Tinodes pallidulus McLachlan, another rare Wyre Forest caddis

IAN WALLACE

Galleries made by larvae of *Tinodes pallidulus* from Dowles Brook Ian Wallace

In 2015 and 2016 the meandering larval galleries of this species were abundant on stones at the edge and on bedrock in the main Dowles Brook as it runs through the forest. All larvae collected on site and all adults reared from galleries on stones were *Tinodes pallidulus*. It was also present in the Baveney, Lem, Mad and Kingswood Brooks. There are eight species of *Tinodes* in the British Isles and all spend their larval stage in a gallery. The gallery is a tunnel-like tube, made by the larva from tiny sand grains, bound together with silk threads, and permanently attached to a rock or stone. The larva feeds by scraping diatoms and algae from the rock surface at the mouth of the gallery, whilst staying just hidden from view. As it exhausts the food supply it adds to the gallery at the front end to take it over new feeding areas. Part of the gallery may be constructed a little above the water level, the larvae making use of capillary action to stay wet. Larvae of some *Tinodes* larvae have also been reported to feed on algae that grow on the inside surface of the gallery tube. The larva pupates within the gallery.

T. pallidulus is a nationally rare species with a scatter of records in England and Wales, summarised by Wallace (2016) who awarded it the national conservation status of 'Vulnerable'. Apart from Wyre, it has been recorded from Nutfield Stream and Milton Brook in Surrey, but was apparently extinct there by 1976 (Hickin, pers. comm.), the Royal Military Canal at Bournewood in Kent, the Hendre Stream in Monmouthshire, and the Burghfield and Wood Brooks in the Charnwood Forest of Leicestershire. Additional sites are to be expected but their locations cannot be predicted, though it may be significant that both Charnwood and Wyre are ancient forest sites.

Rare species are usually encountered in small numbers so the abundance in Wyre is remarkable. It is intriguing that the species was added to the British list by Norman Hickin, who wrote several books on the Wyre Forest, (e.g. Hickin, 1965), as well as the first monograph on British caddis larvae, (Hickin, 1967). Hickin described the larva from the Nutfield Stream in Surrey (Hickin, 1950). About a decade earlier he had collected caddis from the Dowles Brook but did not record *T. pallidulus*. The conclusion I draw is that they were either not common or Hickin did not yet 'have his eye-in' for *Tinodes* galleries.

My wife and I made the first Wyre record on 20.4.1984, when we found one final instar larva in the Dowles Brook during a brief visit to Wyre seeking *Enoicyla*. I did identify the larva as *T. pallidulus* but presumed it must be an unusually marked specimen of a commoner species as the only records of *T. pallidulus* known to me were from two very small streams in Surrey that were geographically remote from Wyre and much smaller than the Dowles Brook. It was not until 2004 and 2005 when David Pryce took adults in Malaise traps on the

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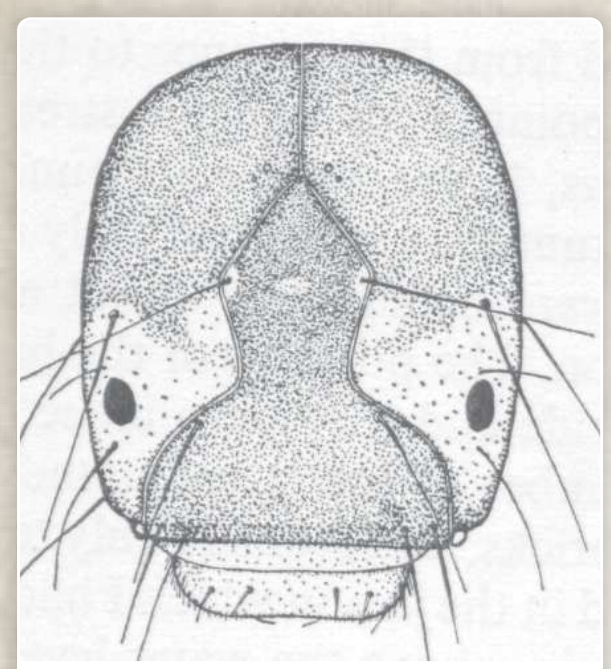

Figure of the head of a *Tinodes pallidulus* larva (Hickin, 1967

Baveney and Newalls Brooks and also at the Roxel site (Pryce, 2004, 2006) that I re-examined our larva and this time felt happy to record it as *T. pallidulus*.

Under the microscope, preserved final instar larva are easy to tell from those of other *Tinodes* species. Three other species have been recorded from Wyre, but two (*T. maclachlani* Kimmins and *T. waeneri* (Linnaeus)) are from single light trap captures at the Roxel Postensplain site. Larvae of *T. rostocki* (McLachlan) have been collected alongside those of *T. pallidulus* from stones in the Baveney Brook; it is another rare species of woodland, but not as rare as *T. pallidulus*. Larvae of *T. pallidulus* cannot be identified without a microscope and that also applies to the adults which could be described as classic 'small brown jobs'; under a microscope they can be identified by their genitalia, which in the case of the males are complex and very distinct from those of other species.

I have no explanation why this species is numerous in Wyre. The larvae are not common in open sunny situations so perhaps it is the dappled shade, coupled with suitable water chemistry, that encourages the right growth of material on the stones to feed the grazing larvae. Too much sun might 'cook' the larvae or their food in a marginal habitat. The general low water temperatures are a noted feature of Dowles (Westwood et al., 2015). It is reassuring that the species can apparently, as a population, survive any depredations by the Signal Crayfish which is known to have a greater negative impact on other aquatic life than the native White-clawed Crayfish (Holdich et al., 2014). The fact that *T. pallidulus* is found in several tributaries as well as the main stream is reassuring, as they are a source of re-colonisation in the event of a serious pollution incident.

It would be useful to know more about the distribution of *T. pallidulus* and its relatives in Wyre as not all tributaries have been surveyed. In the Charnwood Forest, *T. pallidulus* larvae are found in small numbers amongst those of *T. maclachlani* (Greenwood & Hobday, 1988; Greenwood, Bickerton & Petts, 2001), a species we know is present in Wyre, but have not yet located as larvae. The life cycle of *T. pallidulus* is not known and its abundance makes it feasible to study this rare species here without concern about damaging the population. There is scope for someone based near Wyre to improve our knowledge of this species, not least for conservation purposes.

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Ian Wallace in *Tinodes* territory, 8 April 2016 R. Winnall