

ON THE GEOGRAPHIC DISTRIBUTION OF
NEMOGNATHA PLAUMANNI BORCHMANN, 1942
(COLEOPTERA: MELOIDAE): NEW RECORDS FROM VENEZUELA,
WITH A 4500 KM RANGE EXTENSION

GARCÍA-PARÍS, MARIO¹, MANZANILLA, JESÚS², MARTÍNEZ-SOLANO, IÑIGO^{3,4} and BUCKLEY, DAVID^{1,5*}

¹Museo Nacional de Ciencias Naturales, MNCN-CSIC
c/ José Gutiérrez Abascal 2, 28006-Madrid, Spain

²Museo del Instituto de Zoología Agrícola, Facultad de Agronomía
Universidad Central de Venezuela (U.C.V.), Maracay, 2101-A, Aragua, Venezuela

³Instituto de Investigación en Recursos Cinegéticos, IREC-CSIC-UCLM-JCCM
Ronda de Toledo, s/n, 13005 Ciudad Real, Spain

⁴Current address: CIBIO/UP, Centro de Investigação em Biodiversidade e Recursos Genéticos
da Universidade do Porto, InBIO, Campus Agrario de Vairão, Rua Padre Armando Quintas,
s/n, 4485-661 Vairão, Portugal

⁵Current address: Dpt. Physiology, Development and Neuroscience, University of Cambridge
Cambridge CB2 3DY, UK; E-mail: davidbuckley15@gmail.com

Nemognatha plaumanni Borchmann, 1942 (Coleoptera: Meloidae: Nemognathinae) was described from a single specimen found in Brazil, and since its description no additional information has been published on the species. During a field survey in Venezuela, we found one individual morphologically assignable to the species. In this note, we report and discuss this finding, which, together with the revision of the entomological collections of the Magyar Természettudományi Múzeum (Hungarian Natural History Museum, HNHM, Budapest, Hungary), the Natural History Museum (NHM, London, UK), and the Museo del Instituto de Zoología Agrícola (MIZA, Maracay, Venezuela), has led us to acknowledge the presence of the species in Venezuela, therefore extending the known distribution range of the species by more than 4500 km. We discuss the possibility that *N. plaumanni* might in fact correspond to a complex of cryptic species distributed over this vast range, an hypothesis that has to be tested with further field- and lab-work.

Key words: blister beetles, South American fauna, species distribution, systematics, taxonomy.

INTRODUCTION

Nemognatha plaumanni Borchmann, 1942 (Meloidae: Nemognathinae) was described based on a single specimen (holotype by monotypy) from Nova Teutônia (Type locality: “...Brasilien; Nova Teutonia, Rio Grande do Sul”) collected by F. Plaumann (BORCHMANN 1942: 708). The type locality, Nova Teutônia, is located at 27°09'49.6''S–52°25'27.0''W, and about 350 m of elevation, in the western region of the State of Santa Catarina [not in Rio Grande do Sul as

* Author for correspondence

indicated by BORCHMANN (1942)]. The Fritz Plaumann Museum of Entomology is currently located in Nova Teutônia.

Since its description, *N. plaumanni* has not been mentioned again in any subsequent publication, remaining then as an obscure, almost unknown species from Southern Brazil. However, during the revision of the entomological collections of the Magyar Természettudományi Múzeum (Hungarian Natural History Museum, HNHM, Budapest) and the Natural History Museum (NHM, London), we had the opportunity of studying three additional specimens, all from Nova Teutônia and captured by Fritz Plaumann:

(1) N. Teutonia Bras. Santa Catarina. Plaumann 25-XI-50 / Sammlung George Frey / *Nemognatha plaumanni* Borch., Z. Kaszab det. 1952 [HNHM] (Fig. 1); (2) Brasilia. 15-II-1935. Santa Catharina. Nova Teutonia. leg. F. Plaumann / — / *Nemognatha plaumanni* Borch., Z. Kaszab det. 1952 [HNHM]; (3) S. Catarina. N. Teutonia. F. Plaumann [NHM].

According to these data, the species was found only in Nova Teutônia, with specimens collected occasionally from the end of November to mid-February. Variability among the specimens studied was observed at the shape of the pronotum: broader and less campaniform in one specimen (Fig. 1), narrower and campaniform in the second. The latero-anterior impression observed in the pronotum of one specimen is likely a consequence of manipulation.

During a field survey in the Cordillera de la Costa of the State of Vargas (Venezuela) we found a single specimen, morphologically assignable to *N. plaumanni*. This extremely distant location was subsequently confirmed with the study of four additional specimens held at the entomological collection of the Museo del Instituto de Zoología Agrícola (MIZA, Maracay) with the following data:

(1) Venezuela: Aragua: El Limón, 450 m: 20-IV-1965, 1 ejemplar (J. & B. Bechyne leg.) [MIZA] (Fig. 2); (2) Venezuela: Aragua: El Limón, 450 m: 2-X-1966, 1 ejemplar (J. & B. Bechyne leg.) [MIZA]; (3) Venezuela: Aragua: El Limón, 450 m: 2-VI-1977, 1 ejemplar (B. Bechyne leg.) [MIZA]; (4) Aragua: El Limón, 450 m: 7-VIII-1977, 1 ejemplar (B. Bechyne leg.) [MIZA]; (5) Venezuela: Vargas: 3 km al SO de Chichiriviche, Río Chichiriviche, 10°32'N, 67°14'O, 135 m: 18-II-2004, 1 specimen, "en un tallo de gramínea seca" (M. García-París, J. Manzanilla, D. Buckley & I. Martínez-Solano leg.).

Adult specimens were found in the Venezuelan Cordillera de la Costa in the States of Aragua and Vargas, in February, April, June, August, and November, suggesting that adults are active during most of the year. Variability amongst the Venezuelan specimens was similar to that observed amongst the Brazilian specimens.

DISCUSSION

Nova Teutônia and the Cordillera de la Costa are separated by about 4500 km by air, and both general landscape and habitat are very different in the two regions, leaving open the question of whether the populations from



Fig. 1. General habitus of a specimen of *Nemognatha plaumanni* Borchmann, 1942, from the species type locality in Nova Teutônia (Brasil) [HNHM].



Fig. 2. Latero-dorsal view of a specimen of *Nemognatha plaumanni* Borchmann, 1942, from the Cordillera de la Costa in the State of Aragua (Venezuela), located about 4500 km north of the previously known Brazilian populations [MIZA].

Venezuela correspond to a morphologically cryptic species distinct from *N. plaumanni*. However, the wide geographic range reported here for *N. plaumanni* is not unique among nemognathine meloid beetles in America. In fact, the largest recorded distribution along the continent is shown by other species of *Nemognatha* Illiger, 1807: *N. chrysomeloides* (Linnaeus, 1763), recorded from northern Mexico (Sinaloa and Jalisco) to southern Brazil, Peru and northern Argentina (GARCÍA-PARÍS *et al.* 2007, QUINTINO & MONNÉ 2009). Other species of Meloidae with large geographic distributions are *Meloe laevis* Leach, 1815, which extends from the southern states of the USA to northern Venezuela (GARCÍA-PARÍS *et al.* 2010), and *Cissites maculata* (Swederus, 1787) distributed from Mexico and the Antilles to Argentina (GENARO 1996, GARCÍA-PARÍS *et al.* 2007, GARCÍA-PARÍS *et al.* 2013). *Nemognatha* and *Cissites* Latreille, 1804, both included in the subfamily Nemognathinae, and *Meloe* Linnaeus, 1758, included in the subfamily Meloinae, have phoretic larvae, which are carried by bees (Apoidea) during their first larval stage (BOLOGNA 1991).

Two competing hypotheses might explain the geographic pattern observed in *N. plaumanni*: (1) *N. plaumanni* is, as inferred by its external morphology, a single species with a wide but largely unknown distribution range, which seems plausible due to its high vagility, associated with the presence of phoretic larvae and the potential ability of adults to fly over long distances, or alternatively (2) it is a complex of morphologically cryptic species distributed over narrower geographic zones, restricted to particular habitats [as suggested by BEAUREGARD (1890) and MARTÍNEZ (1992) for the *N. chrysomeloides* complex]. Rejecting any of these hypotheses would require additional sampling in intermediate areas as well as the use of neutral molecular markers, which would provide evidence of independent evolution in spite of their similar morphology.

A phylogenetic framework for the relationships within the widespread genus *Nemognatha* is lacking. ENNS (1956), in his thorough treatise of the *Nemognatha* found north of Mexico, proposed a classificatory scheme including four subgenera: *Nemognatha*, *Meganemognatha* Enns, 1956, *Pauronemognatha* Enns, 1956, and *Pronemognatha* Enns, 1956. Based on the characters indicated by ENNS (1956), however, *N. plaumanni* cannot be ascribed to any of those subgenera.

The South American fauna of *Nemognatha* is poorly known (DENIER 1935, 1940, PINTO & BOLOGNA 1999) and the systematics of the Neotropical representatives of the genus remains totally obscure. Some of the colour morphs of the *N. chrysomeloides* complex, a species present along most of the geographic region inhabited by *N. plaumanni*, may show an overall metallic blue coloration (BEAUREGARD 1890, KASZAB 1963, MARTÍNEZ 1992). *N. plaumanni* differs markedly from *N. chrysomeloides* in many characters, including body propor-

tions, antennal structure, length of the galeae, and sculpture. *N. chrysomeloides* is shorter, broader and much more convex, its antennae shorter with differently shaped individual segments, its galeae much longer, often longer than the entire body, and its elytra shiny. The systematics and taxonomic status of these *N. chrysomeloides* groups or morphs is nowadays unresolved, and the species, in its current sense (GARCÍA-PARÍS *et al.* 2007), might include more than one taxon (BEAUREGARD 1890, MARTÍNEZ 1992). Nevertheless, based on the original descriptions of these *N. chrysomeloides* morphs, none of them may be associated to *N. plaumanni*. Moreover, we have no evidence for a close relationship between *N. plaumanni* and any other Neotropical species of *Nemognatha*.

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