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International Journal of Avian & Wildlife Biology

Short Communication

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Moths and their relationship to panamanian agriculture

Abstract

The present communication tries to expose a short synopsis about the importance of moths; including details about the first studies of these organisms in Panama.[1] New knowledge achieved from this group could impact in a wide variety of disciplines, including management of wildlife resources and conservation.

Keywords: panamanian moths, micro moths, wildlife conservation, natural history, agro ecosystem

Volume 3 Issue 2 - 2018

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Received: October 14, 2017 | **Published:** April 09, 2018

Introduction

Moths are closer relatives of butterflies. They are mostly active during the crepuscule and nights, while a particular group of them could have daily activity. These creatures could fly longer distances and able to do transcontinental flights; or short distances, like twirls between shrubs. Some external characters that distinguish them from butterflies are: their feathery antennae on males, robust body mostly covered with hairs. The variety of colors and shapes inside the group is impressive; some of them could be masters of mimicry. Provided with cryptic colors, some species are hard to distinguish on a sunny, summer day. Many other species could have translucent, metallic reflections and impressive designs on the wings. One charismatic moth belongs to the genus Alucita; it has extremely modified wings as feathers. This moth belongs to a poorly known and primitive group of moths, commonly known as micro moths. Moth's diversity succeeds butterflies, many times; and tropics of the world, are important hotspots where the exotic diversity has place. The largest moth known is the atlas moth (wingspan: 25 to 30cm), while the tiniest moth is a nepticulid, Stigmella maya (wingspan: 1.2mm based on NMH, 2016). The species represent the Asian and North American fauna, respectively. The first studies that tried to give identity to the rich diversity of Panamanian moths; were conducted in 1912. When a group of specialists from the United States Agricultural Department (USDA); made a biological survey before the construction of one of the biggest masterpiece of the engineering, the Panama Canal. During that time August Busck an enthusiastic entomologist, versed on micro moths; with a group of other specialists fascinated by the tropical landscapes of Panama; described and gave identity to unique new species; probably endemic to this region of the world.

More than 100 years, just a few works try to share new knowledge about moths in this area of the world. Their life histories, identities, relationship with their host–plants, behavior, seasonality and their important niche in different ecosystems still unknown for the science. This gap in knowledge; limits possible application of diversity in a wide variety of possibilities. As biological controllers of invasive weeds; but also as part of conservation plans, protecting pollinators of endangered species of plants. Some species of micro moths are economically important, as serious pests in the agriculture; they could produce millionaire loss in cultivated yields over the world.

Moths have been millenary inspirational objects. Ancient civilizations appreciate the beauty of these organisms, tangible evidence is ancient art. In some cultures moths have been related to superstition and occultism. Moths served as inspiration to horror movies and as part of American urban legends. Besides the infamous reputation; moths have an important role on the ecosystems. Some caterpillars could be related to water sources as potential indicators of environmentally disturbance. Other species have the highest resistance and tolerance to insecticides, and this quality makes them unique. The experience has demonstrated that moths could be used as biological models; showing the drastic effects of climate change on organisms. Under highly intervened environments, caterpillars could change their normal behavior; searching alternative host–plants in periods when the nutritious resources have decreased. The field expeditions helped the author in the confection of the first prototype guide of the main species of moths related to the Panamanian annual agriculture; based on updated references and new host–plants records (Figures 1–4).

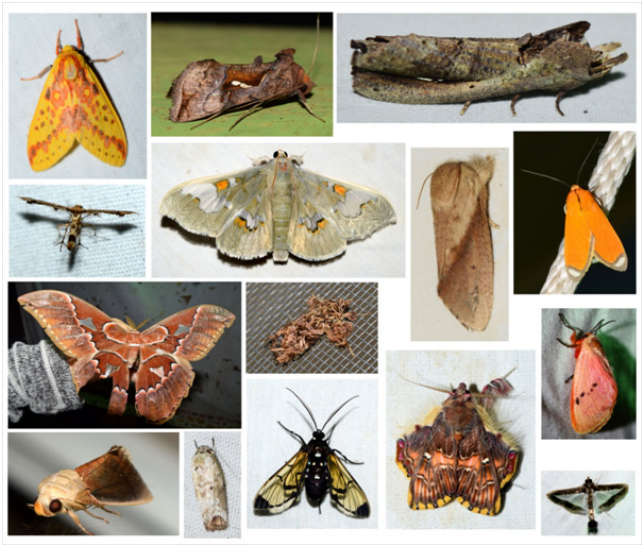
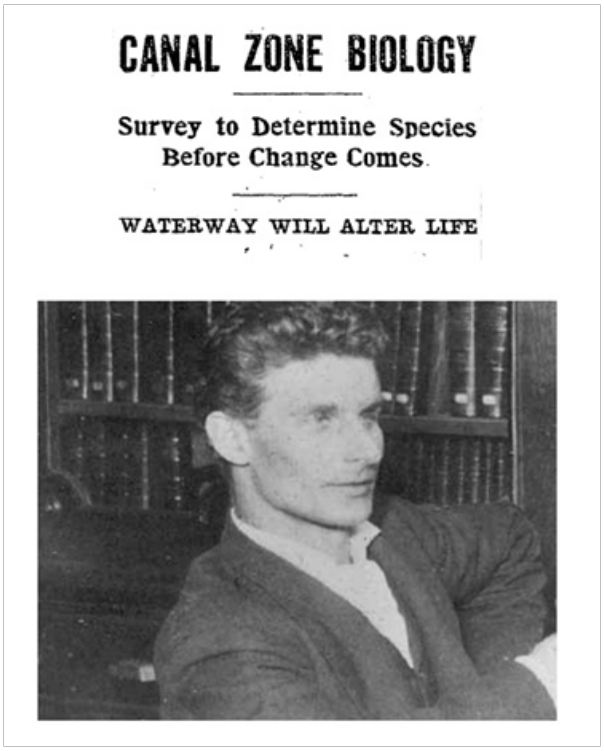


Figure 1 A sample of variety of colors, textures, shapes and resting postures found on Panamanian moths, Copyright: Corro-Chang, 2017.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Survey to Determine Species Before Change Comes

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Figure 2 The Panama Canal biological survey advertisement and August Busck. Copyright: Patuxent Wildlife Research Center.

Figure 3 Samples of Egyptian art inspired in moths and the "Mothman" part of the North American mithology. Copyright: Pinterest and Abishai100 from Comic Vine, 2016.

Figure 4 Field expedition made by Patricia Corro-Chang as part of her studies based on Panamanian moths. Copyright: Corro-Chang, 2017.

Conclusion

After one year of travelling across the Isthmus of Panama, the author had the opportunity to understand particular elements of the life histories of moths and their wealth diversity in this region of the world. The experience has shown the real problem represented by some species of moths; but also those that have important roles on wild ecosystems.

Acknowledgements

The author is particularly grateful to the SENACYT for their academic programs that support her PhD studies in Panamá; and the additional support through the grant APY–NI–2015–27. Thanks also extended to Instituto de Entomología, Universidad de Panamá for physical space to develop part of this research and to Sergey Tarakanov for his support on the field expeditions and rearing specimens based on standardized parameters.

Conflict of interest

The author declare that there is no conflict of interest.

Reference

1. NHM. The tiniest moths in the world. British Natural History Museum; 2016.