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DESCRIPTIONS OF ADULT STAGES OF NEW AND LITTLE KNOWN MITE SPECIES OF THE FAMILY HYPODERATIDAE (ACARI: ASTIGMATA) FROM NESTS OF AQUATIC BIRDS

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ABSTRACT: Two new species of the genus *Neottialges* Fain, 1966 are described from nests of herons and gull-like birds from the northern coastal region of the Black Sea (Ukraine): *Neottialges (Ardeidectes) sevastyanovi* sp. n. from *Larus genei* Brème, 1839 (Charadriiformes: Laridae) and *N. (Heronidectes) gracilipes* sp. n. from *Nycticorax nycticorax* (Linnaeus, 1758) (Ciconiiformes: Ardeidae). Adults of the *Hypodectes nycticoracis* Filippi, 1861, the type species of the genus *Hypodectes* Filippi, 1861, are described from its type host, *N. nycticorax*, for the first time. Brief comments on systematics on the genera *Hypodectes* and *Neottialges* Fain, 1966 are provided. Based on differences in leg and palpal chaetotaxy between adults in the subgenera *Hypodectes* and *Hypodectoides* Fain and Bafort, 1966, we elevate the latter subgenus to the generic rank.

KEY WORDS: Hypoderatidae, *Hypodectes, Neottialges*, systematics, new species

INTRODUCTION

Astigmatan mites belonging to the family Hypoderatidae are associated with various groups of bird and rarely rodents. They have a very characteristic life cycle. At the stage of deutonymph (hypopus), these mites are subcutaneous or visceral tissue parasites, while non-deutonymphal stages inhabit nests of corresponding vertebrate hosts (Fain and Bafort 1967; OConnor 1982, 1985; Wurst and Havelka 1997; Krantz and Walter 2009). The most surprising feature of these mites is that the hypopus, which is the main (or rarely the only) feeding stage in the life cycle, lacks any mouthparts and even a mouth opening. Although the feeding process of hypopi is not specifically investigated, they apparently feed on tissue fluids of their hosts taking them directly though body cuticle. In the course of feeding, hypopi grow by the way of neosomy that causes strong changes in their general appearance, particularly in the size and form of the body, the pattern of cuticle sclerotization, and disposition of idiosomal setae.

Other active stages of the life cycle of hypoderatids living in bird nests are saprophages or aphages. Males of the genera *Hypodectes* Filippi, 1861 and *Bubulcodectes* Fain et Lukoschus, 1986 have strongly enlarged chelicerae, while in the females of these genera, the gnathosoma, including chelicerae, are strongly reduced (Fain and Bafort 1967; Fain et Lukoschus 1986). It seems that the mouthparts of adults of these genera are useless for feeding. In the genus *Hypodectes*, the tritonymph, protonymph, and larva are strongly reduced and represented by sack-like cuticle shells lacking legs and mouthparts (Fain and Bafort 1967). In contrast, in the genus *Tytodectes* Fain, 1966, the larva, protonymph, tritonymph, and adults have the appearance of typical free-living astigmatans like Acaridae, with well developed legs and normally developed mouthparts. Moreover, it was shown that mites of this genus can omit the stage of deutonymph and finalize the life cycle (Wurst and Havelka 1997), indicating that these stages do feed in the nest of their host.

The life-cycle of hypoderatids was unknown until the end of 1960s, although even the earliest descriptions of hypopi speculated that other stages could be probably found in the nests (Filippi 1861). On the contrary, an erroneous concept correlated hypoderatid hypopi with pterolichoid feather mites existed for a very long time (Robin and Megnin 1877; Megnin 1879; Raillet 1896; Vitzthum 1934; Oudemans 1937, 1939; Dubinin 1956). The true life cycle of hypoderatids for the first time was described by Fain and Bafort (1967), based on *Hypodectes propus* Filippi, 1861 associated with the wood pigeon, *Columba palumbus* Linnaeus, 1758.

This family Hypoderatidae currently includes about 80 species arranged in 18 genera and two subfamilies. The subfamily Hypoderatinae includes mites associated with birds (16 genera and 72 satisfactorily described species). The most detailed taxonomic revision of species known from hypopi and associated with birds was given by Fain (1967). Five species in two genera constituting the second subfamily, Muridectinae, are known from hypopi only. They are exclusively found on certain desert and borrowing rodents (Fain 1968; Fain and Lukoschus 1977, 1978).

Table 1.
List of hypoderatid species where non-deutonymphal stages were described

Species	Known stages	Type host (species and order)	Reference
Bubulcodectes brevitarsus Fain et Lukoschus, 1986[1]	M, F, L	*Bubulcus ibis* (Ciconiiformes)	Fain and Lukoschus 1986
Colobathriglyphus malayensis Fain et Nadchatram, 1983	M	In human house[2]	Fain and Nadchatram 1983
Gypsodectes verrucosus Fain, 1984	F	*Gyps coprotheres* (Falconiformes)	Fain 1984
Hypodectes nycticoracis Filippi 1861	M, F, H	*Nycticorax nycticorax* (Ciconiiformes)	Fain 1967; PS
Hypodectoides propus (Nitzsch, 1818)	M, F, TN, H[3], PN, L	*Goura cristata*, *Columba palumbus* (Columbiformes)	Fain and Bafort 1967
H samsinaki Fain, Lukoschus, 1986	M	*Columba livia domestica* (Columbiformes)	Samšiňák 1982; Fain and Lukoschus 1986
Neottialges (*Ardeidectes*) *ibis* Fain et Lukoschus, 1986	M, F	*Bubulcus ibis* (Ciconiiformes)	Fain and Lukoschus 1986
N. (*Ardeidectes*) *sevastyanovi* sp. n.	M, F	*Larus genei* (Charadriiformes)	PS
N. (*Heronidectes*) *mendezi* Fain et Lukoschus, 1986	M, F, PN	*Bubulcus ibis* (Ciconiiformes)	Fain and Lukoschus 1986
N. (*Heronidectes*) *gracilipes* sp. n.	M, F	*Nycticorax nycticorax* (Ciconiiformes)	PS
N. (*Neottialges*) *eurafer* Fain 1966	M[4], H	*Columba palumbus* (Columbiformes)	Fain and Bafort 1967
N. (*Pelecanectes*) *evansi* Fain, 1966	M, TN, H	*Phalacrocorax aristotelis* (Pelecaniformes)	Fain 1966; Fain and Lukoschus 1986
Neotytodectes mexicanus OConnor, 1981	F	*Glaucidium* sp. (Strigiformes)	OConnor 1981
Phalacrodectes (*Frehelectes*) *gaudi* Fain et Beaucournu, 1972	TN, H	*Phalacrocorax aristotelis* (Pelecaniformes)	Fain and Beaucournu 1972
Ph. (*Phalacrodectes*) *panamensis* Fain et Lukoschus, 1986	M	*Bubulcus ibis* (Ciconiiformes)	Fain and Lukoschus 1986
Ph. (*Ph.*) *whartoni* Fain, 1967	M, F, TN, H[5]	*Platalea ajaja, Bubulcus ibis* (Ciconiiformes)	Fain 1967; Fain and Lukoschus 1986
Suladectes hughesae antipodus Fain et Clark, 1994	M, F, TN, H, PN, L	*Sula bassana serrator* (Pelecaniformes)	Fain and Clark 1994
Tytodectes (*T.*) *strigis* (Gené, 1845)	M, F, TN, H, PN, L	*Tyto alba* (Strigiformes)	Wurst and Havelka 1997

F, M, H, TN, PN, L — stages of life cycle, female, male, hypopus, tritonymph, protonymph, and larva, respectively. PS — Present study. Two hosts are given for those cases, where hypopus and other stages were described from different hosts.
[1] According to Fain and Lukoschus (1986), this species supposedly corresponds to *Hypodectes* (*Hypodectoides*) *propus bubulci* Fain, 1967 described only from hypopus.
[2] The actual host is supposedly a swift (Apodiformes: Apodidae) (B.M. OConnor, pers. com.).
[3] Hypopus was described by Nitzsch (in Giebel 1861) from *Goura cristata*; other stages attributed to this species were described by Fain and Bafort (1967) from *Columba palumbus*.
[4] Male was described by Fain and Bafort (1967) as the homeomorph male of *H.* (*Hypodectoides*) *propus*.
[5] Hypopus was described by Fain (1967) from *Platalea ajaja*; other stages attributed to this species were described by Fain and Lukoschus (1986) from *Bubulcus ibis*.

Most of hypoderatid species are known from hypopi only. The full life-cycle has been described so far for the three species, *Hypodectes (Hypodectoides) propus* (Nitzsch, 1861), *Suladectes hughesae antipodus* Fain et Clark, 1994, and *Tytodectes strigis* (Gené, 1845) (Fain and Bafort 1967; Fain et Clark 1994; Wurst and Havelka 1997). Adult and/or tritonymphal stages are known for a few species from the following genera: *Hypodectes* Filippi, 1861, *Neottialges* Fain, 1966, *Phalacrodectes* Fain, 1966, *Suladectes* Fain, 1969, *Neotytodectes* OConnor, 1981, *Colobathriglyphus* Fain

and Natchatram, 1983, *Gypsodectes*, Fain, 1984; *Bubulcodectes* Fain et Lukoschus, 1986 (Fain and Baffort 1967; Fain and Beaucournu 1972; OConnor 1981; Fain and Natchatram 1983; Fain 1984; Fain and Lukoschus 1986; Fain and Clark 1994; Wurst and Havelka 1997) (Table 1). Among these genera, the monotypic genera *Bubulcodectes, Colobathriglyphus, Gypsodectes*, and *Neotytodectes* are known exclusively from adults.

Because of the large gap in the knowledge of adult morphology, the taxonomic system of hypoderatids is generally based on the morphological structures of hypopi. Hypopi are rather uniform in general appearance. Given that the hypopus is a preimaginal stage, it may provide a rather restricted set of characters as compared to adults. Furthermore, because of the endoparasitism, hypoderatid deutonymphs have lost a number of external morphological structures as compared to the free-living or insect-associated hypopi of other acaridian families. Even based on the limited number of hypoderatid species, where adults are described, it is clearly visible that the adult stage could display much more taxonomically important characters. Thus, describing the adult morphology and life-cycles for most genera is crucial for the hypoderatid systematics. Looking forward, it is possible to expect that these findings could cause serious changes in supraspecific systematics of the family Hypoderatidae.

In the present paper we describe two new species from nests of herons (Ciconiiformes: Ardeidae) and gulls and terns (Charadriiformes: Laridae) living in the northern coastal area of the Black sea. We also describe for the first time the adults of *Hypodectes nycticoracis* Filippi, 1861, the type species of the genus *Hypodectes*.

MATERIAL AND METHODS

The material used in the present study was collected by the junior author in two locations of Ukraine at the north coast of the Black Sea. One of the locations was the colony of various herons, and the other was a mixed colony of gulls and terns. The extraction of mites and other little nidicolous invertebrate from the material of bird nests (fledging feathers, debris, twigs) was made by means of the Berlese funnel. Extracted mites were fixed and stored in 70% ethanol. Mites were mounted in microslides in the Faure medium (Evans 1992).

Mites were investigated by means of microscopes Leica DMLS and DM 5000B (with DIC).

Descriptions of new species are given according to the standards used in the systematics of hypoderatid mites (Fain and Bafort 1967; OConnor 1981; Fain and Lukoschus 1986; Fain and Clark 1994). The idiosomal chaetotaxy is that of Griffiths et al. (1990) with subsequent correction by Norton (1998). Leg chaetotaxy is that of Grandjean (1939). All measurements in descriptions are in micrometers.

Type materials are deposited in the following institutions: ZISP — Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia), SIZ — I. I. Shmalghausen Institute of Zoology (Kiev, Ukraine).

SYSTEMATICS

Hypoderatidae Murray, 1877

Hypodectes Filippi, 1861

Type species: *Hypodectes nycticoracis* Filippi, 1861, by subsequent designation (Fain and Bafort 1966).

The genus *Hypodectes* includes three species and two subspecies (Fain and Bafort 1966; Fain 1967; Černý 1969; Fain and Lukoschus 1986). Based on the structure of coxae II in hypopi, Fain and Bafort (1966) recognized the two subgenera within this genus, *Hypodectes* s. str. and *Hypodectoides* Fain and Bafort, 1966. The monotypic subgenus *Hypodectes* is characterized by the strongly developed and heavily sclerotized epimerites IIa which appear in the mature hypopus, while in *Hypodectoides* (2 species and 2 subspecies), these apodemal structures on coxal fields II are absent. The adults in the genus *Hypodectes* were described only for the two species from the second subgenus, *H. (Hypodectoides) propus* Nitzsch, 1861 (males and females) and *H. (Hypodectoides) samsinaki* Fain et Lukoschus, 1986 (male) (Table 1). The males of these mites have strongly enlarged chelicerae, modified in giant claws constituting at least one third of the idiosomal length (Figs. 1, 2). In contrast, in the females, the gnathosoma is strongly reduced, the chelicera are very small, with greatly reduced cheliceral digits (Fain and Bafort 1966) (Figs.4, 5E). Based on the structure of mouthparts of these stages it is reasonable to conclude that they apparently cannot be used for feeding.

Hypodectes (H.) nycticoracis Filippi, 1861, the only species of the subgenus *Hypodectes* and the type species of the genus, was originally described based on the deutonymphs from the Black-crowned Night Heron *Nycticorax nycticorax* (type

host) and also from *Egretta garzetta* (Linnaeus, 1766) (Ciconiiformes: Ardeidae) in Italy (Filippi 1861). Because the structure of hypopus strongly changes during its feeding and growth, this mite species was repeatedly described form *N. nycticorax* by other authors at least three more times (Filippi 1861; Giebel 1861); exhaustive synonymy for this species was provided and discussed by Fain (1967) in the revision of hypoderatids.

The two species of the subgenus *Hypodectoides* are mainly known from pigeons and doves. *Hypodectes propus* was recorded from 12 species of Columbiformes and 3 species of Musophagiformes (Fain 1967), and *H. samsinaki* is known only from the feral pigeon *Columba livia* Gmelin, 1789 (Samšiňák 1982; Fain and Lukoschus 1986). Since *H. propus* was recorded on various hosts, and all these records, except for that from *Columba palumbus* Linnaus, 1758, represent only findings of hypopi, it is possible to suggest that in the current taxonomic concept this mite could be a complex of species. Taking into consideration that *Hypodectes propus* was originally described from the Western Crowned Pigeon, *Goura cristata* (Pallas, 1764) (Nitzsch in: Giebel 1861) from New Guinea, it could potentially appear that adults from *C. palumbus* described by Fain and Bafort (1966) as *H. propus* represent an unnamed species of *Hypodectes*.

The subspecies *H. propus bubulci* Fain, 1967 was originally described from hypopi found on the Cattle Egret, *Bubulcus ibis* (Linnaeus, 1758) (Ciconiiformes: Ardeidae) from Rwanda and also recorded from additional eight heron species (Ardeidae) and from the Painted Stork, *Mycteria leucocephala* (Pennant, 1769) (Ciconiiformes: Ciconiidae), from the New World (Fain and Hyland 1962; Grunberg and Kutzer 1962; Fain 1967; Černý 1969; Pence 1972; Fain and Lukoschus 1986). Records of this subspecies from the wide range of hosts and from different continents cause serious doubts and lead to the suggestion that these authors could actually deal with a complex of species or subspecies. Fain and Lukoschus (1986) hypothesized, although they did not have direct evidence, that the hypopus of *H. propus bubulci* from *Bubulcus ibis* could actually correspond to *Bubulcodectes brevitarus* Fain and Lukoschus, 1986, described from adults from the nest of the same host species (Table 1). This seems to be quite likely, and if it is so, *H. propus bubulci* should be elevated to the specific rank and moved to the genus *Bubulcodectes*. Furthermore, B.M. OConnor (University of Michigan, USA) found hypopi determined as *H. propus bubulci* in the nest of the Snowy Egret, *Egretta thula* (Molina, 1782) (Ciconiiformes: Ardeidae) (pers. comm.). Some of these hypopi were pharate and contained males with characters matching the characteristics of the genus *Bubulcodectes*. Although this is very substantial evidence indicating that the species complex "*H. propus bubulci"* belongs to the genus *Bubulcodectes*, we refrain here to formally synonymize *Bubulcodectes brevitarus* with *H. propus bubulci* until adults from the Snowy Egret and Cattle Egret are available for comparison or direct evidence for this tentative synonymy is found. This observation also shows the weakness of the current hypoderatid systematics based on hypopi, where a deutonymphal specimen classified as a subspecies of a known species actually represents a distinct genus, *Bubulcodectes* (Table 2).

One more subspecies, *H. propus similis* Černý, 1969, was described from the hypopus found in two species of herons, *Ardea herodias* Linnaeus, 1758 and *A. (=Casmerodius) alba egretta* (Gmelin, 1789), in Cuba (Černý 1969). The status of this taxon is questionable until adults from nests of corresponding hosts will be discovered. Domrow (1992) synonymized all non-nomi-

Table 2.
Discriminate characters for three hypoderatid genera with strong modification of gnathosoma in males and females

	Hypodectes	*Hypodectoides*	*Bubulcodectes*
Both sexes			
Palpal setae *l″*	absent	present	present
Tibial setae *kT*IV	absent	absent	present
Tarsal setae *s*IV	present	absent	present
Male			
Palp	one segment	one segment	two segments
Coxal fields III	open	closed	open

nal subspecies described within *H. propus*, but this taxonomic solution seems to be not substantiated.

In the present work, we describe adults of a hypoderatid mite, which we identified as *H. nycticoracis*. These mites were found in the nest of the type host of this species, *Nycticorax nycticorax*. Although we did not have hypopi and other stages, our specimens clearly resemble adults of *H. propus* and *H. samsinaki* based on many morphological characteristics, including those of the gnathosoma and legs. Besides, *H. nycticoracis* is the only hypoderatid species known so far from *N. nycticorax* (Fain 1967; Pence 1972).

Our specimens, however, show distinct differences in the leg and gnathosomal chaetotaxy as compared to the subgenus *Hypodectoides*. Taking in account, the high taxonomic value of chaetotaxy in the systematics of astigmatan mites, we believe that it is reasonable to elevate the two subgenera of *Hypodectes* to the generic rank. The genus *Hypodectes* in the sense of the present paper has the following discriminate features: in both sexes, the ventral palpal setae *l″* are absent, the palps bear only two setae (*dTa, dTi*) and one solenidion *ω*, and the spine-like seta *s* of tarsi IV is present; in the males, coxal fields III are open. According to the description by Fain and Bafort (1966: Figs. 2, 7, 8–10, 12, 15), in the adults of *Hypodectoides*, the ventral palpal setae *l″* are present, the setae *s* on tarsi IV are absent, and coxal fields III are closed in males (Table 2). Thus, the genus *Hypodectes* in the present sense becomes monotypic, and the genus *Hypodectoides* **stat. n.** includes at least two valid species: *Hypodectoides propus* (Nitzsch, 1861) **comb. n.** and *Hypodectoides samsinaki* Fain et Lukoschus, 1986 **comb. n.**

Hypodectes nycticoracis Filippi, 1861

Figs. 1–5

Material examined. 3 males, 3 females from *Nycticorax nycticorax* (Linnaeus, 1758) (Ardeidae), Ukraine, Odesskaya oblast, 30.05.1964, coll. unknown; 1 male, 2 females from *Ardea cinerea* Linnaeus, 1758 (Ardeidae), Ukraine, Odesskaya Oblast, Belyaevski Region, Mayaki, 25.06.1991, D. Kivganov.

Description. **Male** (3 specimens from type host measured). Gnathosoma. Chelicerae greatly hypertrophied, approximately as long as half-length of idiosoma, with strong dorsal ledge at base of fixed digit; movable and fixed digits, each with 2 basal teeth; apex of fixed digit bidentate (Fig. 1). Subcapitulum much wider than long (88–98 × 225–245), with acute antero-lateral angles, with short acute extension mesal to bases of palps, and with angular median extension. Palps consist of one stick-like segment with seta *dTa* and solenidion *ω* situated apically and with seta *dTi* situated near base of the segment; ventral palpal seta *l″* absent (Fig. 2, 3A).

Idiosoma. Ovoid, length 760–780, greatest width 500–530; posterior margin of opisthosoma rounded, without lobes. Prodorsal shield: covering most surface of prodorsum, anterior part wide, anterior margin straight, posterior margin convex and extending beyond level of scapular setae, posterolateral parts may touch but not encompass bases of scapular setae. Hysterosoma with a pair of weakly sclerotized hysteronotal shields situated in posterior half (Fig. 1). Setae *vi* filiform, 200–250 long, situated on anterior margin of prodorsal shield. Supracoxal setae *scx* filiform. Setae *se, si* represented by macrosetae, subequal in length, distance between bases of these setae: *se:se* 310–315, *si:si* 250–260. Setae *c2* spiculiform, 160–170 long; other dorsal idiosomal setae filiform. Setae *c3* and *cp* represented by macrosetae of approximately equal length. Length of setae: *c1* 150–230, *d1* 140–160, *d2*, 80–130, *e1* 100–150, *e2* 120–130, *f2* 140–160, *ps2* 230–250. Setae of terminal complex (*h1, h2, h3, ps1*) represented by macrosetae being equal to or exceeding the greatest width of idiosoma. Hysteronotal gland not colored, openings *gl* distinct. Cupules *ia–ih* weakly developed.

Epimerites I fused into a Y with strongly divergent branches, length of sternum 88–90. Coxal fields I, II completely sclerotized and fused to each other forming entire ventral shield of propodosoma; posterior margin of this shield convex and with small median concavity. Coxal fields III open. Coxal fields III, IV without extensive sclerotization, with narrow sclerotized band at bases of corresponding trochanters. Epimerites IVa absent. Genital apparatus situated posterior to level of trochanters IV, genital arch 26–48 × 59–54, aedeagus as long as half-length of genital arch. Genital setae *g* and posterior pair of genital papillae at level of genital arch apex. Anal suckers including surrounding membrane 26–28 in diameter. Pseudanal setae *ps3* at level of anal suckers, mesal to them. Anal opening rudimentary, situated slightly posterior to level of anal suckers.

Legs. Ventral setae *s* of tarsi I–IV short, spiniform. On tarsus I, setae *aa, ba* and famulus ε situated posterior to solenidion *ω1*, solenidion *ω2* close to tarsal apex (Fig. 3A). Seta *d* of tarsus II

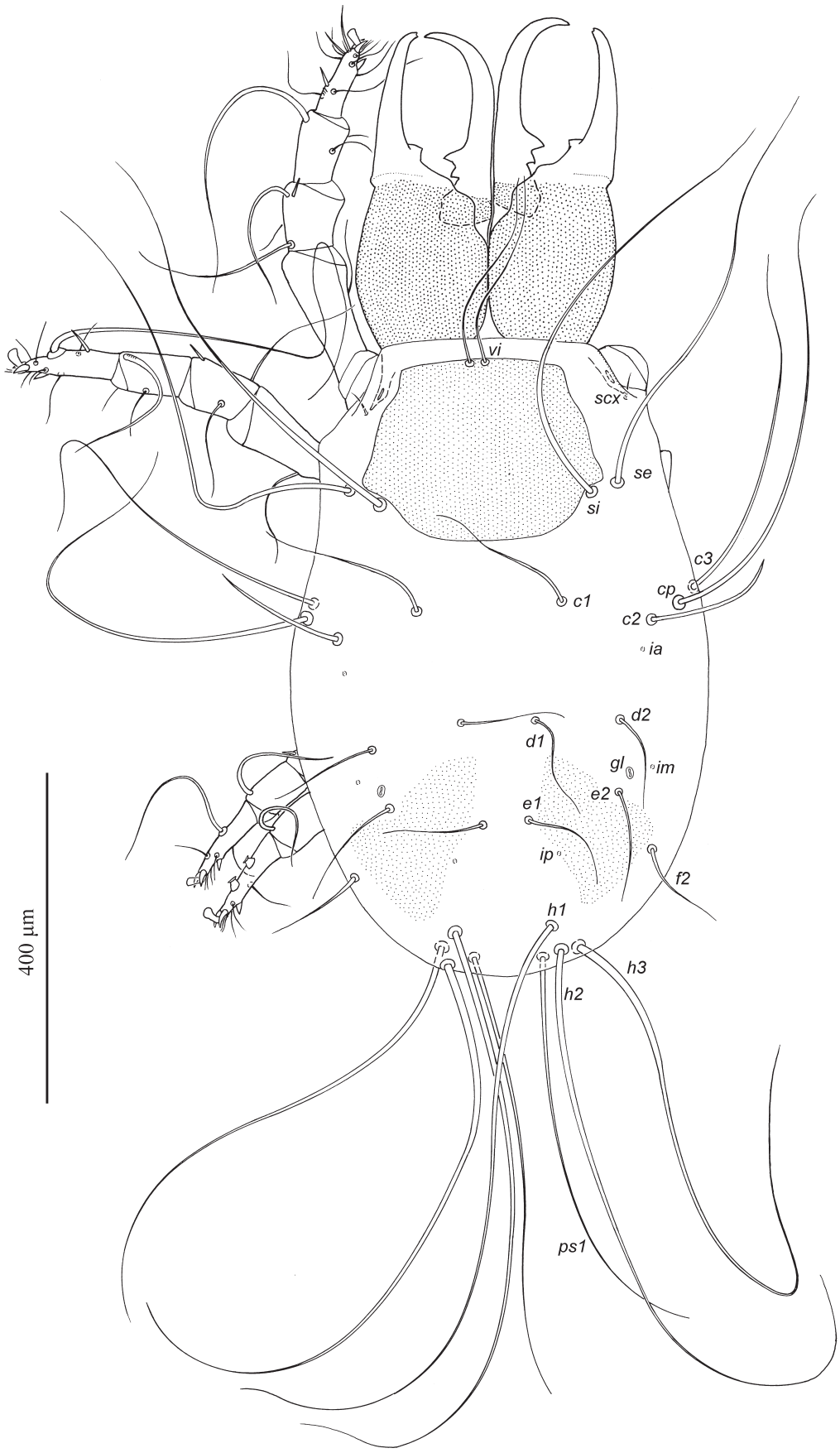

Fig. 1. *Hypodectes nycticoracis*, dorsal view of male.

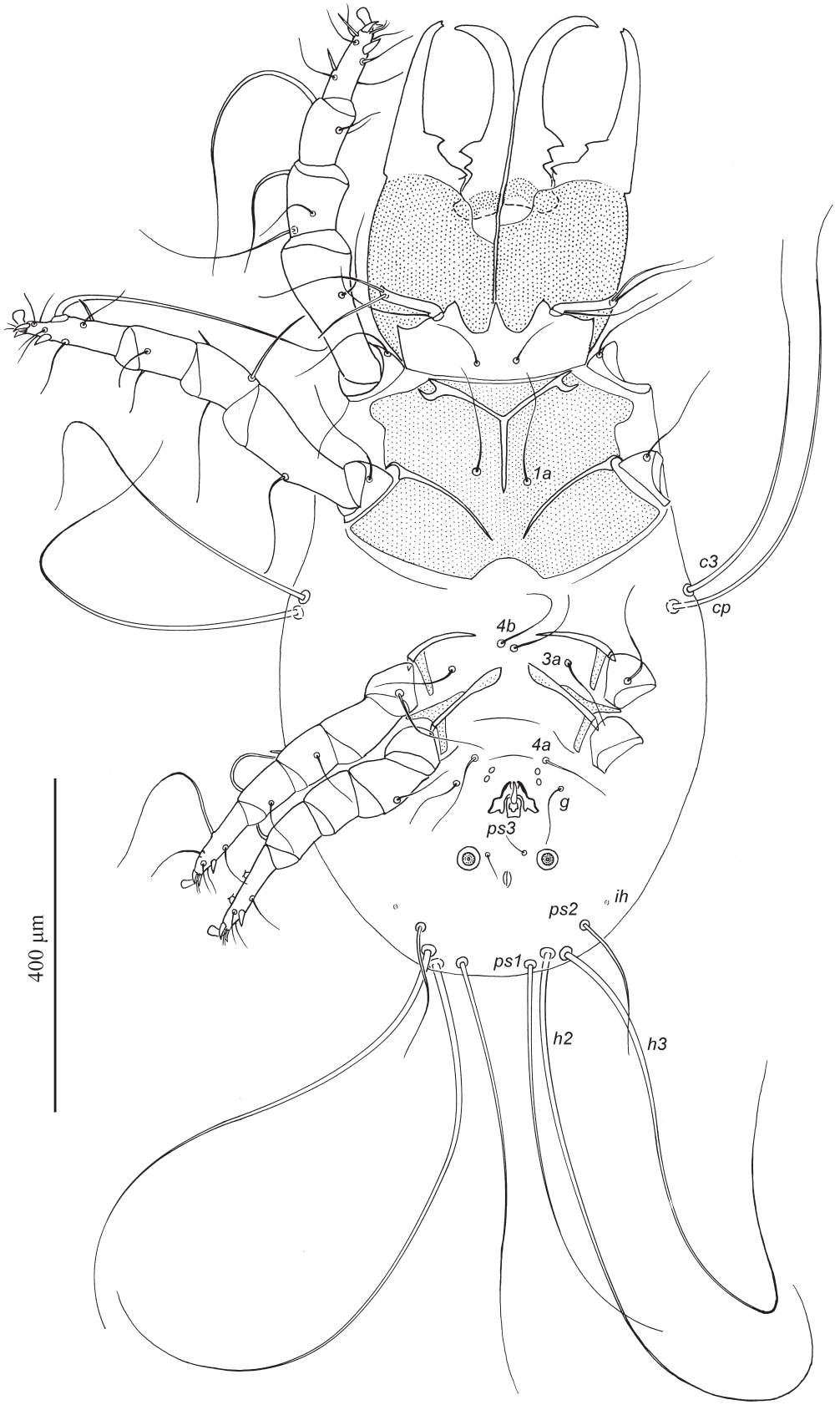

Fig. 2. *Hypodectes nycticoracis*, ventral view of male.

represented by macrosetae and comparable in length to corresponding legs (Fig. 3B). Setae *d, e* of tarsus IV barrel-shaped with distinct discoid caps, these setae separate tarsus into three approximately equal parts (Fig. 3D). Unguinal setae *u, v* of all tarsi distinct, longer than claw-like proral se-

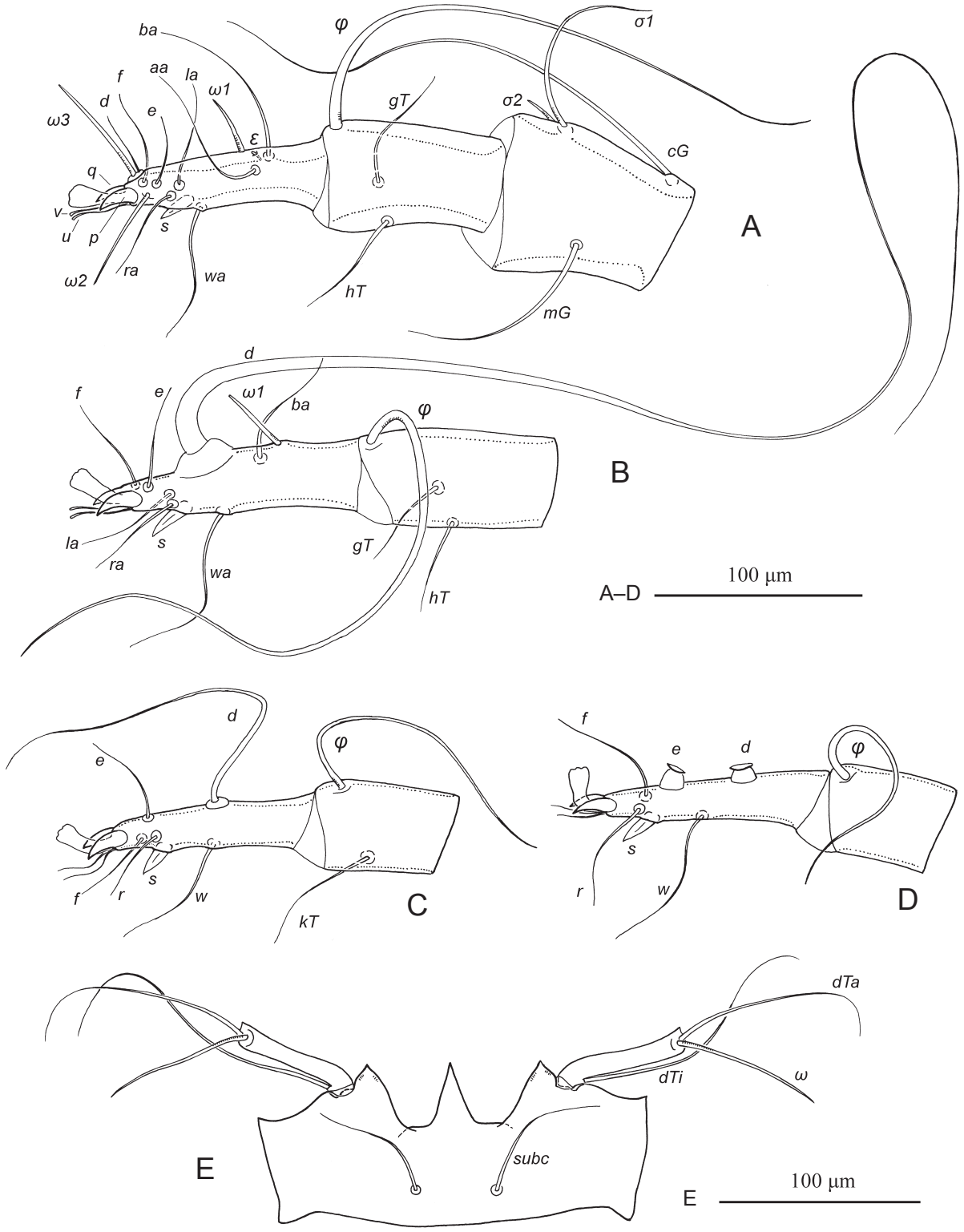

Fig. 3. *Hypodectes nycticoracis*, details of male. A — tarsus, tibia and genu I, B — tarsus and tibia II, C — tarsus and tibia III, D — tarsus and tibia IV, E — subcapitulum.

tae *p, q* (Fig. 3A). Leg chaetotaxy (number of setae, number of solenidia in parentheses): tarsi 13(3)–12(1)–10–10, tibiae 2(1)–2(1)–1(1)–0(1), genua 2(2)–2(1)–1(1)–0, femora 1–1–0–1, trochanters 1–1–1–0. Length of tarsi (excluding pretarsus): I 94–98, II 107–120, III 93–110, IV 102–116.

Female (range for 3 specimens from type host). Gnathosoma strongly reduced in size (Fig. 3B). Subcapitulum: anterior margin with angular

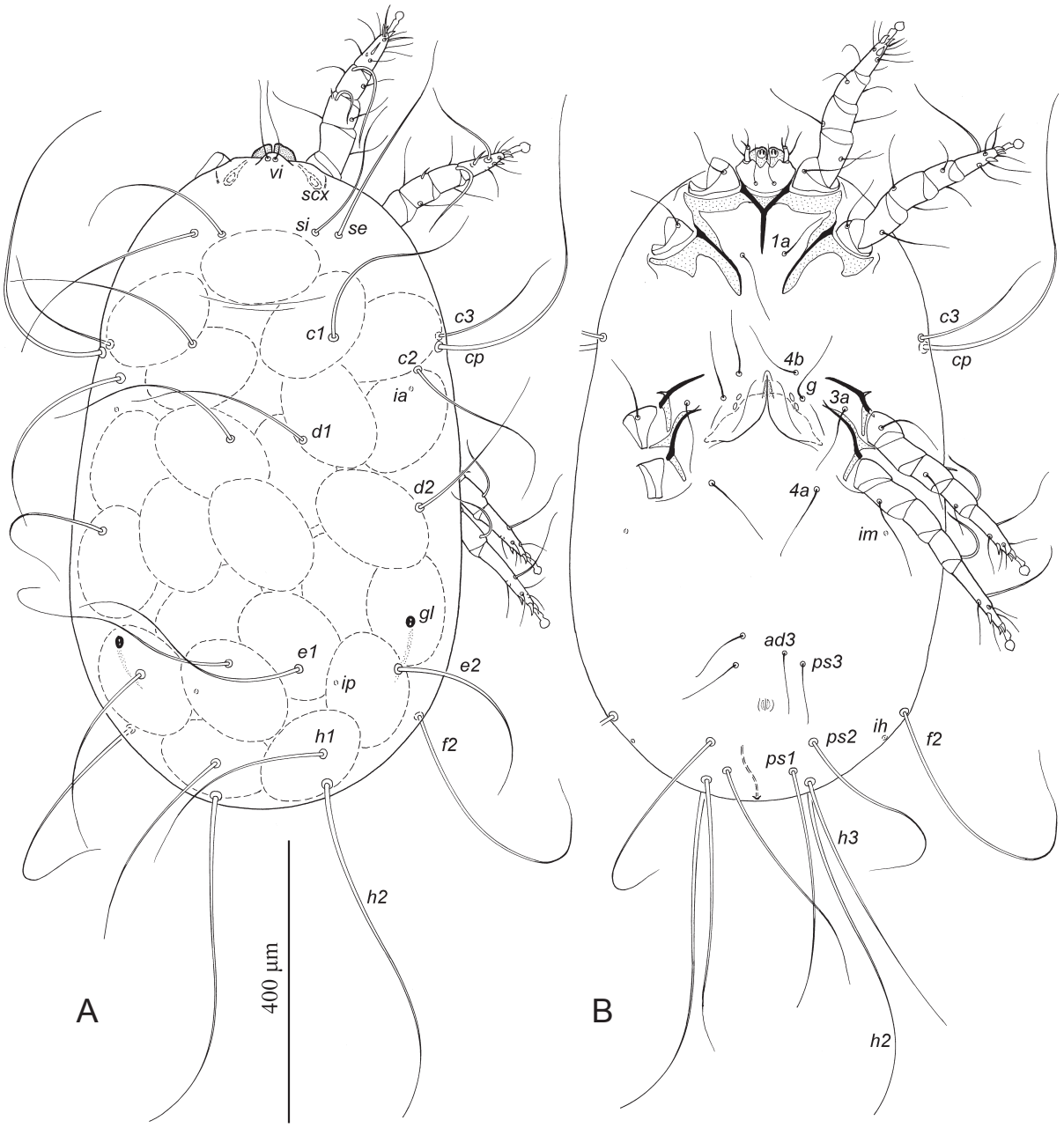

Fig. 4. *Hypodectes nycticoracis*, female. A — dorsal view, B — ventral view.

median extension, length excluding palps 45–50, greatest width 65–72 (Fig. 5E). Chelicerae ovate, fixed digits not developed, movable digits strongly reduced. Each palp represented by single stick-like segment, chetotaxay of palps as in male.

Idiosoma. Ovoid, noticeably elongated, length 920–930, greatest width 550–560, anterior end with weakly expressed rostral extension bearing setae *vi*, surface of idiosoma smooth, without any dorsal shields (Fig. 4A). Setae *vi* filiform, 140–150 long. Supracoxal setae *scx* filiform, situated submarginally. Scapular setae *si* 240–250 long, about 2/3 of macrosetae *se*, bases of scapular setae arranged in transverse row; distance between bases: *se:se* 200–210, *si:si* 150–160. All dorsal hysteronotal setae long, filiform. Setae *c3* 250–260 long, approximately half as long as macrosetae *cp*. Length of hysteronotal setae: *c1* 350–370, *c2* 380–400, *d1* 380–400, *d2* 400–420, *e1* 330–350, *e2* 330–350, *f2* 380–400, *h1* 290–300, *ps1, ps2* 330–350. Setae *h2, h3* subequal in length to the greatest width of idiosoma. Hysteronotal glands not colored, openings *gl* anterior to bases of setae *e2*. Cupules *ia–ih* wakly developed, cupules *im* situated ventrally. Copulatory opening terminal.

Epimerites I fused into a Y, length of sternum 55–70. Epimerites II with narrow sclerotized areas. Coxal fields I, II with sclerotized areas at bas-

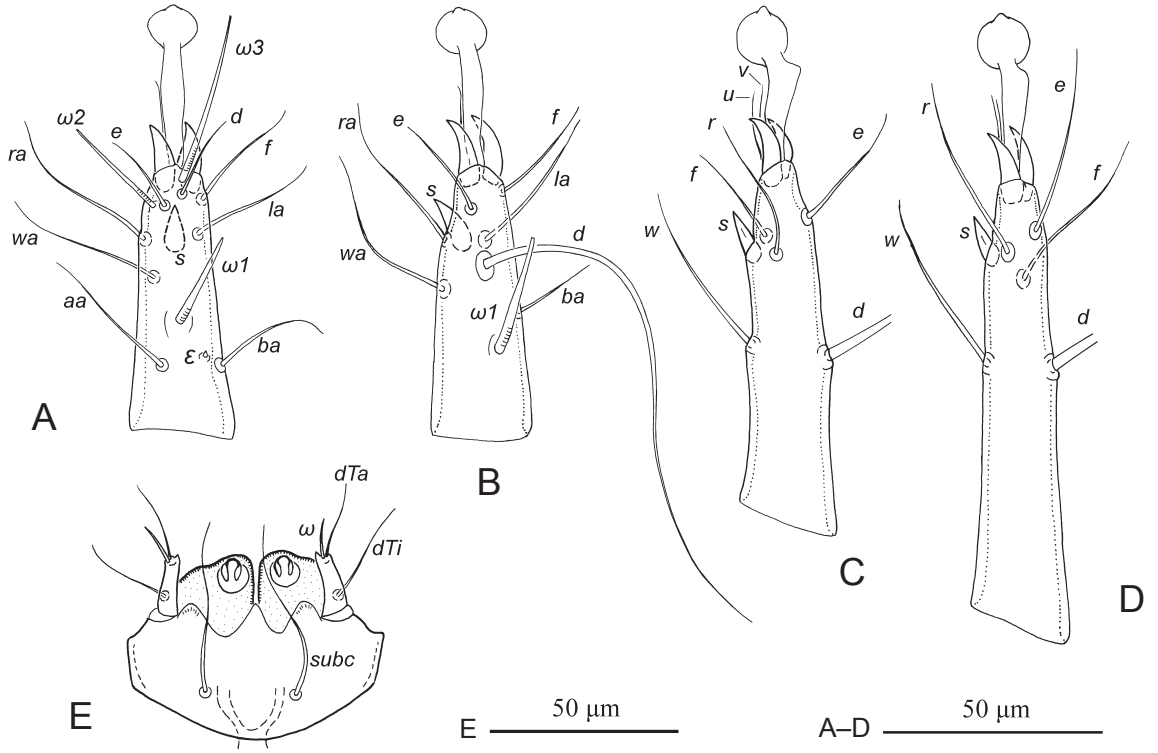

Fig. 5. *Hypodectes nycticoracis*, details of female. A — tarsus, tibia and genu I, B — tarsus and tibia II, C — tarsus and tibia III, D — tarsus and tibia IV, E — subcapitulum.

es of corresponding trochanters. Coxal field III, IV with narrow sclerotized areas along anterior epimerites and at bases of corresponding trochanters. Epimerites IIa, IVa absent. Oviporus at level of coxal fields III and trochanters III; external folds of this opening 90–95 long, extending from level of inner tips of epimerites III to midlevel of coxal fields IV (Fig. 4B). Epigynum represented by small triangular sclerite at anterior end of oviporus. Genital papillae and genital setae *g* at level of inner tips of epimerites IV. Setae *ad3* and *ps3* filiform, subequal, 80-90 long. Anal opening rudimentary.

Legs. Setae *s* of tarsi I–IV spiniform (Fig. 5A–D). Tarsi I, II as in male, except seta *d* of tarsus II, which is approximately as long as half-length of leg II. Setae *d, e, f, r,* and *w* of tarsi III, IV filiform. Leg chaetotaxy as in male. Length of tarsi: I 54–62, II 62–67, III 80–97, IV 98–116.

Remark. In early descriptions of the adult stages of hypoderatids (e.g., Fain and Bafort 1966; Fain and Beaucournui 1972; OConnor 1981; Wurst and Hevelka 1997) the unguinal setae *u* and *v* on the tarsi were not detected. Only in the latest papers on these mites, Fain and coauthors reported these setae (Fain and Lukoschus 1986; Fain and Clark 1994). In most hypoderatids these setae are very difficult to see, because these tiny setae are situated apicoventrally between bases of large claw-like proral setae *p* and *q* and usually pressed tightly to the ventral side of the ambulacral stalk. They can be confidently observed only when the tarsus is placed in the lateral aspect and the ambulacrum is somehow bent dorsally. In adults of *H. nycticoracis*, the unguinal setae are relatively large and even longer than the proral setae (Figs. 3A–D, 5C, D).

Genus *Neottialges* Fain, 1966

Type species: *Neottialges (Neottialges) geopeliae* Fain, 1966, by original designation.

The genus *Neottialges*, most representatives of which are known so far only from hypopi, is the species-richest hypoderatid genus. Fain (1966, 1967) placed here 16 species known from deutonymphs and arranged them into three subgenera: *Neottialges* s. str., *Caloenectes* Fain, 1966, and *Pelecanectes* Fain, 1966. Fain and Beaucournu (1972) elevated *Pelecanectes* to the generic rank, but subsequently it was returned to *Neottialges* as a subgenus (Fain and Lawrence 1974; Fain and Lukoschus 1986; Fain and Clark 1994). Later on, the two more monotypic subgenera, *Ardeidectes* Fain et Lukoschus, 1986 and *Heronidectes* Fain et Lukoschus, 1986, were established in this genus based on adults (Fain and Lukoschus 1986). Dom-

row (1992) synonymized the genus *Suladectes* Fain, 1969 with *Neottialges* and did not recognize any subgenera within the latter genus, but this taxonomic concept seems to be questionable. To date, the genus *Neottialges* (without *Suladectes*) comprises 28 species. Most of these species are arranged in five subgenera (Fain 1966, 1967, 1973; Fain and Amerson 1968; Pence 1971, 1972, 1973; Fain and Lawrence 1974, 1979, 1986; Fain and Kigaye 1976; Yong and Pence 1979; OConnor 1985; Fain and Lukoschus 1986; Pence and Duncan 1995; Pence and Newman 1997; Pence et al. 1997). Adults are known only for four *Neottialges* species from four subgenera (Table 1).

The subgenus *Neottialges* s. str. (2 species) is known from Columbiformes, *Ardeidectes* (1 species) and *Heronidectes* (1 species) occurs on Ciconiiformes, and *Caloenectes* (7 species) was recorded from Columbiformes, Ciconiiformes, and Pelecaniformes. Mites of the subgenus *Pelecanectes* (20 species) were reported from Ciconiiformes, Columbiformes, Falconiformes, Pelecaniformes, and Passeriformes. Three *Neottialges* species from Falconiformes were provisory placed by Fain (1967) in the genus without referring to a subgenus. Given that species of the subgenera *Pelecanectes* and *Caloenectes* are distributed on phylogenetically distant bird taxa, it is quite possible that the current taxonomic limits and species contents of these subgenera are artificial. However, this could be tested only with findings of adult stages from the diverse avian hosts of *Neottialges*.

Neottialges (Heronidectes) gracilipes sp. n.

Figs. 6–11

Type material. Male holotype, 2 male, 1 female and 3 hypopus paratypes, nest of *Nycticorax nycticorax* (Linnaeus, 1758) (Ardeidae), Ukraine, Odesskaya Oblast, Belyaevski Region, Mayaki, 25.06.1991, D.A. Kivganov. Holotype and all paratypes — ZISP.

Additional material. 1 female, nest of *Ardea cinerea* Linnaeus, 1758 (Ardeidae), Ukraine, Belyaevski Region, Mayaki, 25.06.1991, D.A. Kivganov; 1 male, nest of *Egretta garzetta* (Linnaeus, 1766) (Ardeidae), Ukraine, Odesskaya Oblast, Belyaevski Region, Mayaki, 26.06.1991, D.A. Kivganov.

Male (holotype, measurements for 2 paratypes in parentheses). Gnathosoma. Chelicerae and subcapitulum normally developed, 62 long (including palps), 66 wide (60–66 × 65–68); pharyngeal sclerite small, with wavy striae in medial part, posterior end slightly enlarged and rounded (Fig 7E). Palps bear 3 setae, solenidion *ω* and eupathidium *ul′*.

Idiosoma. Length of idiosoma 415 (415–435), width at level of trochanters III 258 (245–255). Opisthosoma bluntly rounded posteriorly, without lobes. Prodorsal shield represented by pair of narrow longitudinal bands almost extending to level of scapular setae (Fig. 6A). Setae *vi* filiform, 70 (70–80) long, situated on soft tegument. Supracoxal setae *scx* filiform. Scapular setae *se*, *si* approximately at same transverse level; setae *si* spiculiform, 58 (55–62) long; distance between bases of scapular setae: *se*:*se* 84 (82–88), *si*:*si* 42 (40–42). Hysteronotal shields paired, most part of these plates situated on lateral and ventral sides of opisthosoma. Setae *c3* represented by macrosetae, subequal in length to *cp*. Length of spiculiform hysteronotal setae: *c1* 55 (55–66), *c2* 46 (45–53), *d1* 33 (33–38), *d2* 40 (40–55), *e1* 35 (35–40), *e2* 62 (60–65), *h1* 84 (82–88). Setae *f2* filiform 60 (60–66). Hysteronotal glands dark-colored, openings *gl* closer to setae *e2* than to *d2*; grooves associated with gland openings indistinct. Cupules *ia–ih* well developed.

Epimerites I fused into a Y, length of sternum 35 (33–36). Coxal fields I–IV open, without large sclerotized areas. Trochanters I, II flanked by narrow sclerotized bands connecting bases of corresponding epimerites. Bases of epimerites III, IV with narrow sclerotized band at corresponding trochanters. Epimerites IIa well developed, long, not enlarged. Epimerites IVa absent. Genital apparatus at level of trochanters III, 48 (48–55) long, 26 (25–33) in width at base, aedeagus, much shorter than genital apparatus. Genital setae *g* and genital papillae approximately at midlevel of genital apparatus. Anal suckers small, 11 (10–11) in diameter, surrounding membrane without pattern. Pseudanal setae *ps3* antero-mesal to anal suckers, near anterior end of anal opening. Length of setae: *ps1* 120 (110–125), *ps2* 75 (55–75), *ps3* 35 (35–45).

Legs. Ventral setae *s* of tarsi I–IV short spiniform. Setae *gT, hT* of tibiae I, II filiform; setae *kT* of tibiae III, IV thick spiniform, situated approximately at midlevel of corresponding segment. Seta *nG* of genu III filiform. Setae *aa, ba* and famulus ε of tarsus I anterior to solenidion *ω1*; solenidion *ω2* approximately at midlevel of this segment, more proximal than seta *s* (Fig. 7A). Setae *s* of tarsi III, IV not longer than 1/5 of corresponding segment (Figs 6C, D). Setae *d, e* of tarsus IV bar-

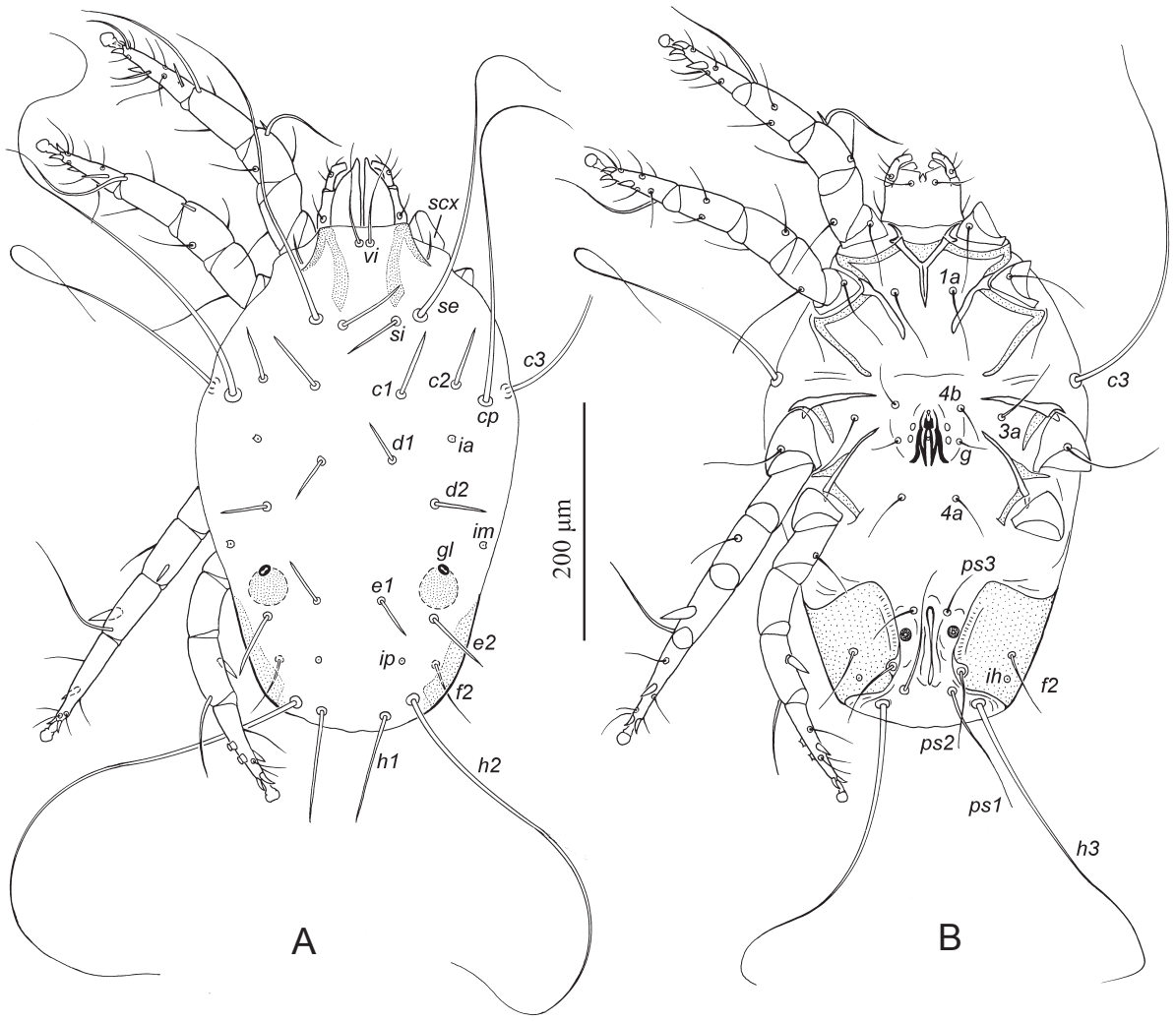

Fig. 6. *Neottialges gracilipes*, male. A — dorsal view, B — ventral view.

rel-shaped with distinct discoid caps, these setae separate tarsus into three approximately equal parts. Setae *u, v* of all tarsi thin, weakly developed. Leg chaetotaxy: tarsi 13(3)–12(1)–10–10, tibiae 2(1)–2(1)–1(1)–1(1), genua 2(2)–2(1)–1(1)–0, femora 1–1–0–1, trochanters 1–1–1–0. Length of tarsi: I 64 (64–66), II 62 (58–62), III 77 (76–78), IV 68 (68–73).

Female (1 paratype). Gnathosoma. General structure as in male, 88 × 90; pharyngeal sclerite almost two times wider than in male (Fig. 9E)

Idiosoma. Ovoid, length 530, greatest width (at level of trochanters III, IV) 345. Prodorsal shield represented by pair of narrow longitudinal bands extending to or slightly beyond level of scapular setae *se* (Fig. 8A). Setae *vi* filiform, 80 long, situated on soft tegument. Supracoxal setae *scx* filiform. Dorsal shields and any pattern on hysterosoma absent. Scapular setae *si* spiculiform, 80 long, situated slightly posterior to level of setae *se*; distance between bases: *se:se* 120, *si:si* 50. Setae *c3* represented by macrosetae, subequal to *cp*. Length of spiculiform hysteronotal setae: *c1* 80, *c2* 62, *d1* 50, *d2* 70, *e1* 53, *e2* 54, *f2* 35, *h1* 58. Hysteronotal glands dark-colored, openings *gl* anterior to bases of setae *e2*, grooves associated with these openings absent. Cupules *ia–ih* well developed. Copulatory opening terminal.

Epimerites I fused into a Y, length of sternum 28. Coxal fields I, II open, without sclerotized areas. Trochanters I, II flanked by narrow sclerotized bands connecting bases of corresponding epimerites. Bases of epimerites III, IV with narrow sclerotized band at corresponding trochanters. Epimerites Iia well developed, long. Oviporus at level of trochanters III. Epigynum represented by large sclerite in form of an inverted U, 60 long, 80 wide, its tips extending to posterior ends of outer genital flaps (Fig. 8B). Genital setae *g* and genital papillae at level of anterior part of epigynum. Se-

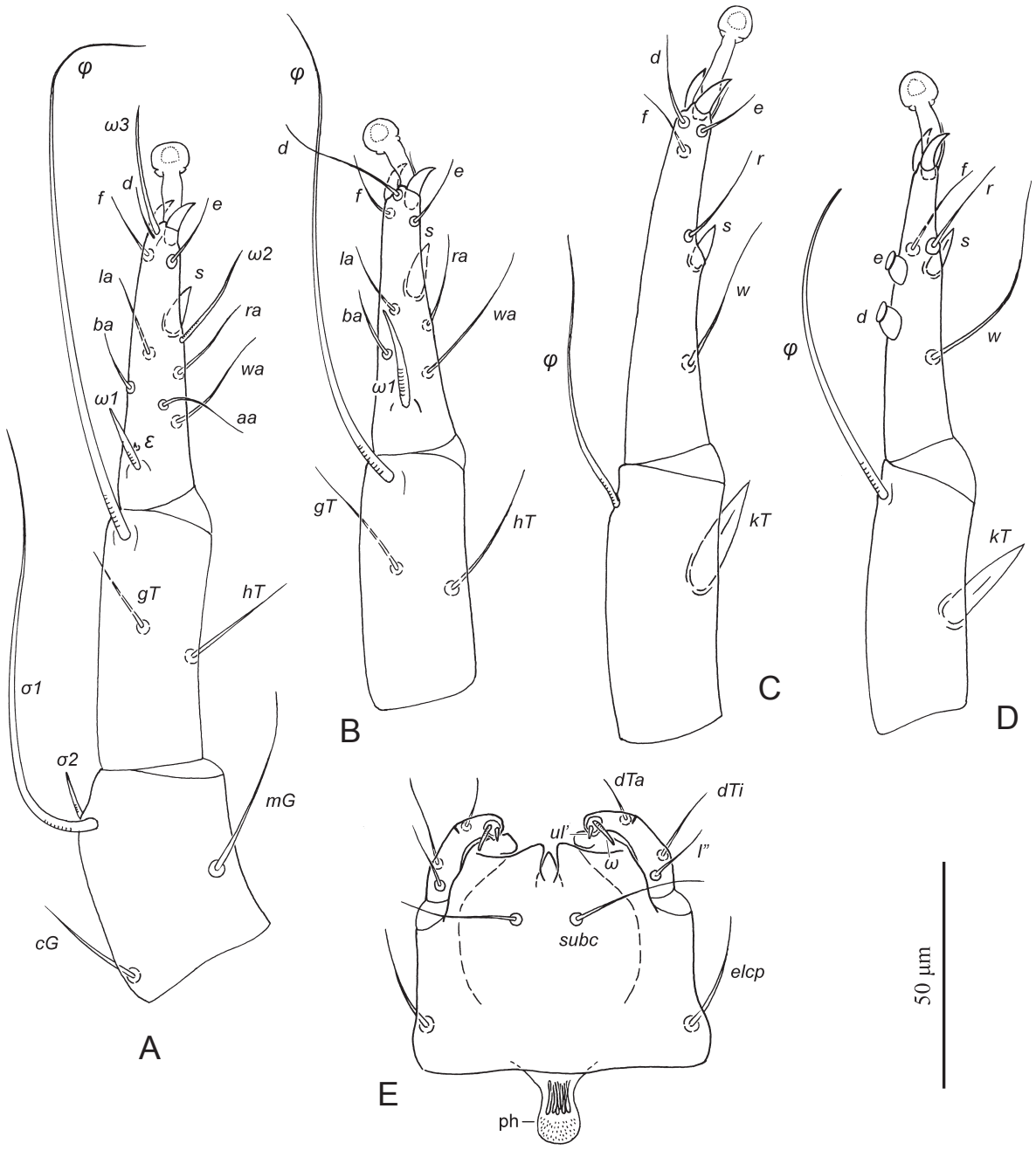

Fig. 7. *Neottialges gracilipes*, details of male. A — tarsus, tibia and genu I, B — tarsus and tibia II, C — tarsus and tibia III, D — tarsus and tibia IV, E — subcapitulum. ph — pharyngeal sclerite.

tae *ad3* and *ps3* long filiform, each about 110 long; setae *ps1, ps2* about 220–250.

Legs. Legs I, II as in male. Legs III, IV thin, elongated, slightly exceeding idiosomal width. Setae *nG* of genu III filiform; setae *kT* of tibia III, IV spiculiform; setae *s* of tarsi III, IV short spiniform, setae *d, e, f, r,* and *w* of tarsi III, IV filiform (Figs. 9C, D). Chaetotaxy as in male. Length of tarsi: I 93, II 89, III 148, IV 165.

Deutonymph (juvenile hypopus, range for 3 paratypes). Idiosoma ovoid, length 295–305, greatest width 170–190, dorsal cuticle without sclerotized areas, with sparse transverse punctate striae, sejugal furrow not marked (Fig. 10A). Opisthosoma short, not extending beyond tips of legs IV. Gnathosomal plate elongated, fused posteriorly to bases of epimerites I. Setae *vi* short filiform, 9–13 long, situated on apex of rostral extension. Supracoxal setae *scx* filiform, situated ventral on rostral extension. Setae *si* short filiform, 20–25 long, situated slightly anterior to level of setae *se*. All dorsal hysteronotal setae except *f2* long filiform, over 100. Cupules *ia* well developed, other cupules indistinct. Length of hysteronotal setae

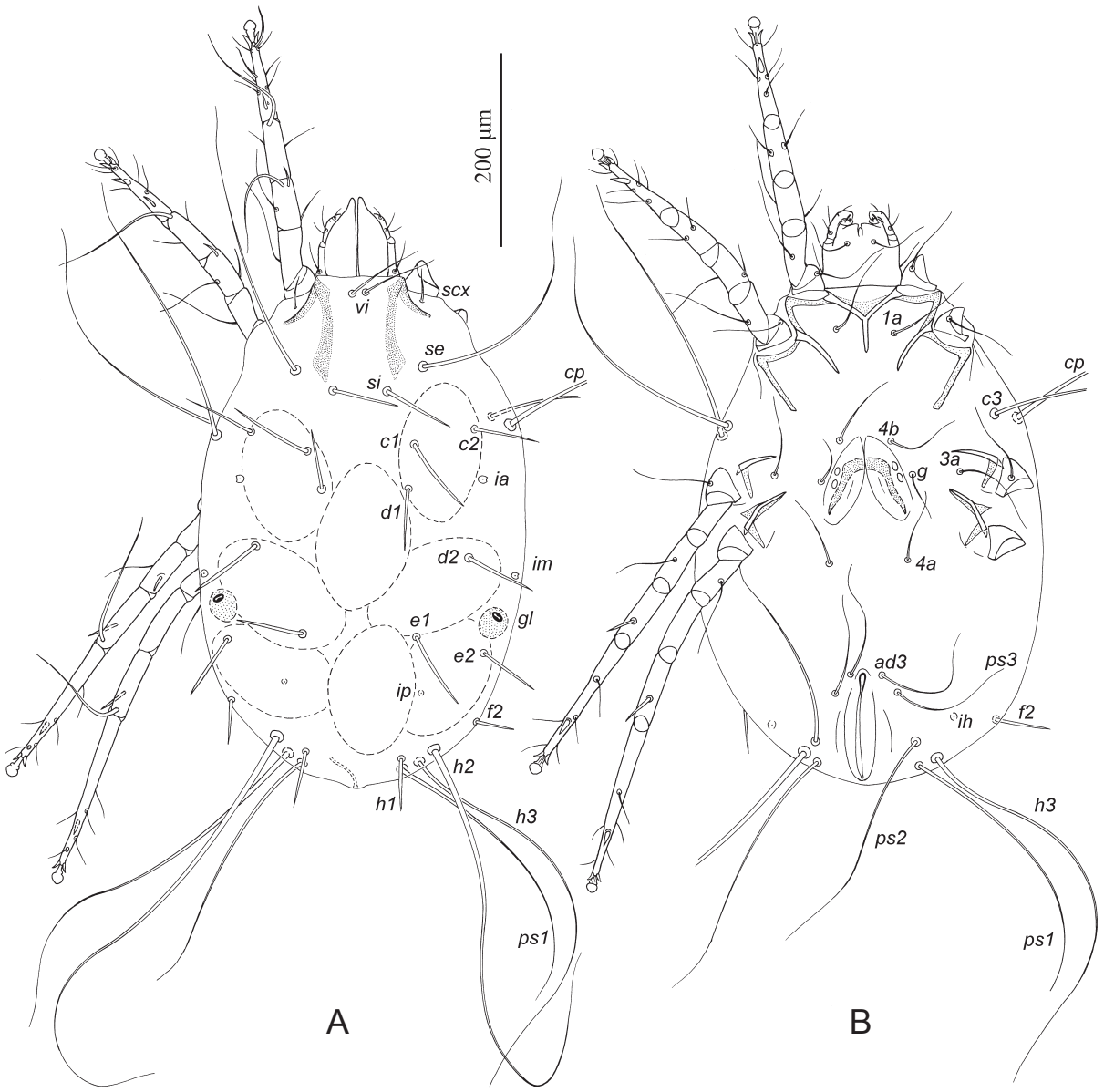

Fig. 8. *Neottialges gracilipes*, female. A — dorsal view, B — ventral view.

(setae indicated by * are displaced ventral): *c1* 250–290, *c2* 150–210, *c3** 110–130, *d1* 175–220, *d2* 150–220, *e1* 135–180, *e2* 140–150, *f2* 10–13, *h1* 290–310, *h2** 80–100, *h3** 140–170.

Epimerites I fused into a Y, posterior end of sternum bifurcate, length of sternum 55–62. Epimerites II and IIa long, almost completely closing coxal fields II (Fig. 10B). Epimerites III and IV long, ending freely. Coxal fields I–IV without extensive sclerotization. Genital sclerite well developed, narrow, with T-shaped anterior and posterior ends, 68–71 long. Genital papillae ovate, similar in size, length 22–26. Length of setae: *g* 33–45, *4a* 50–70. Anal opening poorly distinct.

Legs. Leg segments normally developed, tarsi elongate, especially tarsi III; length of tarsi: I 40–44, II 38–42, III 82–88, IV 37–40. Tarsus I with setae *aa, d, wa* long filiform; setae *la, ra, p, q* long filiform with foliate distal tips, seta *e* short filiform, seta *f* spine-like; solenidion *ω1* slightly attenuate apically, situated basally; solenidion *ω3* elongate, situated apically; famulus ε at midlevel of tarsus, at same level as setae *ba* and *wa* (Fig. 11A). Tarsus II similar in structure to tarsus I (except for presence of seta *ba*) (Fig. 11B). Tarsus III strongly elongate and slightly curved, with small apical spine, with 8 setae: setae *d* long filiform, setae *e, f, p, q*, and *r* elongate, with foliate apices, seta *s* short filiform, seta *w* strongly thickened basally, with filiform apex (Fig. 11C). Tarsus IV with small apical spine and with 4 setae of uncertain homology: apical seta (supposedly *d*) represented

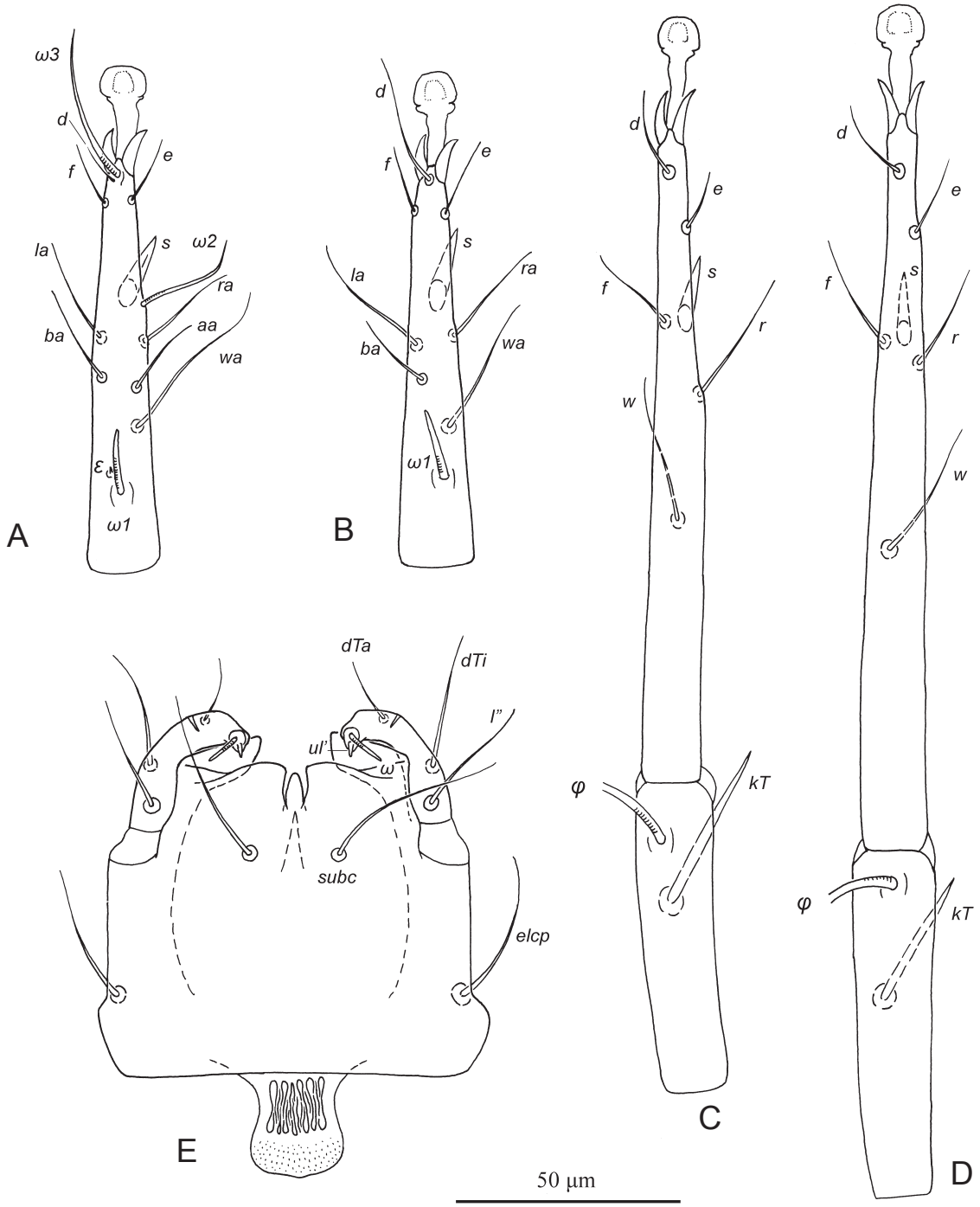

Fig. 9. *Neottialges gracilipes*, details of female. A — tarsus I, B — tarsus II, C — tarsus and tibia III, D — tarsus and tibia IV, E — subcapitulum.

by macrosetae with sparse barbs, two spine-like setae (supposedly *w, r*) situated basi-ventrally, and thin spine-like setae (supposedly *s*) situated ventrally in distal third of tarsus (Figs. 11D, E). Tibia I with longitudinal dorsal crest, seta *gT* long filiform, seta *hT* thick spine-like, solenidion *φ* with filiform apex. Tibia II similar to tibia II except both setae *gT* and *hT* spine-like. Tibia III: seta *kT* thick spine-like, soelnidion *φ* short, attenuate to apex, not longer than seta *kT*. Tibia IV: seta *kT* and solenidion *φ* absent, only their alveoli weakly distinct (Figs. 11D, E).

Genu I: seta *mG* long filiform, seta cG short filiform, solenidion *σ1* a very short and blunt spine. Genu II with seta *mG* and *cG* as in tarsus I, solenidion *σ1* a thin and acute spine. Genu III with seta *nG* thick spine-like, with solenidion *σ1* thin spiniform, shorter than seta *nG*.

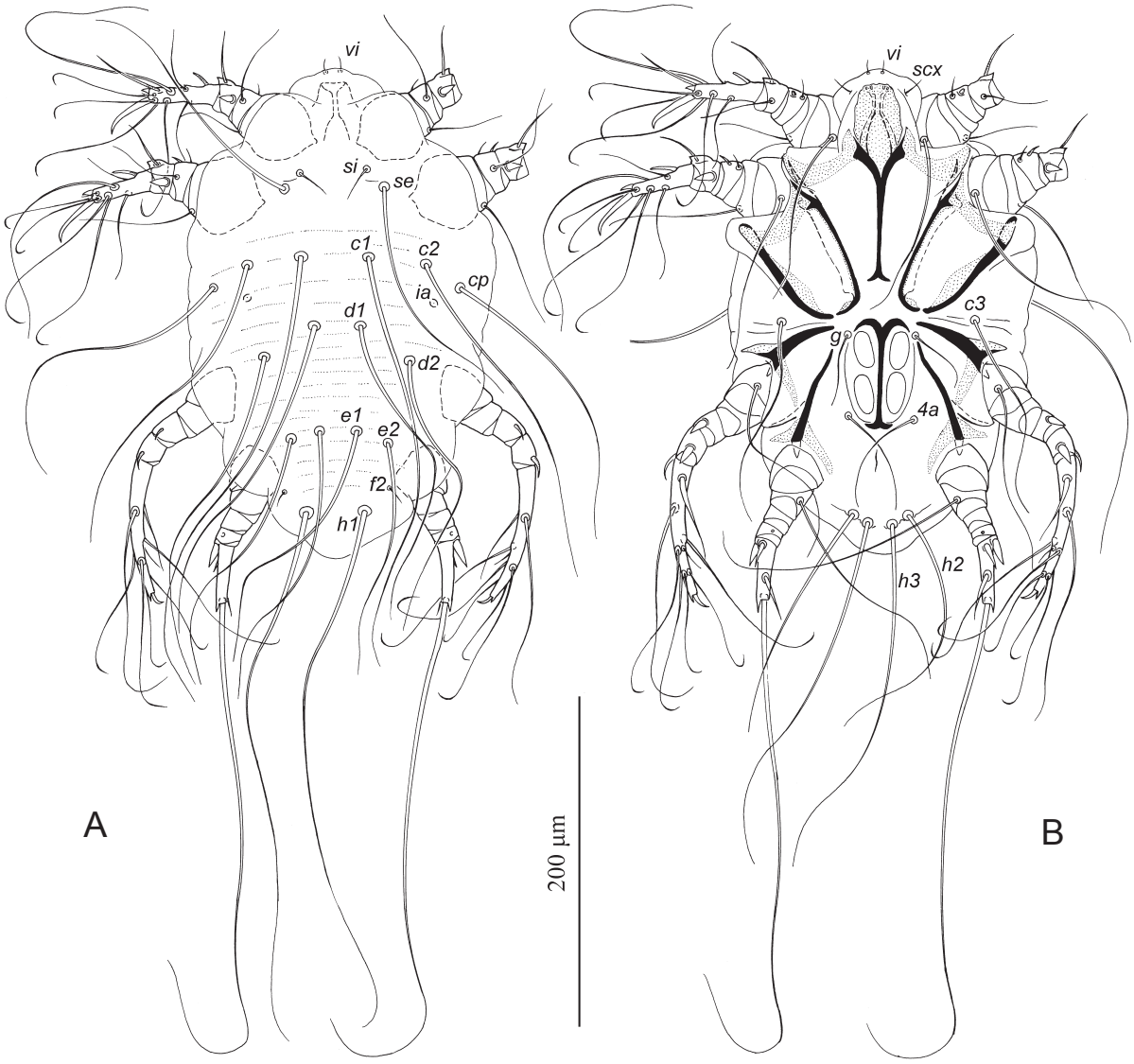

Fig. 10. *Neottialges gracilipes*, hypopus. A — dorsal view, B — ventral; view.

Femora I, II, IV with filiform seta *vF*; on femora IV this seta longer than corresponding leg. Trochanters I–III with long filiform seta comparable in length to corresponding legs. Empodial claws of tarsi I, II longer than half-length of corresponding tarsi, acute and slightly curved apically, 29–36 and 30–33 long, respectively; empodial claw o tarsus III acute and curved, 9–11 long. Leg chaetotaxy: tarsi 9(2)–9(1)–8–4, tibiae 2(1)–2(1)–1(1)–0(0), genua 2(1)–2(1)–1(1)–0, femora 1–1–0–1, trochanters 1–1–1–0.

Differential diagnosis. The new species *Neottialges (Heronidectes) gracilipes* sp. n. differs from *N. (H.) mendezi* Fain et Lukoschus, 1986, the only formerly known species of the subgenus, by the following features. In males, tarsal seta *s*IV is about 1/5 of corresponding tarsi, tibial seta *kT*IV is situated at the midlevel of tibia and approximately as long as a half-length of this segment, the pharyngeal plate with rounded posterior margin, hysteronotal spiculiform setae *c1,c2, d1, d2, e1*, and *e2* are distinctly shorter (not exceeding 60). In females, the epigynum is long and extending to the posterior end of the ovipository opening; the surface of hysteronotum is smooth and the grooves originated from the hysteronotal gland opening are indistinct. In males of *N. (H.) mendezi*, seta *s*IV is about 1/3 of tarsus, seta *kT*IV is situated in the distal half of tibia and subequal in length to this segment; the pharyngeal sclerite with straight posterior margin; the spiculiform setae of hysteronotum are longer (80–100). In females of *N. (H.) mendezi*, the epigynum is short, semicircular, and not extending beyond the level of genital papillae; the hysteronotal glands open into well-developed longitudinal groves.

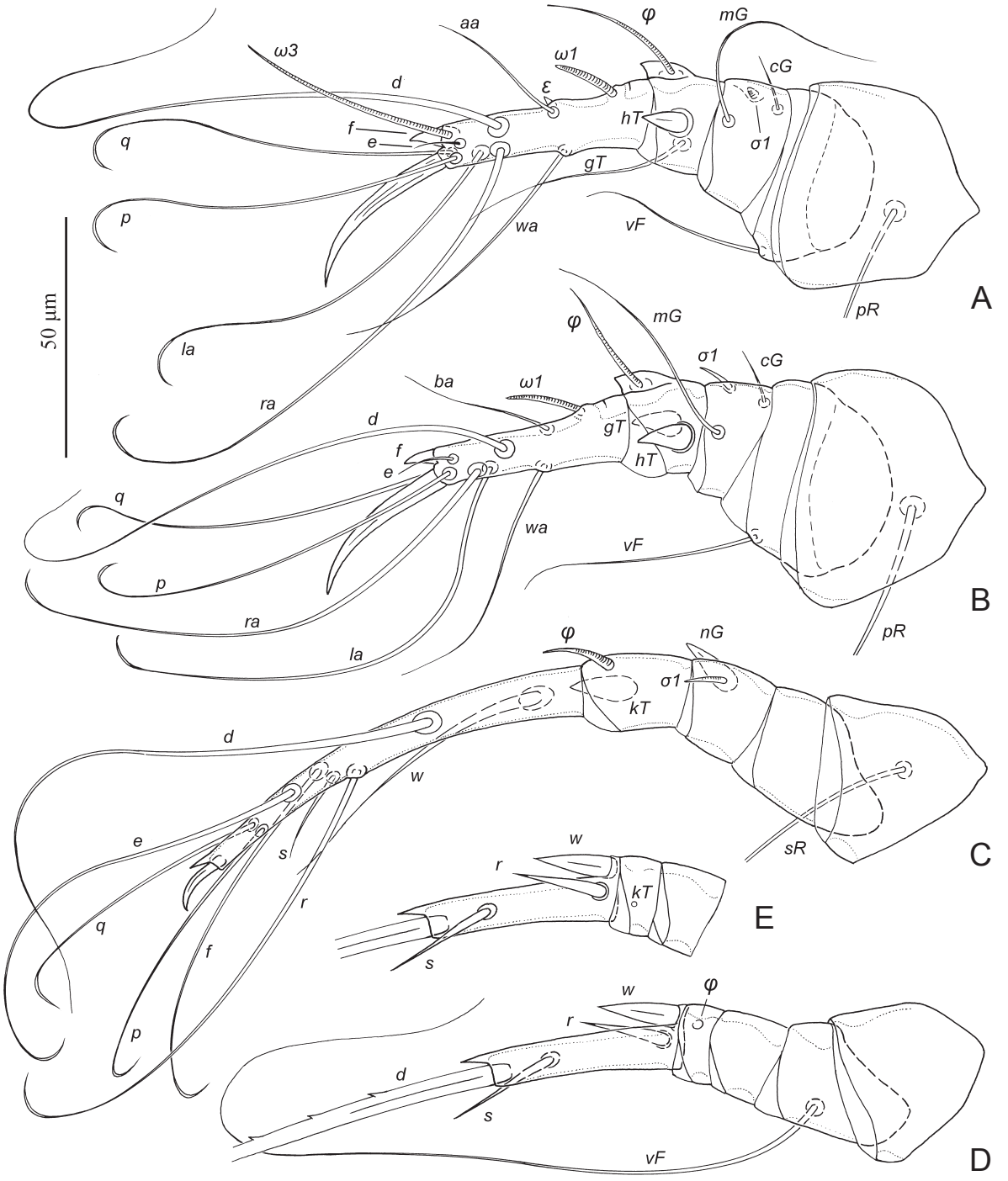

Fig. 11. *Neottialges gracilipes*, legs of hypopus. A–D — dorsal view of legs I–IV, respectively, E — genu, tibia and tarsus IV, ventral view.

Etymology. The specific epithet refers to the distinctly long and slim legs III, IV, especially in females.

Remark. Due to flattening of specimens in microslides, the hysteronotal shields in males of *Neottialges* and related genera are usually found on the ventral side of the mite body and sometimes cover the area of anal suckers like flaps.

Neottialges (Ardeidectes) sevastyanovi sp. n.

Figs. 12–15

Type material. Male holotype, 11 male and 18 female paratypes from nest of *Larus genei* Breme, 1839 (Laridae), Ukraine, Nikolaevskaya Oblast, Tiligul Lake, 4.06.1991, D.A. Kivganov. Holotype, 11 male and 11 female paratypes — ZIPS, 7 female paratypes — SIZ.

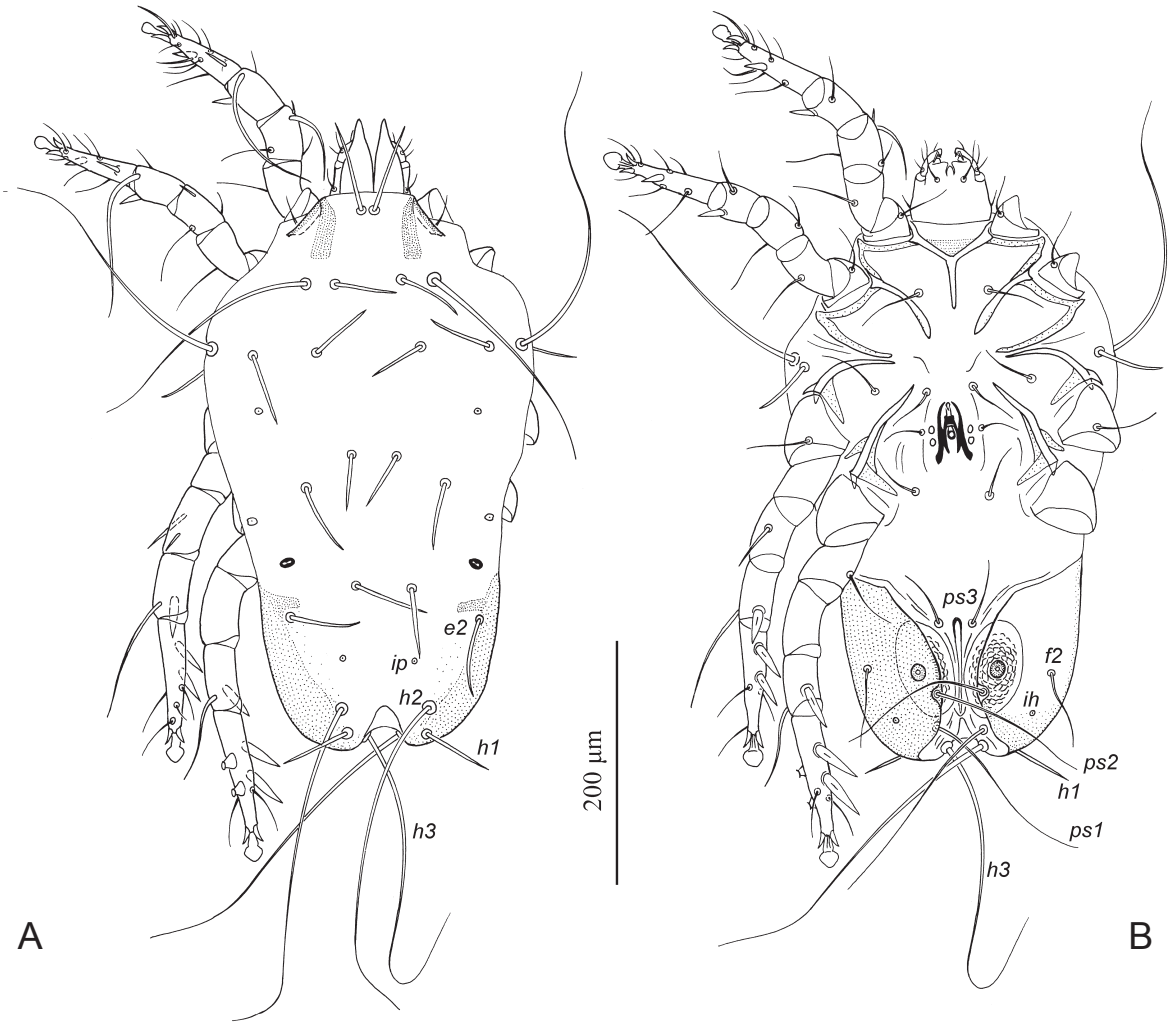

Fig. 12. *Neottialges sevastyanovi*, male. A — dorsal view, B — ventral view.

Additional material. 4 males, 3 females, nest of *Gelochelidon nilotica* (Gmelin, 1789) (Laridae), Ukraine, Nikolaevskaya Oblast, Tiligul Lake, 3.06.1990, D.A. Kivganov; 3 tritonymphs, nest of *Thalasseus sandvicensis* (Latham, 1787) (Laridae), the same place, 4.06.1991, D.A. Kivganov.

Male (holotype, range for 10 paratypes in parentheses). Gnathosoma. Chelicerae and subcapitulum normally developed, 66 long, 70 wide (62–68 × 60–70) (Fig. 12A); pharyngeal sclerite narrow, with deep and narrow terminal incision (Fig. 13E). Palps with 3 setae, solenidion *ω* and eupathidium *ul′*.

Idiosoma. Length of idiosoma 458 (450–480), width at level of humeral shield 265 (265–295). Opisthosoma with short and rounded opisthosomal lobes. Prodorsal shield represented by pair of narrow longitudinal bands not extending to level of scapular setae (Fig. 12A). Setae *vi* spiculiform,, 73 (70–78) long, situated on soft tegument. Supracoxal setae *scx* present, filiform. Scapular setae *se*, *si* approximately at same transverse level; setae *si* spiculiform, 68 (58–70) long; distance between bases of scapular setae: *se:se* 106 (100–112), *si:si* 45 (42–55). Opisthosomal shield paired, most area of these shields situated on lateral and ventral sides of body. Setae *c3* spiculiform, 45 (45–50) long. Length of spiculiform hysteronotal setae: *c1* 53 (52–60), *c2* 69 (60–70), *d1* 47 (40–50), *d2* 58 (52–62), *e1* 62 (42–62), *e2* 63 (60–66), *h1* 66 (50–58). Setae *f2* filiform, 66 (50–68) long. Hysteronotal glands not colored, openings *gl* closer to setae *e2* than to *d2*; grooves associated with gland openings indistinct. Cupules *ia–ih* well developed.

Epimerites I fused into a Y, length of sternum 36 (33–38). Coxal fields I–IV open, without large sclerotized areas. Trochanters I, II flanked by narrow sclerotized bands connecting bases of corresponding epimerites. Bases of epimerites III, IV with narrow sclerotized band flanking correspond-

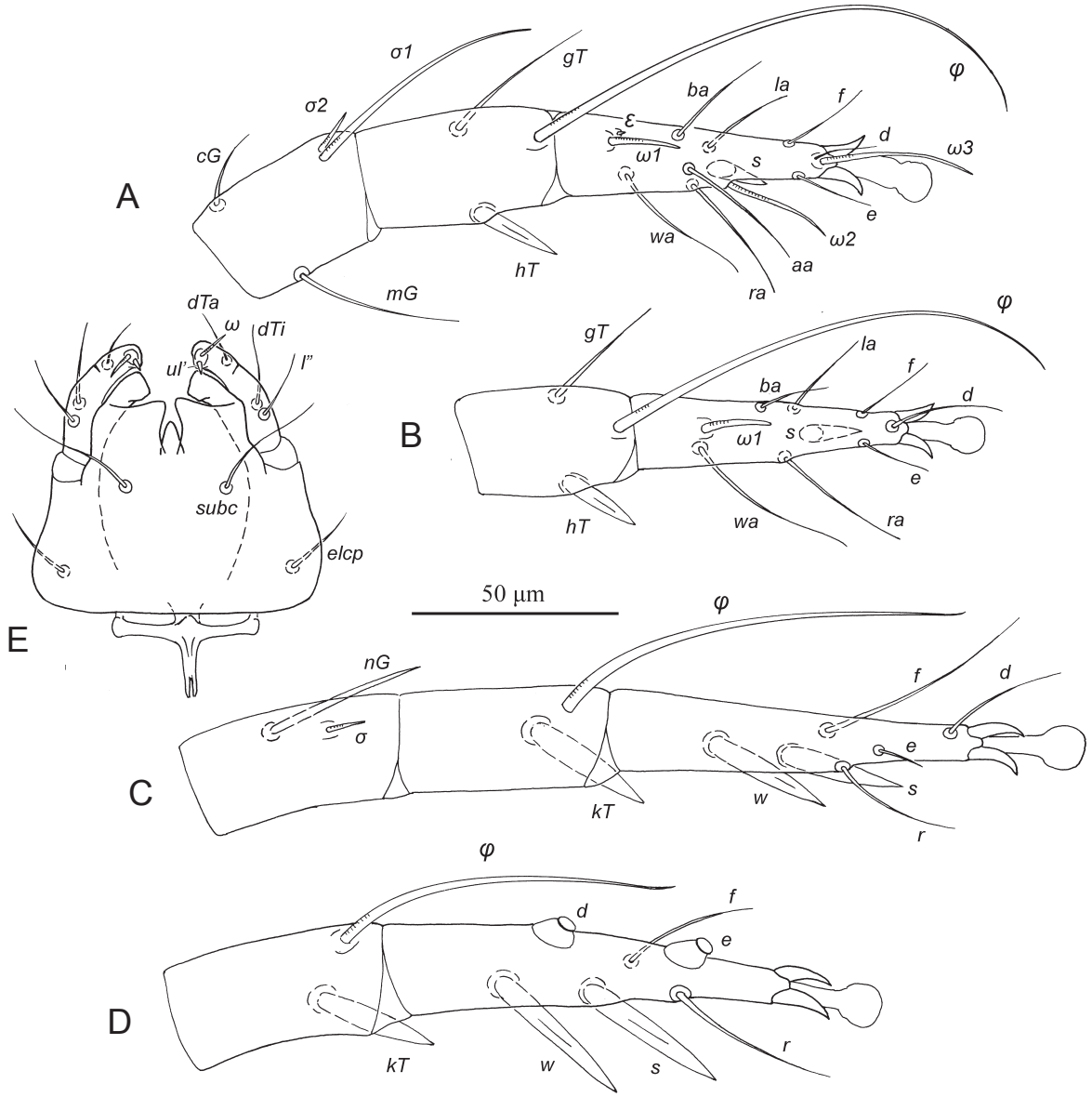

Fig. 13. *Neottialges sevastyanovi*, details of male. A — tarsus, tibia and genu I, B — tarsus and tibia II, C — tarsus, tibia and genu III, D — tarsus and tibia IV, E — subcapitulum.

ing trochanters. Epimerites IIa well developed, long, not enlarged. Epimerites IVa absent. Genital apparatus at level of trochanters III, 49 (48–53) long, 27 (26–32) in width at base, aedeagus much shorter than genital apparatus (Fig. 12B). Genital setae *g* and genital papillae approximately at midlevel of genital apparatus. Anal suckers small, diameter 15 (13–17), surrounding membranes with reticulate pattern. Pseudanal setae *ps3* anteromesal to anal suckers, near anterior end of anal opening. Length of pseudanal setae: *ps1* 140 (140–150), *ps2* 120 (120–130), *ps3* 45 (45–55).

Legs. Ventral setae *s* of tarsi I–IV short, spiniform. Tibial setae *gT*I,II filiform, setae *hT*I, II spiniform; setae *kT* of tibiae III, IV thick, spiniform, situated in distal part of corresponding segment. Seta *nG* of genu III spiculiform. Setae *aa, ba* and famulus ε of tarsus I anterior to solenidion *ω1*; solenidion *ω2* and seta *s* approximately at same level (Fig. 13A). Setae *s* and *w* of tarsi III, IV thick, spiniform, about 1/3 of corresponding segments or longer. Setae *d, e* of tarsus IV barrel-shaped, with distinct discoid caps, divide tarsus into three subequal parts (Figs 13C, D). Setae *u, v* of all tarsi thin, weakly developed. Leg chaetotaxy: tarsi 13(3)–12(1)–10–10, tibiae 2(1)–2(1)–1(1)–1(1), genua 2(2)–2(1)–1(1)–0, femora 1–1–0–1, trochanters 1–1–1–0. Length of tarsi: I 68 (68–73), II 66 (65–70), III 96 (95–102), IV 102 (97–104).

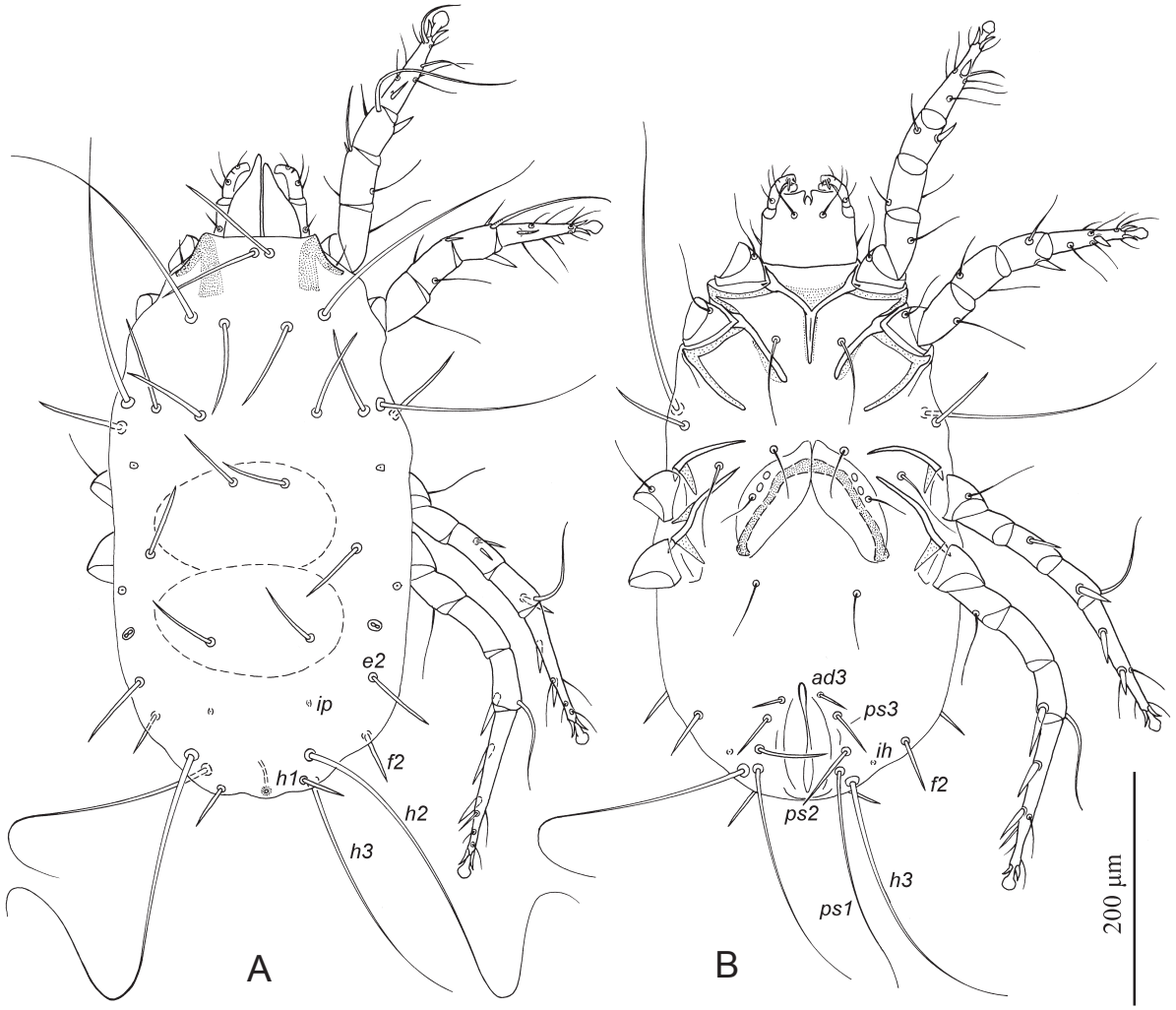

Fig. 14. *Neottialges sevastyanovi*, female. A — dorsal view, B — ventral view.

Female (range for 10 paratypes). Gnathosoma. General structure as in male, length including palps 75–82, width at base 82–88; pharyngeal sclerite almost three times wider than in male, with deep and narrow terminal incision and with wavy striae (Fig. 15E)

Idiosoma. Ovoid in general form, length 508–520, greatest width 235–312. Prodorsal shield represented by pair of longitudinal bands not extending to level of scapular setae *se* (Fig. 14A). Setae *vi* spiculiform, 75–95 long, situated on soft tegument. Supracoxal setae *scx* filiform. Scapular setae *si* spiculiform, 80–88 long, situated slightly posterior to level of setae *se*; distance between bases of setae: *se:se* 122–142, *si:si* 55–64. Shields and any pattern on hysterosoma absent. Setae *c3* spiculiform, 62–70 long. Length of spiculiform hysteronotal setae: *c1* 70–75, *c2* 82–90, *d1* 55–60, *d2* 55–62, *e1* 57–70, *e2* 62–70, *f2* 40–46, *h1* 44–50. Hysteronotal glands not colored; openings *gl* anterior to bases of setae *e2*, grooves associated with these openings absent. Cupules *ia–ih* well developed. Copulatory opening terminal.

Epimerites I fused into a Y, length of sternum 45–50. Coxal fields and epimerites I–IV as in male. Genital ovipository opening large, occupies area between trochanters III and IV. Epigynum represented by large sclerite in form of an inverted U with divergent branches, 84–88 long, 120–130 wide, its tips extending to posterior ends of outer genital flaps (Fig. 14B). Genital papillae at level of anterior margin of epigynum, setae *g* slightly posterior to them. Setae *ad3*, *ps2*, and *ps3* spiculiform, setae *ps1* long filiform; length of setae: *ps1* 190–210, *ps2* 44–40, *ps3* 33–35, *ad3* 22–26.

Legs. Legs I, II as in male. Setae *nG* of genu III spiculiform; setae *kT* of tibiae III, IV and setae *s, w* of tarsi III, IV short spiniform, seta *r* of tarsus IV spiculiform, setae *d, e, f,* and *w* of tarsi III, IV and *r* of tarsus III filiform (Figs. 15C, D). Chaeto-

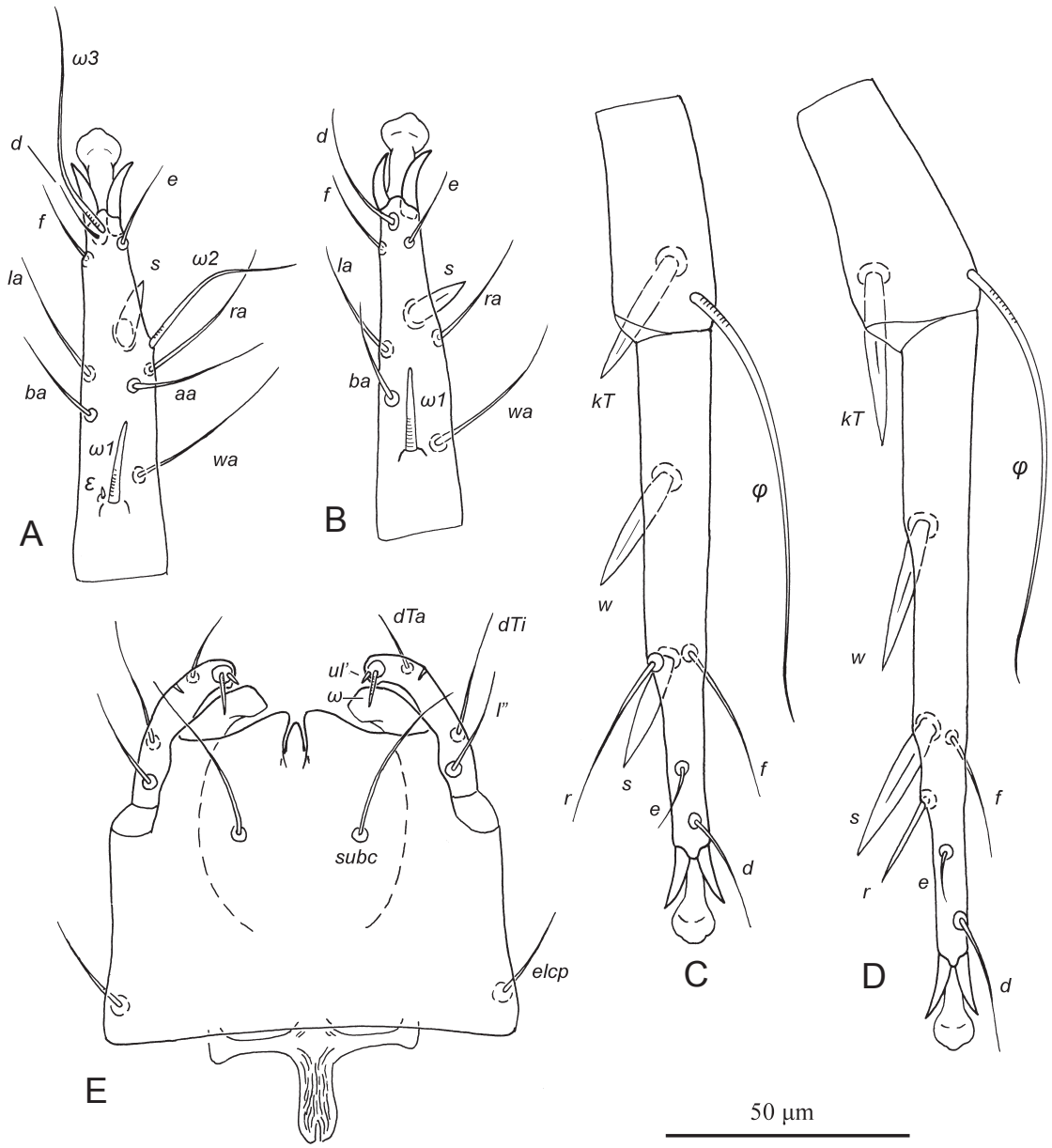

Fig. 15. *Neottialges sevastyanovi,* details of female. A — tarsus I, B — tarsus II, C — tarsus and tibia III, D — tarsus and tibia IV, E — subcapitulum.

taxy as in male. Length of tarsi: I 78–80, II 77–82, III 113–120, IV 135–138.

Differential diagnosis. The new species, *N. (A.) sevastyanovi* sp. n., differs from *N. (A.) ibis* Fain et Lukoschus, 1986, the sole previously known species of the subgenus *Ardeidectes* known only from females, by the following features. In females, the sclerites of the prodorsal shields are narrow longitudinal bands, about 20 in greatest width; the dorsal cuticle of the hystersoma is smooth and does not have any structural pattern, subhumeral setae *c3* are spiculiform and subequal in length to most other spiculiform setae of the hysternotum (*c1, c2, d1, d2, e1*, and *e2*), setae *w* of tarsi III, IV are spiniform. In females of *N. (A.) ibis*, the sclerites of the prodorsal shields are represented by plates of irregular form and are about 50 in width; the dorsal cuticle of the hystersoma bears minute sparse tubercles in the central part and has a distinct, scale-like pattern on the postero-lateral margins; subhumeral setae *c3* are setiform, approximately twice as long as the spiculiform setae of the hysternotum; and setae *w* of tarsi III, IV are filiform. Differential features in the structure of the prodorsal shields and the dorsal setae could probably be used to discriminate the males of these species, since these structures are similar in males and females of *N. sevastyanovi*.

Etymology. This species is named after the acarologist Prof. V.D. Sevastyanov (I.I. Mechnikov Odessa National University, Odessa, Ukraine).

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