

## **Rhithrogena ussingi E. Peters. and its Larva.**

By

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When the above named species was described (Ent. Medd. Kbhvn., p. 313, 1910) only two male specimens kept in alcohol were at hand. Since then I have collected the species at its first locality and in Grejsdal, 4. June 1910, both places situated near to each other. Last year my friend J. Kr. Findal, Aarhus, found the species at a more northerly situated place, Jexen river, 14 km. west and 5 km. south of Aarhus, 10 km. north and 5 km. east of Skanderborg; in spring 1914 he also found the larva at the same place.

On May 2nd we both, together with other entomological friends, visited the place, and we fortunately found both the imagines, ♂ ♀, and the fullgrown larvæ in numbers.

With regard to the description I have only a few remarks to add: The venter of the abdomen is much paler than the dorsum and with yellowish joinings of the segments. Penis yellowish, its tips brownish. Fore femora of the male dark brown with a broad pitchy black median band, fore tarsus and tibia brown to blackish brown. Intermediate and hind femoræ pale brown with a blackish band; tibiæ yellowish; tarsi pale greyish brown, paler at the joinings and with blackish claws.

Wings hyaline with a faint yellowish brown tinge at base and in the costal and subcostal areas with a strong yellowish tinge, which becomes somewhat greyish brown in the pterostigmatal area. Costa, subcosta and base of radius brownish yellow; 2nd, 3rd and the following anal veins and the intercalar veins between 1st and 2nd anal veins yellowish; all the other longitudinal veins dark brown. The cross veins in the pterostigmatal region simple or one or two forked.

In the female the thorax anteriorly is paler brown above; posteriorly darker brown or blackish.

The species has some resemblance to *Rh. germanica* Etn., which I only know from the description of Eaton, but it is easily separated from it by its smaller size and the yellowish nervation of the wings.

The body of the fullgrown nymph is much depressed. Head at least as broad as the thorax. Eyes dorsally placed. Head blackish brown above; ocelli yellowish; antennæ yellowish, basal joint long and dark brown. Thorax pitchy brown with a narrow yellowish median streak; sheaths of wings pitchy brown. Abdomen blackish above. Three setæ of equal length, brown at base with yellowish joinings and becoming yellowish towards the apex. Venter of thorax yellowish, of abdomen blackish grey at base, darker at apex; each segment with a straight blackish (whitish in immatured nymphs) streak near to and parallel to the hind border. Legs yellowish brown; femoræ compressed, with a brim of bristles along their upper side and a few short bristles along their underside; their outer side brownish with a yellowish spot near the base and another in the middle. Tibiæ yellowish towards the tips with yellowish spurs at apex. Tarsi with one joint, yellowish, dark brown at

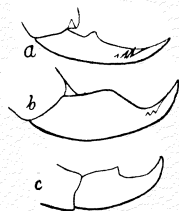


Fig. 1.

Claws of the larva of  
*a. Rh. ussingi*,  
*b. Ecd. volitans*,  
*c. Hept. sulphurea*.

base and tip; the claw long and slender with a broad dent near the base and with three more pointed dents interiorly near the tip. Labrum transverse, its front margins slightly incised in the middle.

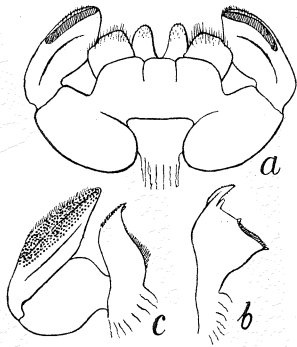


Fig. 2.

Larva of *Rh. ussingi*.

a. labium, b. right mandible, c. right maxilla.

Seven pairs of gills, the foremost and hindmost pairs of which are the largest. Each gill consists of a large lamella, in which the tracheal branches are distinct, and of a tuft of filaments, placed at the base of the underside of the lamella. The hind part of each lamella overlaps the front part of the following one.

Length of body 10–12 mm, of setæ 8 mm.

The rivulet at Jexen is running swiftly, and the bed is very stony. The nymphs of *Rh. ussingi* were found clinging to the underside of the stones, where the stream was most rapid.

The nymphs of the genera of *Ecdyuridæ* may be separated in the following way:

1. Two caudal setæ ..... 2  
Three caudal setæ ..... 3
2. Foremost pair of lamellæ enlarged, so that they touch each other below the abdomen; hindmost pair likewise ..... *Iron*.  
No lamellæ touch each other below the abdomen ..... *Epeorus*.
3. Foremost and hindmost pairs of lamellæ placed as in *Iron*; basal joint of maxillary palpus very stout ..... *Rhithrogena*  
No pair of lamellæ touch each other below the abdomen; basal joint of maxillary palpus slender and cylindrical ..... 4

4. Gill filaments relatively well developed.. *Heptagenia*  
 Gill filaments not so well developed; lamellæ relatively larger..... *Ecdyurus*

In the larvæ of *Rhithrogena* we find the most typical illustration of special adaption to life in rapid currents amongst the *Ephemeridæ*. The broad head with its strongly developed maxillary palpi, the depressed body, the flattened femora, the rows of spurs at tip of tibiæ, the dentated claws make the larvæ well fitted for clinging to the surface of stones etc. But this is not all; the gill lamellæ and the filaments form a closely overlapping series whose outer border fits the supporting surface to which the nymph clings; the foremost pair of the lamellæ is enlarged, so that their front borders touch each other beneath the first abdominal segment; the hindmost pair of the lamellæ is prolonged, and their tip is curved inwards in such a way that they also touch each other below the 8th abdominal segment; thereby a disc for adhesion to the surfaces of the stones is formed so complete that any elevation of the body would cause a partial vacuum beneath it.

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