Identification of Male *Epitheca* (*Tetragoneuria*) in Texas

All photographs, illustrations, and text by John C. Abbott, 21 April 2008 (updated 21 March 2013).

The Holarctic genus *Epitheca* (Baskettails) contains 12 species, ten of which are recognized in the United States and six occur in Texas. This genus may be split into two subgenera, *Epicordulia* and *Tetragoneuria* (these are elevated to the generic level by some). A single species, *Epitheca* (*Epicordulia*) *princeps* (Prince Baskettail) belongs in the subgenus *Epicordulia*. It is easily recognized and not treated here. The remaining five species occurring in Texas belong in the subgenus *Tetragoneuria*. They have proven to be very difficult to identify, particularly from photographs. Most species are quite variable and there is evidence that they may hybridize and or integrate, making identifications even tougher. The following photographs and notes are intended to help identify the males of these five species found in Texas: *E. costalis* (Slender Baskettail, formerly Stripe-winged Baskettail), *E. cynosura* (Common Baskettail), *E. petechialis* (Dot-winged Baskettail), *E. semiaquea* (Mantled Baskettail), and *E. spinosa* (Robust Baskettail).

General Identification Comments

All of our species can co-occur both geographically and seasonally adding to the challenge of identification. Moreover, they rarely perch. With this group, having a specimen to examine is always preferred and even then, it may not be possible to definitively place a name on it, particularly with females. There are many individuals out there photographing dragonflies though and this is largely an attempt to help in identifying these photographs.

The single most important character potentially visible on a photograph is the shape of the abdomen. For this reason it is very important to photograph individuals dorsally. I find that even slight angles in photographs can cause the abdomen to appear differently. I have included both a dorsal and lateral or oblique view of most species on the following pages. Secondly, the shape of the cerci or superior caudal appendages can be useful, again, especially if seen dorsally. Wing maculation (the dark area or wing pattern) is variable and of limited value, but can be helpful in some cases.

*Note the blue spots on the abdomens in many of these photos are actually pine pollen.*
Species Differentiation

*E. cynosura* (Common Baskettail) is moderately constricted basally and broad in the middle (S4-6 about as wide as long or at least, not noticeably wider than long); the cerci diverge distally. This species can have nearly clear wings (making them similar to *E. costalis* and *E. petechialis*) or black in the base of the wings similar to *E. semiaquea*. In Texas, the dark-winged forms of this species have less extensive markings than *E. semiaquea*. In all the specimens I have examined, the continuous portion of the black maculation does not extend beyond the distal end of the hindwing triangle while in *E. semiaquea* it always does (see figure on page 6). Field identification of this species from clear-winged forms of *E. petechialis* and *E. costalis* is best done by the relatively broader abdomen.

*E. petechialis* (Dot-winged Baskettail) is overall narrower (S4-6 longer than wide) and more constricted at the base of the abdomen; the cerci appear to diverge away from the midline distally more in life, than in specimens. This species can have dark spots on the nodal crossveins extending out to the nodus. I have not seen *E. costalis* with these marks, so if present, this is a useful field mark. Clear-winged forms are very similar to *E. costalis* and *E. cynosura*. *E. cynosura* has a broader abdomen and much less constricted basally than *E. petechialis*. Differences between *E. petechialis* and *E. costalis* are subtle. They may hybridize and some even consider them the same species. At the moment, I do feel they are both valid species. I have found that in life or photographs, *E. costalis* generally has more parallel cerci and *E. petechialis* will have cerci that diverge widely, but *E. costalis* can have cerci diverging as well. In lateral view, the angle before the keel is greater than in *E. costalis* (see photographs and illustrations). The base of the cerci is also thicker in *E. petechialis*.

*E. costalis* (Slender Baskettail) has the thinnest abdomen of any of our species; it is moderately constricted at the base and cerci are more parallel than any of our species. As of yet, all individuals appear clear-winged. This means that it can be confused with *E. cynosura* and clear-winged *E. petechialis*. *E. costalis* has a much thinner and narrowly constricted abdomen compared to *E. cynosura*. *E. costalis* also has parallel cerci, but in some individuals they diverge slightly. The cerci of *E. petechialis* typically diverge wider than in *E. costalis*. In lateral view, the angle before the keel is less than in *E. petechialis* (see photographs and illustrations). The base of the cerci is also thinner in *E. costalis*.

*E. semiaquea* (Mantled Baskettail) has a very broad (S4-6 distinctly wider than long) and short abdomen with little to no constriction at the base; the cerci diverge distally. Some *E. cynosura* have black at the base of the wings that approximates that of *E. semiaquea*, but in all the specimens I have examined, the black in *E. semiaquea* always extends at least to the distal side of the hindwing triangle and often approaches the nodus (see figure on page 6). The shape of the abdomen is also broader and shorter than in *E. cynosura*. Clear-winged forms are known from the northeast.

*E. spinosa* (Robust Baskettail) is the largest of our species and has a robust abdomen with a mild constriction at the base; the cerci are distinct with a protuberance dorsally (visible in the lateral view) and the cerci appear more or less parallel in dorsal view. The size of the species, its distinctive cerci, and its restricted distribution (as currently known) in Texas will separate this from our other *Epitheca*. At present the only population known from Texas is at Ratcliff Lake in Houston County. It no doubt occurs elsewhere and future discoveries will be made.

Additional Notes

Our understanding of this group is continually changing. Molecular evidence may help answer questions. The more specimens we have for study from as many different areas, the better. If you are interested in collecting specimens for this study, please contact me at jcabbott@mail.utexas.edu.

Females are more difficult to separate than males. In some cases such as *E. semiaquea*, and maculated forms of *E. petechialis* and *E. cynosura*, they are easy, but clear winged forms overlap considerably. Abdominal shape will help however. These notes are intended to help with identification of individuals in Texas. In other parts of the country there is considerable variation, especially in *E. cynosura* and *E. semiaquea* that is not covered here.
Outlines of the ventral surface of the cerci at the level of the keel; see white arrows above indicating location.

- E. petechialis (Dot-winged Baskettail)
- E. costalis (Slender Baskettail)
E. cynosura (Common Baskettail)

E. semiaquæa (Mantled Baskettail)

E. spinosa (Robust Baskettail)

Hindwings

E. cynosura (Common Baskettail)

E. semiaquæa (Mantled Baskettail)

E. spinosa (Robust Baskettail)
Comparison of relative widths (red) vs. lengths (green) of middle abdominal segments.

- E. petechialis (Dot-winged Baskettail)
- E. cynosura (Common Baskettail)
- E. semiaquea (Mantled Baskettail)
Geographical and Seasonal Distribution of *Epitheca* in Texas
Maps accurate as of 2008,
See www.odonatacentral.org for updates

*Epitheca costalis* (Slender Baskettail)

*Epitheca cynosura* (Common Baskettail)

*Epitheca petechialis* (Dot-winged Baskettail)

*Epitheca semiaquea* (Marbled Baskettail)

*Epitheca spinosa* (Robust Baskettail)