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Illustrations for several previously un-associated Arizona Trichoptera females.

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Abstract. Genitalic illustrations are provided for 24 Arizona Trichoptera females. Male figures are also provided for Clistoronia formosa, Clistoronia maculata and Psychoglyphia schuhii.

Key Words: Arizona, Trichoptera, females, illustrations.

Recent investigations of Arizona Trichoptera resulted in a preliminary list of 135 species reported from the state (Blinn & Ruiter 2005). These collections included many insufficiently illustrated or un-associated females. Illustrations for 24 species are provided to improve our ability to conduct faunal surveys and immature associations.

Materials and Methods

Adult collections were made primarily by light trap augmented by sweep net, examining spider webs and bridge supports, and larval rearing. All material used for illustrations was cleared with KOH. This paper is arranged alphabetically by family, genus and species. Three families (Apataniidae, Calamoceratidae, Leptoceridae) are briefly treated to provide the reader with updated references for available figures. The Glossosomatidae, Helicopsychidae, Hydropitilidae, Uneoidea, and Xiphocentronidae will be treated in separate publications.

Apataniidae

Wiggins (1973) provides figures for the single apataniid (Apatania arizonica) known from Arizona.

Brachycentridae

Two brachycentrid genera, with 5 species, are currently reported from Arizona (Blinn & Ruiter 2005). Illustrations of the Brachycentrus females and the female of Micrasema bactro are provided by Schmid (1983). Ross (1947) indicated the close relationship between M. onisca and M. arizonica. Chapin (1978) indicated the M. arizonica type genitalia are missing but also indicated M. arizonica was probably distinct from M. onisca. We did not collect specimens which could be attributed to M. arizonica. The remains of the M. arizonica type were compared with a M. onisca paratype and distinguishable characters could not be found. The M. onisca female figure (fig. 1) is based on several male/female collections which were also compared with a M. onisca paratype. The female of M. onisca can be distinguished from M. bactro by the mesally divided 8th sternite of M. onisca. Arizona brachycenchrone collections are from small, cool streams at altitudes >1550 m with low mean channel embeddedness (9.6%, ±2.0; Blinn & Ruiter 2005, 2006).

Calamoceratidae

While Blinn & Ruiter (2005) was in press, the Arizona Phylloicus were treated as a single species (P. aenesus). Prather (2003) revised Phylloicus and clarified the distinction between P. aenesus and P. mexicanus resulting in two Phylloicus species in Arizona. Prather (2003) also provided female illustrations. Arizona Phylloicus collections are from small cool streams at altitudes between 1200-1750 m with a mean channel embeddedness of 20%, ±7.8 (Blinn & Ruiter 2005, 2006).

Hydrobiosidae

Schmid (1989) indicated the close similarity between Atopsyche females and that conclusion is supported by the two Arizona species. Female A. sperryi (fig. 2) and A. tripunctata (fig. 3) can be separated by the shape of the lateral invagination of the 8th tergite along with other minor genitalic variations. The invagination of A. sperryi is globular in dorsal view, while that of A. tripunctata is more elongate and slightly bi-lobed. The species are sympatric with overlapping emergence periods, particularly in the Oak Creek drainage. When sympatric, A. sperryi is collected much more frequently. Arizona Atopsyche collections are from altitudes between 1346-2757 m. Atopsyche sperryi were found in streams with a lower mean channel embeddedness (1.9%, ±3.2) than A. tripunctata (19.3%, ±5.7) (Blinn & Ruiter 2005, 2006).

Hydropsychidae

Fourteen species in four hydropsychid genera have been reported from Arizona (Blinn & Ruiter 2005). Scheftner (2005) concluded that Ceratopsyche should be left at the subgenus level, reducing the Arizona hydropsychid genera to three. Gordon (1974) provides illustrations for the Arizona Cheumatopsyche females. Flint (1974) provides illustrations for the Arizona Smicridea females. Ross (1944) provides a female illustration for Hydropsyche auricolor (as H. soles). Nimmo (1987) contains a female illustration of H. occidentalis. Since preparation of Blinn & Ruiter (2005) we have collected Hydropsyche vanaca (fig. 4) in Arizona. Hydropsyche ostari is readily distinguished from the other Arizona Hydropsyche species by the long clasper receptacle in lateral view (see Nimmo 1987). H. vanaca and H. venada (fig. 6) females are quite distinct but, in Arizona, possibly confused with H. cockerelli (see Scheftner et. al. 1986). In lateral and dorsal view the clasper receptacle of H. vanaca females is much larger than that of H. venada & H. cockerelli. The clasper receptacle of H. venada, while small in lateral view, appears as a long sinuate sclerotized area in dorsal view. The clasper receptacle of H. cockerelli is much shorter in dorsal view. Arizona hydropsychid collections occurred in a variety of streams. Typically, H. venada were found in streams at high altitudes with low channel embeddedness (10.3%, ±2.6), while Cheumatopsyche enonis, Smicridea dispers, S. fasciarella, and S. signata were associated with streams with high mean channel embeddedness (53%, ±9.4%) over a wide range of altitudes (Blinn & Ruiter 2005, 2006).

Lepidostomatidae

Female figures for six of the nine Lepidostoma species reported from Arizona are provided by Weaver (1988). Denning (1949) provided a brief description of the L.
apornum female and a figure of the vaginal apparatus. WEAVER (1988) did not have L. apornum females and noted the similarity between DENNING’S figure and L. rayneri. Lepidostoma apornum females (fig. 6) can be readily distinguished from the other known pluviale group females by the upward directed ventromesal band in ventral view. There are two Lepidostoma (L. apache & L. lacinatum) for which we have yet to develop positive associations. We are providing illustrations of the vaginal apparatus for two un-associated Arizona Lepidostoma species (figs. 7 & 8) which may represent the unknown females. Arizona collections occurred in streams at 1,545 m with a low mean channel embeddedness 14.5%, ± 4.4 (BLINN & RUITER 2005, 2006).

Leptoceridae

With the exception of the five Nectopsyche females, female figures for the other three Arizona leptocerid genera, with seven species, are available (O. arizonica in DENNING 1951; O. avara and O. disjuncta in SMITH & LEMHKUHL 1980; O. inconspicua in Ross 1944; O. metlacensis in BUENO-SORIA 1981; Triaenodes tardus and Ylodes reuteri in Ross 1944). Characters to separate the Arizona Nectopsyche females were not discovered. Arizona leptocerid collections occurred over a wide range of altitudes in streams with a mean channel embeddedness of 24% ±6.2. (BLINN & RUITER 2005, 2006).

Limnephilidae

Limnephilidae is the second most diverse family, behind the Hydroptilidae, in Arizona. Females figures are available for the Arizona species of Amphicocmosoccus and Anabolia (see NIMMO 1971); Hesperophylax (see PARKER & WIGGINS 1985); Limnephilus (see RUITER 1995, RUITER 2007); Onocosmoecus (see WIGGINS & RICHARDSON 1986); and Psychoglypha subborealis (see SCHMID 1952). Arizona limnephilid collections occurred at elevations >1600 m with a mean channel embeddedness of 10% ±1.8 (BLINN & RUITER 2005, 2006).

ESSIG (1926) reported Clistoronia formosa from Arizona without locality information. We have not collected additional specimens in Arizona. Clistoronia maculata is relatively common in Arizona at higher elevations. Recent figures for neither C. formosa or C. maculata are available so we have included male and female figures for both species (figs. 9 and 10). Records for Psychoglypha schuhi seem to include only the Nevada types and a single Wyoming collection (RUITER 1999) available. We were surprised to find this species present near Greer. We have included both male and female figures (fig. 11).

Odontoceridae

Marilia nobsea was described from a female, although a figure was not provided. The two North American species are readily separated by spur count (M. flexuosa: 2-4-2; M. nobsea: 2-4-4). Marilia flexuosa is also about half the size of M. nobsea. SCHMID (1980) provided a M. flexuosa female figure. We have included a figure of the M. nobsea vaginal apparatus (fig. 12) for comparison. Arizona collections occurred at altitudes between 1085-2525 m with low mean channel embeddedness (5%, ±0.1) (BLINN & RUITER 2005, 2006).

Philoptamidae

Arizona philoptamid collections occurred over a wide range of altitudes (640-2490 m) with a mean channel embeddedness of 17% (±4.5) (BLINN & RUITER 2005, 2006).

Chimarra are common in Arizona with seven species (C. adella, C. angustipennis, C. primula, C. ridleyi, C. schiza, C. texana, C. utahensis) occurring primarily in small streams and springs. Often two or three species are sympatric, and emerge at the same time. The Arizona females can be readily separated by the ventral view of the 8th & 9th segments (figs. 13 thru 19) Chimarra texana is unusual with an anteroventral spur on the 8th sternite. Chimarra angustipennis and C. primula are most likely confused and can be separated by the relative length of the 9th sternites.

To date only Wormaldia arizonensis has been reported from Arizona. The female is readily distinguished by the inverted v-shaped medial fold of the 8th sternite (fig. 20). The medial fold is covered with fine, dark setae.

Polycentropodidae

The two Arizona polycentropodid genera (Polycentropus arizonensis, P. aztecus, P. gertschi, P. halidus, P. variegatus, Polypedilus recurvatus) occur at elevations between 575-2600 m with a mean channel embeddedness of 14.2% ±3.7 (BLINN & RUITER 2005, 2006). Females of P. halidus and P. variegatus were figured by NIMMO (1986). Figures of P. arizonensis and P. gertschi are provided here (figs. 21 and 22). The P. arizonensis female can be readily separated from the known Arizona females by the narrow 8th sternal lateral lobes. It may be confused with P. gertschi, which also has relatively narrow 8th sternal lateral lobes, but the apex of the P. arizonensis vaginal apparatus has four distinct subparallel apical lobes while the apex of the P. gertschi vaginal apparatus is triangular in shape without distinct lobes. A figure of the Polypedilus charlesi female is also provided (fig. 23).

Sericostomatidae

Two species of Gumaga are reported from Arizona (Gumaga griseola & Gumaga nigricula). WOOD & RESH (1991) documented the variability within the two species and their inability to clearly distinguish the females. We have yet to collect Arizona males attributable to G. nigricula. A figure of the G. griseola female vaginal apparatus is provided (fig. 24) to possibly assist in separating these species. Collections of G. griseola occurred at elevations between 1618-2797 m with a mean channel embeddedness of 7.6% ±2.6 (BLINN & RUITER 2005, 2006).

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Literature Cited:


Effects of selected environmental determinants in Arizona, USA: Effects of selected environmental determinants in Proceedings of the 11th International Symposium on


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Fig. 1. *Micrasema onisca* female: (a) apical abdominal segments, lateral view; (b) apical abdominal segments, ventral view; (c) vaginal apparatus, ventral view. - Fig. 2. *Atopsyche sperryi* female: (a) apical abdominal segments, dorsal view; (b) vaginal apparatus, ventral view. - Fig. 3. *Atopsyche tripunctata* female: (a) apical abdominal segments, dorsal view; (b) vaginal apparatus, ventral view. - Fig. 4. *Hydropsyche vanaca* female: (a) apical abdominal segments, lateral view; (b) apical abdominal segments, dorsal view. - Fig. 5. *Hydropsyche venada* female: (a) apical abdominal segments, lateral view; (b) apical abdominal segments, dorsal view. - Fig. 6. *Lepidostoma apornum* female: (a) apical abdominal segments, lateral view; (b) vaginal apparatus, ventral view. - Fig. 7. *Lepidostoma* species 1 female: (a) vaginal apparatus, lateral view; (b) vaginal apparatus, ventral view. - Fig. 8. *Lepidostoma* species 2 female: (a) vaginal apparatus, lateral view; (b) vaginal apparatus, ventral view.
Fig. 9. *Clistoronia formosa* adults: (a) male apical abdominal segments, lateral view; (b) male apical abdominal segments, dorsal view; (c) male apical abdominal segments, caudal view; (d) male aedeagus, lateral view; (e) female apical abdominal segments, lateral view; (f) female apical abdominal segments, dorsal view; (g) female apical abdominal segments, ventral view. - Fig. 10. *Clistoronia maculata* adults: (a) male apical abdominal segments, lateral view; (b) male apical abdominal segments, dorsal view; (c) male apical abdominal segments, caudal view; (d) male aedeagus, lateral view; (e) female apical abdominal segments, lateral view; (f) female apical abdominal segments, dorsal view; (g) female apical abdominal segments, ventral view.
Fig. 11. *Psychoglypha schuhi* adults: (a) male apical abdominal segments, lateral view; (b) male apical abdominal segments, dorsal view; (c) male apical abdominal segments, ventral view; (d) male aedeagus, lateral view; (e) male aedeagus, dorsal view; (f) female apical abdominal segments, lateral view; (g) female apical abdominal segments, dorsal view; (h) female apical abdominal segments, ventral view; (i) female vaginal apparatus, ventral view. - Fig. 12. *Marilia nobsea* female: female vaginal apparatus, ventral view. - Fig. 13. *Chimarra adella* female: apical abdominal segments, ventral view. - Fig. 14. *Chimarra angustipennis* female: apical abdominal segments, ventral view. - Fig. 15. *Chimarra primula* female: apical abdominal segments, ventral view. - Fig. 16. *Chimarra ridleyi* female: apical abdominal segments, ventral view. - Fig. 17. *Chimarra schiza* female: apical abdominal segments, ventral view. - Fig. 18. *Chimarra texana* female: apical abdominal segments, ventral view. - Fig. 19. *Chimarra utahensis* female: apical abdominal segments, ventral view.
Fig. 20. Wormaldia arizonensis female: apical abdominal segments, ventral view. - Fig. 21. Polycentropus arizonensis female: apical abdominal segments, ventral view. - Fig. 22. Polycentropus gertschi female: apical abdominal segments, ventral view. - Fig. 23. Polyplectropus charlesi female: apical abdominal segments, ventral view. - Fig. 24. Gumaga griseola female: (a) vaginal apparatus, lateral view; (b) vaginal apparatus, ventral view.

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