

## New species of *Hyposmocoma* (Lepidoptera, Cosmopterigidae) from the remote Northwestern Hawaiian Islands of Laysan, Necker, and Nihoa

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### Abstract

The endemic Hawaiian cosmopterigid moth genus *Hyposmocoma* Butler, 1881 contains 315 described species, making it one of the Archipelago's most diverse radiations. However, only one species was previously described as endemic to the Northwestern Hawaiian Islands (NWHI), and prior taxonomic work in the region has been problematic. The NWHI represent a series of much older island remnants and atolls that were formerly high islands of much greater diversity. Systematic relationships within and between *Hyposmocoma* on the Northwestern Hawaiian Islands may have implications for understanding not only the biogeography of *Hyposmocoma* but of Hawaiian radiations in general. We describe eight new species of *Hyposmocoma* endemic to the NWHI: *H. laysanensis* sp. nov. and *H. ekemamao* sp. nov. from Laysan Island, *H. opuumaloo* sp. nov. and *H. mokumana* sp. nov. from Necker Island, and *H. nihoa* sp. nov., *H. kikokolu* sp. nov., *H. menehune* sp. nov., and *H. papahanau* sp. nov. from Nihoa Island. This work represents the first inclusive taxonomic treatment of *Hyposmocoma* in the NWHI and may serve as a basis for studies both of *Hyposmocoma*, and broader biogeographic research on the NWHI.

**Key words:** Microlepidoptera, new species, endemic, Northwestern Hawaiian Islands

### Introduction

The endemic cosmopterigid moth genus *Hyposmocoma* Butler, 1881 is an example of one of the greatest radiations in the Hawaiian Islands. A remarkable trait of some species of *Hyposmocoma* is the spectacular diversity of cases the larvae carry through development as shelters (Zimmerman 1978). Although 315 species of *Hyposmocoma* have been described, all but one are from the large, relatively young, main Hawaiian Islands (0.5-5 million years old). Only *H. neckerensis* (Swezey 1926) was described from the remote island fragments and atolls that make up the much older Leeward (7-21 million years old), or Northwestern Hawaiian Islands (NWHI), which were recently proclaimed the Papahānaumokuākea Marine National Monument. Until recently it was unclear if the lack of species from the NWHI was the result of an impoverished fauna that never fully colonized the ancient declining islands, or the result of inadequate sampling. NWHI *Hyposmocoma* specimens that had been identified by Swezey (1926) were erroneously thought to belong to species already described by Walsingham (1907) from specimens collected on the main islands (Zimmerman 1978). These misidentifications included three *Hyposmocoma* species identified by Swezey (1926) from Nihoa and Necker Islands and the unfortunate record of a species from Laysan Island based on a single larval case which had an emergence hole from a parasitoid (Fullaway 1914). In his preliminary fragmentary notes, Zimmerman (1978) mentions a total of possibly eight species collected on rocks or at lights and occurring on the NWHI, with several kinds of larval cases impossible to associate properly. The few samples that were available did not ameliorate the systematics of the group. We have begun a systematic and phylogenetic