

Hydroptila lotensis Mosely 1930 and *Tinodes maculicornis* (Pictet 1834): two caddisflies new to the Grand Duchy of Luxembourg (Trichoptera: Hydroptilidae & Psychomyiidae)

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On 7.ix.2016, *Tinodes maculicornis* (Pictet 1834) was captured with a light trap in Remich along the River Moselle. On 10.ix.2016, *Hydroptila lotensis* Mosely 1930 was found in Remerschen, also along the River Moselle. Both species are new to the fauna of the Grand Duchy of Luxembourg.

Keywords: Grand Duchy Of Luxembourg, *Hydroptila lotensis*, *Tinodes maculicornis*.

Le 7.ix.2016, *Tinodes maculicornis* (Pictet 1834) a été capturé au piège lumineux à Remich au bord de la Moselle. Le 10.ix.2016, *Hydroptila lotensis* Mosely 1930 a été trouvé à Remerschen, aussi au bord de la Moselle. Les deux espèces sont nouvelles pour la faune du Grand Duché de Luxembourg.

Mots-clés: Grand Duché De Luxembourg, *Hydroptila lotensis*, *Tinodes maculicornis*.

1 INTRODUCTION

Adult Hydroptilidae can be recognised by the pointed forewings, which are smaller than 5 mm. Their short antennae are maximum about half as long as their forewings, while in other families, these are about as long as the forewings or even longer. In contrast to most other caddisflies occurring in the Grand Duchy of Luxembourg, larvae of the genera *Hydroptila*, *Oxyethira* and *Orthothrichia* cannot yet be identified to species level. Their small size in combination with the lack of identification keys to identify the larvae renders this one of the least known caddisfly families. Also Psychomyiidae are quite small, with forewings of 3.5-8 mm. They possess 2, 4 and 4 spores on the tibia of the fore, middle and hind legs, respectively and they lack ocelli. Unfortunately, not all the species of the genus *Tinodes* can be identified with certainty based on morphological characteristics of the larvae (Waringer, personal communication). Here, *Hydroptila lotensis* Mosely 1930 and *Tinodes maculicornis* (Pictet 1834) are reported for the first time for the fauna of the Grand Duchy of Luxembourg.

2 MATERIALS AND METHODS

On 7.ix.2016, caddisflies were sampled with a light trap along the River Moselle in Remich (49°33'23"N, 6°22'54"E, 145 m a.s.l.) and on 10.ix.2016 in Remerschen (49°29'51"N, 6°21'59"E, 150 m a.s.l.). Species were identified using Malicky (1983) and for the Hydroptilidae also Marshall (1978) and Neu (2010). Material of *Hydroptila lotensis* and *Tinodes maculicornis* has been deposited to the collection of the Royal Belgian Institute of Natural Sciences.

3 RESULTS

One male of *Tinodes maculicornis* (**Figure 1**) was sampled with a light trap in Remich along the River Moselle on 7.ix.2016, where also *Glyphotaelius pellucidus* (Retzius 1783), *Hydropsyche exocellata* Dufour 1841 and *Oxyethira flavicornis* Pictet 1834 were observed. Males of *T. maculicornis* can be recognised



Figure 1: Male of *Tinodes maculicornis* (Pictet 1834) (Photograph: Koen Lock).

based on the shape of the genital appendages (**Figure 2**). Females can be identified based on the dark sinuous sclerotised posterior margin of sternite eight.



Figure 2: Lateral view of the male genitalia of *Tinodes maculicornis* (Pictet 1834) (Photograph: Koen Lock).



Figure 3: Female of *Hydroptila lotensis* Mosely 1930 (Photograph: Koen Lock).

One female of *Hydroptila lotensis* (**Figure 3**) was sampled with a light trap along the River Moselle in Remerschen on 10.ix.2016, where also *Agraylea multipunctata* Curtis 1834, *Agrypnia varia* (Fabricius 1793), *Ecnomus tenellus* (Rambur 1842), *Hydroptila forcipata* (Eaton 1873), *O. flavicornis* and *T. waeneri* were observed. Males of *H. lotensis* can be identified based on the posterior margin of tergite ten, which has a slight median nick and the apices of the inferior appendages each possess a strong upturned pointed claw. Females have a deep and wide excision in tergite eight without marginal thickening (**Figure 4**), just like *Hydroptila sparsa* Curtis 1834. *H. lotensis* differs from the latter species by the lateral arms of the internal apparatus that extend beyond the median process (**Figure 5**) and the ventral mushroom-shaped sclerite that has almost right-angled basal corners (**Figure 6**). In addition, *H. lotensis* differs from the other species from the *H. sparsa*-group by the presence of an indentation along the distal margin of segment eight (**Figure 7**).



Figure 4: Dorsal view of the female genitalia of *Hydroptila lotensis* Mosely 1930 (Photograph: Koen Lock).



Figure 5: Internal apparatus of *Hydroptila lotensis* Mosely 1930 (Photograph: Koen Lock).



Figure 6: Ventral sclerite of *Hydroptila lotensis* Mosely 1930 (Photograph: Koen Lock).



Figure 7: Lateral view of the female genitalia of *Hydroptila lotensis* Mosely 1930 (Photograph: Koen Lock).

4 DISCUSSION

Recently, caddisflies in the Grand Duchy of Luxembourg have mainly been studied in the context of water quality assessment and therefore, mostly larvae are observed (Dohet *et al.*, 2008). It is therefore no surprise that species such as *H. lotensis* and *T. maculicornis*, of which larvae cannot be identified with certainty, were not yet observed in the Grand Duchy of Luxembourg (Schrankel *et al.*, 2008). In addition, only catchments with a surface of more than 10 km² have to be monitored in the context of the European Water Framework Directive. It's therefore unlikely to capture *T. maculicornis* during water quality monitoring, since this species mainly inhabits small rivulets near the spring. On the other hand, *H. lotensis* inhabits very large river systems like the River Moselle, which are considered as heavily modified water bodies in the Grand Duchy of Luxembourg and are therefore not taken into account during the usual monitoring.

Although Lock & Goethals (2012) reported *Tinodes maculicornis* from Belgium, all records concerned larvae, which cannot be identified with certainty based on morphological characteristics (Waringer, personal communication). At the locations where these larvae were captured, adults were searched and indeed only *Tinodes assimilis* McLachlan 1865 and *Tinodes unicolor* (Pictet 1834) were found and *T. maculicornis* was therefore removed from the Belgian checklist (Lock, 2015). However, one female of *T. maculicornis* was recently discovered along the river Meuse, the presence of this species in Belgium could thus be ascertained after all (Lock & Van Butsel, 2017). In Germany, the species was only observed in the southern federal states Bayern and Baden-Württemberg (Robert, 2001). In northern France, the species has been reported from the departments Ardennes, Meuse, Seine et Marne, Marne and Haute Marne (Coppa, 2016).

Although *T. maculicornis* was captured along the River Moselle, which is a large river, the larvae live in very small streams near springs, where they live in hygropetic or madiculous habitats. The male that we captured almost certainly did not grow up in the River Moselle, but was probably a wandering specimen originating from a rivulet in the neighbourhood, which was attracted to the light. *Hydroptila lotensis* was already known from Belgium (Lock & Goethals, 2012). In northern France, the species has been found in the departments Aisne, Ardennes and Meuse (Coppa, 2016). In Germany, the species was previously only mentioned from Baden-Württemberg (Robert, 2001), but it also occurs in Rheinland-Pfalz (Neu, personal communication).

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