

Notes on two species of *Sabacon* Simon, 1879 from the mountains of South Siberia (Arachnida: Opiliones: Sabaconidae)

Заметки о двух видах *Sabacon* Simon, 1879 из гор Южной Сибири (Arachnida: Opiliones: Sabaconidae)

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KEY WORDS: Opiliones, *Sabacon*, Siberian fauna.

КЛЮЧЕВЫЕ СЛОВА: Opiliones, *Sabacon*, фауна Сибири.

ABSTRACT: The two harvestman species, *Sabacon crassipalpe* (L. Koch, 1879) and *S. sergeidedicatum* Martens, 1989, are redescribed based on newly collected material. Females of *S. sergeidedicatum* are described for the first time. Diagnostic figures and distributional maps are provided for both species.

РЕЗЮМЕ: Два вида сенокосцев, *Sabacon crassipalpe* (L. Koch, 1879) и *S. sergeidedicatum* Martens, 1989, переописаны по вновь собранным экземплярам. Впервые описаны самки *S. sergeidedicatum*. Для всех видов даны диагностические рисунки и карты распространения.

Introduction

Sabacon crassipalpe (C.L. Koch, 1879) and *S. sergeidedicatum* Martens, 1989 are the poorly known Siberian species of harvestman, which were not included in our first paper [Tchemeris *et al.* 1999]. Faunistic and taxonomic data on both species can now be found in a limited number of works [Gritsenko, 1979, 1980; Staręga, 1978; Martens, 1989]. Moreover, *S. sergeidedicatum* has so far been known from males only [Martens, 1989]. The present study adds to the knowledge on both Siberian *Sabacon* species.

The specimens examined for this study are deposited in the following museum collections: ISEA — Institute for Systematics and Ecology of Animals, Novosibirsk, Russia (Dr. D. V. Logunov); TSU — Tomsk State University, Tomsk, Russia (Dr. V.N. Romanenko); ZMMU — Zoological Museum of the Moscow State University, Moscow, Russia (Dr. K. G. Mikhailov). Abbreviations used in the text and

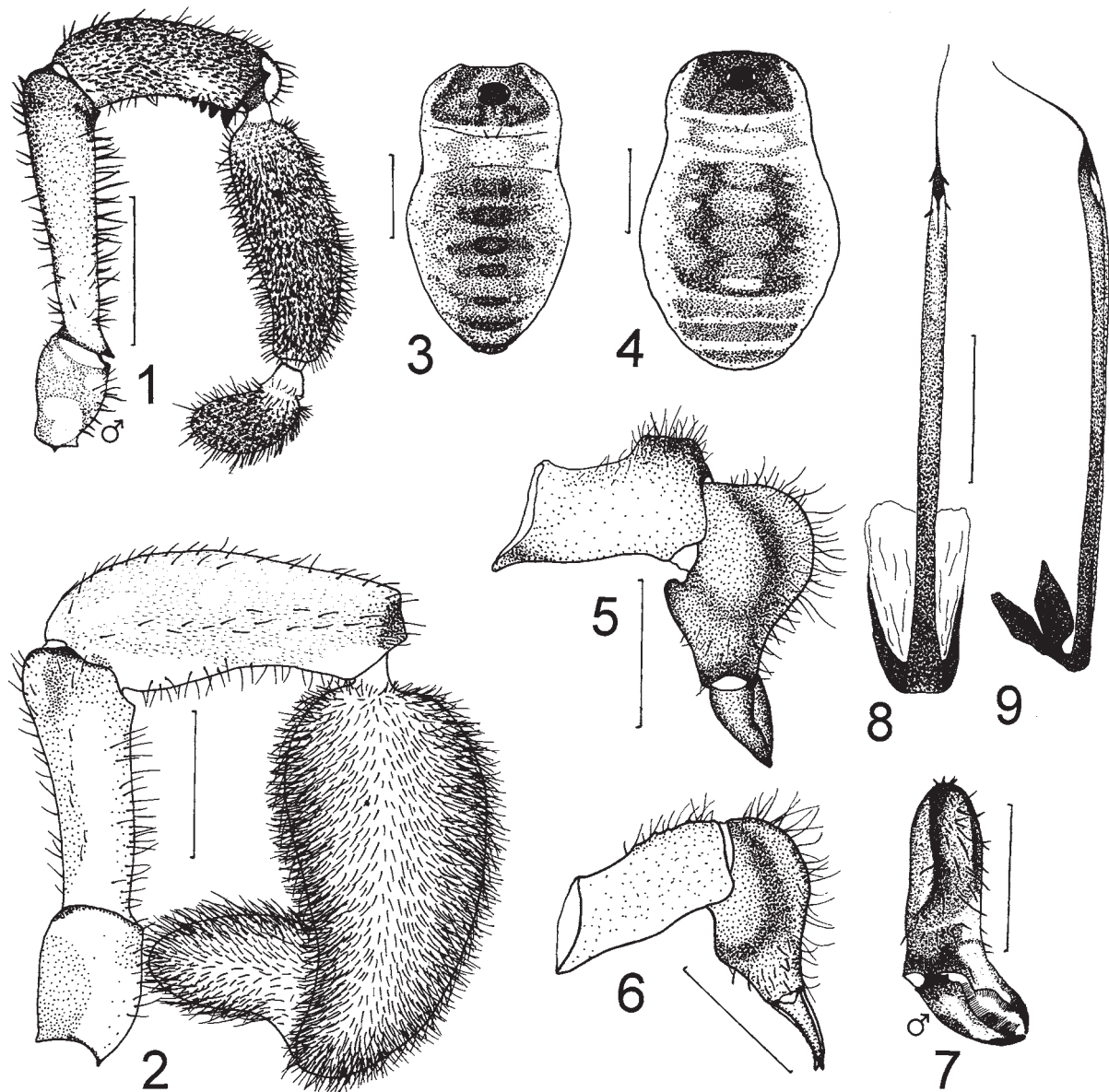
table: Fm — femur, Pt — patella, Tb — tibia, Mt — metatarsus, Tr — tarsus, s.l. — same locality. “Clypeus” is the space between the ocularium and front margin of carapace. Names of some collectors are abbreviated as follows: D.L. — Dr. D. V. Logunov, Y.M. — Dr. Yu. M. Marusik, V.R. — Dr. V. N. Romanenko, R.D. — Dr. R. Yu. Dudko, A.T. — Mr. A. N. Tchemeris. All measurements are in millimeters.

Family Sabaconidae

Sabacon crassipalpe (L. Koch, 1879) Figs 1–12, 15, 18, 21, Map. 1

Sabacon crassipalpe: Roewer, 1923 (*e.p.*): 696; Staręga, 1978: 206; Gritsenko 1979: 32, fig. 12; 1980: 563; Martens, 1989: 370, figs. 1–6, 12, 14–15, 17–18.

MATERIAL. KEMEROVO AREA: 3 ♂♂ (TSU), Izhmorsk Distr., Lomachevka Vil, 3–9.07.1995, V.R.; 1 ♂ (TSU), s.l., 29.06.1997, V.R.; 1 ♂, 1 ♀ (ZMMU), Kuznetskii Alatau Reserve, ca. 16 km SW of Belogorsk, Kiya River, mouth of Rezymyanka stream, 14–17.07.1994, S. Golovatch & A. Ryvkin. — KHA-KASSIYA: 1 ♂ (ISEA), Kuznetskii Alatau Mt, bank of Tom' River, ca. 5 km downstream of Balyksu River mouth, 25.05.1997, R.D. — TUVA: 1 ♂ (ISEA), Tannu-Ola Mt. [50°38'N, 95°18'E], 1300 m a.s.l., 6–19.06.1995, S. Koponen; 2 ♀♀ (ISEA), Erzin Distr, the middle reaches of Kargy River [50°37'N, 97°05'E], 1300 m a.s.l., 2–4.07.1996, Y.M.; 2 ♂♂, 1 ♀ (ISEA), s.l. [50°31'N, 97°03'E], 1400 m a.s.l., 28–30.06.1996, Y.M. — KRASNOYARSK PROVINCE: 1 ♂ (ZMMU), Turukhansk Distr, left bank of Yenisei River, the upper reaches of Lebedyanka River, 19.08.1986, V. Sheftel; 1 ♂, 3 ♀♀ (ISEA), Ermakovskoe Distr., West Sayany Mts, Oiskii Mt. Range, Oiskii Pass [52°48'N, 93°17'E], 1260 m a.s.l., 3.06.1995, Y.M.; 1 ♂, 4 ♀♀ (ISEA), s.l., 8–10 km S Oiskoe Lake, 1500–1700 m a.s.l., 27–28.06.1990, D.L.; 1 ♀ (ISEA), s.l., 8.07.1993, D.L.; 1 ♂, 4 ♀♀ (ZMMU), Stolby Reserve, summer 1980, K. Yu. Eskov. — IRKUTSK AREA: 3 ♀♀ (ZMMU), Baikal Lake, near Maritui Vil, 10.07.1988, A. V. Tanasevich.



Figs 1–9. *Sabacon crassipalpe* (L. Koch, 1879): 1 — male palp, lateral view; 2 — female palp, lateral view; 3 — male body, dorsal view; 4 — female body, dorsal view; 5 — male chelicerae, lateral view; 6 — female chelicerae, lateral view; 7 — distal segment of male chelicerae, frontal view; 8 — penis, dorsal view; 9 — penis, lateral view. Scale: 0.5 mm (1–2, 5–9) and 1 mm (3–4).

Рис. 1–9. *Sabacon crassipalpe* (L. Koch, 1879): 1 — палепа самца, латерально; 2 — палепа самки, латерально; 3 — тело самца, дорзально; 4 — тело самки, дорзально; хелицера самца, латерально; 5 — хелицера самца, латерально; 6 — хелицера самки, латерально; 7 — дистальный сегмент хелицеры самца, фронтально; 8 — пенис, дорзально; 9 — пенис, латерально. Масштаб: 0,5 мм (1–2, 5–9) и 1 мм (3–4).

DISTRIBUTION. Central and Southern Siberia (Map 1).

HABITAT. This species can be collected in the mountain moss-stony tundra, the litter (moss and leaves) of *Abies* forest, the *Larix* and mixed (*Betula-Abies-Pinus*, *Betula-Populus-Pinus*, *Larix-Abies*) forests.

DIAGNOSIS. *Sabacon crassipalpe* and *S. sergeiedicatum* are closely related species, with main diagnostic characters between them being given in the table 1.

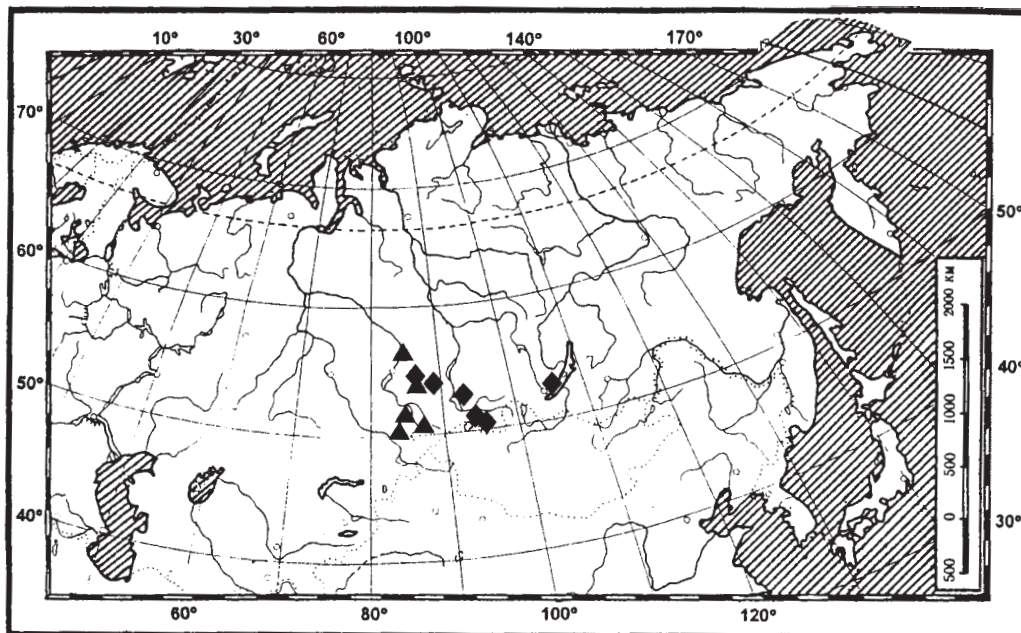
DESCRIPTION. MALE (2). Measurements. Body: length 2.6–2.9; width 1.52–1.60. Cephalothorax length 0.7–0.9. Eye tubercle width 0.15–0.2. “Clypeal” length

0.08–0.10. Chelicera: basal segment 0.62–0.64; distal segment length 0.68–0.71; length of forceps 0.36–0.37. Penis: length 2.4–2.55; width at base 0.20–0.25. Length of palp and legs:

	Fm	Pt	Tb	Mt	Tr	Total
Palp	0.8–0.9	0.7–0.9	0.8–0.9	—	0.3–0.4	2.7–3.1
Legs						
I	1.0–1.4	0.4–0.7	0.9–1.3	1.8–1.9	1.5–2.1	5.6–7.4
II	1.9–2.1	0.7–0.8	1.8–1.9	2.4–2.7	3.1–3.6	9.9–11.1
III	1.4–1.5	0.5–0.6	1.3–2.1	1.8–2.1	2.0–2.3	7.0–7.7
IV	1.7–1.9	0.7–0.7	1.4–1.5	2.3–2.9	2.6–3.2	8.7–10.2

Table 1. Main diagnostic characters between *Sabacon crassipalpe* and *S. sergeiededicatum*.
Таблица 1. Основные диагностические признаки между *Sabacon crassipalpe* и *S. sergeiededicatum*.

Character	<i>Sabacon crassipalpe</i>	<i>Sabacon sergeiededicatum</i>
Cheliceral glands	Short, occupying 1/3 of the basal segment length (Fig. 18)	Long, occupying 2/3 of the basal segment length (Figs 19–20)
Distal segment of chelicera	Large and distally swollen, with an outgrowth (Figs 5, 18); its back side with a median apophysis	Small and not swollen, lacking an outgrowth (Figs 19–20, 26); its back side without a median apophysis
Palpal patella	With 5–6 black tubercles (Fig. 15)	With 3–4 black tubercles (Figs 16–17)
Palpal coxa	In both sexes, without a ventral knob (Fig. 21)	In both sexes, with a ventral knob (arrowed in Figs 22, 23)
Penis	Corpus with numerous apical spines and some microdenticles (Figs 10–12) and 4 strong spicules	Corpus without apical spines and microdenticles (Figs 13–14), only 4 strong spicules



Map 1. Siberian localities of *Sabacon* spp: rombs — *Sabacon crassipalpe* (L. Koch, 1879); triangles — *S. sergeiededicatum* Martens, 1989. One dot represent more than one close locality.

Карта 1. Сибирские локалитеты *Sabacon* spp: ромбы — *Sabacon crassipalpe* (L. Koch, 1879); треугольники — *S. sergeiededicatum* Martens, 1989. Каждая точка может представлять больше чем один близкий локалитет.

Carapace without arms. Ocularium small, sparsely covered with setae. Glands small, visible from above. Metapeltidium in center with two spines (Fig. 3). Last abdominal tergites with a transverse row of setae. Venter furnished with many stout hairs.

Chelicerae (Figs 5, 7, 18). Basal segment dorsally with cheliceral gland, occupying 1/3 of its length. Cheliceral gland low, densely covered with setae and hairs. Distal segment large, distally with a dorsal outgrowth and ventrally with a median apophysis.

Palps slightly longer than body (Fig. 1). Patella distally with 5–6 ventral black tubercles (Fig. 15), first tubercles are most prominent. Tarsus small, without a tarsal claw.

Legs cylindrical in cross-section, with longitudinal rows of setae.

Penis (Figs 8–9, 10–12). Corpus thin, with a wide base; its apical part with 4 strong spicules, some microdenticles and numerous setae.

FEMALE (2). Measurements. Body: length 3.2–4.2; width 1.8–2.4. Cephalothorax length 1.0–1.25. Eye tubercle width 0.2–0.25. “Clypeal” length 0.1–0.15. Chelicera: basal segment length 0.66–0.69; distal segment length 0.63–0.64; length of forceps 0.27–0.31. Length of palp and legs:

	Fm	Pt	Tb	Mt	Tr	Total
Palp	0.6–0.7	0.8–0.9	1.0–1.2	–	0.4–0.5	2.8–3.3
Legs						
I	1.3–1.2	0.4–0.6	1.3–1.4	1.2–1.7	1.5–1.8	5.7–7.5
II	1.6–1.7	0.7–0.6	1.4–1.8	2.2–2.4	2.4–3.1	8.3–9.6
III	1.2–1.0	0.6–0.7	1.1–1.25	1.5–2.1	1.8–2.1	6.2–7.15
IV	1.8–2.0	0.08–0.8	1.2–1.4	2.7–2.4	2.2–2.9	8.7–9.6



Figs 10–14. 10–12 — *Sabacon crassipalpe* (L. Koch, 1879), 13–14 — *Sabacon sergeiededicatum* Martens, 1989: 10, 12 — penis tip, lateral view; 12 — penis, dorsal view; 13–14 — penis tip, dorsal view.

Рис. 10–14. 10–12 — *Sabacon crassipalpe* (L. Koch, 1879), 13–14 — *Sabacon sergeiededicatum* Martens, 1989: 10, 12 — кончик пениса, латерально; 11 — пенис, дорзально; 13–14 — кончик пениса, дорзально.

Females are similar in general appearance to males (Fig. 4), body larger and differ as follows: basal segment of chelicera dorsally without cheliceral gland (Fig. 6); distal segment of chelicera without disto-dorsal outgrowth and ventro-mesal apophysis; palpal patella and tibia swollen; and palpal patella without black tubercles (Fig. 2).

COLORATION. Males darker than females. Dorsum ochre-brown, with light ochre lateral patches, light ochre-white bands between meso- and metapeltidium, and a pair of prominent spines in the center of light rounded spot. Abdomen ochre, with light median and lateral patches. Ocularium dark brown. Venter ochre.

Sabacon sergeiededicatum Martens, 1989

Figs 13–14, 16–17, 19–20, 22–31, Map 1.

Sabacon sergeiededicatum: Martens, 1989: 372, figs. 7–11, 13, 16.

MATERIAL. TOMSK AREA: 9♂♂, 7♀♀ (TSU), Tomsk Distr., near Anikino Vil., 20–30.06.2000, A.T.; 5♂♂, 1♀ (ISEA), s.l., 25.06.1994, S. Yu. Rakov; 1♂ (ISEA), s.l., 10.05.1996, S. Yu. Rakov. — KEMEROVO AREA: 2♂♂, 2♀♀ (ISEA), near Mezhdurechensk, right bank of Ulsa River (ca. 3 km upper of the mouth), 23.09.1997, R.D. & I. I. Lubechanskii. — ALTAI PROVINCE: 1♂ (ZMMU; the holotype of *S. sergeiededicatum*), Teletskoe Lake, near Artybash Vil., 7–13.07.1982, S. I. Golovatch; 1♀ (ISEA), Kholzun Mt. Range, the upper reaches of Bannaya River, 2000–2500 m a.s.l., R.D. & A. Yu. Dudko; 1♂ (ISEA), West Altai, Tigiretskii Mt. Range, the upper reaches of Malyy Tigirek River, ca. 10 km S of Tigirek Vil., 1000–1400 m a.s.l., 19–21.06.2000, R.D. & A.T.; 3♂♂ (ISEA), West Altai, Ivanovskii Mt. Range, ca. 10 km S of Leninogorsk, 1700 m a.s.l., 30–31.05.1996, R.D.; 1♀ (ISEA), s.l., ca. 15 km NW of Leninogorsk, Belaya Uba River Valley, near Poperechnoe Vil., 9.06.1996, R.D.; 1♀ (ISEA), s.l., the upper reaches of Gromotukha River, 1400–1800 m a.s.l., 3–5.06.1996, R.D.; 1♀ (ISEA), ca. 8 km S of Ust'-Kan, the upper reaches of Aksas River, 1900–2000 m a.s.l., 8–9.07.1999, R.D. & A. Yu. Dudko; 1♂ (ISEA), North-West Altai, Charysh Distr., Bashchelakskii Mt. Range, ca. 30 km NWW of Sentelek Vil., Zagrikha Mt. [51°15'N, 84°11'E], 1700 m a.s.l., 28.06.2000, G. N.

Azarkina. — KHAKASSIYA: 1♂ (ISEA), Kuznetskii Alatau Mt. Range, ca. 20 km NE of Balyksu Vil., right tributary of Kansas River, 1000 m a.s.l., 22–23.05.1997, R.D.; 1♀ (ISEA), s.l., Terensug River Valley, 7–20 km N of Balyksu Vil., 24.05.1997, R.D.

DIAGNOSIS. *Sabacon crassipalpe* and *S. sergeiededicatum* are closely related species, with main diagnostic characters between them being given in the table 1.

DISTRIBUTION. The mountains of South Siberia (Map 1).

DESCRIPTION. MALE (2). Measurements. Body: length 2.6–2.8; width 1.60–1.68. Cephalothorax length 0.7–0.8. Eye tubercle width 0.15–0.20. “Clypeal” length 0.04–0.06. Chelicera: basal segment length 0.67–0.70; distal segment length 0.53–0.55; length of forceps 0.31–0.34. Penis: length 2.3–2.4; width of base 0.20–0.22. Length of palp and legs:

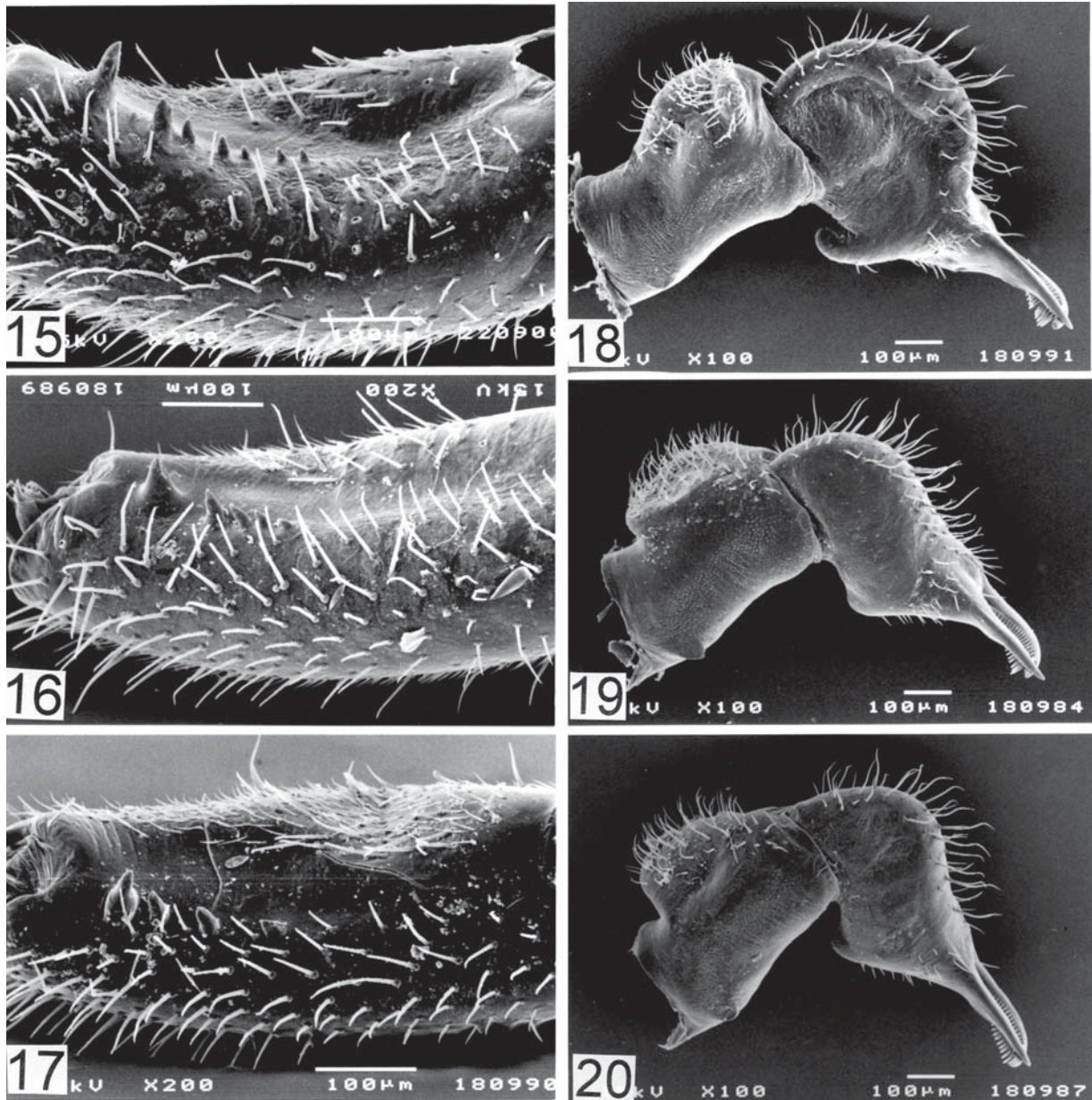
	Fm	Pt	Tb	Mt	Tr	Total
Palp	0.6–0.65	0.75–0.82	0.77–0.8	–	0.4–0.43	2.52–2.7
Legs						

I 1.1–1.2 0.58–0.62 1.2–1.3 1.45–1.5 1.6–1.7 5.93–6.32
 II 1.75–1.8 0.69–0.82 1.65–1.68 1.7–1.8 2.0–2.1 7.79–8.2
 III 1.3–1.4 0.57–0.6 1.2–1.3 1.56–1.59 1.6–1.7 6.23–6.59
 IV 1.83–1.85 0.63–0.67 1.6–1.65 2.5–3.1 3.0–3.6 9.56–10.87
 Carapace without arms. Ocularium small, sparsely covered with setae. Glands small, visible from above. Metapeltidium with two central spines (Fig. 28). Last abdominal tergite with a transverse row of setae. Venter furnished with many stout hairs.
 Chelicerae (Figs 19–20, 26). Basal segment dorsally with the long cheliceral gland, occupying 2/3 of its lengths. Cheliceral gland with numerous setae and hairs. Distal segment small, lacking a disto-dorsal outgrowth and ventro-mesal apophysis (Figs 22–23).

Palps shorter than body (Fig. 24). Palpal coxa with well visible tubercle. Palpal patella distally with 3 ventral black tubercles (Figs 16–17), first of which being most prominent. Tarsus small, without a tarsal claw.

Legs cylindrical in cross-section, with longitudinal rows of setae.

Penis (Figs 13–14, 30–31). Corpus thin, with a wide base. Apical part of corpus with 4 strong spicules.



Figs 15–20. 15–17 — male palpal patellae of *Sabacon crassipalpe* (L. Koch, 1879) (15) and *S. sergeidedicatum* Martens, 1989 (16–17); 18–20 — male chelicerae of *Sabacon crassipalpe* (L. Koch, 1879) (18) and *S. sergeidedicatum* Martens, 1989 (19–20).

Рис. 15–20. 15–17 — чашечки пальпы самца *Sabacon crassipalpe* (L. Koch, 1879) (15) и *S. sergeidedicatum* Martens, 1989 (16–17); 18–20 — хелицера пальпы самца *Sabacon crassipalpe* (L. Koch, 1879) (18) и *S. sergeidedicatum* Martens, 1989 (19–20).

FEMALE (2). Measurements. Body: length 3.6–3.8; width 1.9–2.4. Cephalothorax length 0.8–0.9. Eye tubercle width 0.28–0.29. “Clypeal” length 0.1–0.12. Chelicera: basal segment length 0.99–1.05; distal segment length 0.68–0.69; length of forceps 0.36–0.37. Length of palp and legs:

	Fm	Pt	Tb	Mt	Tr	Total
Palp	0.92–0.97	1.0–1.04	0.9–1.12	–	0.52–0.58	3.4–8.87
Legs						
I	1.4–1.6	0.63–0.68	1.43–1.45	1.87–1.98	1.8–1.9	7.3–7.61
II	2.2–2.3	0.7–0.72	2.0–2.1	2.5–2.6	2.8–2.9	10.2–10.62
III	1.6–1.65	0.58–0.65	1.43–1.45	2.0–2.12	2.05–2.2	7.66–8.07
IV	2.18–2.2	0.8–0.83	1.8–1.9	2.05–2.2	3.2–3.4	10.03–10.53

Female is similar by general appearance to male (Fig. 29), but larger and differ as follows: chelicerae longer; their basal segment dorsally without cheliceral gland; palps swollen; palpal patella without black tubercles (Fig. 25).

COLORATION. Male darker than females. Carapace black-brown, with ochre lateral patches, light ochre-yellow bands between meso- and metapeltidium, and a pair of prominent spines in the center of a light ochre-yellow spot. The abdomen dark brown, with a median ochre patch and ochre-yellow lateral patches. Ocularium dark brown. Venter ochre-brown.

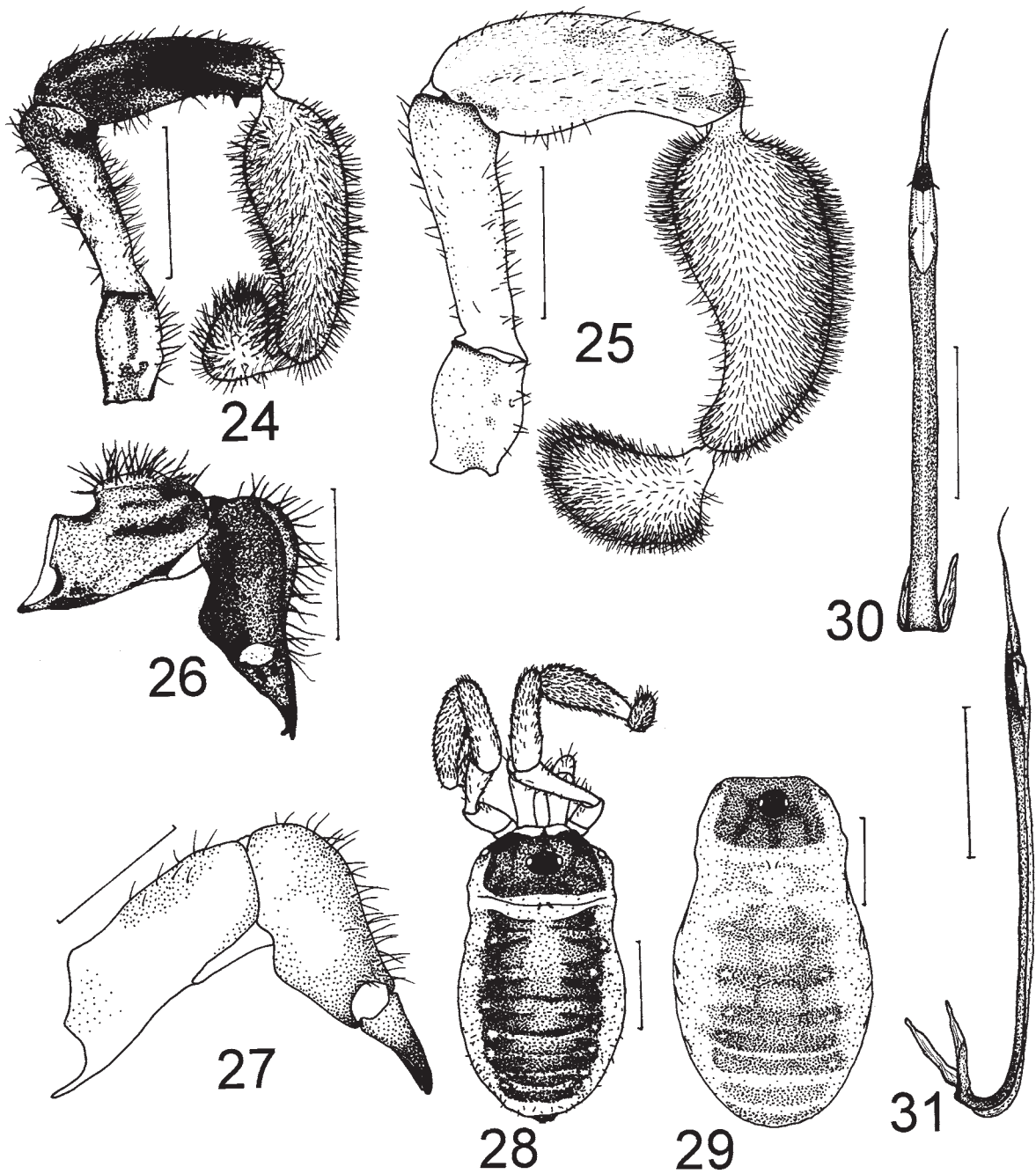


Figs 21–23. Male palpal coxae of *Sabacon crassipalpe* (L. Koch, 1879) (21) and *S. sergeidedicatum* Martens, 1989 (22–23).
Рис. 21–23. Коксы пальпы самца *Sabacon crassipalpe* (L. Koch, 1879) (21) и *S. sergeidedicatum* Martens, 1989 (22–23).

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Figs 24–31. *Sabacon sergeiededicatum* Martens, 1989: 24 — male palp, lateral view; 25 — female palp, lateral view; 26 — male chelicerae, lateral view; 27 — female chelicerae, lateral view; 28 — male body, dorsal view; 29 — female body, dorsal view; 30 — penis, dorsal view; 31 — penis, lateral view. Scale: 0.5 mm (24–27, 30–31) and 1 mm (28–29).

Рис. 24–31. *Sabacon sergeiededicatum* Martens, 1989: 24 — палпа самца, латерально; 25 — палпа самки, латерально; 26 — хелицера самца, латерально; 27 — хелицера самки, латерально; 28 — тело самца, дорзально; 29 — тело самки, дорзально; 30 — пенис, дорзально; 31 — пенис, латерально. Масштаб: 0,5 мм (24–27, 30–31) и 1 мм (28–29).