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Hostplant and last instar of *Amastus walkeri* (Rothschild, 1922) from southwestern Peru (Lepidoptera: Erebidae, Arctiinae)

J. Grados, J. Cerdeña, J. Farfán & G. Rodríguez-Acosta

Abstract

The hostplant, *Schinus molle* L. (Anacardiaceae) and the last instar of the Arctiinae *Amastus walkeri* (Rothschild, 1922) are reported for the first time. Several caterpillars with abundant setae and gregarious behavior, were observed feeding on the leaves of *Schinus molle* L. in the department of Arequipa, southwestern Peru. Ten caterpillars were collected and raised in laboratory condition. Two adults were recovered. According to the external morphology of the adults, they correspond to the species identified as *Amastus walkeri* (Rothschild).

KEYWORDS: Lepidoptera, Erebidae, Arctiinae, *Amastus*, *Schinus molle*, taxonomy, Western Slopes, Peru.

Planta nutricia y el último estadio de *Amastus walkeri* (Rothschild 1922) en el suroeste de Perú (Lepidoptera: Erebidae, Arctiinae)

Resumen

Se reporta por primera vez, la planta nutricia *Schinus molle* L. (Anacardiaceae) y el último estadio del Arctiinae *Amastus walkeri* (Rothschild, 1922). Algunas orugas con abundantes setas y comportamiento gregario fueron observadas alimentándose de hojas de *Schinus molle* L., en el Departamento de Arequipa, suroeste de Perú. Diez orugas fueron recolectadas y criadas en condiciones de laboratorio. Dos adultos fueron recuperados. De acuerdo a la morfología externa de los adultos, se identificaron como la especie *Amastus walkeri* (Rothschild).

PALABRAS CLAVE: Lepidoptera, Erebidae, Arctiinae, *Amastus*, *Schinus molle*, taxonomía, Vertientes Occidentales, Perú.

Introduction

The genus *Amastus* Walker, 1855 with Neotropical distribution is one of the most diverse within the subfamily Arctiinae and currently includes more than 150 species (WATSON & GOODGER, 1986; VINCENT & LAGUERRE, 2014). *Amastus* species are among the largest in size within the subfamily and some of them have sexual dimorphism in the pattern of wing coloration.

Majority of species occur at medium and high altitudes on both sides of the Andes. About 25% of the known species have Peru as type locality (37 species) and it is estimated that 60-70 species may occur (GRADOS, unpublished data). A reclassification study of *Amastus* was carried out by TOULGOËT (1988, 1992), who recognized eight groups on the basis of their habitus, *A. walkeri* was assigned to group VIII. VINCENT & LAGUERRE (2014) in your catalogue of neotropical Arctiini maintained the classification proposed by TOULGOËT (1992).

Taxonomic knowledge of the genus is acceptable, but unfortunately the same does not occur in regard to its natural enemies, host plants, natural history, and geographic distribution. Some known host

plants are: *Rumex pulcher* L. (Polygonaceae) is host plant of *Amastus formosana* Schaus, 1910, *Erato polymnioides* DC (Asteraceae) and *Miconia* sp. (Melastomataceae) are hosts of *Amastus ambrosia* (Druce, 1890), and *Amastus hyalina* (Dognin, 1889) species is polyphagous, with some species of Poaceae, Fabaceae, Piperaceae, Clusiaceae, Dryopteridaceae and Rosaceae as host plants (BOURQUIN, 1936; RAB GREEN *et al.*, 2011; ALBAUGH *et al.*, 2017).

The objective of the present work is to report for the first time *Schinus molle* L. as host plant for larvae of the species *Amastus walkeri* (Rothschild), which were reared under laboratory conditions.

Materials and methods

In April 2019 at the town of Mollebaya, about 12 km SE of the city of Arequipa, Peru (Fig. 1a), several caterpillars with abundant setae and gregarious behavior, were observed feeding on the leaves of a pepper-tree *Schinus molle* L. (Fig. 1b), a common plant around the edges of crop fields and dry creeks on the surroundings of Arequipa. A total of ten caterpillars, the largest ones, were collected and placed in plastic containers to be raised in the laboratory of entomology at the Museo de Historia Natural de la Universidad Nacional de San Agustín de Arequipa (MUSA), at the city of Arequipa, under natural environmental conditions (temperature and humidity). Fresh leaves of *Schinus molle* were provided daily until pupation occurred. The cocoon were observed daily until emerged adults. From caterpillars collected, only two completed the life-cycle, emerging one female and male adults; the rest of the caterpillars stopped feeding, dying without completing the pupation, for unknown cause. The two recovered adults were mounted.

Material examined: Mollebaya, 12 km SE of Arequipa (16°29'14.69"S, 71°28'27"O, 2400 m, G. Acosta leg.). 10 last instar caterpillars (20-IV-2019), on *Schinus molle*. Pupation: male (25-IV-2019), female (28-IV-2019). two adults obtained: male (10-V-2019), female (16-V-2019).

Results and Discussion

According to the external morphology of the emerged adults, they correspond to the species identified as *Amastus walkeri* (Rothschild). The identification of this species has been possible in a previous work of the Arctiinae of Arequipa (Peru), (GRADOS *et al.*, in press), based on the original description (ROTHSCHILD, 1922) and the revision of the holotype deposited in the National History Museum, London, United Kingdom. The characteristics of the morphology of the male genitalia is provided by GRADOS *et al.* (In press). TOULGOËT (1992) does not exclude that *Amastus walkeri* belongs to group VIII of the genus.

The species occurs at the western slopes of the Peruvian Andean mountains between the departments of Lima and Arequipa, with an altitudinal distribution between 1800-2300 m (GRADOS *et al.*, in press). It is the first time that the last larval instar and cocoon of the species is reported.

Last larval instar has black heads, yellow setae on the back of the second thoracic segment, and orange ones on the third one. Whitish spots on the lateral parts with yellowish setae throughout its length. The legs are blackish and the prolegs are light brown. The rest of the body is covered with creamy, blackish setae (Fig. 1c). Last instar larvae make a light brown cocoon (Fig. 1d). The pupal instar lasts between 16 and 19 days for the male and female, respectively. The caterpillars observed in the field have gregarious behavior.

Schinus molle L. (Anacardiaceae) is the first registered host plant for *Amastus walkeri* (Rothschild) and the first family record for the genus *Amastus*. Only two species of hemipteran insects harmful to *Schinus molle* L. have been reported (MÓSTIGA & LOZADA, 2019) and, among the Lepidoptera, three species are known to use it as a hostplant: *Leurocephala chilensis* Vargas & Moreira, 2017 (Gracillariidae), *Iridopsis hausmanni* Vargas, 2007 (Geometridae), and *Eupithecia yubitzae* Vargas & Parra, 2004 (Geometridae) (VARGAS, 2014; VARGAS *et al.*, 2015; PEREIRA *et al.*, 2017).

The plant *S. molle* was known long before its first formal description (CLUSIUS, 1605), carried

out by LINNAEUS (1753), both authors stating that the species came from Peru. Its native area of distribution is central and southern South America, introduced to other regions such as the Canary Islands (Spain), the United States (USA), Mexico and China RZEDOWSKI & CALDERÓN (1999). The species was used for various purposes by pre-Columbian cultures, being referred to as a tree of warm and temperate areas, whose berries in clusters were used to prepare a highly prized “chicha”, its wood was used for medicinal purposes and provided good charcoal, used by the Incas for different purposes (CIEZA, [1553] 1973; COBO, [1890-1893] 1964; GARCILASO, [1609] 2016; GUAMÁN POMA [1615] 2008). It has several medicinal uses that popular and cultural tradition keep VALDIZÁN & MALDONADO, (1985) and it is perhaps the reason for the good conservation of its populations. Today it is common to use it as an ornamental in gardens, squares and on the sides of roads in valleys where crops can be found.

We hope this work can motivate researchers to study the complete cycle of the species, in order to know the shape of the eggs, detailed morphology of the different instars, if there is polymorphism in the larvae, duration of each instar, natural enemies and if *Amastus walkeri* has other hostplants. All these data would contribute to the understanding of the herbivore-host relationships and their correlations with geographic distributions and evolutionary processes.

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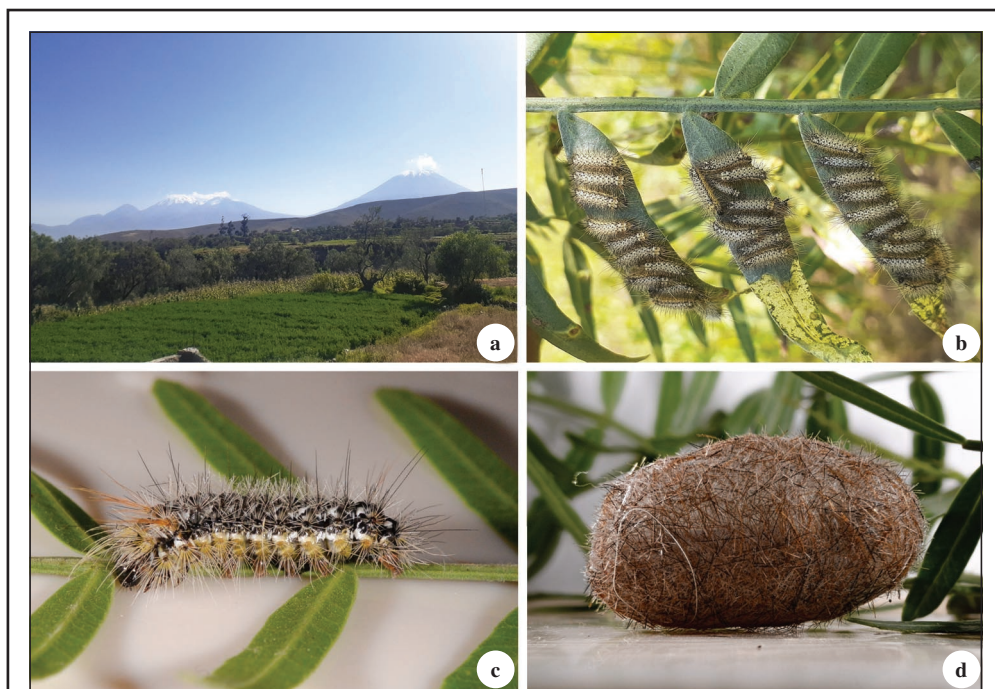


Figure 1.— Natural history of *Amastus walkeri* (Rothschild, 1922) in southwestern Peru. **a.** Habitat of *A. walkeri* in Mollebaya (Arequipa). **b.** Gregarious larvae of *A. walkeri* feeding on leaves of *Schinus molle* L. **c.** Larva of *A. walkeri* showing the distribution of setae. **d.** Light brown cocoon of *A. walkeri*.

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