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Source: The Journal of the Lepidopterists' Society, 66(2) : 76-80

Published By: The Lepidopterists' Society

URL: https://doi.org/10.18473/lepi.v66i2.a2

Journal of the Lepidopterists' Society
66(2), 2012, 76–80

A NEW PHYCITINE GENUS AND SPECIES FROM UTAH (PYRALOIDEA: PYRALIDAE: PHYCITINAE)

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ABSTRACT. The new genus *Utah* is described from moths collected in the San Rafael Reef area of eastern Utah and in Juab Co., western Utah near the Nevada border. The type species *Utah sanrafaelensis* is described. Adults and genitalia are illustrated.

Additional key words: Phycitinae, Pyralidae, Pyraloidea, Utah, *Utah sanrafaelensis*

During April and May in 2003–2005, I collected a series of twenty-six specimens of a gray pyralid in UV light traps in the San Rafael Reef area of Emery Co., Utah. The San Rafael Reef is along the eastern portion of the San Rafael Swell, which in turn is part of the Colorado Plateau. Initially, based on habitus, the moths appeared to be an undescribed species of *Interjectio* Heinrich. Subsequent to submitting this paper for initial review, twenty-nine additional specimens were found in the Los Angeles County Museum of Natural History (LACM) and the personal collection of Stephanie Shank (Alburgh, VT), all collected by her in the Fish Springs NWR, Juab Co., Utah during May and June, 1989. Upon examination of the male and female genitalia, I was unable to place the moths to any genus or species treated by Heinrich (1956) or Neunzig (2003). In the possibility that the moth might be a described extralimital species, additional references were consulted yielding no matches in habitus (Ragonot, 1901; Druce [plates], 1891–1900; Herbulot, 1960). In keeping with phycitine genera names derived from place names (*Palatka* Heinrich, *Passadena* Hulst, *Sarasota* Hulst, *Tulsa* Heinrich, etc.), I propose a new genus.

UTAH Ferris, **new genus**

(Figs. 1–13)

Type species: *Utah sanrafaelensis*, Ferris, 2012

Diagnosis. Length of forewing: 12–15 mm males (n = 21), 12–13 mm females (n = 5). Wing venation shown in Fig. 1. Adults are medium-sized phycitines with white dorsal forewing ground color overlaid with black or very dark brownish-black mottling; the dorsal hindwings are essentially unmarked fuscous. The moths could be confused with some of the species in *Interjectio* Heinrich, *Phobus* Heinrich, *Pima* Hulst, *Pyla* Grote, and *Sarata* Ragonot based on size, color, and maculation. The porrect labial palpi in *Interjectio*, *Pima*, and *Sarata* separate these genera from *Utah*, which has strongly upturned labial palpi. Reliable separation from *Phobus* and *Pyla* is by the unique male and female genitalia. In the male, in contrast to related genera, the aedeagus is without a well-defined sclerotized shaft. The membranous vesica is without cornuti (which occur in *Phobus*), but rather the shaft of the aedeagus consists of a sclerotized ventral plate with two parallel rod-like structures that support two robust (easily broken) spines at opposite ends. In the female genitalia, the corpus bursae is without signa and has a well-developed spherical appendix bursae, not seen in the other genera. The sterigma is membranous and nearly unsclerotized. Additional comments and a rudimentary cladistic analysis are included in Appendix 1.

Description. As below for type species.

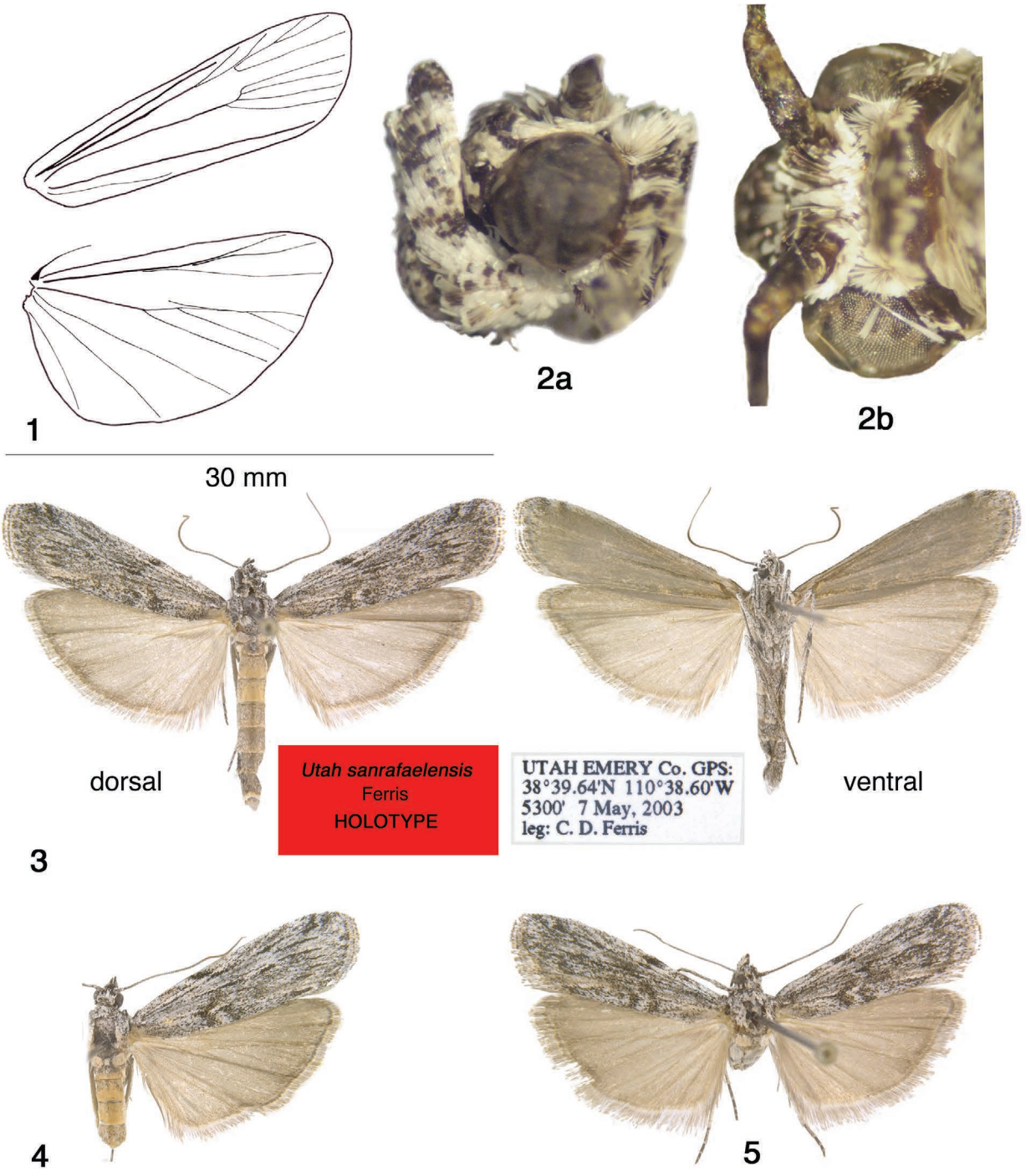
Etymology. *Utah* is masculine. The state name Utah is a noun derived from the name of the Ute Native American tribe, and in their language means "people of the mountains."

Utah sanrafaelensis, Ferris, **new species**

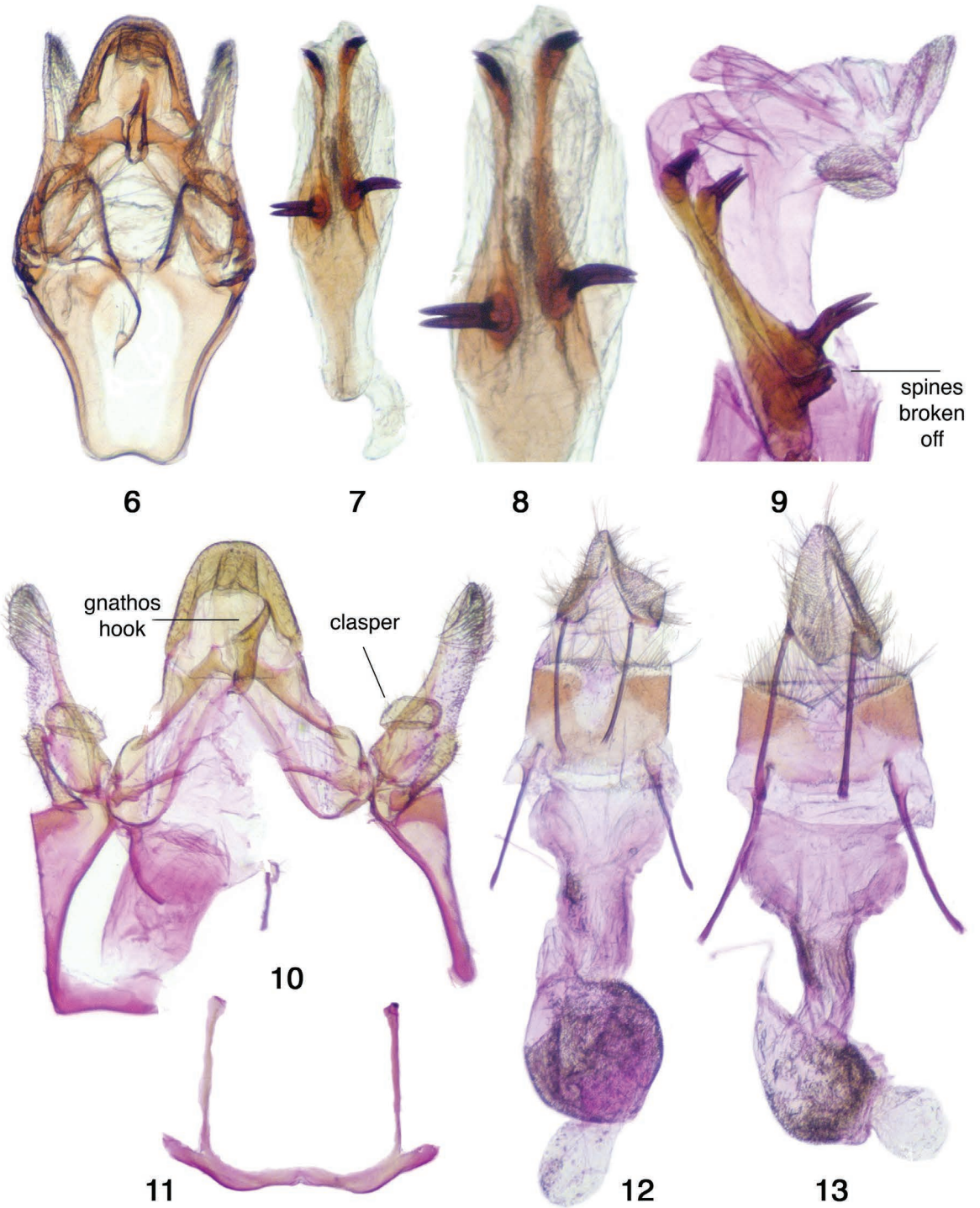
(Figs. 1–13)

Diagnosis. As above for genus.

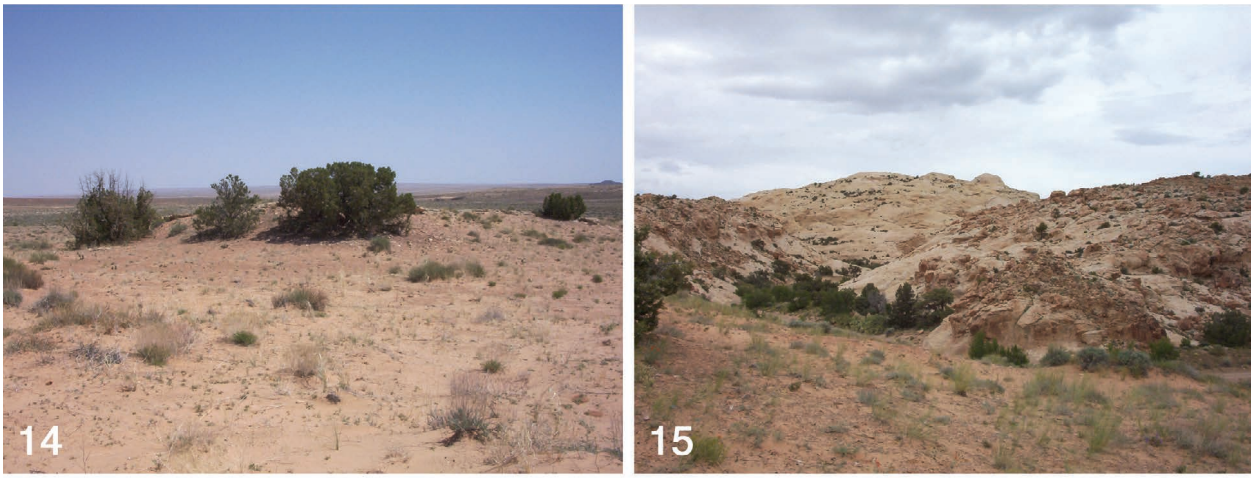
Description. *Head* (Fig. 2). Male antenna similar to *Castastia* (Neunzig, 2003, p. 41, text fig. 14a). Speckled charcoal gray and white; pubescent. Basal segments of antenna form a very shallow sinus; apices of segments produced into black spine-like processes weakly covered by scale tufts. Female antenna simple. Haustellum well developed and thickly covered with white and brownish scales. Labial palpi robust, oblique, projecting above frons. Ocellus present. Head including frons, palpi, crown speckled with white and dark slightly brownish charcoal gray scales. *Thorax*. Thoracic vestiture similar to head. Legs basically white speckled with dark brownish-black scales, especially on tarsi. *Abdomen*. Dorsally tawny peppered with small brownish scales, prominent dark brown chitinization between segments; laterally and ventrally clothed with white and dark brown scales. *Wings*. Dorsal forewing. Ground color white, overlaid with numerous short horizontal streaks of black or very dark brownish-black scales; two small dark patches along basal third of costal margin and two additional small dark patches immediately before apex. A small horizontal dark basal patch along inner margin. Two horizontal V-shaped dark markings (pointing basad) separated by white scales located along the inner margin in basal half of wing and



FIGS. 1–5. *Utah sanrafaelensis*. **1,** wing venation. **2,** head, **2a** lateral view less antennae showing labial palpi; **2b** dorsal view showing antenna base. **3,** male holotype with pin labels (not to scale). **4,** male paratype. **5,** female.



FIGS. 6–13. *Utah sanrafaelensis* genitalia. **6–11,** male genitalia. **6,** genital capsule, aedeagus removed. **7,** aedeagus to scale (ventral view). **8,** enlarged view of upper half of aedeagus. **9,** aedeagus with vesica everted. **10,** genital capsule split and flattened. **11,** ventral sclerotization of 8th abdominal segment. **12–13,** female genitalia viewed ventrally.



FIGS. 14–15. Type locality habitat. **14,** looking east. **15,** looking west.

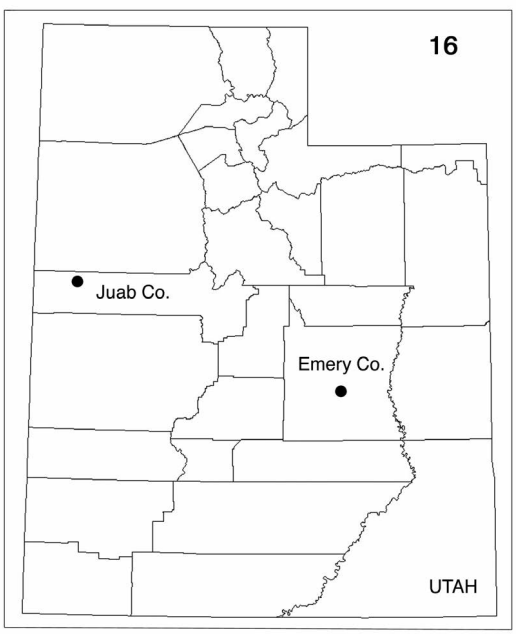


FIG. 16. Utah map showing *Utah sanrafaelensis* colony locations.

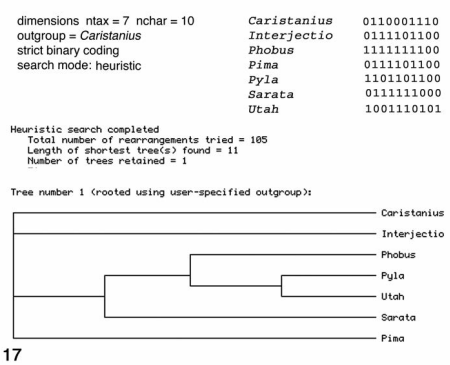


FIG. 17. Data set and associated tree generated by PAUP (original PAUP graphics).

extending vertically to mid-wing. Fringe basally checkered white and dark scales with only white scales along outer edge. No visible transverse scale ridge. Dorsal hindwing. Pale fuscous and slightly hyaline; thin dark fuscous marginal band; fringe basally checkered brownish and white, outer margin white. Ventral forewing. Unmarked fuscous, glossy, slight darkening of costa toward apex; fringe checkered brown and white basally, then white. Ventral hindwing. Similar to dorsal forewing but slightly paler. *Male genitalia* (Figs. 6–10; 8 dissections). Uncus trapezoidal, broad with rounded apex, hoodlike. Gnathos with moderately long robust hook. Transtilla present. Valva short, narrow with heavily sclerotized costa, and pad-like clasper at base. Basal margin of saccus indented. Aedeagus unusual, basically a membranous suggestion of an extended manica; ventrally consisting of a strongly sclerotized plate tapering to base from a swollen midsection; upper half of this structure bifurcated with narrow symmetrical arms. At base of each are a pair of robust spines set perpendicular to the arm axis; the apex of each arm is expanded and supports two robust spines (smaller than basal spines) also set perpendicular to arm axis. Everted vesica is membranous without cornuti; there are two prominent diverticuli, one covered with small spinules, and a spinule-covered spherical pouch. The ventral sclerotization of the eighth abdominal segment is broadly U-shaped without projecting tufts (Fig. 11). *Female genitalia* (Figs. 12–13, ventral aspect; 5 dissections). Ovipositor lobes basally broad tapering to apex, hirsute with long fine hairs. Apophyses robust and of approximately equal length. Sterigma goblet shaped, broad, open, essentially membranous rather than sclerotized. Ductus bursae a membranous tube with length approximately equal to diameter of corpus bursae; two linear diffuse spinule patches along axis. Corpus bursae spherical with diameter about double the diameter of ductus bursae; signa absent, but spinule patches present. Appendix bursae a well-developed unadorned sphere, smaller than corpus bursae, emanating from lower right side of latter. Ductus seminalis originates from a conical projection on the upper left side of the corpus bursae.

Types. Holotype male (Fig. 3): Utah, Emery Co., San Rafael Reef area, 38°39.64'N, 110°38.60'W, 5300' (1617 m), 7 May, 2003. Deposited in Carnegie Museum, Pittsburgh, PA. Paratypes: same collecting locality, 7.v.03 (3m), 22.v.03 (2f); 27.iv.04 (1m); 15.v.05 (17m, 3f), all C. D. Ferris collector. Paratypes in author's collection. Additional paratypes: Utah, Juab Co., Fish Springs NWR, 15.v, 6.vi, 1989 (6m, 15f), all Stephanie Shank (McKown) collector. Five pairs deposited in LACM with the remainder in the S. Shank collection.

Additional material examined. Eight specimens in Shank collection with same data as Juab Co, specimens, but not included as paratypes because of damaged condition.

Biology. Unknown. The type locality (Figs. 14–15) is moderately arid desert with *Artemisia, Ephedra* and *Juniperus* as the principal woody components.

Distribution. Known only from two localities in Utah (Fig. 16).

Etymology. The name *sanrafaelensis* (adjective) denotes the geographic place of occurrence of one colony of the the moths.

ACKNOWLEDGEMENTS

My thanks to Julian Donahue, Los Angeles, CA and Stephanie Shank (McKown), Alburgh, VT for providing loan material for examination. Two anonymous reviewers provided comments and suggestions.

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Appendix 1. Discussion of phylogeny of *Utah*.

The phylogentically appropriate generic placement of *Utah* awaits barcoding of the Phycitinae. The forewing shape of *U. sanrafaelensis* closely matches that of *Sarata incanella* (Hulst) and except for the difference between the labial palpi, it might easily be confused with the pale form of the latter. In general habitus, *U. sanrafaelensis* resembles *Interjectio denticuella* (Rag.) [= *ruderella* (Rag.) *fide* Neunzig, 2003], but again the labial palpi do not agree. Other similarities are to some phenotypes of *Pima granitella* (palpi do not match) and *Phobus brucei* (Hulst), which has somewhat similar palpi, but different male and female genitalia. In habitus, *Utah* does not resemble the several gray species of *Pyla* (Wilterding & Balogh, 2002), which have shorter and broader forewings and dissimilar maculation. There is similarity of the palpi and some superficial similarity of the male genitalia, but the female genitalia are very different in possessing a prominent appendix bursae. One external reviewer requested the inclusion of a cladistic analysis, and a rudimentary analysis is now presented, using PAUP, based upon the genera herein mentioned and in the main body of the paper. The genus *Caristanius* was selected as the outgroup because of some superficial resemblance in habitus of *C. decoloralis* (Walker), but differences in the genitalia from the other *Utah* look-alike genera/species. The character set is based on the characters mentioned in the diagnosis and description sections. In the data matrix shown in Fig. 17, the character columns 1–10 read from left to right. The characters are: 1. labial palpi not porrect = 1, porrect = 0; 2. aedeagus sheath well sclerotized = 1, not so = 0; 3. cornuti present = 1, absent = 0; 4. uncus hoodlike = 1, not so = 0; 5. gnathos with definite hook = 1, no hook = 0; 6. transtilla present but may be incomplete = 1, absent = 0; 7. sclerotized sterigma = 1, not so = 0; 8 ductus seminalis emerges at top of bursae = 1, not so = 0; 9. signum present = 1, absent = 0; 10. appendix bursae present = 1, absent = 0. The single resulting tree is shown in Fig. 17 and suggests that *Utah* is a sister species to *Pyla*. This result must not be construed as definitive because of both the limited character set and the limited number of genera selected. As noted initially, barcoding should eventually resolve the placement of *Utah*.

Submitted for publicaton 2 April 2011; revised and accepted 10 October 2011.