of it in the intensity and in the beginning of the borer infestation. The insects were collected in a nylon screen (with four squared meters) placed under the cupuaçu treetop. The branches of the tree were shaken for five seconds approximately and the adults of the borer were counted on the nylon screen. For determination of fruit infestation the number of infested (with a hole of larval exit) and non infested fruits were recorded. The adult of *C. humeropictus* was collected in almost all the samples, but occurred at lower levels during the vegetative period. The population of this insect pest is directly related with the plant phenology and with the climate. Thus, the pest population level was higher at the stages of flowering and fruit formation and at the end of the harvest period, and lower in the dry season. It is important to point out that the insect distribution is not homogeneous in the region, existing areas with large infestation, others with less or without the presence of the insect. Some factors as the insect dispersion, cultural treatments, age and density of cupuaçu plants in agroforestry systems can determinate those differences. The plants sampled near the forest presented, during the study period, a larger number of adults than those sampled inside the cultivation area. Such fact demonstrates that the forest around the cupuaçu plants can serve as source of alternative hosts or shelter for *C. humeropictus*. Losses greater than 50% in fruits production were found in one of the areas in 98/99 season, due to the insect, which emphasize the importance of this pest in this region.

Index terms: *Theobroma grandiflorum*, Curculionidae, insect-pest, Occidental Amazonia

[1190] BIONOMICS OF THE CITRUS YELLOW MITE, *EOTETRANYCHUS CENDANAI* (TETRANYCHIDAE)

T. Thongtab¹, A. Chandrapatya¹ & G.T. Baker², ¹Dept. of Entomology, Kasetsart Univ., Bangkok 10900, Thailand, E-mail agramc@ku.ac.th; ² Dept. of Entomology and Plant Pathology, Box 9775 Mississippi Sta. Univ., Mississippi State, MS, USA 39762

Eotetranychus cendanai Rimando was found on six different citrus plants and two are new host records: *Citrus hystrix* DC., *Citrus aurantifolia* Swingle, *Citrus reticulata* Blanco, *Citrus maxima* (Burm. f.) Murr., x *Citrofortunella microcarpa* (Bunge) D.O. Wijnands (new record) and *Murraya paniculata* (Linn.) Jack (new record) in 34 provinces and completed its life cycle on the five edible host plants under the study. The egg, larva, protonymph and deutonymph stages lasted 4.8-5.8, 1.52, 1.1-1.8 and 1.24 days. Completion of the life cycle required 11.20-13.97 days. A fertilized female produced 6.30-26.38 eggs (0.96-2.43 eggs/days). Female longevity lasted 6.55-10.52 days. Fertilized females produced offspring with sex ratio of male: female 1:1.02-1:2. Life table study of *E. cendanai* indicated that net reproductive rate of increase (R_0) = 14.1 times, cohort generation time (T_c) = 17.37 days, intrinsic rate of increase (r_m) = 0.156

individual/day and finite rate of increase (λ) = 1.165. Major mortality occurred during larval stage followed by nymphal and egg stages.

Index terms: *Eotetranychus cendanai*, citrus plants.

[1191] MIMETIC ASSEMBLAGES OF LYCID BEETLES IN SOUTHERN BRAZIL

R. F. Torres¹ & K. Del-Claro², ¹Federal University of Paraná, Dept. of Zoology; Home address: R. Carlos Cavalcanti, 19, ap.1702, Curitiba, PR, Brazil, 80020-280, e-mail: rodrigo@bio.ufrpr.br ²Federal University of Uberlândia, Dept. of Biosciences, C.P. 593, Uberlândia, MG, Brazil, 38400-902, E-mail: delclaro@ufu.br

Lycid beetles are traditionally considered aposematic models due to their conspicuous coloration and unpalatability. We would like to know if they participate of any Batesian/Müllerian mimetic relationship at Mananciais da Serra, a subtropical Atlantic Rain Forest area in southern Brazil (Piraquara city, Paraná State). Some classical premises of the Batesian and Müllerian mimics were tested in the field: mimics must resemble models in their conspicuous appearance and behaviour; mimics must occur at the same place (habitat) and time as models; mimics must be less abundant than their models. Collections of about 6 h intervals (morning and afternoon), along a 6 km transect, were carried out weekly for one year. All the insects that resembled the local lycid pattern in habitat, morphology and coloration (black-yellow-black transversal bands in the elitra) were captured with a hand net. Definition of models and mimics was based at the literature on chemical defenses and palatability to predators of the groups of insects studied. Models, which exhibited Müllerian mimicry among themselves, were in the following taxa (number of species in parenthesis): Coleoptera - Lycidae (3), Meloidae (1), Oedemeridae (1), Cantharidae (5) and Lampyridae (3); Hemiptera - Coreidae (1). The Batesian mimics (Coleoptera) were: Cerambycidae (2), Belidae (1), Elateridae (1) and Chrysomelidae (3). Two mimetic complexes were distinguished: one with large models and mimics, the other with small ones. Models and mimics occurred synchronously, abundance of models being greater than that of mimics along the year. Results were placed in relation to the hypothesis of the existence of a palatability and resemblance spectrum between models and mimics, and to the presence of local potential vertebrate and invertebrate predators. The study presents field evidences that suggest Batesian/Müllerian mimicry relations between lycids and other insects in the area, and points out the species involved in such mimeries.

Index terms: Lycidae, Coleoptera, mimicry, aposematism, rain forest.

[1192] MIMICRY DYNAMICS OF WASPS AND OTHER INSECTS IN SOUTHERN BRAZIL

R. F. Torres¹ & K. Del-Claro², ¹Federal University of Paraná, Dept. of Zoology; Home address: R. Carlos Cavalcanti, 19, ap.1702, Curitiba, PR, Brazil, 80020-280, e-mail: rodrigo@bio.ufrpr.br ²Federal University of Uberlândia, Dept. of Biosciences, C.P. 593, Uberlândia, MG, Brazil, 38400-902, E-mail: delclaro@ufu.br

Stinging wasps are traditionally considered aposematic models due to their outstanding appearance and behaviour associated with unpalatability. We would like to know if they participate of any Batesian/Müllerian mimetic relationship at Mananciais da Serra, a subtropical Atlantic Rain Forest area in southern Brazil (Piraquara city, Paraná State). Some classical premises of the Batesian and Müllerian mimics were tested in the field: mimics must resemble models in their conspicuous appearance and behaviour; mimics must occur at the same place (habitat) and time as models; mimics must be less abundant than their models. Collections of about 6 h intervals (morning and afternoon), along a 6 km transect, were carried out weekly for one year. All the median-sized black-bodied Vespidae and the other insects that resembled them in habitat, morphology, size, coloration and behaviour were captured with a hand net. Stinging wasp species, all with the same vespid pattern, were defined as models, and only their high fidelity mimics were studied. Models, which exhibited Müllerian mimicry among themselves, were in the following taxa (number of species in parenthesis): female Hymenoptera - Vespidae (5), Sphecidae (1), Pompilidae (2) and Halictidae (1). The most numerous model was the vespid *Polybia (Trichothorax) minarum*. Batesian mimics were: Diptera - Syrphidae (3), Tabanidae (1) and Asilidae (1); Lepidoptera - Ctenuchidae (1); Hymenoptera - Ichneumonidae (4), Formicidae (1) and male Pompilidae (2). Models and mimics occurred synchronously, abundance of models being greater than that of mimics along the year. Results were placed in relation to the hypothesis of the existence of a palatability and resemblance spectrum between models and mimics, to the central role played by aculeate Hymenoptera as models in many mimicry complexes, and to the presence of local potential vertebrate and invertebrate predators. The study presents field evidences that suggest a Batesian/Müllerian mimicry complex involving wasps and other insects in the area, and describes the mimetic aspects of such species.

Index terms: Hymenoptera, Diptera, Lepidoptera, aposematism, rain forest.