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Sexual dimorphism helps deep diving in *Potamyia johansonii* n.sp. (Trichoptera: Hydropsychidae)

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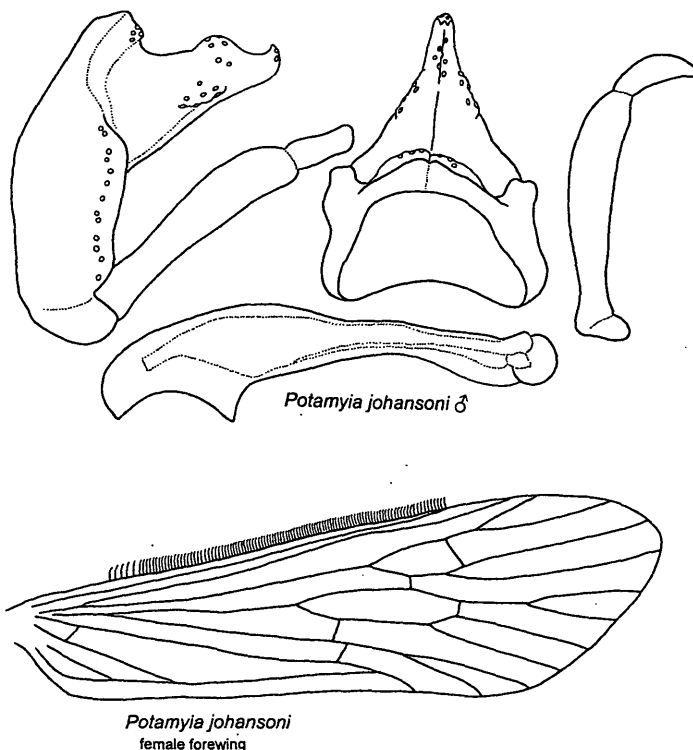
We had just published our revision of the *Potamyia* genus with 42 species (OLÁH, BARNARD and MALICKY, 2006) when I found an unusual species of *Potamyia* in freshly collected material from Laos. While sorting light trap material collected by N. Jönsson, T. Malm and P. Viklund during an expedition organised by Kjell Arne Johanson at the Entomology Department of the Swedish Museum of Natural History, I found seven females of an unusual and unknown *Potamyia* species. Its most striking feature was easily recognised even at low magnification: Two thirds of the costal vein on the forewing were fringed with long, strong and forwardly directed modified black setae. It was surprising to recognise for the first time these uniquely equipped creatures with plenty of mini lancets. When examined under higher magnification, the distal end of the setae was observed as slightly tapering and moderately sinuous laterad in flying and posteriad in resting position. Finally near the end of sorting the rich light trap material, a single male was found in the same habitat without any modified setae on the costal vein of the forewing.

Searching for such a modified setae on the costal margin of the forewing in other caddisflies resulted in the discovery of the same type of erect and black hairs in *Potamyia czekanowskii* (MARTYNOV, 1910), a widely distributed species and with huge biomass in the large Siberian rivers. MARTYNOV (1910) has described these hairs as species character, not limited to the female only. In his later description (MARTYNOV, 1934), this character was mentioned again as a special feature of the species. Thanks to Kjell Arne Johanson, I was able to examine a large amount of light trap material of this species collected at the Amur River (Russia, Khabarovsk Ter. Slavyanka at Amur, light trap, 17.vi.1994, leg. P. Kindskog et B. Viklund). I have found that all the females, but not the males of *P. czekanowskii* have the modified setae on the costal margin of the forewing. However the modified setae at *P. czekanowskii* are shorter and distributed at about one third length of the costal margin. It seems that these enforced modified setae indicate a sexual dimorphism in these species. The modified setae may have a swimming function during the deep (up to 7-8 m, OLÁH et al. 2006) diving action of the ovipositing female.

***Potamyia johansonii* new species**

The new species belongs to the *Potamyia flava* species group (OLÁH, BARNARD and MALICKY, 2006). It is closely related to *P. straminea* (MCLACHLAN, 1875), but the new species has a clasper which does not taper, 10th segment extremely tapering as visible in dorsal view and its apex not bifid, just excised at the very tip. Moreover the phallosome differ, being flatter, its basal half not developed, endothecal process regularly rounded and not elongated at all. The female has the characteristic modified strong setae along the costa of the forewing. However the presence of this modified setae was not examined systematically in the females of the *Potamyia* genus.

Male (in alcohol). Body and wing membrane light brown with light pubescence. Wing membrane homogenous without any pattern. Antennae broken. Dorsum of the head



light brown; anteromesal setal wart accompanied with a pair of small warts; behind the pair of the elongated anterior setal warts, there are a pair of setal groups composed of 4-5 smaller warts of different size; the pair of posterior setal warts large. Swollen setal wart absent on proepisternum. Protarsal claw asymmetrical with laterally flanked setal bundle. No spurs present on the first tibia, spur formula 044. Forewing length 6,5 mm, hindwing length 4,8 mm. In the forewing, the crossvein cu is apical of crossvein m-cu about the length of the crossvein; Cu2 and A joining before C; crossveins sc-r1 and r1-r2+3 absent; pale pterostigmal area enlarged. The erect black modified setae on the costal margin of forewing present on the middle two thirds of the female wing (Fig. 1). In the hindwing, stem of M plus proximal part of M3+4 almost touching and running parallel with Cu1; fork 1 present; Sc and R1 joining around crossvein r.

Male genitalia (Fig.2). Ninth abdominal segment short and almost evenly annular, anteriorly only slightly rounded, dorsal corner truncate, dorsum not narrowing more than ventrum, apical lobe on posterolateral margin forms a flat plate from the tenth segment to the base of the inferior appendages. Spine row on the posterior margin of the 9th segment intermittent, the area at the 10th segment without spines, the spines on the flat apical lobe strong, submarginal and arranged in a vertical line. Dorsocaudal spiny lobe stocked with a group of long spines slightly separated medially. Intersegmental depression between the ninth and tenth segments forming a right angle. Tenth segment elongated and broad basally; subtriangular both in lateral and dorsal views, however in dorsal view very sharply triangular, unusually almost tapering; its apex formed by the ventroapical setose lobe with very small excision into a pair of upturned small spiny projections; its sclerotised continuation along the ventral margin of the tenth segment reaching the posterior margin of the ninth segment; dorsal interlobular gap of the small excision small and shallow; dorsoapical setose lobe moved backward, forming a setose

hump in lateral view; lateral setose area (preanal appendages) flat, shifted ventrad and elongated; transverse suture not discernible; longitudinal suture running along the ventral margin of the 10th segment as the continuation of ventroapical lobes. The basal segment of inferior appendages almost as long as the apex of tenth segment, straight and only slightly dilating distally; the second segment broad digitiform in lateral and broad falciform in ventral views. Phallosome flat, with slightly wavy dorsum, but almost straight; ventral subapical keel well developed; chitinesed endothecal process regularly rounded, phallosomal sclerites small, narrowly horizontal in lateral aspect; endophallus long with a very visible sclerous band, membranous endothecal lobes not visible on the less sclerotized ventroapical corner.

Holotype male: Laos PDR, Luang Namtha Prov., Tong Om Village, 552mao, 47Q 0750111, UTM 2321825, 1 May 2005, light trap, loc 30; N. Jönsson, T. Malm and B. Viklund leg., in the collection of Entomology Department of the Swedish Museum of Natural History, Stockholm.

Paratypes: 6♀: same as holotype. 1♀: Laos PDR, Vientiane Prov., Vang Vieng, Nam Xong River, upstream bamboo footbridge, 363mao, 48Q 0223506, UTM 2115465, 26 April 2005, Light trap, loc 10; N. Jönsson, T. Malm and B. Viklund leg. - Allotype: 1♀: same data as holotype. - Distribution: Laos.

Eymology: Named in honor of Kjell Arne Johanson.

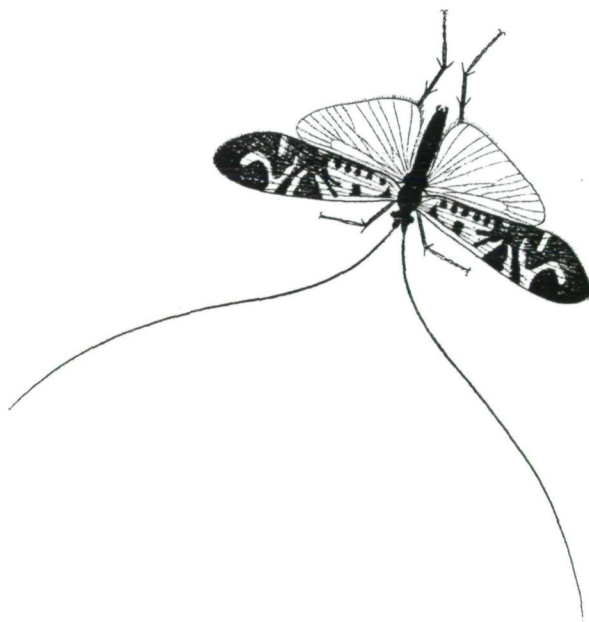
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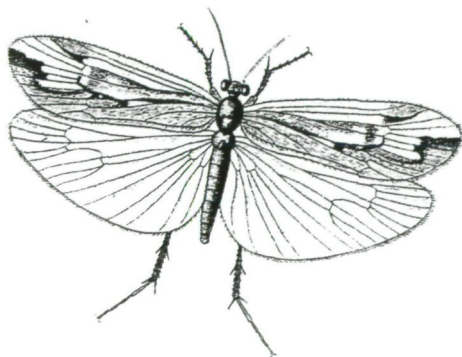
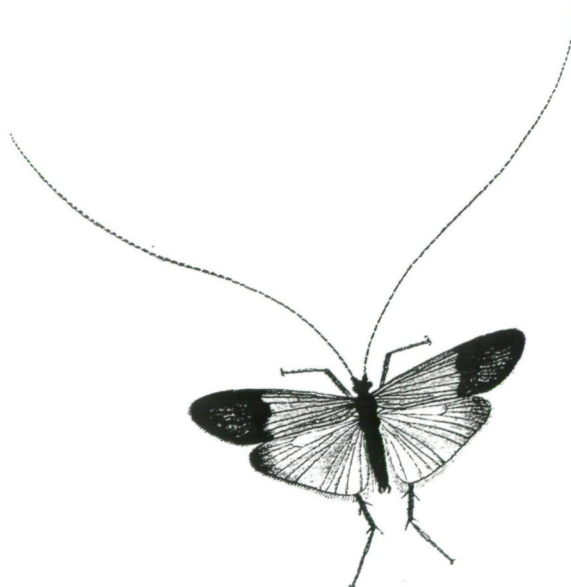
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