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## A REDESCRIPTION OF *PONTOPPIDANIA PONTICA* (ACARI, ASTIGMATINA, ACARIDAE) INHABITING ALGAL DEBRIS ON SEASHORES OF BLACK AND AZOV SEAS OF CRIMEA (UKRAINE)

S. I. Maslov

Nikita Botanical Gardens — National Scientific Center,  
Yalta, Crimea, 98648 Ukraine  
E-mail: serdok78@mail.ru

**A Redescription of *Pontoppidania pontica* (Acari, Astigmatina, Acaridae) Inhabiting Algal Debris on Seashores of Black and Azov Seas of Crimea (Ukraine).** Maslov, S. I. — A male and female of a little-known species of mites *Pontoppidania pontica* (Volgin et Shchur, 1974) is redescribed based on material from algal debris of seashores of marine nature reserves of Crimea. A key to species of the genus *Pontoppidania* Oudemans, 1923 of the world is provided.

**Key words:** Astigmata, *Pontoppidania*, redescription, seashore, Crimea, Ukraine.

**Переописание *Pontoppidania pontica* (Acari, Astigmatina, Acaridae), обитающего в водорослевых выбросах на побережье Чёрного и Азовского морей Крыма (Украина).** Маслов С. И. — На основании изучения материала из водорослевых выбросов на морском побережье природных заповедников Крыма переписаны самка и самец малоизвестного вида клещей *Pontoppidania pontica* (Volgin et Shchur, 1974). Приведена определительная таблица видов рода *Pontoppidania* мировой фауны.

**Ключевые слова:** Astigmata, *Pontoppidania*, переописание, побережье, Крым, Украина.

### Introduction

The genus *Pontoppidania* Oudemans, 1923 (Acari, Acaridae) was established for a single species *Tyroglyphus littoralis* Halbert, 1920 from the seashore of Great Britain (Halbert, 1920; Nesbitt, 1950). Volgin, Shchur (1974) described a monotypic genus *Phycoditum* with the type species *Phycoditum ponticus* Volgin et Shchur, 1974 from the algal debris on seashore in the Black Sea Nature Reserve (Ukraine). OConnor (2008) after studying the type material of *P. littoralis* considered *Phycoditum* to be a junior synonym of *Pontoppidania*. The original description of *P. ponticus* contains the leg chaetotaxy of both male and female incompletely described and no drawings of the female.

During the study of mites inhabiting algal debris on the seashores of nature reserves of the Black Sea and Sea of Azov, I found a large number of specimens of *P. pontica* which served the base for redescription of this little-known species.

### Material and methods

Mites were collected from algal debris using Berlese funnels and mounted on slides in Hoyer's medium. The mites were examined under a light microscope with phase contrast. Drawings were made with a camera lucida. The idiosomal chaetotaxy nomenclature follows Griffiths et al. (1990) as modified by Norton (1998); the leg chaetotaxy follows Grandjean (1939). The system of Astigmatina follows OConnor (2009). All measurements are given in micrometers ( $\mu\text{m}$ ) for ten males and females.

**Family ACARIDAE** Latreille, 1802

**Subfamily PONTOPPIDANIINAE** Oudemans, 1925

***Pontoppidania*** Oudemans, 1923

***Pontoppidania pontica*** (Volgin et Shchur, 1974) (fig. 1–6)

*Phycoditum ponticus* Volgin et Shchur, 1974: 79, fig. a, b.

**Material studied. Ukraine: Crimea:** Yalta, "Cape Martyan" Nature Reserve, algal debris on seashore of Black Sea, 40°30' N, 34°16' E, 4.11.2011, 28 ♀, 20 ♂; "Sivash" Nature Reserve, algal debris on seashore of

Sivash gulf, 45°15' N, 35°05' E, 5.12.2012, 14 ♀, 10 ♂ (Maslov); Ukraine, Crimea, vicinity of settl. Kamenskoe, algal debris on seashore of Azov Sea, 45°16' N, 36°31' E, 5.12.2012, 2 ♀, 2 ♂; cape Tarkhankut, algal debris on seashore of Black Sea, 45°18' N, 32°39' E, 4.12.2012, 5 ♀, 6 ♂; "Cape Kazantip" Nature Reserve, algal debris on shore of Azov Sea, 45°28' N, 36°50' E, 5.12.2012, 2 ♂; Ukraine, Crimea, Karadag Nature Reserve, algal debris on seashore of Black Sea, 44°54' N, 35°12' E, 5.12.2012, 18 ♀, 23 ♂ (Maslov).

**F e m a l e** (fig. 1–4). Idiosoma 480–530 long, maximum width 352–360.

Gnathosoma (fig. 4, 1, 2). Chelicerae (fig. 4, 2) with large median process on digitus fixus, digitus mobilis smooth. Cheliceral setae not evident. Subcapitulum almost triangular in shape, with filiform ventral setae (*m*) and spine-like palpal supracoaxal setae (*elcp*). Each palp bears three filiform setae: dorsal tibial, dorsal tarsal, ventral tibial; tarsus with very small subapical solenidion.

Idiosomal dorsum (fig. 1, 1). Prodorsal sclerite almost quadrangular, very poorly sclerotized, invisible in poorly sclerotized (young) mites. Podocephalic sclerites extending on lateral side of prodorsum from supracoaxal setae to lateral apex of idiosoma. Grandjean's organ at apex of podocephalic sclerite almost spine-like, barbed. The lengths of dorsal setae are highly variable, especially those of longest setae. All setae are smooth. Setae *si*, *c*<sub>1</sub>, *c*<sub>2</sub>, *d*<sub>1</sub>, *d*<sub>2</sub>, and *e*<sub>1</sub> always blunt-ended; setae *cp* and *h*<sub>1</sub> usually blunt-ended in females with relatively shorter setae and pointed in females with long setae. External vertical setae (*ve*) on same transverse line as internal verticals (*vi*). Sejugal furrow well-developed. Hysterosoma un-



Fig. 1. *Pontoppidania pontica*, female: 1 — dorsum; 2 — venter.

Рис. 1. *Pontoppidania pontica*, самка: 1 — дорсальная сторона; 2 — ventральная сторона.

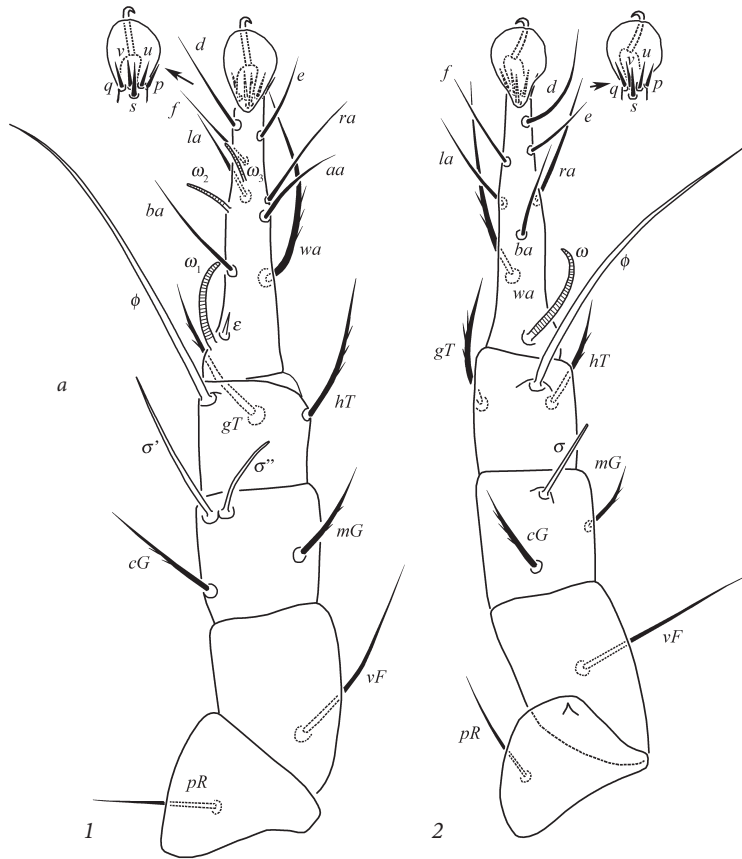


Fig. 2. *Pontoppidania pontica*, female: 1-2 — legs I and II respectively.

Рис. 2. *Pontoppidania pontica*, самка: 1-2 — ноги I и II соответственно.

sclerotized. Idiosomal setation complete. Opisthonotal gland openings (*gla*) posterolateral to setae  $d_2$ . Cupules *ia* in the middle between setae  $c_2$  and  $d_2$ , *im* laterad of opisthonotal gland. Bases of setae  $e_2$  situated very close to bases of setae  $f_2$ . Bursa copulatrix distinct, situated on posterior margin of the body. Spermatheca as on fig. 4, 3.

Idiosomal venter (fig. 1, 2). Coxal apodemes as on fig. 1, 2. All ventral setae filiform. Oviporus elongate, with highly folded pseudovipositor typical of acarid mites internally. Genital papillae small, anterior genital papillae distinctly larger than posterior one. Cupules *ip* situated almost on the same transverse line with *ih*. Cupules *ih* anterior to setae  $h_3$ .

The length of idiosomal setae:  $vi$  51–73,  $ve$  24–27,  $el$  14–19,  $si$  50–88,  $se$  168–233,  $c_1$  28–46,  $c_2$  39–48,  $cp$  88–172,  $c_3$  35–42,  $d_1$  32–57,  $d_2$  45–72,  $e_1$  72–121,  $e_2$  151–230,  $f_2$  94–140,  $h_1$  94–198,  $h_2$  94–184,  $h_3$  80–146,  $p_1$  30–40,  $p_2$  30–40,  $p_3$  31–35,  $ad_1$  18–25,  $ad_2$  23–26,  $ad_3$  20–23,  $1a$  33–45,  $3a$  30–41,  $4a$  27–30,  $4b$  20–23,  $g$  25–28.

Legs (fig. 2, 3). All legs relatively long and thin, ventrodistal setae *s*, *p*, *q*, *v*, *u* short, spine-like. Chaetotaxy of legs I–IV complete. Leg I (fig. 2, 1): setae *dG*, *mG*, *gT*, *hT*, and *wa* barbed. Famulus  $\epsilon$  spine-like; solenidium  $\omega_1$  c-shaped, tapering distally; the length of solenidia:  $\omega_1$  23–37,  $\omega_2$  11–15,  $\omega_3$  10–16,  $\phi$  96–132,  $\sigma'$  40–67,  $\sigma''$  23–42. Leg II (fig. 2, 2): setae *dG*, *mG*, *gT*, *hT*, and *wa* barbed; solenidium  $\omega$  of similar shape with  $\omega_1$  on tarsus I; the length of solenidia:  $\omega$  29–36,  $\phi$  88–130,  $\sigma$  21–33. Leg III (fig. 3, 1): setae *nG*, *kT*, and *w* barbed; the length of solenidia:  $\phi$  85–127,  $\sigma$  11–16. Leg IV (fig. 3, 2): setae *kT* and *w* barbed, solenidium  $\phi$  67–87 long.

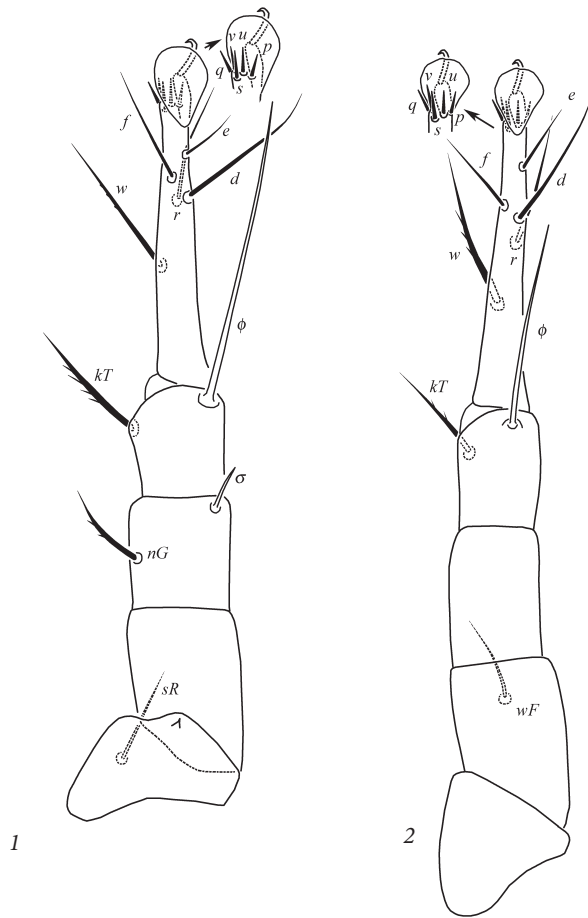


Fig. 3. *Pontoppidania*, female: 1–2 — legs III and IV respectively.

Рис. 3. *Pontoppidania pontica*, самка: 1–2 — ноги III и IV соответственно.

Male (fig. 5, 6). Distinctly smaller than female, idiosoma 352–380 long, maximum width 240–264.

Gnathosoma as in female.

Idiosomal dorsum (fig. 5, 1) similar with that of female, but setae relatively shorter and less variable in length and shape. Setae  $si$ ,  $c_1$ ,  $c_2$ ,  $cp$ ,  $d_1$ ,  $d_2$ ,  $e_1$  and  $h_1$  blunt-ended.

Idiosomal venter (fig. 5, 2). Coxal apodemes as in female. Aedeagus very short, supported by arch-like structure. Genital papillae as in female, but smaller; setae  $p_1$ – $p_3$  needle-like, setae  $h_2$  blunt-ended. Setae  $p_3$  situated just anterior to adanal suckers. An area around setae  $h_2$ ,  $h_3$ ,  $p_1$ ,  $p_2$  with weak but distinct sclerotization. Adanal suckers situated near anterior end of anal opening.

The length of idiosomal setae:  $vi$  44–46,  $ve$  18–20,  $el$  16–18,  $si$  31–33,  $se$  153–162,  $c_1$  26–29,  $c_2$  24–29,  $cp$  57–65,  $c_3$  28–33,  $d_1$  27–31,  $d_2$  32–33,  $e_1$  55–56,  $e_2$  51–57,  $f_2$  83–95,  $h_1$  56–57,  $h_2$  61–78,  $h_3$  69–72,  $p_1$  28–30,  $p_2$  22–28,  $p_3$  13–15,  $1a$  26–29,  $3a$  22–30,  $4a$  20–26,  $4b$  17–24,  $g$  22–25.

Legs (fig. 6). Similar with that of female, except solenidia  $\omega_1$  on tarsus I and  $\omega$  on tarsus II distinctly longer, solenidium  $\omega_3$  distinctly longer than  $\omega_2$  and situated near anterior end of the tarsus I; tarsus IV with setae  $d$  and  $e$  sucker-like,  $d$  in basal part of tarsus,  $e$  in distal. The length of solenidia on legs I–IV: leg I (fig. 6, 1):  $\omega_1$  39–44,  $\omega_2$  12–13,  $\omega_3$  21–26,  $\phi$  92–101,  $\sigma$  42–52,  $\sigma'$  32–34; leg II (fig. 6, 2):  $\omega$  45–49,  $\phi$  88–92,  $\sigma$  25–28; leg III (fig. 6, 3):  $\phi$  83–92,  $\sigma$  10–11; leg IV (fig. 6, 4):  $\phi$  44–55.

Larva, protonymph, heteromorphic deutonymph, and tritonymph unknown.

Remarks. In original description of *P. pontica* authors did not illustrate setae 4a (Volgin, Shchur, 1974: fig b). By my request, Dr A. V. Bochkov studied male holotype of *P. pontica* deposited in the collection of Zoological Institute of RAS (St.-Petersburg, Russia) and confirmed the presence of setae 4a.

Distribution. *Pontoppidania pontica* is currently known only from Ukraine.

Ecology. Mites inhabit algal debris on seashores of Black and Azov Seas. Phoresy on insects or other arthropods is unknown.

Below the key to world species of the genus *Pontoppidania* is provided<sup>1</sup>.

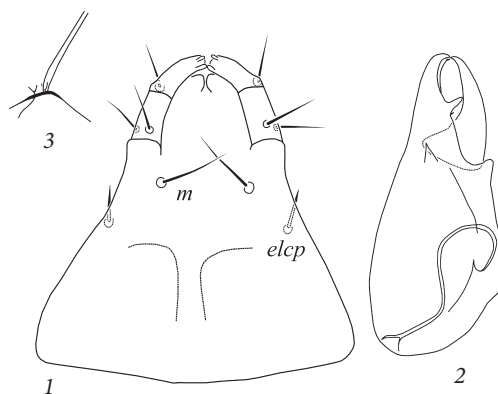


Fig. 4. *Pontoppidania pontica*, female: 1 — subcapitulum; 2 — chelicerae; 3 — spermatheca.

Рис. 4. *Pontoppidania pontica*, самка: 1 — субкапитулюм; 2 — хелицера; 3 — сперматека.



Fig. 5. *Pontoppidania pontica*, male: 1 — dorsum; 2 — venter.

Рис. 5. *Pontoppidania pontica*, самец: 1 — дорсальная сторона; 2 — ventральная сторона.

<sup>1</sup> The comparison of *P. littoralis* and *P. pontica* based on unpublished original drawings of the male holotype of *P. littoralis* and our materials of *P. pontica* by Barry OConnor.

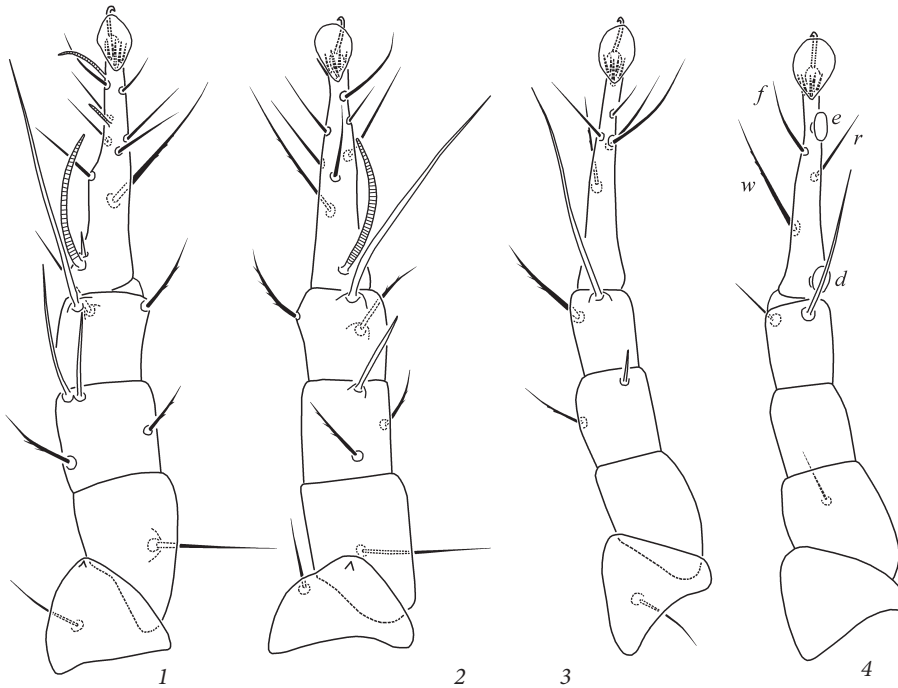


Fig. 6. *Pontoppidania pontica*, male: 1–4 — legs I–IV respectively.

Рис. 6. *Pontoppidania pontica*, самец: 1–4 — ноги I–IV соответственно.

#### Key to world species of the genus *Pontoppidania* (males only)

1. Solenidion  $\omega_1$  on tarsus I widened distally, setae  $cp$  very long, pointed, more than 6 times longer than  $c_2$ , setae  $e_1$  very long, pointed, much longer than  $f_2$ . ..... *P. littoralis* (Halbert, 1920)
- Solenidion  $\omega_1$  on tarsus I tapering distally, setae  $cp$  not so long, blunt-ended, less than 3 times longer than  $c_2$ , setae  $e_2$  not so long, blunt-ended, distinctly shorter than  $f_2$ . ..... *P. pontica* (Volgin et Shchur, 1974)

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