

**Description of the full-grown larva of
Sympecma gobica (FÖRSTER, 1900)
(Odonata: Lestidae)**

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Abstract

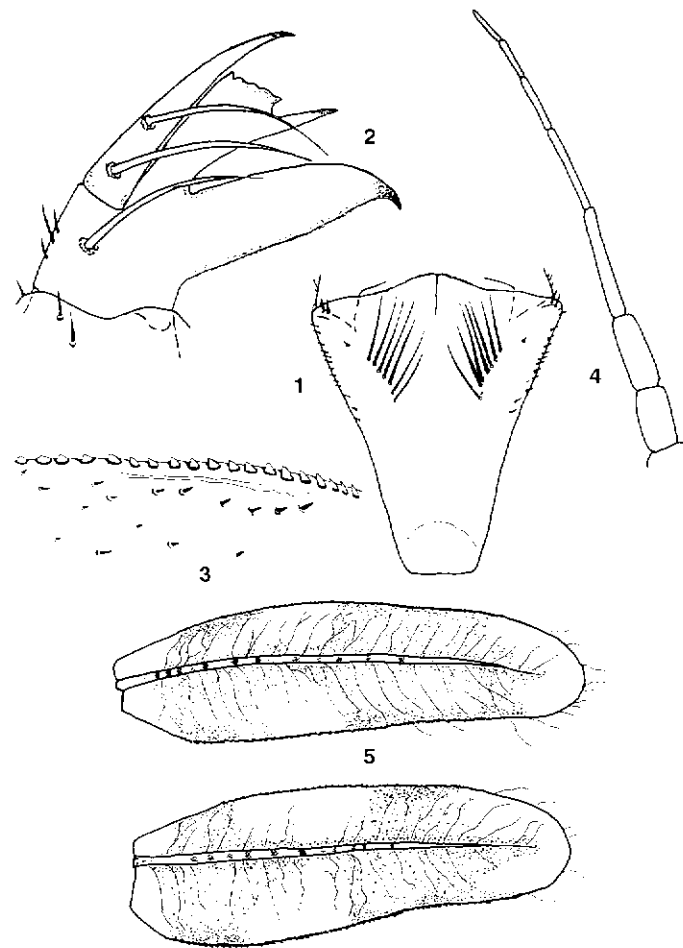
The larva of S. gobica is described and figured, based on two exuvia from Tajikistan. It appears to be more closely related to that of S. fusca than to that of S. paedisca. A provisional key to the last larval instar of the known three species of the genus is given.

Introduction

The final larval instars of *S. fusca* (VANDER LINDEN, 1820) and *S. paedisca* BRAUER, 1883 are well-known and relatively easy to differentiate (see e.g. CONCI & NIELSEN, 1956), but the larva of *S. gobica* (FÖRSTER), often but incorrectly regarded as a mere subspecies of *S. paedisca* (DUMONT & BORISOV, 1993), has so far remained undescribed. The present paper is aimed at eliminating this hiatus in our knowledge of the larval morphology of lestid damselflies. At the same time, it provides another piece of evidence in favour of the full specific status of *S. gobica*.

Material

Two exuviae (1♂, 1♀), collected with their emerging imagoes in the natural reserve "Tigrovaya balka" (tiger valley), Tajikistan, 25 May 1991.

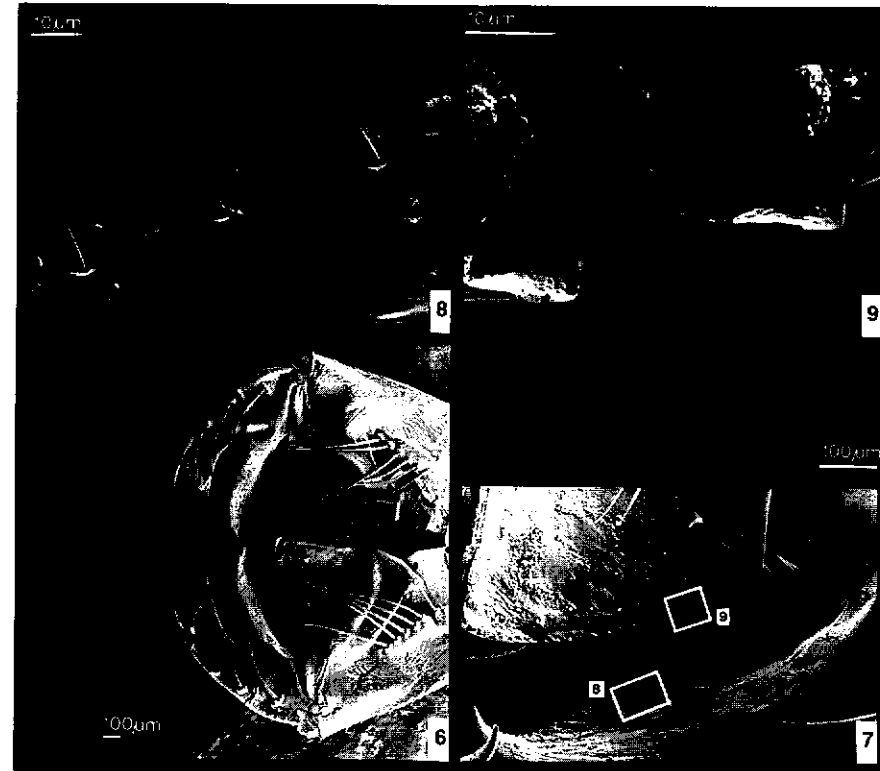


Figs 1-5. *S. gobica*. 1: Prementum; 2: Labial palp; 3: Marginal zone of anterior rim of prementum; 4: Antenne; 5: Caudal lamellae.

Description

The larvae have a typical lestad habitus (total length: 24 mm), and antennae composed of seven segments (Fig. 4). Distinctive characters were therefore looked for on the prementum and caudal lamellae. The prementum is roughly trapezium-shaped, widening distally (apex about 3.2 times wider than base), and lined with two rows of seven obliquely implanted setae, the longest five of which reach the anterior rim of the prementum. The remaining two are about 1/3 shorter (Figs 1, 6). The distal margin of the prementum is only weakly produced, and is adorned with a row of c.

30 sclerotized teeth, outwardly directed, blunt and broad externally, but becoming sharper and straighter towards the central cleft (Figs 3, 9). Adjacent and proximal to the marginal spines, a series of scattered stiff setules (Figs 3, 7) are found. The lateral margins are lined with about 13-14 spines along their distal half; these spines are situated in submarginal position proximally, in lateral position distally. Two slender spines occur at the base of the palp; one short, stiff spine is implanted some distance proximal to the basal spines (arrow on fig. 9).



Figs 6-9. *S. gobica*, SEM-micrographs. 6: Prementum and labial palp (central zone of prementum damaged); 7: Free margins of prementum and labial palp, moderately enlarged and identifying two subzones, shown strongly enlarged in figs 8-9; 8: Portion of free margin of labial palp, showing wavy cutting edge and submarginal spines; 9: Portion of anterior margin of prementum, somewhat lateral, showing structure of strongly sclerotized, wide-based teeth.

The premental palps are armed with one, and their movable hook with two long palpal setae (Fig. 2). The length of these setae is about 80-85% of the length of the movable hook itself (Figs 2, 9). The inner margin of the palp presents ca. 30 undulations and, in slightly submarginal position,

ca. 18 spines (Figs 7, 8). Few spinules occur at an even further submarginal position (e.g. one on fig. 8).

The apical margin of the palps bears a long, almost straight median hook (Figs 2, 9), and an external branch, separated by a rather shallow incisure. The distal margin of the external branch is wavy, but with a well differentiated marginal tooth on either side (Figs 2, 9). The external tooth is somewhat outwardly pointing (Fig. 2).

The caudal lamellae are 6.5 and 7 mm long in both specimens, and adorned with two transverse dark bands (Fig. 5).

Differential diagnosis

Most of all the weakly protruding premental rim, but also the long premental and palpal seta, and the two-banded caudal lamellae will immediately differentiate *S. gobica* from its congeners, where the premental setae reach only little over halfway to the anterior rim of the prementum, and where three bands across the caudal lamellae occur.

In most respects, the larva of *S. gobica* appears more closely related to *S. fusca* than to *S. paedisca*. The weakly protruding distal margin of the prementum, the scattered nature of the submarginal spinules along that margin, and the straight median hook on the palps (sinuate in *paedisca*), are cases in point, and supposedly more typical of *S. fusca*. The only seemingly *paedisca*-like character in *S. gobica* is the outwardly pointing, externalmost tooth on the external branch of the labial palp (Fig. 2). However, there is considerable divergence among published figures, at least as regards some of these characters. Thus, the marginal spinules of the prementum are shown scattered in CONCI & NIELSEN, 1956, but lined in AGUESSE, 1968. The length of the premental setae is variously depicted as well: short (their own length about equal to the distance between their tip and the rim of the prementum) in CONCI & NIELSEN (1956) and ASKEW (1988), but long (reaching rather close to the rim of the prementum) in MAY (1933) and in AGUESSE (1968). A similar divergence (hence uncertainty in interpretation) is found in the relative length of the three setae on the palp and movable hook. For example, these setae are shown to decrease in length from basal to apical in CARCHINI (1983); the middle (= first one on movable hook) the largest in ASKEW (1988); the middle one the shortest in AGUESSE (1968); all three equally long in MAY (1933). Fortunately, these characters do not blur the distinctiveness of *S. gobica*, however.

All this may reflect true variation, or just inaccurate description. In any case, it is clear that the details of the armature of the rim of the prementum and the labial palp, by lack of SEM or high-power microscopic studies, have not been correctly depicted in any of the literature sources cited. Additional data on variability of meristic characters will certainly be useful in order to evaluate their phylogenetic meaning.

We conclude by offering a key to the terminal larval instars of the genus *Sympecma*, in hopes that a more abundant material in the future will lead to a critical evaluation of those characters presently in use.

Key to the full-grown larvae of *Sympecma*

1. Distal rim of prementum distinctly protruding; submarginal spinules along this rim lined. Internal margin of median hook of palps somewhat sinuate *S. paedisca*
- Distal margin of prementum weakly protruding, submarginal spinules along this rim scattered. Internal margin of median hook of palps straight 2
2. Tip of premental setae not reaching the anterior margin of the prementum. Caudal lamella with three transverse dark bands *S. fusca*
- The longest five premental setae reach (or almost reach) the anterior margin of the prementum. Caudal lamellae with two transverse dark bands *S. gobica*

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