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Description of fourth instar larva of *Ablabesmyia phatta* (EGGER, 1863)
(Diptera, Chironomidae)

[With 9 Text-figures]

Abstract. Description of the fourth instar larva of *Ablabesmyia phatta* (EGG.) and comparison with a closely related, cosmopolitan species, *Ablabesmyia monilis* (L.) are given. The fourth instar larva of the species in question differs mainly in the body dimensions and structure of the maxillary palpus: the base of the palpus in *A. monilis* (L.) consists of 2-4 segments, whereas *A. phatta* (Egg.) has but one segment. For particular populations of both species, the metric and meristic characters, as well as indices essential to the taxonomy of the subfamily *Tanypodinae* are also given.

Though *Ablabesmyia phatta* (EGGER, 1863) has a wide distribution (FITTKAU and REISS 1978), nevertheless its immature stages do not achieve a higher density in their habitats (THIENEMANN 1937, 1942, 1951; BRUNDIN 1949; ŠILOVA 1976). In some biotypes it usually coexists with a closely related, eurytopic species, *Ablabesmyia monilis* (LINNAEUS, 1758).

The original description of adult *Ablabesmyia phatta* (EGG.), published by EGGER (1863), was supplemented by GOWIN (1942) who gave a description of the male anal cavity which is a fundamental organ serving in the discrimination of species within the genus *Ablabesmyia* JOHANNSEN, 1905 (FITTKAU 1962). A list of morphological features characteristic for pupae of *Ablabesmyia monilis* (L.) var. *connectens* (synonym of *Ablabesmyia phatta* (EGG.)) was published by THIENEMANN (1937), while the larva of the taxon in question has never been described in detail till now.

Owing to a close affinity of *Ablabesmyia phatta* (EGG.) and *A. monilis* (L.), a frequent coexistence of the two species, as well as a precise knowledge of the morphology of the larvae of *A. monilis* (L.) (ZAVĚEL and THIENEMANN

1921), the description of larvae of *A. phatta* (EGG.) has been treated in the present paper as a differential diagnosis against *A. monilis* (L.). Both taxa were investigated in population aspect; the biometric analysis was applied only to those individuals the larvae of which, taken from their natural habitats, passed the whole metamorphosis in the laboratory.

The syntypes of *A. phatta* (EGG.) are deposited in the Naturhistorisches Museum in Vienna. My sincere thanks are due to Dr. Ruth CONTRERAS-LICHTENBERG who kindly sent me the material to study and gave information concerning the types preserved in Vienna Museum.

Ablabesmyia phatta (EGGER, 1963)

Synonyms:

Tanytus phatta EGGER, 1863: 1109–1110. In *Pentaneura*: EDWARDS, 1929: 289. In *Ablabesmyia*: GOETHEBUER, 1936: 31; FITTKAU, 1962: 433–434.

Ablabesmyia monilis (L.) var. *connectens* THIENEMANN, 1937: 165–168. (Synonymized by FITTKAU, 1962: 433).

Ablabesmyia monilis: GOWIN, 1942: 292–293. (Misidentification — see FITTKAU, 1962: 429).

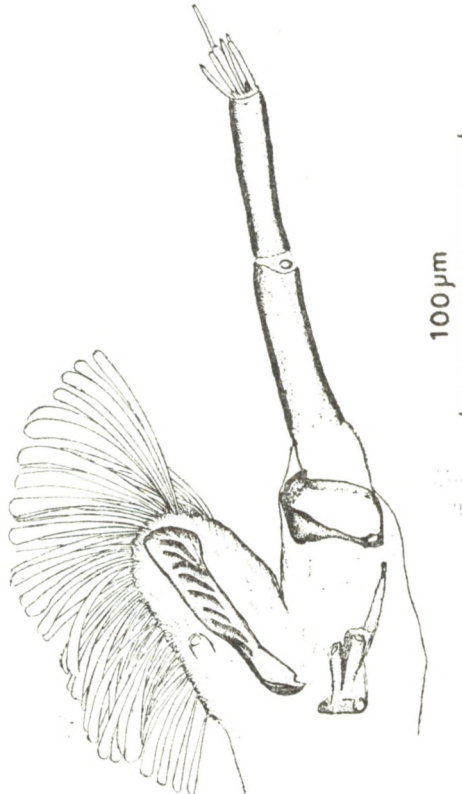


Fig. 1. *Ablabesmyia phatta* (EGG.), larva, maxilla.

Material:

1 ♂, syntype (one of a series of 8 specimens) Gmunden — coll. J. SCHINER, Naturhistorisches Museum, Vienna.

Larvae: Poland, ponds in Zgierz-Krzywie; pupae and adults obtained mainly by rearing — coll. M. GRZYBKOWSKA, of University Łódź.

Description of fourth instar larva:

Body length 11–13 mm. Pale green, majority of individuals without pale spots. Base of maxillary palpus one-segmented (Fig. 1). Hypopharyngeal pecten with variously high teeth. Base of anal papillae terminated with a tuft of 7 long bristles. Morphology of the remaining organs similar to the general plan typical for *A. monilis* (L.). Metric characters and indices of some features of the exuviae are given in Table 1.

Ablabesmyia monilis (LINNAEUS, 1758)

Synonyms: see FITTKAU 1962: 437.

Material:

Larvae: Poland, ponds in Zgierz-Krzywie, ponds in Łódź (Liściasta Street and Botanical Garden), and ponds on peaty-bogs at Szczerców. Pupae and imagines obtained mainly from rearing in the laboratory — coll. M. GRZYBKOWSKA, Łódź University.

Description of fourth instar larva:

Body length 7–9 mm. Ventral side of head with three dark patches which are best visible in exuviae (Fig. 2). Hypopharyngeal pecten with teeth variously high (Fig. 3). Base of maxillary palpus variously developed: from two-segmented (Fig. 9), through incomplete three-segmented (Figs. 5, 8) to completely developed three chitinous rings of various shape and height (Figs. 4, 6, 7). The above characters supplement the previous data concerning the range of individual, intraspecific variation.

Measurements and indices in Table 1 refer to the population from Zgierz-Krzywie.

DIFFERENCES

Mature larvae of fourth instar larvae of *A. monilis* (L.) and *A. phatta* (EGG.) differ both in linear dimensions of the whole body, and averages of a number of variables (Tab. 1). Differences significant statistically (the test *t* of STUDENT — $n_{\text{♂♂}} = n_{\text{♀♀}} = 30$, $p < 0.05$) were also observed in the indices (except for head index of females as well as $L_k:L_a$ and $L_{bt}:B_{bt}$ of females and males). As concerns the morphology, the most apparent difference is that in the structure of maxillary palpus; in *A. monilis* its base can consist either of 4 rings (ZAVŘEL and THIENEMANN 1921) or of 2–3 chitinous rings (the present writer), whereas in case of *A. phatta* the base consists of one ring only.

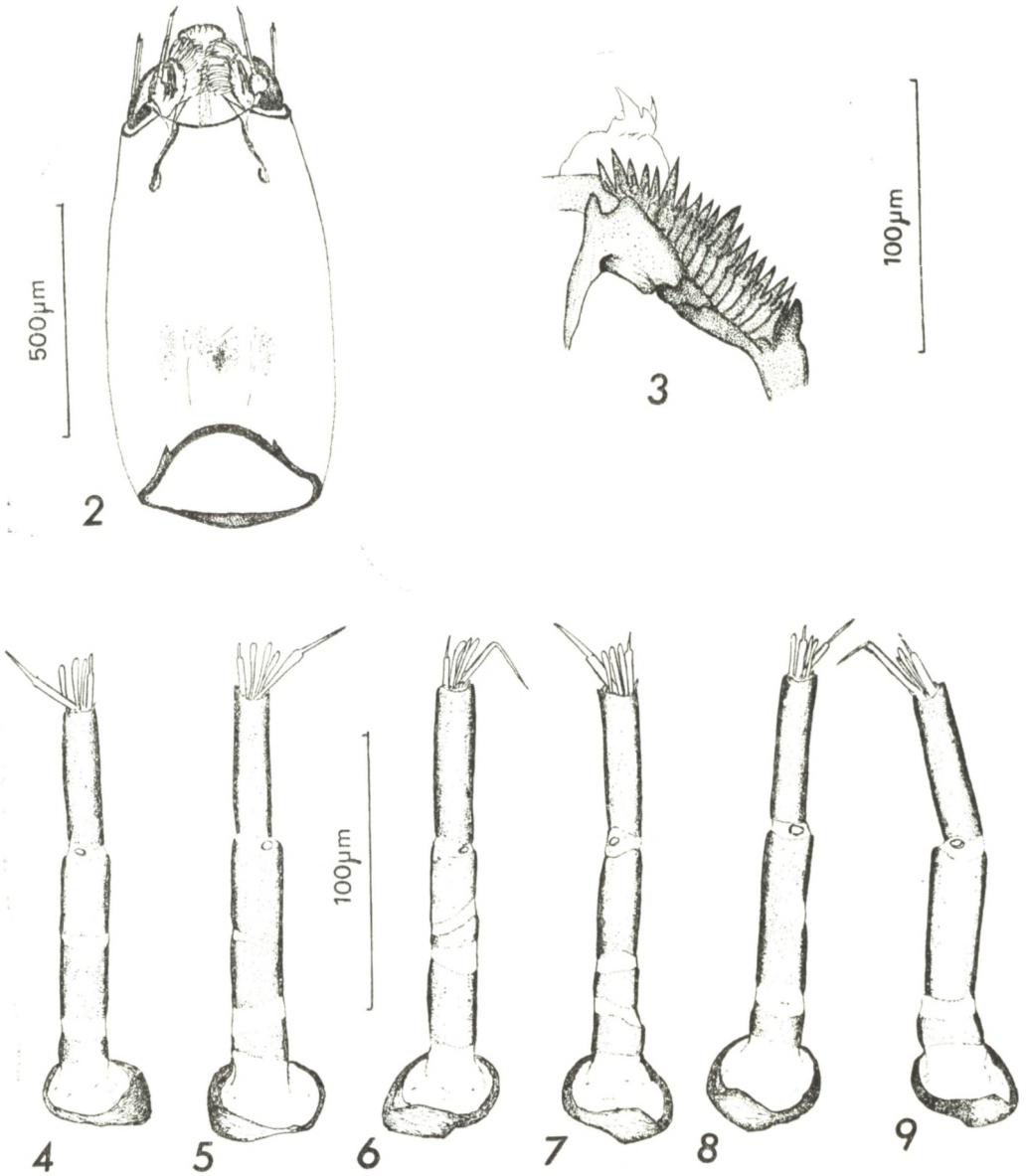


Fig. 2. *Ablabesmyia monilis* (L.), larva, head in ventral aspect.

Fig. 3. *Ablabesmyia monilis* (L.), larva, hypopharyngeal pecten.

Fig. 4-9. *Ablabesmyia monilis* (L.), variability of maxillary palpus in the larvae.

Table 1. Metric characters (in μm), meristic characters and indices of the larvae of *Ablabesmyia monilis* (L.) and *Ablabesmyia phatta* (EGGER); ($n\sigma\sigma = n\varphi\varphi = 30$)

Character	Sex	<i>Ablabesmyia monilis</i> (L.)		<i>Ablabesmyia phatta</i> (EGG.)	
		Min. - \bar{x} (\pm SD) - Max.		Min. - \bar{x} (\pm SD) - Max.	
1. Length of head - L_k	$\sigma\sigma$	992 - 1042 (\pm 36) - 1102		1081 - 1459 (\pm 90) - 1569	
	$\varphi\varphi$	994 - 1071 (\pm 47) - 1123		1422 - 1485 (\pm 53) - 1572	
2. Index of head - I_k (%)	$\sigma\sigma$	48.0 - 51.8 (\pm 2.1) - 54.4		48.7 - 49.5 (\pm 2.2) - 53.5	
	$\varphi\varphi$	46.4 - 49.4 (\pm 3.0) - 53.9		46.1 - 50.8 (\pm 3.0) - 55.4	
3. Length of antenna - L_a	$\sigma\sigma$	499 - 541 (\pm 28) - 582		548 - 754 (\pm 77) - 839	
	$\varphi\varphi$	513 - 568 (\pm 50) - 624		683 - 800 (\pm 59) - 914	
4. Index of antenna - $LB_a:G_a$	$\sigma\sigma$	3.8 - 4.9 (\pm 0.3) - 5.2		5.6 - 6.6 (\pm 0.8) - 8.3	
	$\varphi\varphi$	5.0 - 5.3 (\pm 0.3) - 6.3		5.8 - 6.5 (\pm 0.6) - 7.5	
5. $L_k:L_a$	$\sigma\sigma$	1.8 - 1.9 (\pm 0.1) - 2.1		1.8 - 1.9 (\pm 0.2) - 2.3	
	$\varphi\varphi$	1.8 - 2.0 (\pm 0.1) - 2.1		1.6 - 1.9 (\pm 0.1) - 2.2	
6. Length of mandible - L_m	$\sigma\sigma$	162 - 179 (\pm 4) - 189		180 - 239 (\pm 6) - 255	
	$\varphi\varphi$	169 - 183 (\pm 3) - 211		226 - 249 (\pm 10) - 267	
7. Length of maxillary palpus - L_{pm}	$\sigma\sigma$	111 - 119 (\pm 3) - 143		101 - 129 (\pm 7) - 151	
	$\varphi\varphi$	114 - 124 (\pm 3) - 163		119 - 129 (\pm 6) - 145	
8. $L_{pm}:B_{pm}$	$\sigma\sigma$	6.0 - 6.7 (\pm 0.2) - 7.0		5.6 - 6.1 (\pm 0.7) - 6.7	
	$\varphi\varphi$	5.6 - 6.5 (\pm 0.2) - 7.0		5.5 - 6.0 (\pm 0.4) - 6.9	
9. Length of glossa - L_g	$\sigma\sigma$	121 - 129 (\pm 1) - 142		125 - 170 (\pm 11) - 183	
	$\varphi\varphi$	123 - 142 (\pm 3) - 154		159 - 174 (\pm 7) - 184	
10. Length of paraglossa - L_{pg}	$\sigma\sigma$	45 - 50 (\pm 2) - 61		49 - 67 (\pm 7) - 75	
	$\varphi\varphi$	61 - 63 (\pm 1) - 72		58 - 68 (\pm 5) - 72	
11. Number of teeth on hypopharyngeal pecten	$\sigma\sigma$	14 - 17.1 (\pm 0.6) - 18		17 - 20.1 (\pm 2.9) - 25	
	$\varphi\varphi$	15 - 18.3 (\pm 0.5) - 20		16 - 19.7 (\pm 2.4) - 24	
12. Breadth of labrum - B_l	$\sigma\sigma$	220 - 238 (\pm 6) - 269		310 - 421 (\pm 41) - 457	
	$\varphi\varphi$	223 - 242 (\pm 7) - 313		387 - 437 (\pm 25) - 471	
13. Breadth of labium - B_{lp}	$\sigma\sigma$	117 - 138 (\pm 3) - 146		214 - 320 (\pm 38) - 339	
	$\varphi\varphi$	134 - 152 (\pm 3) - 154		293 - 339 (\pm 28) - 384	
14. Length of anal papillae - L_{bt}	$\sigma\sigma$	127 - 148 (\pm 3) - 156		145 - 187 (\pm 18) - 209	
	$\varphi\varphi$	143 - 164 (\pm 5) - 194		180 - 197 (\pm 11) - 212	
15. $L_{bt}:B_{bt}$	$\sigma\sigma$	2.4 - 3.1 (\pm 0.1) - 3.3		2.6 - 3.1 (\pm 0.2) - 4.3	
	$\varphi\varphi$	2.6 - 3.1 (\pm 0.1) - 3.5		2.3 - 2.9 (\pm 0.1) - 3.6	

B - breadth of particular organs, L - their length, G_a - length of antennal flagellum, LB_a - length of antennal base.

In both species, similarly as in other investigated taxa from the subfamily *Tanypodinae* (GRZYBKOWSKA 1978, 1981), the sexual dimorphism is expressed by greater body dimensions in the larvae of females than of males.

Some hydrobiologists suggested that the cosmopolitanism of *A. monilis* (L.) is due to insufficient knowledge of the immature stages, or there is a real lack of structural differentiation in larvae of some species, which belong to one morphological type. The name *Ablabesmyia ex grege monilis*, used in some European papers, can refer to two species: *A. monilis* (L.) or *A. longistyla* FITTKAU, 1962, the imagines of which are markedly distinct morphologically (FITTKAU 1962).

Effective attempts have already been made at determining the above taxa on the ground of their pupae (FITTKAU 1962). Morphological differences in the larvae of the species in question have been treated only generally, and the diagnostic criteria were restricted to a statement that the maxillary palpus in *A. longistyla* FITT. consists of a greater number of segments than it does in *A. monilis* (L.) (BANASZAK 1979).

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STRESZCZENIE

[Tytuł: Opis larw IV stadium *Ablabesmyia phatta* (EGGER, 1863) (*Diptera*, *Chironomidae*)]

W pracy opisano larwy IV stadium *Ablabesmyia phatta* (EGG.), a następnie porównano je z larwami blisko spokrewnionego, kosmopolitycznego gatunku *Ablabesmyia monilis* (L.). Stwierdzono, iż IV stadium larwalne obu gatunków różni się przede wszystkim rozmiarami ciała oraz budową głaszczka szczegółowego: podstawa głaszczka larw *Ablabesmyia monilis* (L.) składa się z 2-4 pierścieni, natomiast u *Ablabesmyia phatta* (EGG.) tylko z jednego pierścienia. Dla określonych populacji tych taksonów podano charakterystyki metryczne, merystyczne oraz wskaźniki istotne dla systematyki podrodziny *Tanypodinae*,

РЕЗЮМЕ

[Заглавие: Описание личинок IV стадии *Ablabesmyia phatta* (EGGER, 1863) (*Diptera*, *Chironomidae*)]

В работе описаны личинки IV стадии *Ablabesmyia phatta* (EGG.), а затем произведено их сравнение с личинками близкородственного космополитического вида *Ablabesmyia monilis* (L.). Констатировано, что IV личиночная стадия обоих видов отличается прежде всего измерениями тела, а также строением максимум шупика; основание шупика у личинки *Ablabesmyia monilis* (L.) состоит из 2-4 колец, а у *Ablabesmyia phatta* (EGG.) только из одного хитинового кольца.

Для определенных популяций обоих рассматриваемых таксонов приведены метрическая и меристическая характеристики, а также показатели, имеющие существенное значение для систематики подсемейства *Tanypodinae*.

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