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## A REVIEW OF THE GENUS *GYMNOPHORA* MACQUART (DIPTERA, PHORIDAE) FROM THE RUSSIAN FAR EAST

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Six species of the genus *Gymnophora* are recorded from Russian Far East, four of them (*G. fastigiorum* Schmitz, *G. gotoi* Brown, *G. integralis* Schmitz and *G. pararcuata* Brown) are new to Russia. *G. laciniata* **sp. n.** is described from Primorskii krai. The redescription of *G. verrucata* Schmitz and key to the species of the Russian Far East are given.

KEY WORDS: Diptera, Phoridae, *Gymnophora*, fauna, new species.

**М.В. Михайловская. Обзор рода *Gymnophora* Macquart (Diptera, Phoridae) Дальнего Востока России // Дальневосточный энтомолог. 1997. N 45. С. 1-8.**

С Дальнего Востока приводятся 6 видов рода *Gymnophora*, причем 4 из них (*G. fastigiorum* Schmitz, *G. gotoi* Brown, *G. integralis* Schmitz и *G. pararcuata* Brown) впервые отмечаются для России. Из Приморского края описан *G. laciniata* **sp. n.** Приводятся переописание *G. verrucata* Schmitz и определительные таблицы дальневосточных видов.

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## INTRODUCTION

In preparing identification key to the Far East species of Phoridae the most remarkable specimens were collected by water traps. Those traps were white, plastic, rectangular and small (80-90 cm<sup>2</sup>).

More than 50 species of *Gymnophora* are known in the world, mainly from Holarctic and Neotropical regions (Disney 1980, 1983; Brown 1987a, 1987b, 1989). Previously, only *G. verrucata* Schmitz, 1927 have been recorded from the Russian Far East. A new species is described below. Holotype and paratypes of new species are deposited in the collection of the Institute of Biology and Pedology, Vladivostok, Russia.

### GENUS *GYMNOPHORA* MACQUART, 1835

Type species - *Phora arcuata* Meigen, 1830, by monotypy.

REMARKS. Six species have been recognized as occurring in Russia.

#### KEY TO THE FAR EASTERN SPECIES OF *GYMNOPHORA*

1. Costa thickening not abrupt or gradually through most of length or thickened in apical half (Fig. 1) ..... 2
- Costa with an abrupt thickening embracing a clear spot (Fig. 2) ..... 4
2. Aedeagus reduced without prominent dorsal projection in frontal view. Lateral arm of aedeagus narrow. Lower arm of aedeagus ventrally with medial tooth on left side (Fig. 19); epandrium as in Fig. 3 ..... *G. fastigiorum*
- Aedeagus with dorsally projecting structures (Figs 8-11) ..... 3
3. Male: left side of epandrium with ventromedial process and greatly enlarged surstylar crest; left lobe of hypandrium with short, broad process. Female: abdomen with reduced tergites (III-small, patch sclerotized; IV-absent; V-thin step membrane; VI-rounded square); tergite VII and VIII as on Figs. 21, 25; segment VIII ventrally with two sclerotized lateral lobes with group of spinulae medially (Fig. 29) ..... *G. gotoi*
- Male: left side of epandrium with small, rounded median process and tiny small surstylar crest (Fig. 4). Left hypandrial lobe simple without process (Fig. 12). Aedeagus with dorsally projecting membrane structures: vertical, concave backward lobe and twisted around left horizontal lobe (Figs 8, 16, 18) ..... *G. laciniata* sp. n.
4. Left hypandrial lobe without process (Fig. 13). Left side of epandrium with small crest (Fig. 5). Inner left arm of aedeagus with six long teeth (Fig. 17) ..... *G. verrucata*
- Male terminalia with elongate hypandrial process: narrow or broad (Figs. 14, 15) ..... 5
5. Male: hypandrial process broad with parallel sided (Fig. 14); epandrium as in Fig. 6; basiphallus thin (Fig. 10). Female: all tergites of abdomen

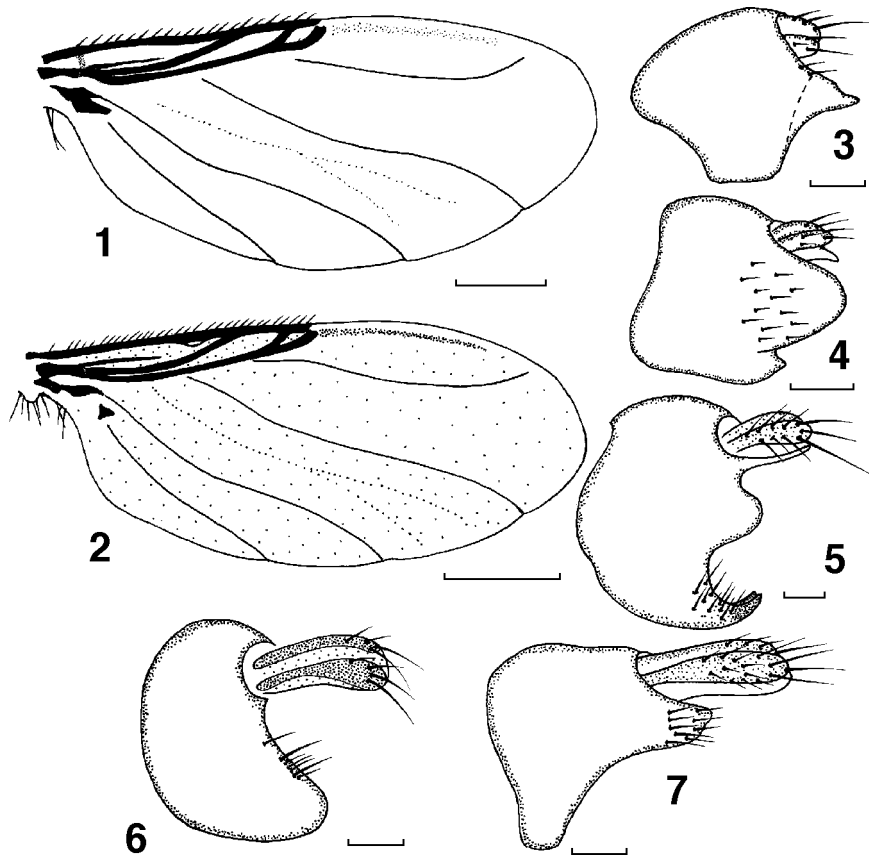
present; tergites VII and VIII as in Figs. 22, 26; segment VIII ventrally with triangular plates on left and right lobes (Fig. 30) ..... *G. integralis*  
 – Male: hypandrial process narrow, hooke-like (Fig. 15); epandrium as in Fig. 7; basiphallus thick (Fig. 11). Female: tergites IV-V lacks; tergite III - reduced; tergites VII and VIII as in Figs 23, 27; segment VIII ventrally with two lateral unequal sclerotized lobes (Fig. 31) ..... *G. pararcuata*

***Gymnophora verrucata* Schmitz, 1927**

Figs 2, 5, 9, 13, 17, 20, 24, 28

*Gymnophora verrucata* Schmitz, 1927: 96. Types - ♂, ♀, "Ussuri-Fluss, Spasskaja, Rep. des Fernen Ostens (Amurprovinz), 10.IX 1917."

*Gymnophora verrucata*: Brown, 1987: 298.



Figs. 1-7. Wing and male terminalia of *Gymnophora*. 1, 2) wing: 1) *G. laciniata* sp. n.; 2) *G. verrucata*; 3-7) epandrium, left lateral: 3) *G. fastigiorum*; 4) *G. laciniata* sp. n.; 5) *G. verrucata*; 6) *G. integralis*; 7) *G. pararcuata*. Scales: figs 1, 2 - 0.5 mm; figs 3-7 - 0.1 mm.

MATERIAL. 11 ♂, 17 ♀. Russia: Primorskii krai, 18 km SE Ussuryisk, Gornotayozhnoe, 25.VII 1996; 18-31.VII 1996 (M.Michailovskaya).

REMARKS. The Schmitz's collection in Germany has the holotype ♀, but ♂ is apparently lost. Schmitz's description was vague and general but mentions that costal thickening with a clear spot enclosed (Brown, 1987a). Therefore the redescription of this species is given below.

DESCRIPTION. Body length – 2.25-3.05 mm. Frons dark with one pair ocellar (O), one pair posterolaterals (PL), one pair mediolaterals (ML) bristles. Antennae black with pubescent arista. Palpus brown with 3 bristles on apex. The oblique ridge of the notopleurae dark. Scutellum with 4 equal bristles. Pleurae brown, stenopleurae and hypopleurae dark in lower half. Mesopleurae with short hairs in upper back ridge. Abdomen greyish-brown. Female without tergites IV and V; tergite III reduced; paired glands large and well visible; single row of short (0.06 mm) hairs ventrally on segment VI. Male with scattered short (0.05 mm) hairs. Wings length – 2.44 mm (mean). Mean costal index – 0.48. Mean costal sector ratios 6 : 2 : 1. Costa with swelling enclosing clear spot just before insertion of  $R_1$ . Base of vein 3 without hairs, only 3 hairs on axillary ridge.  $M_1$  originates before fork, curved slightly forward on apex (Fig. 2). Halter white-yellowish. Legs yellow. Male terminalia. Epandrium light-brown, asymmetrical, medially with narrow lobe below cerci. Left side of epandrium with broad backwards directed process and surstylus with hairs and two hooks on apex (Fig. 5). Right side of epandrium short with long hairs. Hypandrium symmetrical, each hypandrial lobe elongate (Fig. 13). Aedeagus heavily sclerotized (Fig. 9). Epiphallus pad and wrapped around long projecting process. Inner left arm with six long (0.07 mm) teeth (Fig. 17). Cercus – 0.15 mm. Female terminalia. Tergite VII wedge-shaped, with scattered hairs (Fig. 20). Sternite VII long, thin, sclerotized strip. Tergite VIII irregular square with several hairs (Fig. 24). Segment VIII ventrally with lateral lobe each with elongate expanded on apex and with long (up to 0.12 mm) hairs (Fig. 28).

DISTRIBUTION. Russia: Primorskii krai (Spassk, Gornotayozhnoe).

### ***Gymnophora fastigiorum* Schmitz, 1952**

Figs 3, 19

MATERIAL. 7 ♂, Russia: Primorskii krai, 18 km SE Ussuryisk, Gornotayozhnoe, 21-27.VI 1996; 5-8.VII 1996 (M.Michailovskaya).

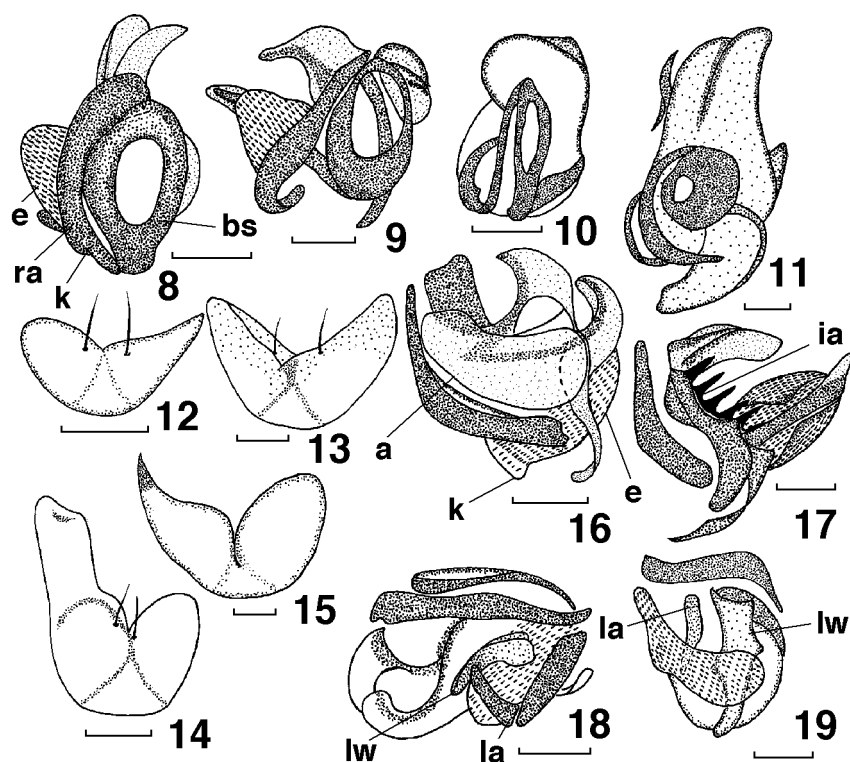
DISTRIBUTION. Russia: Primorskii krai (new record). Japan, North America.

### ***Gymnophora gotoi* Brown, 1989**

Figs 21, 25, 29

MATERIAL. 3 ♀, Russia: Primorskii krai, 18 km SE Ussuryisk, Gornotayozhnoe, 17-22.VII 1996; 28-31.VII 1996 (M.Michailovskaya).

DISTRIBUTION. Russia: Primorskii krai (new record). Japan.



Figs 8-19. Male terminalia of *Gymnophora*. 8-11) aedeagus, frontal: 8) *G. laciniata* sp. n.; 9) *G. verrucata*; 10) *G. integralis*; 11) *G. pararcuata*; 12-15) hypopygium, ventral: 12) *G. laciniata* sp. n.; 13) *G. verrucata*; 14) *G. integralis*; 15) *G. pararcuata*; 16-18) aedeagus, left lateral: 16) *G. laciniata* sp. n.; 17) *G. verrucata*; 18, 19) aedeagus, ventral: 18) *G. laciniata* sp. n.; 19) *G. fastigiorum*; **a** - anterior lobe; **bs** - basiphallus; **e** - epiphallus; **ia** - inner left arm; **k** - knob of right arm; **la** - lateral arm; **lw** - lower arm. Scale=0.1 mm.

REMARKS. Studied specimens differ from Japanese ones by costal index – 0.46; costal sector ratio: 5 : 1.5 : 1; tergite VII with oval anterior extension on intersegment VI-VII (Fig. 21).

***Gymnophora integralis* Schmitz, 1920**

Figs 6, 10, 14, 22, 26, 30

MATERIAL. 32 ♂, 15 ♀, Russia: Primorskii krai, 18 km SE Ussuryisk, Gornotayozhnoe, 30.IV-3.VI 1996 (M.Michailovskaya).

DISTRIBUTION. Russia: Primorskii krai (new record). Europe, Japan.

***Gymnophora pararcuata* Brown, 1989**

Figs 7, 11, 15, 23, 27, 31

MATERIAL. 3 ♂, 1 ♀, Russia: Primorskii krai, 18 km SE Ussuryisk, Gornotayozhnoe, 17-24.VII 1996 (M.Michailovskaya).

DISTRIBUTION. Russia: Primorskii krai (new record). Japan.

REMARKS. The female from Russia differs from Japanese one in the shape of tergite VIII: elongate with extension posterior and ventrally with unequal sclerotized lateral lobes (Fig. 27, 31).

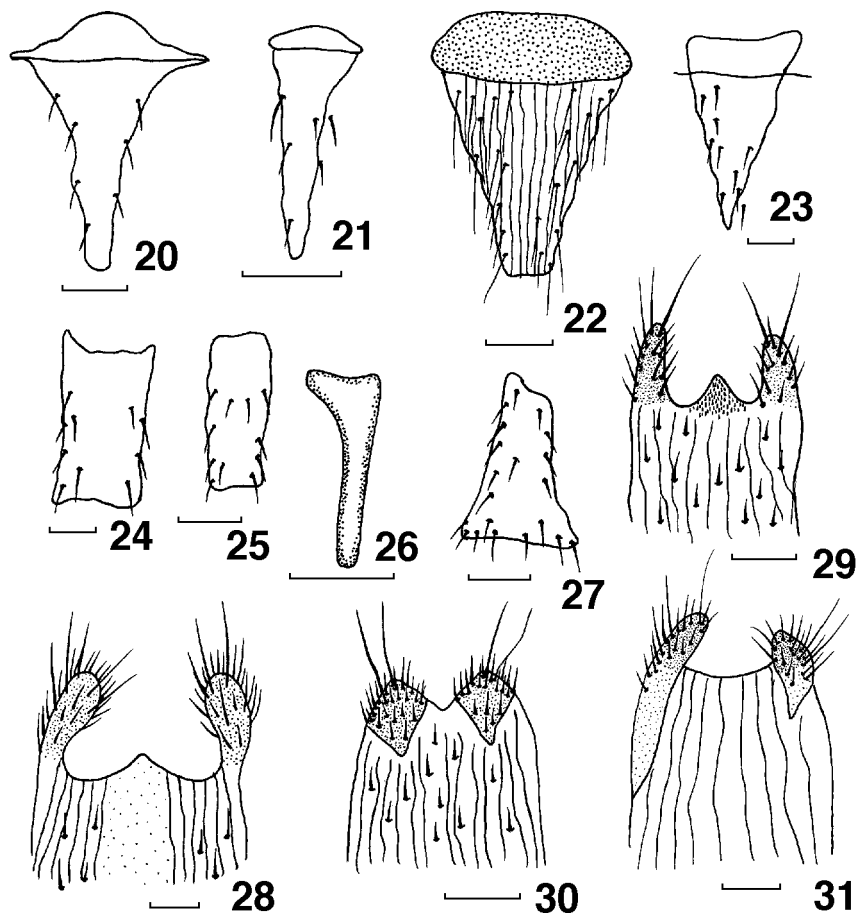
***Gymnophora laciniata* Michailovskaya sp. n.**

Figs 1, 4, 8, 12, 16, 18

MATERIAL. Holotype - ♂, Russia: Primorskii krai, 18 km SE Ussuryisk, Gornotayozhnoe, 25.VII 1996, water trap (M.Michailovskaya). Paratypes - 5 ♂ from the same locality, 12-16.VII, 24-26.VII 1996 (M.Michailovskaya).

DESCRIPTION. MALE. Body black, length 2.54-3.58mm. Frons black with reduced setation. There are one pair ocellar (O), one pair posterolaterals (PL) and one pair mediolaterals (ML) bristles. ML - one-half of length of PL. Antennae black with pubescent arista. Palpus brownish with 3 bristles near tip and shorter hairs along length. The oblique ridge of the notopleuron dark. Scutellum with four bristles, but anterior pair only half as long as posterior pair and weaker. Pleurae dark. Mesopleurae with short fine hairs in upper half. Legs yellow. Wings - length 2.3-3.5 mm (mean 2.9 mm) Mean costal index - 0.46 (ranges 0.41-0.50). Mean costal sector ratios 4.7 : 1.2 : 1 (ranges 3.8-7.0 : 1.0-1.4 : 1). Costa slightly thickened through most of length without spot. Base of vein 3 without hair. only 2 hairs on axillary ridge. Membrane dark-brownish. Veins brown.  $M_1$  originates after fork (Fig. 1). Halter with almost whitish knob and yellowish stem. Abdomen dark brown. All six tergites well developed. Venter greyish, with few short (0.05 mm) hairs in one row on segment VI only. Epandrium palebrownish, asymmetrical, medially with narrow, bare lobe below cerci. Left side of epandrium with small, rounded, posterioy directed process with scattered hairs. Surstylus posteroventral (Fig. 4). Right side of epandrium with narrow surstylus with several associated hairs. Hypandrium without process on left lobe, but right hypandrial lobe elongate (Fig. 12). Aedeagus with dorsally projecting structures. Right arm (*ra*) dark sclerotized with small knob (*k*) near epiphallus pad of epiphallus (*e*) elongate (Fig. 8). Extension of right aedeagal arm consists of vertical, concave backward membrane lobe and twisted around left horizontal lobe, which connect with narrow arm (possible left sclerit). Anterior lobe (*a*) weakly sclerotized, bare and with one small dorsal peak (Fig. 16). Lateral arm (*la*) heavily sclerotized, sickleshaped. Lower arm (*lw*) short with broad, slightly sclerotized base (Fig. 18). Cercus short - 0.10 mm. Female unknown.

DISCUSSION. This species resembles members of the *G. cymatoneura*-group, one of which - *G. priora* Brown is found in Japan: terminalia asymmet-



Figs 20-31. Females abdominal tergites and terminalia of *Gymnophora*. 20-23) female tergites VII: 20) *G. verrucata*; 21) *G. gotoi*; 22) *G. integralis*; 23) *G. pararcuata*; 24-26) females tergites VIII: 24) *G. verrucata*; 25) *G. gotoi*; 26) *G. integralis*; 27) *G. pararcuata*; 28-31) apex of segment VIII, ventral: 28) *G. verrucata*; 29) *G. gotoi*; 30) *G. integralis*; 31) *G. pararcuata*. Scale=0.1 mm.

rical and narrow lobe below cerci, differing by the simple left hypandrial lobe without process and remarkable shape of projection of the right arm of aedeagus.

ETYMOLOGY. From the latin "lacinia" referring to the dissected dorsal projections.

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