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## REVIEW OF CHEYLETID MITES OF THE GENUS *CHELETOPSIS* (ACARI, CHEYLETIDAE) FROM THE QUILLS OF WADERS IN SOUTHERN UKRAINE, WITH DESCRIPTION OF A NEW SPECIES

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**Review of Cheyletid Mites of the Genus *Cheletopsis* (Acari, Cheyletidae) from the Quills of Waders in Southern Ukraine, with Description of a New Species.** Chernichko K. I., Kivganov D. A. — Cheyletid mites of the genus *Cheletopsis* Oudemans, 1904 from the quills of waders of southern Ukraine are listed. *Cheletopsis ferrugineae* Chernichko et Kivganov, sp. n. from Curlew Sandpiper *Calidris ferruginea* (Pontoppidan, 1763) is described. Previously unknown male of *C. charadrii* Mironov, Bochkov et Chirov, 1991 is described.

Key words: *Cheletopsis*, Cheyletidae, Ukraine, new species.

**Обзор хейлетид рода *Cheletopsis* (Acari, Cheyletidae) из очиньев перьев куликов юга Украины с описанием нового вида.** Черничко Е. И., Кивганов Д. А. — Приведен список хейлетид *Cheletopsis* Oudemans, 1904 из очиньев перьев куликов юга Украины. С краснозобика, *Calidris ferruginea* (Pontoppidan, 1763). описан *Cheletopsis ferrugineae* Chernichko et Kivganov, sp. n. Приведено описание ранее неизвестного самца *C. charadrii* Mironov, Bochkov et Chirov, 1991.

Ключевые слова: *Cheletopsis*, Cheyletidae, Украина, новый вид.

### Introduction

The family Cheyletidae includes free-living predators occurring in quite various biotopes, predators inhabiting the body of other animals (warm-blooded vertebrates and insects) and ectoparasites feeding on blood, lymph of their hosts. Currently the family Cheyletidae includes more than 360 species in 73 genera (Gerson et al., 1999; Bochkov, Oconnor, 2003; Bochkov, 2004). All the mites of the genus *Cheletopsis* Oudemans, 1904, like other members of the tribe Cheletosomatini, live in quills and prey on other mites inhabiting feathers, mostly on the mites of the families Syringophilidae and Syringobiidae (Volgin, 1969; Mironov et al., 1991; Kivganov, Bochkov, 1994). Cheyletid mites of the genus *Cheletopsis* are highly specialized predators and in addition have developed specific morphological adaptations for life inside the quills (most part of their body setae is abnormally long, the setae *p*' and *p*'' of legs II–IV are plume-like, the eyes are reduced et) (Bochkov, Fain, 2001; Bochkov et al., 2002).

Mites of the genus *Cheletopsis* are associated exclusively with the Charadriiformes mites. Most species of this genus were described in the beginning of XX century by A. Oudemans (1904, 1906) and since that time most of them species were not registered. One reason for this situation may be a poor definition of the mites hosts. Thus, A. Oudemans indicated the Redshank (*Tringa totanus*) as a host for four species of the genus *Cheletopsis*: *C. basilica* Oudemans, 1904, *C. impavida* Oudemans, 1904, *C. anax* Oudemans, 1904 and *C. animosa* Oudemans, 1904, from France. Recent studies found only two species in Redshank significantly, *C. impavida* and *C. norneri* (Poppe, 1888); probably, other species listed for it, actually live on other waders.

In the last 20 years studies of *Cheletopsis* species were intensified (Mironov et al., 1991; Kivganov, Bochkov, 1994; Kivganov, 1998; Bochkov et al., 2002; Bochkov, Oconnor, 2003; etc.).

Host specificity of this group of mites varies from monoxenous to very low. Certain species are found on one or two species of birds: *C. charadrii* Mironov, Bochkov et Chirov, 1991, *C. mariae* Mironov, Bochkov et Chirov, 1991, *C. magnanima* Oudemans, 1904, *C. prosobonialis* Bochkov, Fain et Dabert, 2002, *C. limnodromi* Bochkov, Fain et Dabert, 2002, and *C. rynchops* Bochkov, Fain et Dabert, 2002.

Other species are known from different families of Charadriiform birds: *C. impavida*, found in *Tringa*, *Calidris*, *Micropalama* (Scolopacidae) and *Rostratula* (Rostratulidae); *C. daberti* Kivganov et Bochkov, 1994 is probably restricted in to Scolopacidae. There are three species that show low host specificity: *C. basilica*, found

in *Charadrius*, *Calidris* and *Chlidonias* spp., belonging to the three different families (Charadriidae, Scolopacidae and Laridae, respectively). Two other species, *C. animosa* and *C. norneri*, were found on the birds of the families Scolopacidae and Laridae, and *C. norneri* is more common on the birds of the family Laridae, than Scolopacidae.

### Material and methods

For this study we have examined material collected from waders, captured on Ukrainian wetlands for ringing. Quills of the primaries and secondaries viewed under binocular microscope. In the case of mites detection, feather was removed (no more than one feather in the wing). After that, quills was dissected and mites collected in 70° alcohol.

Slides were produced by the standard method for mites by mounting in the Faure-Berlese's medium. Chaetotaxy terminology of cheyletid mites follows J. B. Kethley (1990).

All the slides, including those with type specimens, are deposited in the collections of Department of Zoology I. I. Mechnikov Odessa National University (DZUO). Measurements of structures are given in microns.

### *Cheletopsis impavida* Oudemans, 1904

Material. Ukraine: Crimea, Sivash, on Curlew Sandpiper *ferruginea*, 26.08.2002, 1 ♂ (DZUO). Coll. K. I. Chernichko).

Described from *Tringa totanus* from France (Oudemans, 1904). Later this species was recorded on *Rostratula semicollaris* in Argentina; on *Micropalama himantopus* and *Calidris pusilla* in the USA on *Tringa stagnatilis* in Poland; on *Calidris minutus*, *ruficollis* and *temminckii* in Kazakhstan, Kyrgyzstan and Russia; on *ferruginea* in Poland (Bochkov et al., 2002).

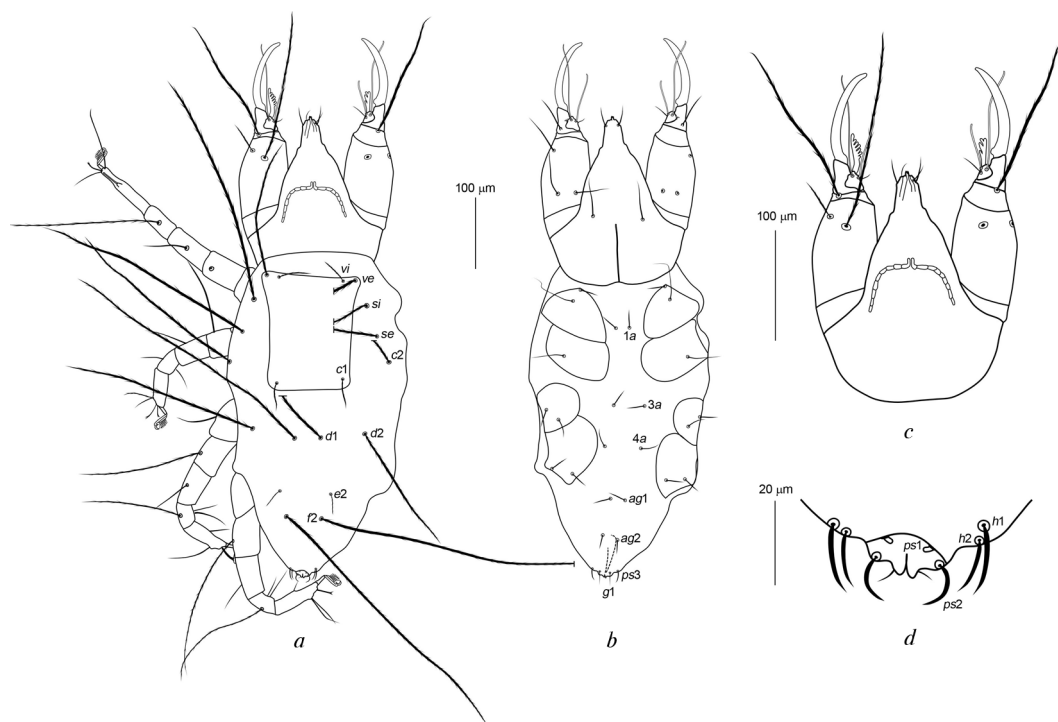


Fig. 1. *Cheletopsis charadrii*, ♂: a — dorsal view; b — ventral view; c — gnathosoma; d — posterior part of opisthosoma in dorsal view.

Рис. 1. *Cheletopsis charadrii*, ♂: a — дорсально; b — вентрально; c — гнатосома; d — задняя часть опистосомы (дорсально).

***Cheletopsis daberti* Kivganov et Bochkov, 1994**

Material. Ukraine: Crimea, Siwash, on Bar-Tailed Godwit *Limosa laponica*, 29.08.2002, 1 ♀ (DZUO. Coll. K. I. Chernichko).

Described from *Tringa glareola* from Ukraine and then from *T. glareola*, *T. nebularia* and *Calidris temminckii* in Poland; on *Micropalama himantopus* in the USA (Kivganov, Bochkov, 1994; Bochkov et al., 2002).

***Cheletopsis charadrii* Mironov, Bochkov et Chirov, 1991**

Material. Ukraine: Kuyal'nik Lagoon, on Little Ringed Plover *Charadrius dubius* 14.05.1995, 1 ♀ (DZUO. Coll. D. A. Kivganov); idem, on Kentish Plover *Charadrius alexandrinus* (new host for this species), 14.05.2003, 1 ♀, 1 ♂ (DZUO. Coll. K. I. Chernichko). The male recorded for the first time is redescribed below.

Described from *Charadrius dubius* from Kyrgyzstan.

Male (fig. 1). Gnathosoma: Length: 257 microns; width: 191 microns. Peritremes with 8 pairs of segments, middle part of peritremes slightly convex. Palpal claws without teeth. Comb-like seta with 3–6 tines. Idiosoma: length 371; width 227.

Gnathosoma moderately large, 1.5 times as short as idiosoma. Setae *vi* 4.5 times as short as *ve*. Setae *se* and *si* approximately equal and 1.7 times as long as *ve*. Setae *c1* and *f2* short. Setae *se* slightly (1.2 times) longer than *d2*. Anal setae subequal. Lengths of setae: *vi* 37, *ve* 170, *si* 293, *se* 293, *c1* 42, *c2* 257, *d1* 315, *d2* 242, *e2* 33, *f2* 337.

Remark. Described male *Cheletopsis charadrii* is similar to that of *C. impavida* Oudemans, 1904, but differs from it by the elongated gnathosoma (257 × 191), absence

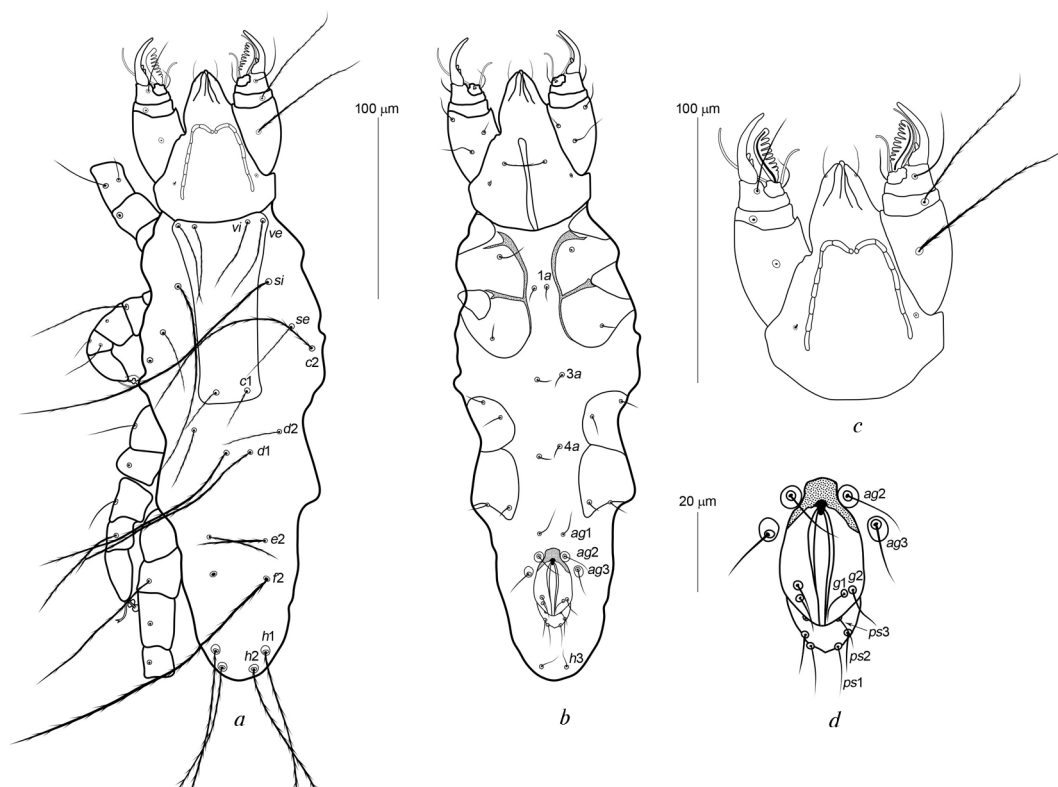


Fig 2. *Cheletopsis ferrugineae* sp. n., ♀: a — dorsal view; b — ventral view; c — gnathosoma; d — genito-anal region.

Рис. 2. *Cheletopsis ferrugineae* sp. n., ♀: a — дорсально; b — вентрально; c — гнатосома; d — опистосома (дорсально).

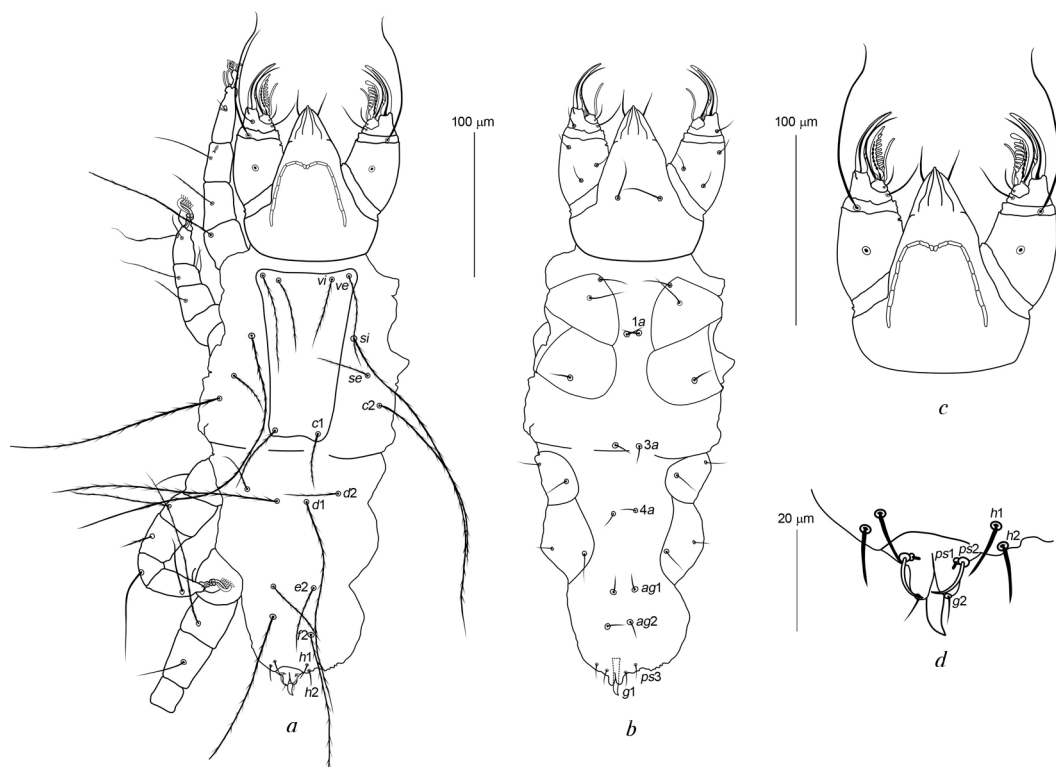


Fig 3. *Cheletopsis ferruginei* sp. n., ♂: a — dorsal view; b — ventral view; c — gnathosoma; d — posterior part of opisthosoma in dorsal view.

Рис. 3. *Cheletopsis ferruginei* sp. n., ♂: а — дорсально; б — вентрально; с — гнатосома; д — задняя часть опистосомы (дорсально).

of teeth on the palpal claws, comb-like setae with 6 tines,  $si : ve : se$  ratio = 1.8 : 1 : 1.8. Male *C. impavida* with gnathosoma 235 × 215, palpal claws with tooth, comb-like setae with 7 tines,  $si : ve : se$  ratio = 2.3 : 1 : 1.

### *Cheletopsis ferrugineae* Chernichko et Kivganov, sp. n.

**Material.** Holotype ♀, Tilihul Lagoon, from quills of primary feathers of the Curlew Sandpiper *Calidris ferruginea* (Pontoppidan, 1763), 28.05.1998, paratype 1 ♂ (DZUO. Coll. D. A. Kivganov), label as in holotype.

**Female** (fig. 2). *Gnathosoma*: length 106; width 83. Peritremes with 8 pairs of links, middle portion slightly concave. Palpal claws with 1–2 teeth. Comb-like setae with 8 tines. *Idiosoma*: length 308; width 121.

*Gnathosoma* 3 times as short as *idiosoma*. Setae *vi* slightly as short as *ve*. Setae *se* 4 times as short as *si* and 1.4 times as short as *ve*. Setae *c1* and *e2* short, and *c1* 1.6 times as short as *e2*. Setae *se* slightly (1.2 times) longer than *d2*. Setae *h1* 2.2 times as long as *h2* and 4.4 times as long as *ve*. Anal setae subequal. Lengths of setae: *vi* 56, *ve* 63, *si* 187, *se* 46, *c1* 29, *c2* 177, *d1* 165, *d2* 38, *e2* 46, *f2* 212, *h1* 280, *h2* 125.

**Male** (fig. 3). *Gnathosoma*: length 108; width 116. Peritremes with 7–8 pairs of lines, middle portion slightly concave. Palpal claws without teeth. Comb-like seta with 8–9 tines. *Idiosoma*: 283 microns long and 132 microns wide.

*Gnathosoma* 2.6 times as short as *idiosoma*. Setae *vi* is slightly as short as *ve*. Setae *se* approximately 6.2 times as short as *si* and almost 1.4 times as short as *ve*. Setae *c1* and *e2* short and subequal. Setae *se* slightly shorter (1.2 times) than *d2*. Lengths of setae: *vi* 48, *ve* 52, *si* 234, *se* 38, *c1* 48, *c2* 183, *d1* 154, *d2* 46, *e2* 48, *f2* 234.

Remark. *Cheletopsis ferrugineae* sp. n. is similar to *C. animosa* Oudemans, 1904 (they belong to the group “norneri” — setae *vi* and *ve* subequal in length; setae *h2* longer than *ve*; *e2* is short), but has some differences: gnathosoma 0.33 times as long as idiosoma; comb-like seta have 8 tines; proportion of setae *vi*: *d2* = 1.5, *ve*: *d2* = 1.7, *vi*: *c1* = 1.9, *ve*: *c1* = 2.2, whereas female of *C. animosa* has gnathosoma 0.25 times as long as idiosoma; comb-like setae of palpal tarsi have 6–7 tines; proportion of setae *vi*: *d2* = *ve*: *d2* = 2, *vi*: *c1* = *ve*: *c1* = 1.6 (we used the redescription of *C. animosa* by Bochkov et al. (2002) from the non-typical host Common tern *Sterna hirundo* L., 1758, because description of Oudemans (1906) from the Redshank *Tringa totanus* (L., 1758) is incomplete).

Gnathosoma of *C. ferrugineae* sp. n. males is almost square (108 × 116), setae *se* more than 4 times longer than *vi* and *ve*, *C. animosa* males have more elongated gnathosoma (115 × 85), setae *se* more than 2 times longer than *vi* and *ve*.

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