

DESCRIPTIONS OF A NEW SPECIES OF
EUPITHECIA AND THE MALE OF
E. COCOATA PEARSALL (GEOMETRIDAE)¹

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ABSTRACT

A new species, *Eupithecia peckorum*, is described from Missouri belonging to the *palpata* species group. The male of *E. cocoata* Pearsall also is described revealing this species to be the first Nearctic representation of its species group.

INTRODUCTION

THESE FINDINGS ARE THE RESULT of a thesis reviewing the Larentiinae of Missouri. *Eupithecia cocoata* Pearsall (1908) was described from a single female specimen from Plummer's Island, Maryland. This species has not since been recorded until now. A series of six specimens from Missouri and Arkansas reveals two males with unusual genitalic structure. The laterally bifurcate uncus is unique among the Nearctic fauna introducing a new species group for the region. Its closest ally appears to be *E. haworthiata* Dbd., a Palearctic species.

The new species is known exclusively from three vernal specimens taken in Independence, Missouri over an eight year period. This is apparently a univoltine species, which is typical for Missouri *Eupithecia*. It inhabits a sparsely forested environment. The wings and the genitalia show unique characters and cannot be confused with any other species.

Eupithecia cocoata Pearsall

Plate I: Figs. 4,5,6. Plate II: Fig. 8

MALE: Head: Eyes black; vertex heavily gray and brown scaled with slightly raised scales anteriorly, followed by a thin row of erect bristles (chaetosemas) and very small pale scales, and posteriorly with a collar of erect larger scales; frons with closely appressed, gray scales, extending a bit and turning brown at the

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base of the proboscis; pilifers and proboscis finely pubescent with a few fine hairs, labial palps moderate in length (about diameter of eye), broad and down-curving with thick gray scaling; antennal base gray-scaled, segments as wide as long, with fine ventral and lateral hairs (about one-third length of segment in size), dorsum with gray scales.

Thorax: Patagia with broad, gray scales; tegulae extending beyond base of hindwing, with gray and brown scales and pencils; dorsum covered by small gray and brown scales; venter thickly scaled with white, gray, and brown scales, predominately light colored; forelegs gray with some tarsal banding with lighter scales, middle and hind legs pale gray.

Abdomen: More thickly scaled and darker, with predominately gray and some brown scales.

Wings: Length of fore wing: 11 mm. Dorsal surface: Fore wings, ground color gray with some faint, brown, wavy, thin lines; two very obscure premedial lines; medial line leaving costa obliquely into discal spot, continuing faintly and obliquely towards body to inner margin; medial line mirrored by three more identical lines distally; subterminal line thicker but faint. Hind wings, ground color gray with brown, wavy, thicker lines, more prominent than those on forewings but still faint; lines darker toward inner margin; antemedial line present; medial line passing thru discal dot; three more distally located lines present, homologies uncertain. Ventral surface: Identical to dorsum but lines and ground color fainter. Terminal lines of all wings dark; fringe alternating gray and brown hairs.

Genitalia: Uncus laterally bifurcate and well formed; tegumen large and rounded posteriorly, with long setae laterally; transtilla weakly formed; labidal arms and feet normally developed; labidal pads of most common shape, with hairy bases and tips, rest naked; labidal papillae abnormally long and stout (at least one-half size of pads), tipped with fine hairs; juxta normal; saccus normal; valve broad and without processes; costa with setae on its entire length; valvula rather thickly haired and naked proximally; sacculus with a few fine hairs; aedeagus relatively large, thickly spiculate at its opening and pointed, vesica with numerous sclerotizations; ninth segment with hair pencils; ventral plate with base broad and weakly bilobed, tapering at mid-length into two thin arms.

SPECIMENS: Two males from Blue Springs State Park, Washington Co., Arkansas: 3 May 1969 and 4 June 1971 at UV light (R. L. Heitzman); three females from same locality: 29 May

1966, 16 April 1967, and 3 May 1969 at UV light (J. R. Heitzman); one female from Sarcoxie, Jasper Co., Missouri, 16 May 1972 at UV light (J. R. Heitzman).

LOCATION OF SPECIMENS: The described male will be deposited in the United States National Museum, Washington, D. C. where the female type is located, and one female in the Entomology Museum of the University of Missouri, Columbia. The remaining specimens will be retained by the senior author.

Eupithecia peckorum sp. nov.

Plate I: Figs. 1,2,3. Plate II: Figs. 7,9,10

MALE: Head: Eyes black; vertex heavily brown-scaled, with slightly raised scales anteriorly, followed by thin row of erect bristles (chaetosemas), and posteriorly with a collar of erect, larger scales tipped with dark brown; frons with brown, closely appressed, scales in medial area, scales dark brown and longer near eyes and base of proboscis; pilifers and proboscis finely pubescent, thinly arrayed with longer hairs; labial palps extremely long and up-curving (about twice diameter of eyes), thin but heavily scaled with short and long dark brown tipped scales; antennal base completely scaled, antennae bifasciculate with segments slightly longer than wide, thick patches of fine hairs arising most prominently from two ridges on the ventral surface of each segment (about one-half length of segment in size), dorso-lateral surface covered by dark and light brown scales.

Thorax: Patagia with broad, long, brown scales; tegulae reaching base of hind wing and brown-scaled; dorsum covered with small scales; venter thickly covered with light brown scales and some intermittent darker scales; forelegs light with some dark banding, middle and hind legs evenly light brown.

Abdomen: More darkly and thickly scaled with variations in shading.

Wings: Length of fore wing: 9 mm. Dorsal surface: fore wings, ground color red brown, with dark brown lines; basal line complete and bowing distally; antemedial line arising at one-third length of costa and jutting perpendicular to body for a short distance towards discal dot then abruptly angling down towards body to inner margin; a very obscure medial line arising from inner margin but incomplete and difficult to follow; postmedial line prominent, arising at two-thirds length of costa, curving distally at beginning but quickly straightening and

fading as it nears inner margin; subterminal line represented by weak series of pale dots encased in dark, transverse dashes, final dash near inner margin enlarged and suffused into postmedial line. Hind wings, antemedial and postmedial lines continuing into hind wings but not as dark; basal, medial and subterminal lines vague; discal dot present; ground color same as fore wing but lightened at costal and basal areas. Ventral surface: Fore wings, ground color pale brown; costa dark brown to antemedial; antemedial line very weak; discal dot present; medial line obscure; postmedial line strong and fading before inner margin; subterminal line weak. Hind wings, ground color same as fore wing; antemedial weak; medial obscure; discal dot present; postmedial line strong and complete; subterminal obscure. Terminal lines of all wings dark brown; fringe alternating dark and light brown hairs.

Genitalia: Structures typical of *palpata* group; tegumen with extremely long setae; transtilla thickened centrally; labidal arms and feet well developed; labidal pads regularly haired by minute setae; labidal papillae very small and tipped with small hairs; saccus well developed; costa straight and only slightly thickened medially, displaying several very long setae; valvula with scales on its anterior edge, remainder heavily haired with a long tuft of hairs proximally; sacculus with patch of setae, some very long at its base; aedeagus centrally curved and slightly narrowed in the middle, vesica with an extensive array of complex sclerotizations; ninth segment without pencils; ventral plate with bowed, stout arms recurving distally, tips pointed ventrally and rounded laterally, anterior portion or base well sclerotized with its shape typical of the species group.

FEMALE: Same as male, except antennae not bifasciculate and hairs smaller; fore wing length 10 mm, antemedial line angled more towards body, discal dot very vague; all lines on venter of wings more pronounced.

Genitalia: Ovipositor and apophyses typical of group; ostium narrower than ductus bursae; cervix bursa far removed from ductus seminalis which is atypical for the group; ductus seminalis normally shaped; bursa copulatrix spherical in shape and almost entirely embedded with spines.

ETYMOLOGY: We take pleasure in naming this species for Dr. and Mrs. William B. Peck of Central Missouri State University, Warrensburg. Dr. Peck is a well known araneologist and friend of the authors.

TYPES: Holotype, male, Independence, Jackson Co., Missouri,

19 April 1971 at UV light (R. L. Heitzman); allotype, same locality, 17 April 1963 at UV light (J. R. Heitzman); paratype, one male, data and collector same as allotype.

TYPE LOCALITY: City limits of Independence, Jackson Co., Missouri, in sparsely forested and disturbed habitat.

LOCATION OF TYPES: The holotype and allotype will be deposited in the type collection of the United States National Museum, Washington, D.C. The paratype will remain in the senior author's collection.

DISCUSSION

Only one other Nearctic form, *E. longidens kerrvillaria* Cassino and Swett (1924), approaches *peckorum* in appearance. The former is a light brownish-gray, the lines arise further distally on the fore wings with the subterminal line plain, and the distal dot prominent on the female. The bursa, aedeagus, valve and ventral plate, however, vary quite radically from *peckorum*. The ventral plate of *peckorum* most closely resembles that of *E. pseudotsugata* MacKay, but with the arms bowing more and the apices not so hooked and pointed. The bursa is quite unique and cannot be readily compared with any other species.

ACKNOWLEDGEMENTS

We wish to thank Dr. Douglas C. Ferguson for his comparison of a specimen of *E. cocoata* series with the type in the United States National Museum, Washington, D.C., U.S.A. and his comments on the new species, and also, Dr. Klaus Bolte of the Biosystematics Research Institute, Ottawa, Ontario, Canada and Dr. D. S. Fletcher of the British Museum (Natural History), London, England for comments on and examination of illustrations of the genitalia. Also, thanks are extended to Mr. Paul Szopa of the University of Missouri, School of Forestry, Fisheries and Wildlife for making photographic prints of the adults.

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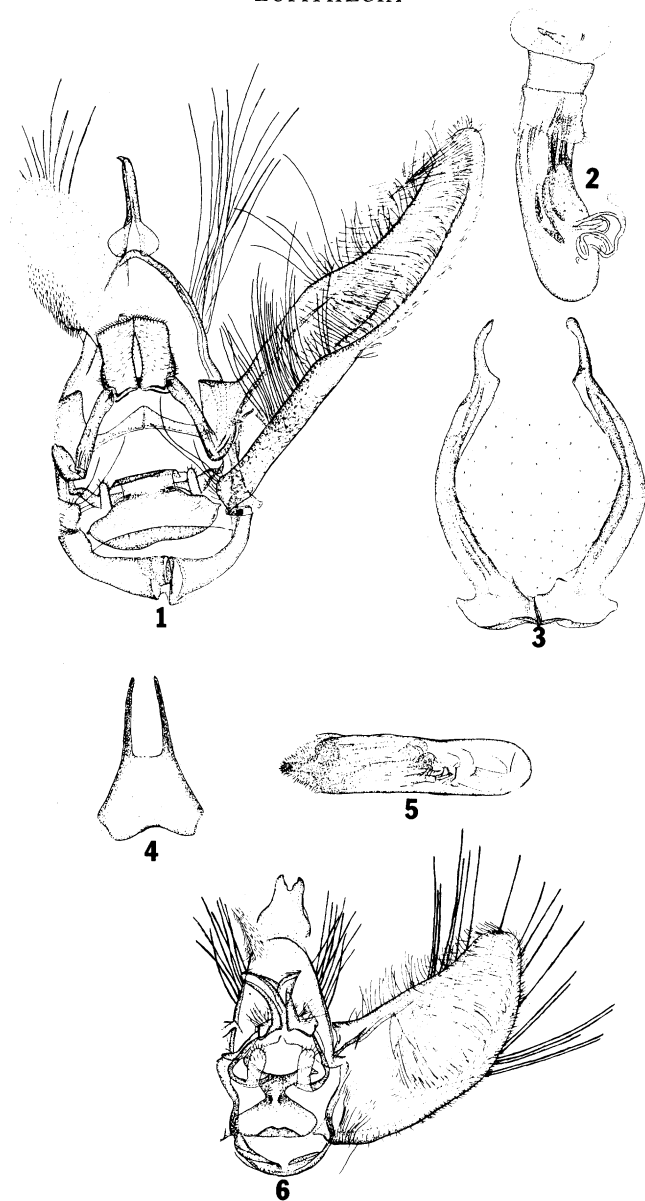


PLATE I

Figs. 1-3.—*E. peckorum* n.sp. (holotype male). 1, clasp unit; 2, aedeagus; 3, eighth sternite.

Figs. 4-6.—*E. cocoata* Pearsall (male). 4, eighth sternite; 5, aedeagus; 6, clasp unit.

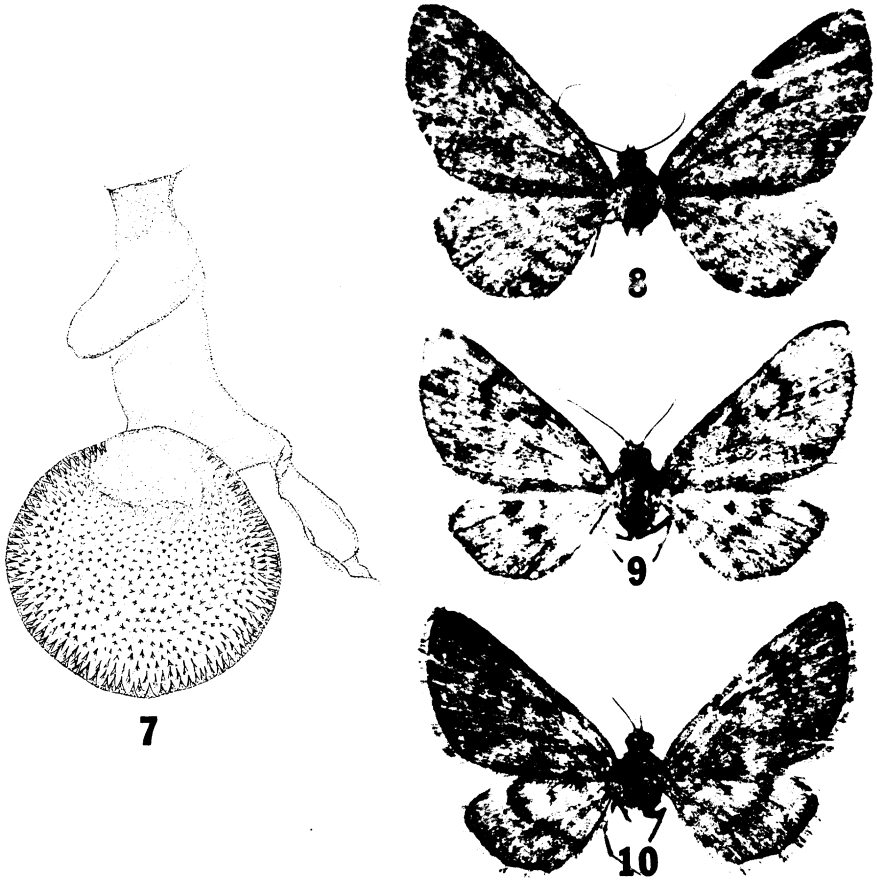


PLATE II

Fig. 7.—*E. peckorum* n.sp. (allotype female), bursa, ventral view.

Fig. 8.—*E. cocoata* Pearsall, male.

Fig. 9.—*E. peckorum* n.sp., holotype.

Fig. 10.—*E. peckorum* n.sp., allotype.