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Phytotelmatrichis, a new genus of Acrotrichinae (Coleoptera: Ptiliidae) associated with the phytotelmata of Zingiberales plants in Peru

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Abstract

Phytotelmatrichis, **gen. n.** a new genus of Ptiliidae: Acrotrichinae with two species *Phytotelmatrichis peruviensis* **sp. n.** and *Phytotelmatrichis osopaddington* **sp. n.** is described and illustrated. The new species were found during a survey of insects in the aquatic environments that form in the hollows (phytotelmata) in the leaves and floral bracts of Zingiberales plants. The new taxa were found in the the Zingiberales genera *Calathea* (Marantaceae), *Heliconia* (Heliconiaceae), and *Alpinia* and *Renealmia* (Zingiberaceae) in southern Peru. Sampling of other habitats in the same areas over five years and using a range of different techniques did not yield more specimens of this new genus. This suggests that the new species are restricted to phytotelmata.

Key words: taxonomy, new genus, new species, *Alpinia, Calathea, Heliconia,* Ptiliidae, *Phytotelmatrichis, Renealmia.*

Introduction

The research involved in this paper forms part of an inventory of the leaf beetle fauna of Peru conducted by Chaboo. One outcome of that programme is a re-evaluation of the species diversity that forms a baseline for beetle families in this hyperdiverse Neotropical country (99 families, >10000 species (Chaboo 2015). A particular focus of collecting has been from phytotelmata, the small pools of water that form in hollows of plants, from seeds to inflorescences (Kitching 2000). These pools provide habitat for many arthropods that invade and establish mini-ecosystems. Pitcher plants are a temperate example (see Beaver 1983), but tropical and sub-tropical bromeliads, bamboo internodes, tree-holes, and even large seed-pods can also host distinctly-bounded communities.

This paper focuses on phytotelmata communities of the plant order, Zingiberales. This order includes many commercial food (e.g., banana, ginger) and ornamental plants grown for large 'tropical' leaves and stunning inflorescences with brightly-coloured bracts. Zingiberales comprises eight families, 92 genera, and *ca.* 2100 species (Kress et al. 2005). They have interesting pollination systems with bats, hummingbirds, and many insects (Kress & Specht 2005). These plants offer two distinct phytotelm habitats, watery pools that form in the colourful upright bracts and the leaves that unfurl as a cone that can hold water. Zingiberales leaf-roll phytotelmata communities have been the focus of ecological research, from early application of island-biogeography hypotheses (e.g. Seifert et al. 1975) to recent elucidation of food network communities (e.g. García-Robledo et al. 2014). Systematic inventories of the phytotelm fauna, predominantly insects, are uncommon (see Greeney 2001).

The beetle family Ptiliidae Heer, commonly called featherwing beetles, are the most minute beetles at less than 1.5 mm in size. The world fauna comprises more than 70 genera and 600 species but Peru has only one species, *Limulopteryx loebli* Hall, 2003. Jalinsky et al. (2012) surveyed the arthropod communities of two Peruvian Zingiberales, *Calathea lutea* Schult (Marantacaceae), and *Heliconia stricta* Hubner (Heliconiaceae) and found individuals of *Acrotrichis* Motschulsky common in the leaf rolls for both plant species. Darby and Chaboo (2015) thus reported two species of Ptiliidae from Peru.

We now report, after studying the approximately 1,420 Ptiliidae collected to date in the Chaboo inventory (approximate because many specimens were disarticulated and fragmentary), a new genus and two new species

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