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Scientific note

The relationship between *Pachymerus cardo* (FÅHRAEUS) (Coleoptera: Bruchidae) and the palm *Orbignya spectabilis* (C. MARTIUS) BURRET (Arecaceae: Cocoeae) in a terra firme forest, Brazilian Amazon.

by

C. Delgado

M.Sc. Cesar Delgado, Instituto de Investigaciones de la Amazonia Peruana, (IIAP) - Pbio., Cp. 784, Iquitos/Peru; e-mail: pbioinv@iiap.org.pe
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Pachymerus cardo (FÅHRAEUS) is a member of the tribe Pachymerini (Bruchidae: Pachymerinae), indigenous to the new world, currently introduced and established in Nigeria and in the region of the Gulf of Guinea, where it is a pest of *Elaeis guineensis* JACQUIN (Arecaceae) (PREVETT 1966). This bruchid is found in Brazil, Bolivia, Colombia, Costa Rica, Guyana, Nicaragua, Panama, Peru, Trinidad and Venezuela. Its known host plants are *Elaeis guineensis* JACQUIN, *E. oleifera* (KUNTH) CORTES, *Acrocomia aculeata* (JACQUIN) LOOD. ex MARTIUS, *Aiphanes aculeata* WILLD., *Attalea spectabilis* MARTIUS, *A. tessmannii* BURRET, *A. victoriana* DUGAND, *Areca triandra* ROXBURGH ex BUCHANAN-HAMILTON, *Bactris cuesa* CRUEG. ex GRISEB., *B. gasipaes* KUNTH, *Scheelea gomphococca* (MARTIUS) BURRET, *S. leandroana* BARB. RODR., *S. butyracea* (MUTIS ex L.f) H. KARST. ex H. WENDLAND, *S. phalerata* (MARTIUS ex SPRENG.) BURRET, *S. brachyclada* BURRET, *S. macrolepis* BURRET, *S. maracaibensis* (MARTIUS) BURRET, *Orbignya phalerata* MARTIUS, *Maximiliana maripa* (AUBL.) DRUDE, *Syagrus romanzoffiana* (CHAM.) GLASSMAN, *Copernicia tectorum* (KUNTH) MARTIUS (SILVA 1989; NILSSON & JOHNSON 1993; DELOBEL et al. 1995; JOHNSON et al. 1995; HARMS & DALLING 2000). Here I report that this bruchid is also as a pest of an additional Neotropical palm species, *Orbignya spectabilis* (MARTIUS) in the Brazilian Amazon. The bruchid has a negative effect on this palm, reducing its reproductive potential, which has a socioeconomic importance due to the use of its leaves for thatching and protection of the houses by the rural inhabitants of Amazonia.

The present study was carried out in the Adolpho Ducke Forest Reserve, Brazil (02°03' to 03°S, 59°54' to 59°59'W), Municipality of Manaus, Amazon State. The observations were made in the months of January to March of 1996 (the months of

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major rainfall in the region). In a first experiment, bruchids were offered 100 mature fruits with the mesocarp intact and 100 mature fruits whose mesocarp was removed. The fruits were placed on the ground under the palm tree. This experiment was repeated three times. A second experiment consisted of recording the predation rates on the fruits of six preselected palm trees of the same species, in order to compare them with the predation rates on the fruits offered on the ground.

Orbignya spectabilis (Cocoeae: Attaleinii) is an exclusive inhabitant of hydromorphic soil found on creek margins that are flooded by the frequent rains characteristic of the region. In fully grown specimens, the raceme of the palm is approximately 0.50 m above the ground. Each raceme contains a mean of 328 spherical fruits (length = 3.954 cm, s.d. = 0.248; diameter = 2.575 cm, s.d. = 0.152; n = 200).

Oviposition and predation

After 7 days, significant differences were observed between the treatments (Chi2 = 67.12; 1df), 92.3 % of the fruits without mesocarp were oviposited upon while only 9.6 % of the fruits with the mesocarp intact were oviposited upon. The mean number of eggs on each fruit was 8.33 (s.d. = 2.47) in the fruits without mesocarp, and 1.33 (s.d. = 0.50) in the fruits with mesocarp. *Pachymerus cardo* infested the seeds of *Elaeis guineensis*, *Maximiliana maripa* and *Scheelea* spp. at similar rates in the Peruvian Amazon (DELOBEL et al. 1995). When we compare the predation of fruits, there are no significant differences between the treatments (Chi2 = 1.08; 1df), with 79.3 % (n = 317) of the fruits predated on the raceme and 93.0 % of the fruits predated on the ground. This high ovipo-predatory rate on the fruits on the tree was probably related to the small stature of the palm (guild C in JOHNSON 1981). Since the palms are so close to the ground, bruchids which are poor fliers, could deposit their eggs on fruits of their own raceme, an unusual behavior for the species, because generally the members of this family infest the fruits without mesocarp on the ground (JOHNSON 1981; SILVA 1989). On the other hand, the fruits close to the ground are more easily taken from the raceme by rodents that feed on the mesocarp, creating conditions for an early and accelerated oviposition. I observed that in one night one half of the fruits of a raceme were taken and the mesocarp consumed.

Population control at larval level

My observations permitted to determine that mortality occurs mainly in the larval stages, while several larvae penetrate the fruits building different channels, only one adult emerges from each fruit. In contrast, DELOBEL et al. (1995) and DELGADO et al. (1997) found, among other species in *Astrocaryum chambira* BURRET, emergence of up to 15 adults of the bruchids *Caryoborus serripes* (STURM). In addition, considering the mechanism of population regulation, if we consider that eggs are deposited at random on the surface of each fruit, the probability that all the larvae that penetrate the fruit will encounter each other is small. While BRADFORD & SMITH (1977) suspected cannibalism as a mechanism for population regulation in *Pachymerus cardo*, I opened many seeds within a few days after infestation and found that several larvae managed to reach the endosperm and died soon after. There was, therefore, no evidence of cannibalism.

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