Vestnik zoologii, **34**(4–5): 107–113, 2000

UDC 595.72.23

DISCOVERY OF FOUR SPECIES OF *TRICHOGRAMMA* (HYMENOPTERA, TRICHOGRAMMATIDAE), NEW FOR THE FAUNA OF ENGLAND

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Accepted 28 February 2000

Находка четырех новых для фауны Англии видов *Trichogramma* (Hymenoptera, Trichogrammatidae). Фурсов В. Н. — Впервые указаны для фауны Англии 4 вида рода *Trichogramma* Westw. — *T. danubiense* Birova et Kazimirova (известен только из Словакии), *T. talitzkii* Djuritsh (известен из Молдовы), *T. lacustre* Sorokina (известен из России), *T. daumalae* Dugast et Voegele (известен из Франции и Болгарии). Дано описание видов и дан их дифференциальный диагноз.

Ключевые слова: Hymenoptera, Trichogrammatidae, *Trichogramma*, фауна, Англия, Словакия, Франция, Молдова, Россия.

Discovery of Four Species of *Trichogramma* (Hymenoptera, Trichogrammatidae), New for the Fauna of England. Fursov V. N. — Four species of *Trichogramma* Westw. are recorded at the first time for the fauna of England — *T. danubiense* Birova et Kazimirova (known only from Slovakia), *T. talitzkii* Djuritsh (known from Moldova), *T. lacustre* Sorokina (known from Russia), *T. daumalae* Dugast et Voegele (known from France and Bulgaria). Descriptions of species and diagnoses are given.

Key words: Hymenoptera, Trichogrammatidae, *Trichogramma*, new species, fauna, England, Slovakia, France, Moldova, Russia.

Introduction

Only three species of *Trichogramma* have been recorded for the fauna of England: *T. semblidis* (Aurivillius, 1897), *T. evanescens* Westwood, 1833 and *T. cacoeciae* Marchal (Fitton, Graham, Bouček et al., 1978, Fursov, Pintureau, 1999). Two species (*T. niveiscapus* Morley, 1950 and *T. latipennis* Haliday, 1833) have been proposed as synonyms of *T. evanescens* and one species, *T. vitripenne* Walker, 1851 is a nomen nudum (Fitton, Graham, Bouček et al., 1978). Four other species of *Trichogramma* are described here as rare species and first found in England — *T. danubiense* Birova et Kazimirova (known only from Slovakia), *T. talitzkii* Djuritsh (known only from Moldova), *T. lacustre* Sorokina (known only from Russia), *T. daumalae* Dugast et Voegele (known only from France and Bulgaria). Specimens were mounted by the author on glass slides in Canada Balsam and deposited in the collection of The Natural History Museum (London, England). The author gratefully acknowledges the kind help of Dr. John S. Noyes (NHM, London) for the opportunity to study this material. The discussion of the taxonomical position of *Trichogramma* with Dr. B. Pintureau (INRA, France) is greatly appreciated. The terminology of genitalia and abbreviations are given as in Pinto (1992) and Doutt, Viggiani (1968).

Trichogramma danubiense Birova et Kazimirova, 1984 (fig. 1, *a–d*)

Material. ♂, England: Hants, Romsey, Awbridge, 08.1982 (C. Vardy), on slide N 1227, ♂ and ♀, same label, on slide N 1268; ♂, same place, 09.1981 (C. Vardy), on slide N 1228; ♂, same place, 08.1982 (C. Vardy), on slide N 1269; 5 ♂, same place, 09.1981 (C. Vardy), on slides N 1274–1276, 1287, 1290.

Description. Male. Color of thorax, abdomen, all coxae and femora dark brown, except for yellow postscutellum, propodeum and base of abdomen. All tibiae, tarsi and apical parts of all femora yellow, head and antennae yellow, except brown genae and postgenae.

Antenna with flagellum 4.27–5.0 times as long as maximum width, 1.62–1.83 times as long as length of scape; ratio of the length of the longest setae to the maximum width of flagellum 1.72–1.90. Number of flagellum setae 30–36.

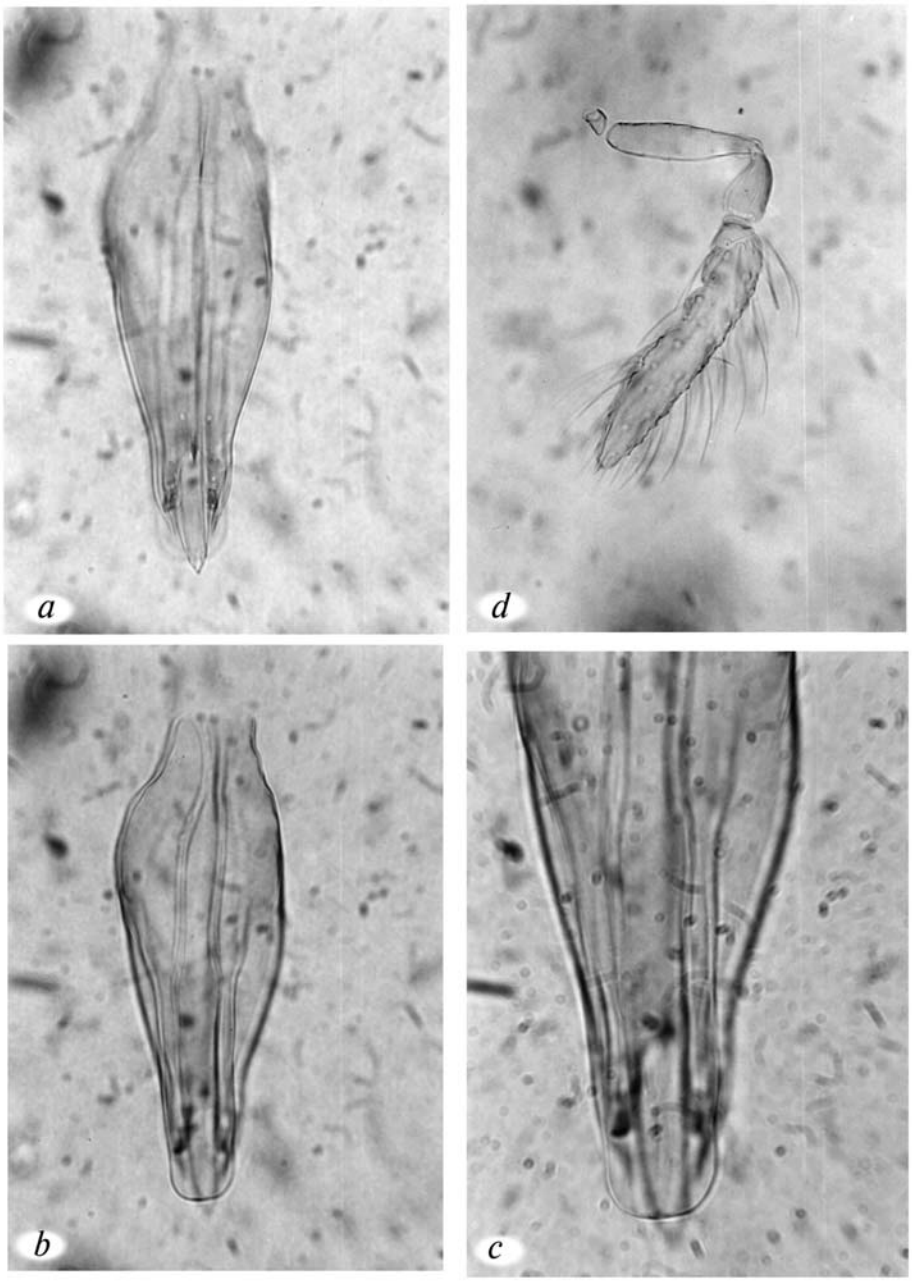

Fig. 1. *Trichogramma danubiense*: *a–c* — male genitalia; *a* — ventral view of intervorcellar process; *b* — dorsal view on dorsal lamina; *c* — apex of dorsal lamina; d — antenna.

Рис. 1. *Trichogramma danubiense: a–c* — гениталии самца; *a* — вентральный вид на вентральный выступ фаллобазы; *b* — дорсальный вид на дорсальный выступ фаллобазы; *c* — вершина дорсального выступа фаллобазы; d — усик.

Genital capsule linear and narrow, with narrowed basal part and small internal curvature near the base of parameres. Dorsal lamina with weakly visible basal constriction and without lateral basal lobes, with plate-like shape and parallel sides, flattened and with nearly straight apical margin. Apex of dorsal lamina extending beyond apical part of vorsellar digiti and slightly more narrow than the broadest part of parameres. Apex of dorsal lamina with short median incision, sometimes forming two visible and separated apical lobes.

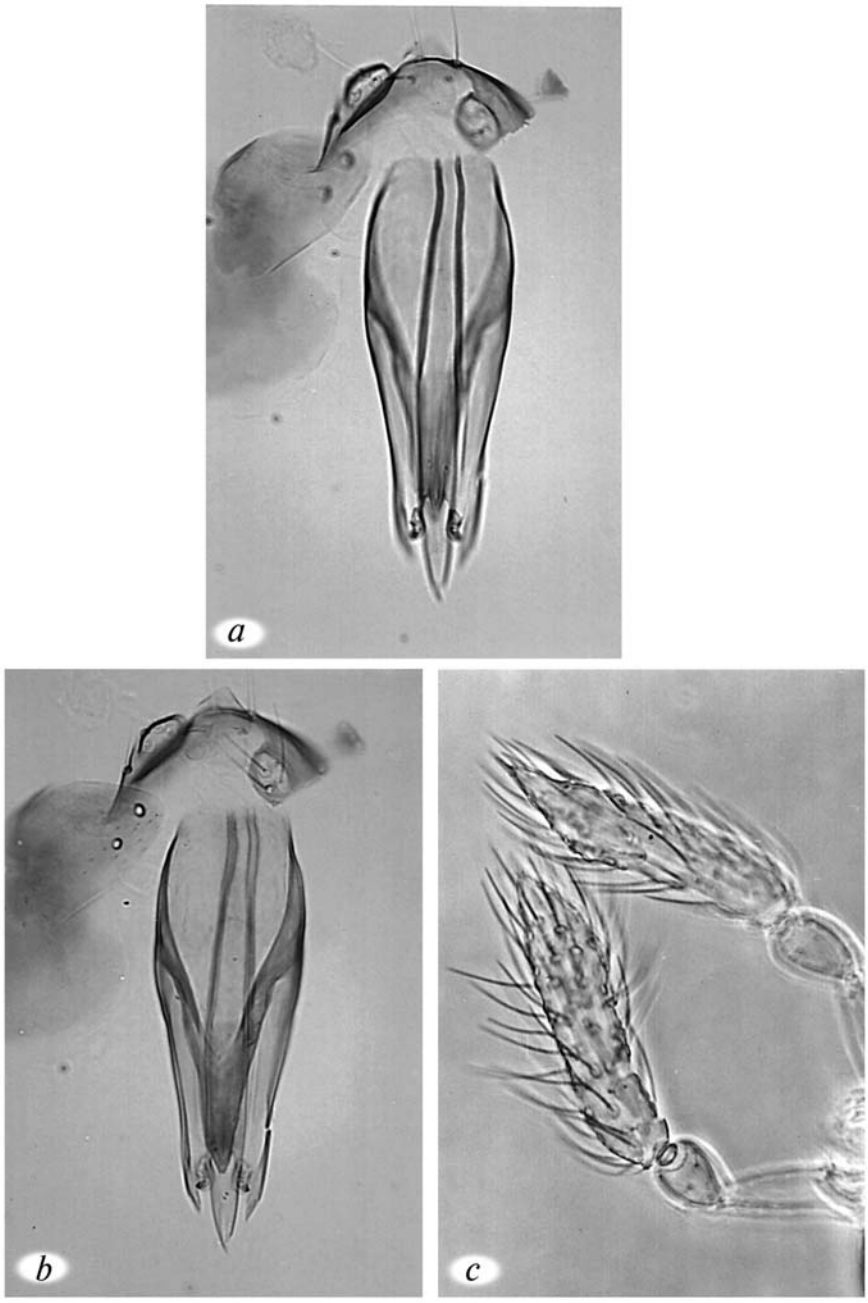

Fig. 2. *Trichogramma talitzkii: a–b* — male genitalia; *a* — ventral view of intervorcellar process; *b* — dorsal view on dorsal lamina;*c* — antenna.

Рис. 2. *Trichogramma talitzkii: a–b* — гениталии самца; *a* — вентральный вид на вентральный выступ фаллобазы; *b* — дорсальный вид на дорсальный выступ фаллобазы; *c* — усик.

Intervorsellar process sclerotized, short, very narrow, with horn-like shape and sharpen apex; ratio of apical distance of genital capsulae to length of intervorsellar process 5.66. Apex of parameres slightly curved inwards. Parameres extending to the apex of vorsellar digiti to the extent of twice the length of intervorsellar process.

Ratio of genital length to width 2.78; ratio of the apical distance of genital capsulae to genital length 0.19; length of dorsal aperture 0.61–0.63 times as long as length of phallobase; ratio of maximum width of genital capsule to maximum width of dorsal lamina 2.3–2.53.

Aedeagus length 1.06 times as long as maximum length of genital capsulae, apical part of aedeagus 0.48 times as long as length of aedeagus.

Hosts. Only *Macrothylacia rubi* (L.) (Lepidoptera: Lasiocampidae) was indicated as a native host in Slovakia. The species was reared in the laboratory on the eggs of *Mamestra brassicae* (L.) (Lep.: Noctuidae) and *Ephestia kuehniella* Zeller (Lep.: Pyralidae).

Distribution. Slovakia (Birova, Kazimirova, 1984), new for England.

Diagnosis. This species is close to *T. piceum* Djuritsch and *T. lingulatum* Pang et Chen but is distinguished by the parallel sides of dorsal lamina, flattened and straight apex of dorsal lamina with distinctive median incision, and by absence of basal lobes of dorsal lamina.

Trichogramma talitzkii Djuritsh, 1987 (fig. 2, *a–c*)

Material. ♂, England: London, Richmond Park, Surrey, 26.06.1984 (N. Stork), on slide N 838; ♂, England: Hants, Romsey, Awbridge, 08.1982 (C. Vardy), on slide N 1229.

Description. Male. Color of head and antennae yellow; thorax and abdomen dark brown, except bright yellow axillae, propodeum and base of abdomen. All legs yellow, except hind femora and tibiae which are dirty yellow-brownish.

Antenna with flagellum 4.5–4.8 times as long as maximum width, 1.81 times as long as length of scape; ratio of the length of the longest setae to the maximum width of flagellum 1.2. Number of flagellum setae 40–45.

Genital capsule linear and narrow, with elongate dorsal aperture. Dorsal lamina sharpened triangular shape, without basal lobes and with sharpened apical part. Apex of dorsal lamina not extending beyond apical part of vorsellar digiti and slightly extending beyond apex of intervorsellar process.

Ventral ridge distinct, highly sclerotized, extending interiorly to the middle part of apodemes. Intervorsellar process sclerotized, very short, with horn-like shape and sharpened apex; ratio of apical distance of genital capsulae to length of intervorsellar process 4.16–5.33. Apical part of genital capsule narrowed gradually, without curvature. Parameres extending to the apex of vorsellar digiti to the extent of 1.5–2.0 times the length of intervorsellar process.

Ratio of genital length to width 2.68–3.19; ratio of the apical distance of genital capsulae to genital length 0.13–0.16; length of dorsal aperture 0.58–0.61 times as long as length of phallobase; ratio of maximum width of genital capsule to maximum width of dorsal lamina 1.29–1.61. Aedeagus length 1.09–1.10 times as long as maximum length of genital capsulae, apical part of aedeagus 0.50 times as long as length of aedeagus.

Hosts. Only *Chrysopa flava* L. (Neuroptera, Chrysopidae) was indicated as a native host in Moldova. The species was reared in the laboratory on the eggs of *Sitotroga cerearella* (Olivier).

Distribution. Moldova (Дюрич, 1987), new for England.

Diagnosis. This species is close to *T. aurosum* Sug. et Sorok. but is distinguished by the narrow shape of phallobase, sharpened and narrow apical part of dorsal lamina, and by absence of basal lobes of dorsal lamina.

Trichogramma lacustre Sorokina, 1978 (fig. 3, *a–c*)

Material. ♂, England: Sussex, Richmond Park, 2.09.1984 (J. Noyes), on slide N 790; ♂, England: Surrey, Richmond Park, 14.08.1982 (J. Noyes), on slide N 1230; ♂, England: E. Sussex, Ashdown Forest, Wych Cross, 23.08.1984 (J. S. Noyes), on slide N 1238.

Description. Male. Color of head yellow, except brown genae and postgenae; thorax and abdomen dark brown, except bright yellow axillae, yellowish middle part of propodeum and basis of abdomen. All coxae, femora and 3rd tarsal segments brown, but all tibiae, apical parts of femora and 1st-2nd tarsal segments yellow.

Antenna with flagellum 3.53–4.38 times as long as maximum width, 1.82–1.9 times as long as length of scape; ratio of the length of the longest setae to the maximum width of flagellum 2.13–2.46. Number of flagellum setae 36–43.

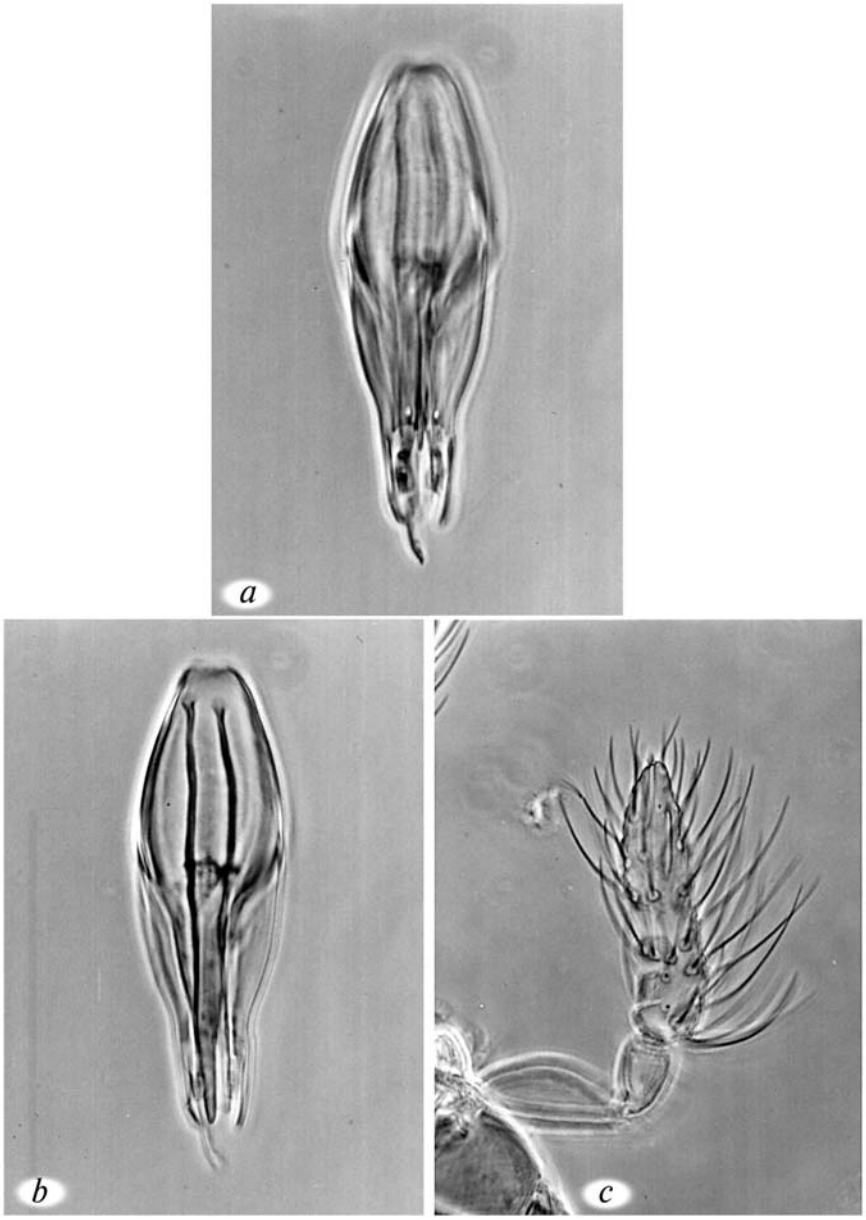

Fig. 3. *Trichogramma lacustre: a–b* — male genitalia; *a* — ventral view of intervorcellar process; *b* — dorsal view on dorsal lamina; *c* — antenna.

Рис. 3. *Trichogramma lacustre: a–b* — гениталии самца; *a* — вентральный вид на вентральный выступ фаллобазы; *b* — дорсальный вид на дорсальный выступ фаллобазы; *c* — усик.

Genital capsule narrow, elongated, with distinct curvature in the basal part of parameres. Dorsal lamina with short marked constriction at base and without basal lobes. Dorsal lamina very broad basally and abruptly narrowed from the middle part to the apex, apical half very narrow, with nearly parallel sides, finger-like shape and sharp apex. Apex of dorsal lamina not extending beyond apical part of vorsellar digiti and not extending beyond the apex of parameres.

Intervorsellar process sclerotized, very short, triangular, with short horn-like shape and sharpened apex; ratio of apical distance of genital capsulae to length of intervorsellar process 4.75–5.0. Parameres extending to the apex of vorsellar digiti at the distance 1.75–2.0 times as long as the length of intervorsellar process.

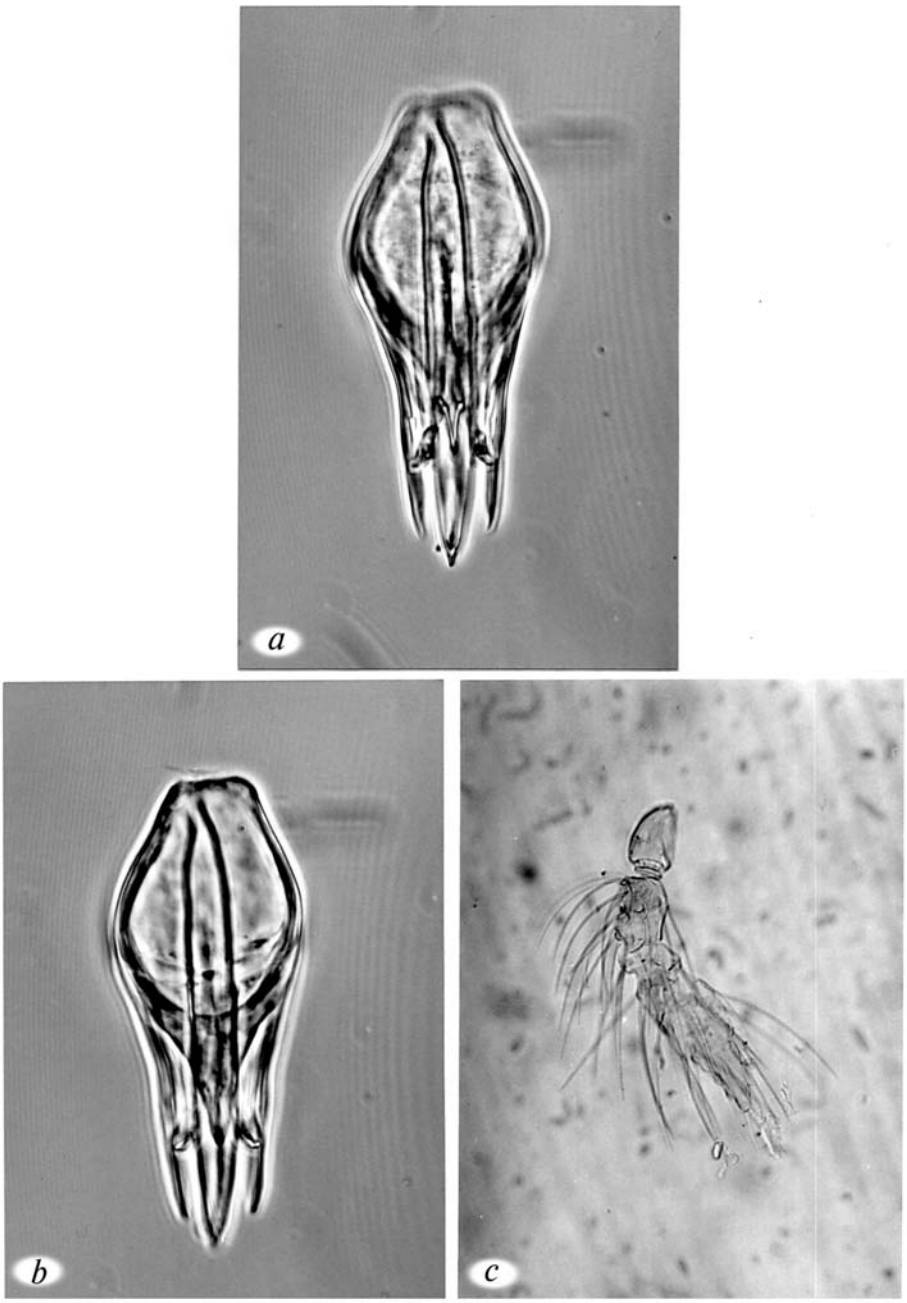

Fig. 4. *Trichogramma daumalae: a–b* — male genitalia; *a* — ventral view of intervorcellar process; *b* — dorsal view on dorsal lamina;*c* — antenna.

Рис. 4. *Trichogramma daumalae: a–b* — гениталии самца; *a* — вентральный вид на вентральный выступ фаллобазы; *b* — дорсальный вид на дорсальный выступ фаллобазы; *c* — усик.

Ratio of genital length to width 3.20–3.25; ratio of apical distance of genital capsulae to genital length 0.20; length of dorsal aperture 0.55–0.57 times as long as length of phallobase; ratio of maximum width of genital capsule to maximum width of dorsal lamina 1.82–1.93; ratio of maximum length to width of dorsal lamina 2.93. Aedeagus 1.02–1.03 times as long as maximum length of genital capsulae; apical part of aedeagus 0.46–0.51 times as long as length of aedeagus.

Hosts. The species was reared from the eggs of undetermined Noctuidae on *Typha* sp. and *Phragmites* sp. in Russia.

Distribution. Russia (Сорокина, 1978), new for England.

Diagnosis. This species is close to *T. raoi* Nagaraja but is distinguished by very narrow, finger-like shape of apical half part of dorsal lamina with parallel sides, extending beyond the apical part of parameres, and distinct curvature in basal part of parameres.

Trichogramma daumalae Dugast et Voegele, 1984 (fig. 4, *a–c*)

Material. 3 ♂, England: Surrey, Richmond Park, Fogging oak, 11.07.1984 (N. Stork), on slides N 837, 840, 849; ♂, England: Richmond Park, Fogging, 18.08.1988 (J. P. Clapp), on slide N 839.

Description. Male. Antenna with flagellum 4.81–6.08 times as long as maximum width, 1.66–1.87 times as long as length of scape; ratio of length of the longest setae to maximum width of flagellum 2.15–2.72. Number of flagellum setae 35–41.

Genital capsule wide, with wide dorsal aperture and wide triangular dorsal lamina. Dorsal lamina with well marked constriction at base and short basal lobes, situated very close to the sides of genital capsule. Dorsal lamina gradually narrowed to the apical part, with sharp apex. Ratio of maximum width to length of dorsal lamina 0.87–0.90. Apex of dorsal lamina not extending beyond apical part of vorsellar digiti, and slightly extending beyond the apex of intervorsellar process.

Ventral ridge distinct, highly sclerotized, extending interiorly to the middle part of dorsal aperture. Intervorsellar process sclerotized, elongate, very sharp apically, 1.8–2.1 times as long as broad; ratio of apical distance of genital capsulae to length of intervorsellar process 2.7. Parameres extending to the apex of vorsellar digiti on the distance 1.36–1.47 times as long as length of intervorsellar process.

Ratio of genital length to width 2.15–2.37; ratio of the apical distance of genital capsulae to genital length 0.14–0.15; dorsal aperture 0.52–0.59 times as long as length of phallobase; ratio of maximum width of genital capsule to maximum width of dorsal lamina 1.28–1.32. Aedeagus length 0.97–1.02 times as long as maximum length of genital capsulae; apical part of aedeagus 0.55–0.60 times as long as length of aedeagus.

Hosts. The species was reared from the eggs of *Lobesia botrana* Den. et Schiff. (Lep.: Tortricidae) in France and eggs of *Laspeyresia pomonella* L. (Lep.: Tortricidae) in Bulgaria.

Distribution. France (Dugast, Voegele, 1984), Bulgaria (Kostadinov, 1987), new for England.

Diagnosis. This species is close to *T. leucaniae* Pang et Chen but is distinguished by the dorsal lamina not extending beyond the apex of vorsellar digiti and by the apical part of aedeagus which is longer than apodemes.

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