



## Three new species of *Eupithecia* Curtis from Arizona and New Mexico with discussion of associated species (Lepidoptera: Geometridae: Eupitheciini)

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### Abstract

*Eupithecia macfarlandi*, new species, and *Eupithecia penablanca*, new species, from southern Arizona, and *Eupithecia nonanticaria*, new species, from southwestern New Mexico, southeastern Arizona, and Chihuahua, Mexico are described. Adults and male and female genitalia are illustrated. *Eupithecia anticaria* Walker and *E. nonanticaria* are compared.

**Key words:** Arizona, *Eupithecia anticaria*, *Eupithecia macfarlandi*, *Eupithecia nonanticaria*, *Eupithecia penablanca*, Eupitheciini, Geometridae, Mexico, New Mexico, taxonomy

### Introduction

Three new species of *Eupithecia* are described from limited material that I collected at UV light and from additional specimens sent to me for identification. All appear to be uncommon with localized geographic distribution. A few specimens have resided in my collection since the late 1980s. Loan material was held for several years in the hope that the field seasons 2003–2006 would generate additional specimens and of better quality. A few additional examples of all three species were obtained, some by loan. Since it is now apparent that additional material will not be readily forthcoming, I have decided to describe these species.

Images of adults were taken with a Fuji S1 FinePix Pro digital SLR camera. Images of the genitalia were taken through an Olympus SZ60 stereozoom microscope using a Fuji S3 FinePix Pro camera body attached to the microscope photo tube. Image post-processing was accomplished with several versions of Adobe Photoshop®. Various stains were used to enhance genitalic features. In several instances, inverted images of female genitalia are presented to enhance the visibility of structural features and produce a degree of three-dimensionality.

Abbreviations and definitions used herein:

D, V—dorsal, ventral

DFW, DHW—dorsal forewing, dorsal hindwing

EME—Essig Museum of Entomology, University of California, Berkeley, CA

FW, HW—forewing, hindwing