

## Note on Australian *Triplectidinae*

(*Trichoptera: Leptoceridae*)

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(With 6 figures)

The original description of *Triplectides australis* Navás was not accompanied by drawings, and without re-examining the type specimens it was not possible to ascertain to which genus this species belonged.

Through the kind help of Prof. Dr. HANS SACHTLEBEN, Deutsches Entomologisches Institut, Berlin, I was able to examine both type specimens and the results are published hereunder.

I express my sincere thanks to Prof. Dr. H. SACHTLEBEN for the privilege of examining the types.

NAVÁS (1934) described *Triplectides australis* Navás as follows:

"Caput fuscum, albo pilosum, oculis fuscis; palpis fuscis, albo pilosis; antennis fuscis, apice articularum albo anguste annulato.

"Thorax fuscus, albo pilosus, metanoto testaceo (♂) vel testaceo-ferrugineo (♀).

"Abdomen fusco-ferrugineum, appendicibus fulvis, fulvo pilosis; cercis ♂ cylindricis, superioribus horizontalibus, inferioribus adscendentibus, longioribus.

"Pedes fulvi, fulvo pilosi, apice tibiarum et articularum tarsorum fusco; calcaribus fulvis.

"Ala anterior apice parabolico, angusta, margine posteriore citra stigma leviter concavo; reticulatione et pubescentia plerumque fuscis, maculis parvis pallidis leviter conspersa; cellula discali longa, subaequali (♂) vel multo brevior (♀) suo pedunculo; furca apicali 1 sesquialongiore suo pedunculo; furcis ita longitudine crescentibus: 5, 1, 3.

"Ala posterior reticulatione fulva, pubescentia rara et fimbriis densis fuscis; furca apicali 1 longiore (♂) vel subaequali (♀) suo pedunculo, 3 brevior prima et quinta.

Long. corp. ♂ 6.5 mm., ♀ 10.4 mm.

" al. ant. ♂ 11.0 mm., ♀ 14.3 mm.

" al. post. ♂ 8.6 mm., ♀ 11.0 mm.

Patria. Australia: Sydney, Coll. Lüddemann. Mus. Berlin-Dahlem."

Since 1934 a number of new genera has been separated from the *Triplectides* complex and also a number of new species described, thus making many more fine characters necessary for the correct identification. MOSELY (1936), and again (1953), referred to this species as unknown to him and queried its systematic position. Both type specimens ♂ and ♀ were made available to me for study, and revealed surprising results.

Apart from the fact, that they belong to two different species it was also discovered that the ♀ specimen is viviparous and its body contained

a large number of fully developed young larvae. They occupied practically the whole of the inside of the ♀ abdomen from the middle of second segment posteriorly (Fig. 4). The total number of larvae was estimated to be about 300—350. A small number of them were preserved on separate microscopical slides, but the majority were left intact inside the body.

This is the first occasion of a viviparous caddis fly being recorded from Australia. ULMER (1951, p. 397) referring to this phenomenon says: „Überraschend ist doch wohl die Tatsache, daß das ♀ von Australien Eier aus dem Körper austieß, die ♀♀ von Java und Indien aber Larven entließen.“ In this case ULMER had 3 ♀♀ specimens from Klakah (Eastern Java) which he had identified as *Notanatolica* (= *Triplectides*) *magna*, Walk. The first record about viviparity in the order Trichoptera is by WOOD-MASON (1890) who named an Indian species *Notanatolica vivipara*.

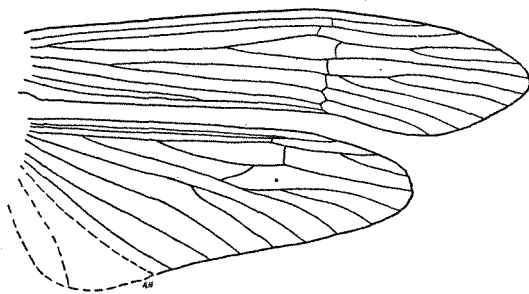


Fig. 1. *Triplectides australis* Navás, Type ♀ wings

Well pronounced differences in the ♀ genitalia separates *T. australis*, Navás ♀ from *T. magna*, Walk. ♀.

On the other hand the ♂ type proved to belong to the genus *Hudsonema* which was erected by MOSELY (1936) for a New Zealand species *H. amabilis* (McLach.) as genotype and other two species from South America, but since then two species have been described also from Australia.

Based on the above discoveries *Triplectides australis* Navás is now separated into two species as follows:

*Triplectides australis* Navás ♀ retains its generic and specific names.

*Triplectides australis* Navás ♂ becomes *Hudsonema maculata* Mosely.

*Triplectides australis* Navás ♀ not ♂

(Figs. 1—5)

*Triplectides australis* Navás, Broteria, 30, 93—94, 1934.

*Triplectides australis* MOSELY, Trans. roy. ent. Soc. Lond., 85, 125, 1936.

*Triplectides australis* MOSELY & KIMMINS, Trich. Austr. & N. Z., p. 226, 1953.

Head brown, clothed with white hairs, both antennae missing in the ♀ type specimen, basal segment the same colour as the head. Maxillary palpi dark brown with white pubescence.

Thorax brown covered with pale yellowish hairs, and white longer ones near the base of the wings.

Abdomen yellowish brown with darker lines on each segment as shown in the Fig. 4.

Legs — first pair darker than second and third pair, with whitish pubescence. Spurs 2:2:2.

Wing neuration (Fig. 1) similar to that of *T. magna*, but fork no. 3 in the anterior wing has a longer footstalk, and in the posterior wing with

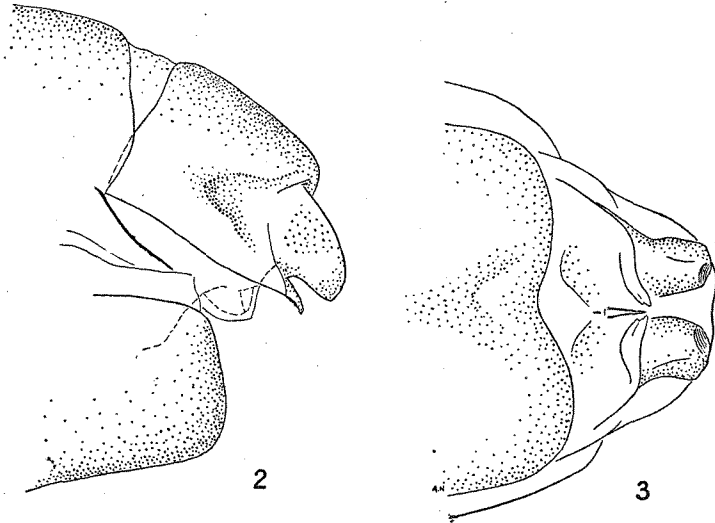


Fig. 2. *Triplectides australis* Navás. Type ♀ genitalia lateral. — Fig. 3. ♀ genitalia ventral

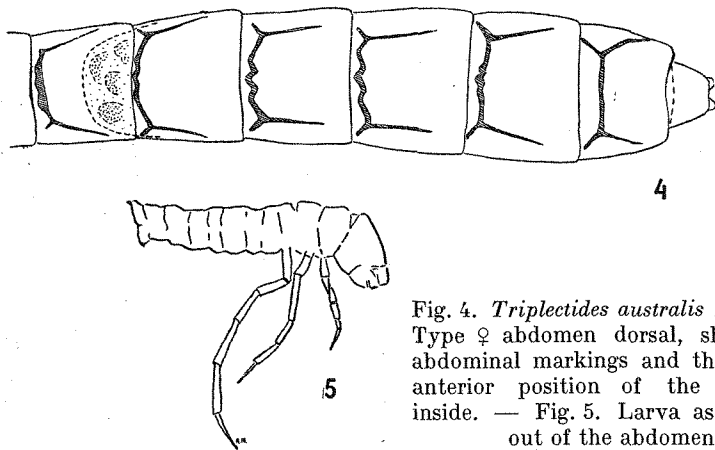


Fig. 4. *Triplectides australis* Navás, Type ♀ abdomen dorsal, showing abdominal markings and the most anterior position of the larvae inside. — Fig. 5. Larva as taken out of the abdomen

rather wide discoidal cell, and cross-vein between R5 and M1 more oblique. Anterior wing light brown with white and dark pubescence forming irregular mottling. Posterior wing paler, sparsely covered with yellowish brown pubescence. Anal area not unusually wide.

Genitalia ♀ — (Figs. 2 & 3) dorsal view shows the blunt apex of the abdomen with a pair of stout processes. The lateral and ventral aspects show a pair of sharp pointed processes. They arise from near the base of the stout processes, turn towards the centre and down, nearly touching each other.

Type: ♀ Sydney, Australia in Deutsches Entomologisches Institut, Berlin<sup>1)</sup>.

*Hudsonema maculata* Mosely

(Fig. 6.)

*Triplectides australis* NAVÁS ♂ not ♀ Broteria, 30, 93—94, 1934. syn. nov. (partim).

*Hudsonema maculata* Mosely in MOSELY and KIMMINS, Trich. Austr. & N. Z., 245, 1953.

The examination of the genitalia and wing neuration proved without doubt that NAVÁS' specimen belongs to this species which was described by MOSELY only in 1953 as follows:

"Wings castaneous, narrow; anterior mottled with minute clusters of short, white hairs. Head dark fuscous. Antennae with a yellowish, rounded wart at the base of the inner side of the basal joint; remaining joints chocolate with narrow white annulations. In the anterior wing thyridial cell is a little longer than the discoidal cell; posterior wing, fork no. 5 rather short, posterior margin somewhat excised at the third anal vein.

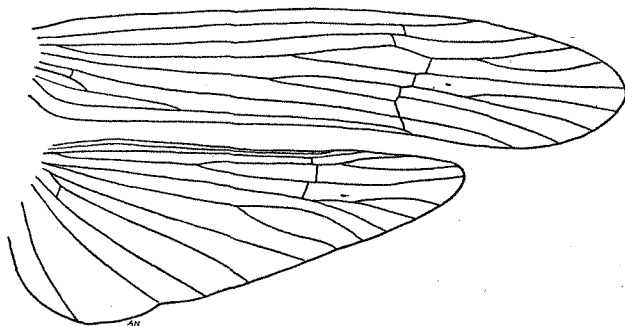


Fig. 6. *Hudsonema maculata* Mosely, ♂ wings drawn from the ♂ Type specimen of *Triplectides australis* Navás

"Genitalia, ♂. — From above, distal margin of the ninth segment straight. Superior appendages short and stout; beneath them is a large upper penis-cover, cleft at the apex, with a strongly concave upper margin as seen from the side. Penis short and membranous. Inferior appendages of the *Triplectides* pattern rather than that of *amabilis*, three-branched; upper branch the longest; second branch curved and spiniform. Basal branches very short, widely divergent from beneath; inner plates with apices terminating in out-turned beaks.

"Length of anterior wing, ♂, 14.5 mm.

"Australia: New South Wales, Blue Mts., Leura, 3000 ft., 6. x. 1914, 1 ♂ (type); Sydney, 18. ix. 1884, 1 ♂, McLachlan Collection.

<sup>1)</sup> Another six specimens, unfortunately all females, of the very interesting species — *Triplectides australis* Navás, were collected by Mr. A. N. BURNS on 5th October, 1956 near Mooloolaba, Queensland. It is interesting to note his observation that one female immediately after having been placed in 70% alcohol, ejected larvae, estimated about  $\frac{1}{4}$  of the full number. Four of the captured specimens contained larvae, but one, well developed eggs, which already show some details of larvae. All specimens agree very well with the type; except that they are slightly larger — the anterior wings measured 15—15.5 mm. All six specimens are in the National Museum of Victoria Collection.

"In this species the neuration is typically that of *Hudsonema*, whilst the genitalia is equally typical of *Triplectides*."

MOSELY's description agrees very well with NAVÁS specimen in all respects, and so leaves no doubt about its identity. This specimen is only slightly smaller than MOSELY's type and the anterior wing measures 11 mm in length. Inferior appendages, upper branch on one side is broken off, but otherwise undamaged and recognisable. Spurs 2:2:4.

♂ (Type of *Triplectides australis* NAVÁS) from Sydney, Australia in Deutsches Entomologisches Institut, Berlin.

#### Summary

Re-examination of the male and female type specimens of *Triplectides australis* NAVÁS showed that they belong to two different species. The male specimen is referred to *Hudsonema maculata* Moseley, but the female remains unchanged as *Triplectides australis* NAVÁS. The discovery of young larvae inside the body of the female is the first indication of viviparous Trichoptera in Australia. Another four specimens of *Triplectides australis* NAVÁS carrying larvae have since been discovered from Queensland. Figures are given for both species.

#### Zusammenfassung

Die Nachuntersuchung des männlichen und weiblichen Typenexemplares von *Triplectides australis* NAVÁS zeigt, daß sie zu zwei verschiedenen Arten gehören. Das männliche Tier muß zu *Hudsonema maculata* Moseley gezogen werden, während das Weibchen als Typus von *Triplectides australis* NAVÁS verbleibt. Die Entdeckung von jungen Larven im Körper des Weibchens ist der erste bekanntgewordene Fall von Viviparie bei australischen Trichopteren. Weitere vier Exemplare von *Triplectides australis* NAVÁS, die Larven enthielten, sind inzwischen in Queensland gefunden worden. Beide Arten werden abgebildet.

#### Резюме

Дополнительные исследования мужского и женского типового экземпляра *Triplectides australis* NAVÁS показывают, что они принадлежат к двум различным видам. Мужское животное следует отнести к *Hudsonema maculata* Moseley, между тем как самка остается типом *Triplectides australis* NAVÁS. Нахождение молодых личинок в теле самки — первый известный случай живорождения у австралийских трихотер. Дальнейшие четыре экземпляра *Triplectides australis* NAVÁS, которые содержали личинки, найдены между тем в Квинсленде. Оба вида изображены на рисунках.

#### References

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