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PREDATORY MITES (PARASITIFORMES, PHYTOSEIIDAE) OF THE FAUNA OF UKRAINE: REVIEW OF THE GENUS *AMBLYSEIUS* WITH A KEY TO SPECIES

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Predatory Mites (Parasitiformes, Phytoseiidae) of the Fauna of Ukraine: Review of the Genus *Amblyseius* with a Key to Species. Kolodochka, L. O. — The article continues a series of papers on the results of the study of predatory phytoseiid mites of the Ukrainian fauna, which are natural regulators of plant-feeding mites and small insects. Illustrated morphological descriptions of mite species with morphometry, diagnoses and information on distribution are provided together with a key to the species recorded in Ukraine. A previously unknown male of *Amblyseius irinae* Wainstein & Arutunjan, 1973 is described.
Key words: Amblyseiinae, mites, redescriptions, records.

Introduction

Predatory mites of the family Phytoseiidae (Acarina, Parasitiformes) are known to be natural limiters of the populations of herbivorous phytophagous mites and small insects that cause serious damage to agricultural production. This group of beneficial mites has long been the subject of research and some of them are successfully used in the practice of environmental plant protection. Collectively, they form a pool of species whose ecological potential can provide significant support for strengthening effective population control of various pests. Therefore, research aimed at identifying new species for the search and selection of predators for the subsequent ecological plant protection system must be carried out continuously.

This article continues a review of the results of a long-term research on the species composition of predatory phytoseiid mites in the fauna of Ukraine. Fifteen species of the genus *Amblyseius* are recorded, with new data on their distribution presented, diagnoses and detailed descriptions and morphometric data of the identified species, and a key to species occurring in Ukraine is provided.

Material and Methods

The main methodological stages of the work are considered below. Methods for preparing material for study are described in more detail in the first article of this series of publications (Kolodochka, 2022). The material was taken from terrestrial vegetation (plants) in different natural zones of Ukraine by shaking off mites with a stick onto the surface of a black polyvinyl chloride film. Mites were transferred from the leaf with a needle and fixed in 70 % ethanol. In the laboratory, samples were mounted on glass slides in Heuer's liquid. They were kept in a thermostat at a temperature of 60 °C for 2–3 weeks until completely dry. After lining (edging) the cover glass with varnish, the samples are ready for examination under a light microscope MBI-3 (LOMO) with a magnification of 10–90× and on a phase contrast device KF-4 with a camera lucida RA-6 (LOMO) 1.5× for drawings and measurements. The drawings in the article were made by the author.

The type material used in the study was deposited in the collections of the I. I. Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kyiv (SIZK). In where the type material was not available or its suitability for research (preparation of drawings, morphometry, etc.) was insufficient, non-type specimens from Ukraine were used. These non-type specimens were compared with voucher specimens from the collection of B. A. Wainstein, deposited in the Department of Acarology (SIZK), or with illustrations and measurements of specimens from publications of other authors. Measurements are given in micrometers (μm). The terminology of the idiosomal setae follows Wainstein (1973 a) with slight modifications or from Wainstein (1973 b) and Kolodochka (1990 a) to describe the reproductive system of phytoseiids.

Abbreviations of material depositories are as follows:

ARRIP — All-Russian Research Institute of Phytopathology, Russian Academy of Sciences;

CNC — Canadian National Collection, Ottawa;

IZGT —Department of Invertebrate Animals of the Institute of Zoology, Georgian Academy of Sciences, Georgia, Tbilisi;

IZAY — Institute of Zoology, Scientific Center of Zoology and Hydrobiology, National Academy of Sciences, the Republic of Armenia, Yerevan;

LAEP — Laboratoure d'Acarologie de l'Ecole Pratique des Hautes Études, Paris;

SIZK — I. I. Schmalhausen Institute of Zoology, NAS of Ukraine, Kyiv.

The list of countries in the world where the studied species were found was compiled according to Demete et al. (2024).

Subfamily Amblyseiinae
Tribe Amblyseiini
Subtribe Amblyseiina
Genus *Amblyseius* Berlese, 1914

Type species: *Zercon obtusus* Koch, 1839, by original designation.

Amblyseius Berlese, 1914: 143; Muma, 1961: 287; Muma et al., 1970: 62; Arutyunyan, 1977: 29 (in part); Ghiliarov et al., 1977: 233 (in part); Kolodochka, 1978: 20 (in part); Beglyarov, 1981: 30 (in part); Moraes et al., 1986: 5; Denmark & Muma, 1989: 4; Chant & McMurtry, 2007: 73; Papadoulis et al., 2009: 48; Denmark & Evans, 2019: 25; Kolodochka, 2006: 60 (in part).

Typhlodromalus Muma, 1961: 288 (in part, non type species); Moraes et al., 1986: 128 (in part); *Typhlodromips* De Leon, 1965: 23; Moraes et al., 1986: 135.

Genus profile. The dorsal shield with 17 pairs of setae and up to 7 pairs of solenostomes (*it, iv, id, il, isc, is, ic*); sclerotization of the shield varies from weak to strong; the surface of the shield is smooth (may be obliquely striated along the anterolateral edges) or weakly reticulate. The setae AS and PS are located outside the shield (in males, due to the growth of the edges of the shield, these setae end up on the shield). The dorsal setae often contrast in length, ranging from microsetae to whip-shaped. The setae AL4, PM3 and PM4

(rarely only PM3 and PM4 or only PM4) are usually longer than the others, which can be of medium size, short or microsetae, differ from each other within certain limits, or be more or less equal in length. Seta AL3, as a rule, is shifted to varying degrees towards the body axis relative to seta AL1. Peritremes with chaetoids usually reach at least the level of thecal setae AM1, often reaching AD1. The length of the sternal shield is equal to its width or some longer; c 3 pairs of sternal bristles. The ventroanal shield is entire, pentagonal or oval-pentagonal, occasionally elongated, usually with lateral notches, bearing 3 pairs of setae. Whether there are anal pores or not. The opisthoventral surface of the female idiosome usually has 4 pairs of setae surrounding the ventroanal shield; very rarely the pair of setae MV2 is absent (for example, in *A. krantzi*). Legs with macrosetae developed to varying degrees. Legs IV have 3 macrochaetes; legs I–III also usually have short macrochaetes on the knee, less often on the tibia. The gnathosoma and oral organs are proportional to the size of the idiosome, as in most species of the family. The chelicerae are moderate in size, Df carries from a small to a significant (more than 10) number of teeth, Dm — from 0 to 3 teeth (a larger number of them has not been identified in species of fauna of Ukraine).

Diagnosis. The genus *Amblyseius* here unites species of phytoseiids, which have the usual proportions of gnathosoma and oral appendages for most mites of the family and the presence of 3 pairs of elongated setae on the dorsal shield (AL4, PM2, PM3; very rarely AL4 is short, and only PM3 and PM4 are elongated). One of the related genera of the fauna of Ukraine, with a similar set and shape of dorsal setae *Chelaseius* Muma & Denmark, but with characteristically hypertrophied chelicerae and different proportions of the sternal shield, the width of which is noticeably greater than its length. From the genus *Amblyseiulus* Muma, which lacks a pair of setae PD2 in the dorsal chaetom, it is reliably distinguished by its presence. In contrast to the genus *Neoseiulus*, the dorsal shield has contrastingly elongated dorsal setae AL4, PM3, PM4.

Species included. This widespread genus includes 386 described species worldwide (Chant & McMurtry, 2007; with additions from Denmark, Evans, 2019). In Ukraine, 15 specieshave been recorded by far.

Amblyseius andersoni (Chant, 1957) (fig. 1)

Typhlodromus andersoni Chant, 1957: 296.
Amblyseius andersoni: Athias-Henriot, 1958: 33; Kolodochka, 1978: 27; Ghiliarov et al., 1978: 237; Kolodochka, 2006: 227; Chant & McMurtry, 2007: 75; Papadoulis et al., 2009: 48.
Typhlodromus (*Amblyseius*) *andersoni*, Chant, 1959: 92.
Typhlodromus andersoni: Hirschmann, 1962, Tab. 11, fig. 208.
Typhlodromus (*Typhlodromus*) *andersoni*: Westerboer & Bernhard, 1963: 682.

Material. **Type.** Holotype ♀: Canada, British Columbia, Rosedale, on prune (*Prunus* sp.), (collection date unknown), specimen #6545 (not examined) (CNC).

Non-type. 1422 specimens (1152 ♀, 270 ♂) — Autonomous Republic of Crimea, Cherkassy, Chernihiv, Donetsk, Kyiv, Kherson, Khmelnitsky, Luhansk, Lviv, Mykolaiv, Poltava, Rivne, Sumy, Ternopil, Transcarpathian, Vinnitsa, Zhytomyr Regions.

Redescription. Female. The dorsal shield (fig. 1, *1*) is moderately sclerotised, elongated-oval, caudally widened, partly covered with thin reticulate sculpture; 7 pairs of solenostomies (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). The setae of AM1, AL4, PM3 and PM3 are significantly longer than the others. The setae PM3 and PM4 are serrated, the rest are smooth. Setae AM1 extend far beyond the thecae of setae AL1. Setae AL1 equal half the distance to thecae AL3. Seta AL3 longer than AL1. Seta PL1 longer than PL2 and PL3. Peritremes long, reaching the bases of setae AD1. Sternal shield with uneven posterior margin, without postero-

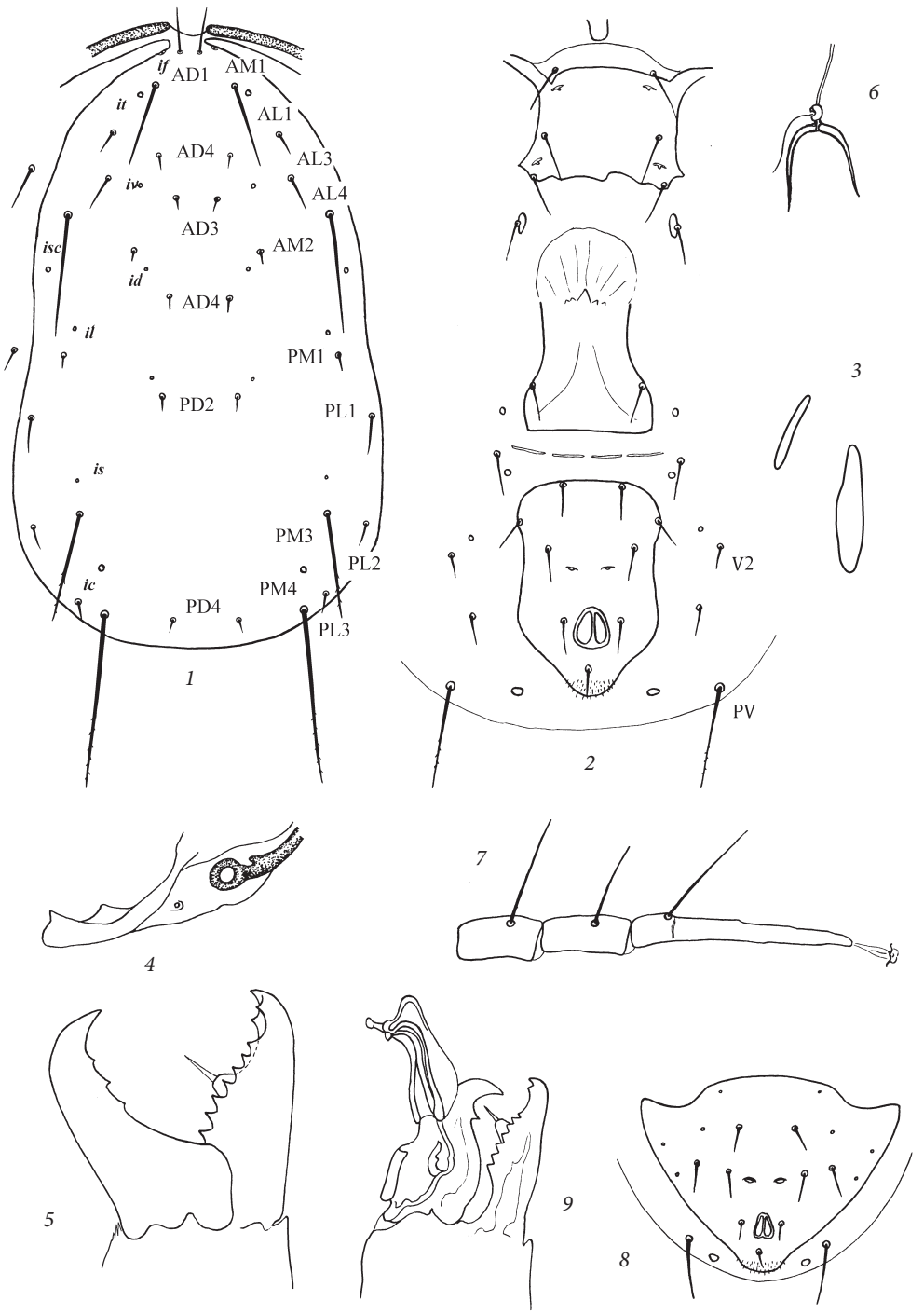

Fig. 1. *Amblyseius andersoni* (Chant, 1957). ♀ (1–7), ♂ (8, 9): *1* — dorsal shield; *2* — ventral body surface; *3* — metapodal plates; *4* — posterior part of peritremal schield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8*— ventrianal shield; *9* — chelicera.

lateral processes. The ventrianal shield is some wider than the genital shield, elongated with lateral notches, sculptured in the form of thin transverse lines; anal pores close together, semilunar (fig. 1, *2*). The anterior metapodal shield is narrow, 1.5 times shorter than the posterior one (fig. 1, *3*). The posterior part of the peritremal shield is slightly curved, beak-shaped at the end, with a pore (fig. 1, *4*). There are 9 teeth on Df, and 3 on Dm (fig. 1, *5*); very rarely one middle tooth on one Dm may be reduced. The spermatheca is small, a cup-shaped funnel, an atrium on a short neck (fig. 1, *6*). Leg IV has 3 macrochaetes — on the tarsus and genu almost equal in length, on the tibia somewhat shorter (fig. 1, *7*); on the knee and shin of the 3rd pair of legs, on the knees of the 2nd and 1st pairs of legs, also along a short macrochaete.

Measurements: Lds 350, Wds 210, Lvas 128, Wvas 90, Lian 22, Ltar IV 134; setae length: AD1 28; AD2 7; AD3 7; AD4 8; PD2 8; PD4 10; AM1 39; AM2 7; AL1 14; AL3 22; AL4 78; PL1 25; PL2 13; PL3 10; PM1 10; PM3 72; PM4 140; AS 26; PS 17; PV 72; MCh IV: ge 63, ti 50, ta 67; MCh III: ge 37, ti 27; MCh II: ge 32; MCh I: ge 27.

Male. Preanal setae 3 pairs; anal pores large semilunar (fig. 1, *8*). The spermatodactyl L-shaped, beak-shaped at its end (fig. 1, *9*). Lds — 270.

Differential diagnosis. The differences between the very closely related *Amblyseius andersoni* and *A. wainsteini* will be discussed in detail in the section on the second species. *A. rademacheri* is also similar to both *A. andersoni* and *A. wainsteini*, but to a lesser extent. It is reliably distinguished from both species by the presence of thickened and roughly serrated setae PM3 and PM4, as well as a frontally distinctly tapering dorsal shield without lateral notches and anal pores located at an angle to each other.

Besides that *A. andersoni* and *A. wainsteini* both similar to *A. krantzi* and differ from it in the presence of lateral notches on the dorsal shield at level of the PS setae, as well by the presence of 6 instead of 7 of pairs of dorsal solenostomes. Slit-like anal pores, and the absence of a pair of setae MV1 on the membrane surrounding the ventrianal shield complete the list of differences between these two species.

Distribution, habitat, occurrence. Europe (24 countries), South Caucasus (Azerbaijan, Armenia, Georgia), East Asia (China), Japan, Western Asia (Turkey, Syria), North America (Canada, USA), South America (Brazil), North Africa (Algeria, Morocco), Australia. In Ukraine: Polissia, Transcarpathia (prefers trees and shrubs, less often found on herbs, common in gardens, occasionally in moss, soil, litter); steppe zone (usually inhabits perennial grasses), Autonomous Republic of Crimea: Yalta (on grasses), the second ridge of the Crimean Mountains (on shrubs). In Ukraine it is often found in natural and artificial plant communities, including in industrial gardens treated with pesticides (Akimov et al., 1993), although it is usually not found in significant quantities on one plant.

Note 1. Description, morphometry and illustrations are given based on non-type specimens from the Kyiv Region after comparing them with vouchers from the collection of B. A. Wainstein and illustrations of this type in publications by various authors.

Note 2. This is one of the most active acariphagous mites used to protect plants from plant consuming mites in greenhouses. For these purposes, it is propagated by feeding it on spider mites or acaroid mites (Akimov & Kolodochka, 1991).

Fig. 2. *Amblyseius filixis* Karg, 1970. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* — ventral body surface; *3* —metapodal plates; *4* — caudal part of peritremal schield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

Amblyseius filixis Karg, 1970 (fig. 2)

Amblyseius filixis Karg, 1970: 296; Kolodochka & Khaustov, 2003: 53;
Amblyseius (Amblyseius) filixis: Karg, 1991: 183.

Material. **Type.** Holotype ♀: Germany: "Karl Marx Stadt, near Rottis (Vogtland), Elsterhang, on fern, 26.09.1967, specimen #296", (not located, not examined).

Non-type. Ukraine, Kharkiv Region, Chuguev, on grass, 06.10 1991, specimen #S–515 (ph-18), 1 ♀, 1 ♂, specimen #S–516 (ph-19), 1 ♂ (Khaustov).

Redescription. Female. The dorsal shield (fig. 2, 1) is well sclerotised, oval in shape, with small lateral notches, smooth, with a dark marginal border; 7 pairs of solenostoms (*it*, *iv*, *id*, *il*, *isc*, *is*, *ic*). The setae of the PM4 are slightly serrated, the rest are smooth, varying in length from miniature to long. Seta AM1 approximately equal in length to the distance from its proper theca to theca of seta AL1. Peritreme long, reaches the base of the seta AD1. Ventrianal shield (fig. 2, *2*) rounded-pentagonal, in the anterior third with distinct lateral notches, the posterior part of the shield is wider than the anterior part, bears 3 pairs of preanal setae; anal pores are small, round, not close together. The walls of the spermatheca funnel are thickened, becoming thinner towards the sac; the atrium is large, sessile; the large duct is thickened (fig. 2, *3*). There are 8 chelicerae on Df and 3 on Dm (fig. 2, *4*). Metapodal scutes are asymmetrically elongated oval, the anterior one is smaller than the posterior one (fig. 2, *5*). The curved posterior part of the peritremal shield is not beak-shaped but ending in a straight cut (fig. 2, *6*). Leg IV with 3 macrochaetes: on the genu and basitarsus of equal length and longer than on the tibia (fig. 2, *7*).

Measurements: Lds 345, Wds 200, Lvas 114, Wvas 95, Lian 41, Ltar IV 106; setae length: AD1 23; AD2 9; AD3 7; PD2 7; PD4 10; AM1 32; AM2 6; AL1 14; AL3 27; AL4 46; PL1 11; PL2 9; PL3 11; PM1 8; PM3 63; PM4 155; AS 19; PS 14; PV 63, MCh: gen 54, tib 42, tar 55, gen III 25, tar II 22.

Male. There are 3 pairs of ventrianal setae, and small round anal pores (fig. 2, *8*). The spermatodactyl L-shaped (fig. 2, *9*). Lds — 305.

Diagnosis. Differs from the closely related *A. wainsteini* Gomelauri, 1968 b in almost three times shorter setae PL1 and 1.5 times longer PM4, more shorter setae AM1, AL4 and PL1, a wider ventroanal shield in the posterior half, the structure of the male spermatodactyl, the presence of 7 teeth on the Df of the female versus 9 teeth in *A. wainsteini*. Mite *A. filixis* differs from another related species, *A. nemorivagus* Athias-Henriot, 1961, in having some shorter dorsal setae PM4, AL1, AL3, and PM3.

Distribution, habitat, occurrence. Europe (France, Germany, Slovakia, Spain, Ukraine). In Ukraine: Wood-and-Steppe zone, grass; rare.

Note. Description, morphometry and illustrations are given for non-type specimens from the Kharkiv Region after comparing them with illustrations of this species in other publications.

Amblyseius irinae Wainstein & Arutunjan, 1973 (fig. 3)

Amblyseius irinae Wainstein & Arutunjan, 1973: 55; Ghiliarov et al., 1978: 236; Kolodochka, 2006: 228.

Material. **Type.** Holotype ♀, Armenia, Stepanavan district, Brick factory, mixed forest, *Fragaria* sp., 11.07.1971, specimen #643 (not examined) (IZAY).

Non-type. Ukraine, Transcarpathian Region, Perechin District, Turia Poliana village, meadow, *Betonica officinalis*, 09.10.1975, specimen # №2410, 1 ♀; Lviv Region, Stryi District, Morshyn forestry, Grabniky, mixed forest, *Crataegus* sp., 07.22.1983, # 4377 a, 6 ♀, 2 ♂; ibid., the same data, #4377 b, 1 ♀, 1 ♂ (Kolodochka) (SIZK).

Fig. 3. *Amblyseius irinae* Wainstein et Arutunjan, 1973. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* — ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

Redescription. Female. The dorsal shield (fig. 3, *1*) is moderately sclerotised, smooth, with a clearly defined marginal border, ovoid, with almost absent lateral notches; solenostomies 7 pairs (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). Dorsal setae vary in length — setae PM4 are whip-shaped, thin, flexible, with a weak club at the end (the remaining setae are sharp); AL3 and PM3 are long, thin, flexible; AD1 and AM1 are elongated; the rest are short or microchaetes. All dorsal setae are smooth, except for the weakly serrated PM3 and PM4. Peritremes extend anteriorly beyond the level of thecae AD1, which in turn extend beyond the thecae of the setae AM1. Seta slightly longer than the distance to the theca of seta AL1. Seta AL3 exceeds the distance to theca PM1. Seta PM4 is close to PL2. The ventral shields are moderately sclerotised. The ventrianal shield (fig. 3, *2*) is somewhat wider than the genital shield, elongated, with an almost straight or somewhat convex anterior edge and slightly concave lateral edges, tapering caudally; anal pores semilunar, located close to the thecae of the PV setae. Metapodal scutes are roughly fusiform, with uneven edges, the posterior one is approximately 2.5 times longer than the anterior one (fig. 3, *3*). The posterior end of the peritremal shield is slightly curved, beak-shaped at the end (fig. 3, *4*). There are 10 small teeth on the Df chelicerae, and 3 on the Dm (fig. 3, *5*). The funnel of the spermatheca is elongated-conical with a somewhat thickened wall; the atrium is large, sessile (fig. 3, *6*). Leg IV has 3 long, sharp macrochaetes: the longest is on the knee (fig. 3, *7*); relatively shorter macrochaetes are present on the knees of legs III–I.

Measurements: Lds 433, Wds 288; Lvas 143, Wvas 118; Lian 34; Ltar 163; setae length: AD1 32, AM1 56, AL3 109, PM3 145, PM4 255; остальные дорсальные щетинки не длиннее 10; PV 95; MCh IV: ge 122–130, ti 111–113, ta 91–97; MCh III: ge 54; MCh II: ge 39; MCh I: ge 47.

Male (previously unknown). Ventrianal shield with four pairs of setae. The shield may contain 1 of a pair of additional bristles, shown in the dotted line in the figure. The anal pores are semilunar, close to the thecae of the setae PrA2 (fig. 3, *8*). The spermatodactyl is L-shaped (fig. 3, *9*). Lds — 330.

Differential diagnosis. The presence of relatively thin, very long (flagellated) dorsal setae PM4, smoothly tapering towards the ends with fusiform clubs, brings the species *A. irinae* and *A. microorientalis* Wainstein et Begjarov closer together.

Distribution, habitat, occurrence. Europe (Ukraine), Southern Caucasus (Armenia). In Ukraine: Transcarpathian and Lviv Regions, herbs, shrubs; rare.

Note 1. Microscopic examination of a significant number of phytoseiid species indicates the absence of any formed structures in the lumen of the spermatheca before fertilization of the female.

The structural features of the spermatheca noted in the holotype of *A. irinae* is not confirmed in the studied material from Ukraine. This issue can be resolved after research on a statistically reliable amount of material.

Note 2. Description, morphometry and illustrations are given based on non-type specimens from the Lviv Region after comparing them with voucher specimens from the collection of B. A. Wainstein.

Amblyseius kalandadzei Gomelauri, 1968 (fig. 4)

Amblyseius kalandadzei Gomelauri, 1968 b: 701; Ghiliarov et al., 1978: 236; Kolodochka & Skliar, 1981: 102.

Material. **Type**. Holotype ♀, Georgia, neighborhood of Tbilisi, moss, (collection date unknown), #1180 (not examined) (IZGT).

Non-Type. 32 specimens (28 ♀, 4 ♂) — Autonomous Republic of Crimea, Cherkassy and Donetsk Regions.

Fig. 4. *Amblyseius kalandadzei* Gomelauri, 1968 b. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* — caudal part of ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

Redescription. Female. The dorsal shield (fig. 4, *1*) is well sclerotised, broadly oval, with barely visible lateral notches, smooth; 7 pairs of small solenostomes (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). The setae of the dorsal shield AM1, AL4, PM2, PM3 are longer than the others (PM3 is the longest), AD1, AL1, AL3 are short, the rest are miniature. The seta AM1 extends beyond the theca of the seta AL1. Thecae AL1 and AL3 are close together, the first of the setae is somewhat longer than the second, but does not extend beyond its theca. Seta AL3 clearly shifted toward the body axis relative to the arc of setae AL. Seta PM2 is close to PL2. Peritremes reaching the techal setae of AD1. The ventroanal shield (fig. 4, *2*) is noticeably wider than the genital shield, rounded-pentagonal with almost straight or slightly convex lateral edges, transversely finely striated; anal pores are small, round, spaced. Metapodal scutes are oval, the anterior one is smaller than the posterior one (fig. 4, *3*). The posterior part of the peritremal shield is smoothly curved (fig. 4, *4*). There are 3 chelicerae on Df and 0 on Dm (fig. 4, *5*). The funnel of the spermatheca is well sclerotised, large, goblet-shaped, gradually widens towards the sac, the atrium is large, sessile (fig. 4, *6*). Leg IV has 3 long macrochaetes: on the tarsus and genu almost equal in length, on the tibia somewhat shorter (fig. 4, *7*). The genu and tibia of the third leg bear a short macrochaete.

Measurements: Lds 462, Wds 273; Lvas 110, Wvas 106, Lian 42; Ltar IV 110; setae length: AD1 22; AD2 4; AD3 4; AD4 4; PD2 5; PD4 12; AM1 48; AM2 4; AL1 18; AL3 14; AL4 58; PL1 6; PL2 7; PL3 7; PM1 6; PM3 95; PM4 125; AS 19; PS 8; PV 62; MCh IV: ge 58, ti 50, ta 47; MCh III: ge 35, ti 25, MCh II: ge 30.

Male. The ventroanal shield is well sclerotised and reticulate. Anal pores are small and round; in the front part of the shield there is a pair of pore fields located transversely (fig. 4, *8*). The spermatodactyl is curved, mushroom-shaped at the end (fig. 4, *9*). Lds — 305.

Differential diagnosis. A good distinguishing character of this species from similar species is the large bell-shaped funnel of the spermatheca with a large atrium; mutual arrangement of setae AL1 and AL3, the thecae of which are close together; setae AL3 distinctly shifted towards the central axis of the body.

Distribution, habitat: occurrence. Europe (Moldova, Ukraine), South Caucasus (Georgia). In Ukraine: steppe zone, montane Crimea (Main and Inner mountain ranges, Karadag), soil near the nests of shore swallows, small rodents and their nests; regular (rare on herbs).

Note. Descriptions, morphometry and illustrations are given for non-type specimens from Crimea after comparing them with the description and drawings of the original description, as well as with illustrations of this species in publications of other authors.

Amblyseius krantzi (Chant, 1959) (fig. 5)

Typhlodromus (Amblyseius) berlesei Chant, 1957: 292.
Typhlodromus (Amblyseius) krantzi Chant, 1959: 83, a replacement name for *Typhlodromus berlesei* Chant, 1957.
Amblyseius (Amblyseius) krantzi: Muma, 1961: 287.
Amblyseius krantzi: Chant & Hansell, 1971: 708; Beglyarov, 1981: 31.

Material. **Type.** Holotype ♀, Canada, British Columbia, Nakusp, on *Ranunculus* sp., (collection date unknown), specimen #292 (not located).

Non-type. 38 specimens (29 ♀, 9 ♂) — Lviv, Transcarpathian, Zhytomyr Regions.

Redescription. Female. Dorsal shield (fig. 5, *1*) weakly or moderately sclerotised, oval, without lateral notches, smooth; small solenostomes 6 pairs (*it*, *id*, *isc*, *il*, *is*, *ic*; pair *iv* missing). Dorsal setae contrast in length. Setae AL4, PM3, PM4 much longer than the oth-

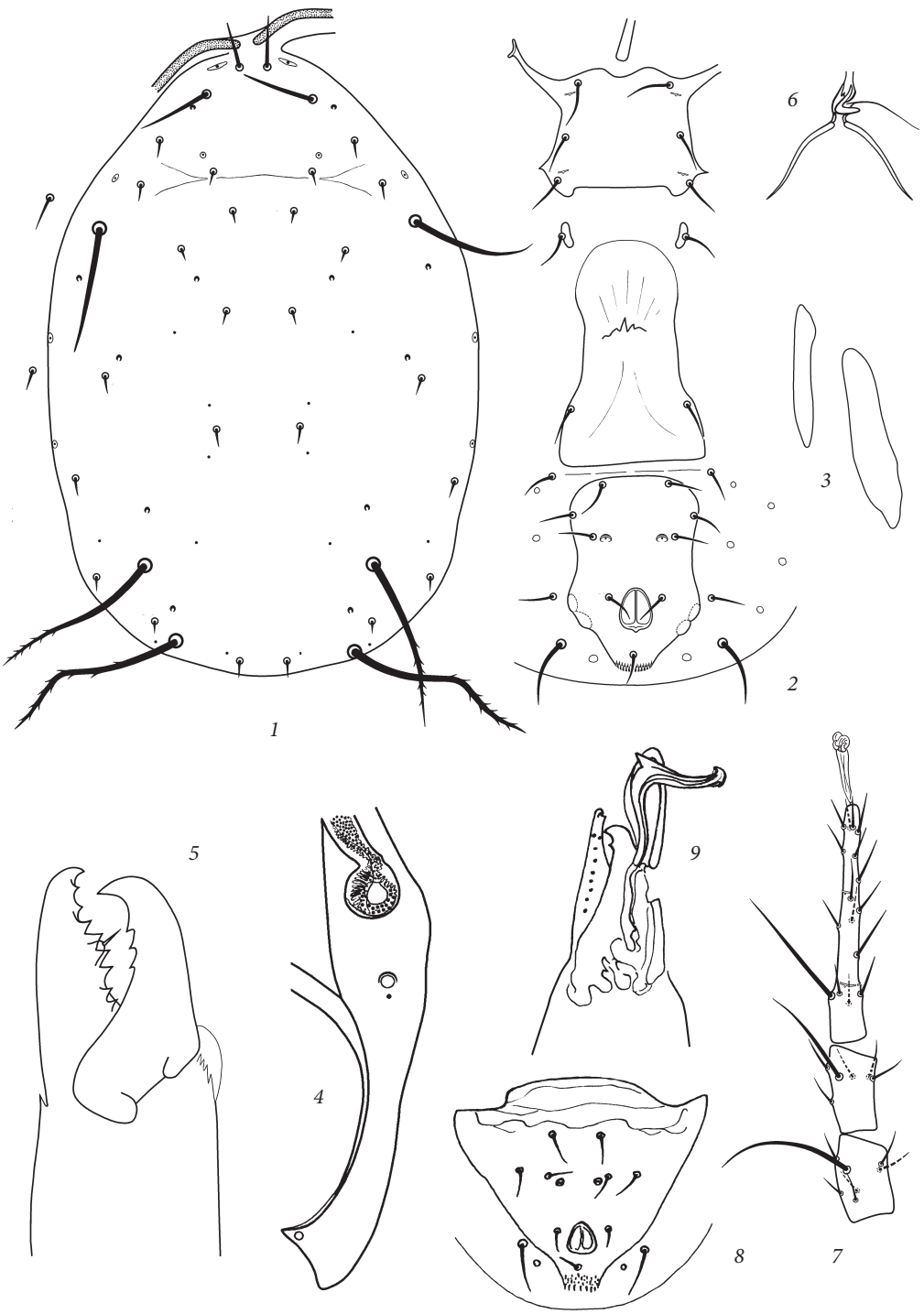

Fig. 5. *Amblyseius krantzi* (Chant, 1959). ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* —ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

ers, AD1 and AM1 have medium length, the rest are very short. Dorsal setae sharp, smooth, thin, with the exception of serrated and thickened PM3 and PM4. Seta AM1 longer then distance from its theca to theca of seta AL1. Peritremes extend beyond the level of the bases of setae AD1. Ventrianal shield (fig. 5, *2*) narrower than the genital shield, elongated with a convex anterior edge and lateral notches, smooth; anal pores large, crescent-shaped, spaced close to the thecae of PrA2 setae. Seta MV1 missing on the membrane surrounding the ventrianal shield. Metapodal scute elongated, anterior one smaller and narrower than posterior one (fig. 5, *3*). The posterior part of the peritremal shield slightly curved, beak-shaped (fig. 5, *4*). Eigth teeth on Df, on Dm — 3 (fig. 5, *5*). The funnel of the spermatheca cup-shaped, atrium large, on a short neck (fig. 5, *6*). Leg IV has 3 pointed macrochaetes: longer on the basitarsus and genu, shorter on the tibia (fig. 5, *7*). Genu and tibia III, genu II and I each have a short macrochaete.

Measurements: Lds 405; Wds 260; Lvas 117; Wvas 81; Lian 372; Ltar 130; setae length: AD1 27; AD2 5; AD3 6; AD4 6; PD2 8; PD4 8; AM1 41; AM2 6; AL1 8; AL2 9; AL4 70; PL1 10; PL2 9; PL3 6; PM1 8; PM3 83; PM4 104; AS 19; PS 8; PV 39; MCh IV: ge 69, ti 51, ta 72; MCh III: ge 37, ti 30; MCh II: ge 36; MCh I: ge 37.

Male. Preanal setae 3 pairs; anal pores large, oval (fig. 5, *8*). Spermatodactylus L-shaped (fig. 5, *9*). Lds – 310.

Differential diagnosis. The absence of paired ventral setae MV1 near the ventrianal shield in *A. krantzi* is a unique character among species of the *Amblyseius* genus known in Ukraine. This character clearly separates the *A. krantzi* species from other near species, for example, *A. rademacheri*, *A. andersoni* and *A. wainsteini*. In addition to this rare feature, *A. krantzi* has 6, rather than 7, pairs of dorsal solenostomes and relatively larger anal pores.

Distribution, habitat, occurrence. Europe (Poland, Ukraine), Kazakhstan, North America, on trees, bushes, grasses. In Ukraine: Polissia, on trees; common.

Note. Description, morphometry and illustrations are based on non-type specimens from the Lviv Region after comparing them with figures in publications of various authors.

Amblyseius meridionalis Berlese, 1914 (fig. 6)

Amblyseius obtusus var. *meridionalis* (Berlese, 1914): 144.
Amblyseius meridionalis: Athias-Henriot, 1958: 32.
Typhlodromus (Amblyseius) meridionalis: Chant, 1959: 85.
Phytoseiulus (Proprioseius) meridionalis: Wainstein, 1962: 17.
Typhlodromus meridionalis: Hirschmann, 1962: Taf. 11, fig. 217.
Typhlodromus (*Typhlodromus*) *meridionalis*: Westerboer & Bernhard, 1963: 690.

Material. **Type.** Holotype ♀, Italy, Basilicata, Potenza, in humus (collection date No. of the specimen unknown, not located, not examined).

Non-type. 14 specimens (12 ♀, 2 ♂) — Autonomous Republic of Crimea, Donetsk, Odesa, Poltava, Cherkasy Regions.

Redescription. Female. The dorsal shield (fig. 6, *1*) is well sclerotised, with a dark marginal border, ovoid, frontally narrowed, with light lateral notches; smooth, 7 pairs of solenostomes (*it, iv, id, isc, il, is, ic*), the largest are *ic*. All dorsal setae are smooth and sharp. Setae PM4 are very long, whip-shaped, PM3 are long, AD1, AL3, AM1 are elongated, the rest are short or microsetae. Seta AM1 extends far beyond theca AL1. Setae AL1, AL2, PL1 and PL2 of equal length; PL3 is slightly (2 μ) longer than them. Peritremes reach theca AD1. The ventrianal shield (fig. 6, *2*) is somewhat

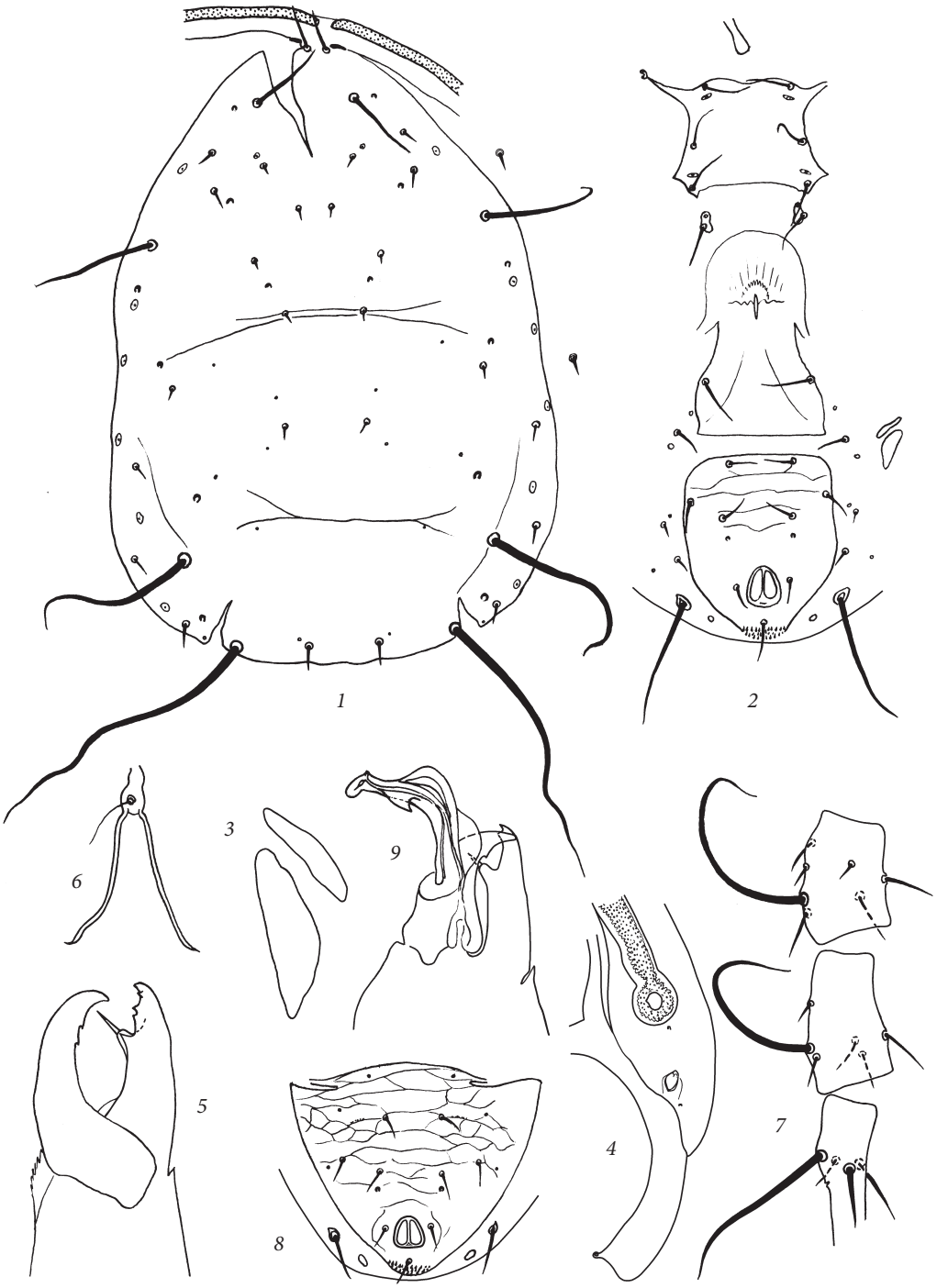

Fig. 6. *Amblyseius meridionalis* (Berlese, 1914). ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* —ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

wider than the genital shield, rounded-pentagonal; transversely striated, anal pores small, not close together, round. Metapodal scutes elongated, the anterior one no less than 1.4 times shorter than the larger posterior one (fig. 6, *3*). The posterior part of the peritremal shield is curved, with almost parallel edges, with a pore at the end (fig. 6, *4*). On Df there are 4 chelicerae (3 small distal and a large medial one), on Dm there are 2 (fig. 6, *5*). The funnel of the spermatheca is large, widening towards the sac, its walls are evenly thickened; the atrium is massive, sessile; large duct (fig. 6, *6*). Leg IV has 3 long macrochaetes; the largest is on the knee (fig. 6, *7*). The genu and tibia III, as well as genu II, also have macrochaetes, but of much shorter length.

Measurements: Lds 365, Wds 252; Lvas 120, Wvas 102, Lian 41, Ltar 123; setae length: AD1 24; AD2, AD3; AD4 – 5; PD2 5; PD4 12; AM1 47; AM2 4; AL1 10; AL2 10; AL3 73; PL1 10; PL2 10; PL3 12; PM1 7; PM3 107; PM4 188; AS 11; PS 8; PV 86; MChIV: ge 90, ti 75, ta 65, MChIII: ge 38, MChII: ge 33.

Male. Preanal setae 3 pairs; anal pores round, spaced (fig. 6, *8*). The spermatodactyl is massive, L-shaped, flattened at the end in the form of a "scapula" and bent back at an angle (fig. 6, *9*). Lds — 310.

Differential diagnosis. *Amblyseius meridionalis* differs from the very similar *A. neobernhardi* Athias-Henriot in having relatively shorter setae PM4, a cone-shaped funnel of the spermatheca, and fewer teeth on both fingers of the cheliceral claw (in *A. neobernhardi* the length of PM4 is about 215 μ, the funnel is cylindrical, Df of the chelicerae with 8 teeth, and Dm – with 3).

Distribution, habitat, occurrence. Europe, South Caucasus (Aserbaidjan), North Africa (Algeria, Morocco, Tunisia), North America (USA, Canada). In Ukraine: Wood-and-Steppe, Steppe, Crimea (seaside slope of the Main Mountain Range), soil, nests of small rodents and burrowing birds; common.

Note. Description, morphometry and illustrations are given for non-type specimens from the Odesa Region after comparing them with voucher specimens from the collection of B. A. Wainstein and with illustrations of this species in publications by various authors.

Amblyseius microorientalis Wainstein & Begliarov, 1971 (fig. 7)

Amblyseius microorientalis Wainstein & Begjarov, 1971: 1808.
Amblyseius (*Amblyseius*) *microorientalis*: Wainstein, 1979: 140.

Material. **Type.** Holotype ♀, Russia, Primorsky Territory, reserve "Kedrovaya Pad", on *Quercus* sp., 14.06.1961, specimen #635 (Beglyarov) (ARRIP).

Non-type. 22 specimens (16 ♀, 6 ♂) — Lviv, Transcarpatian, Sumy Regions.

Redescription. Female. The dorsal shield (fig. 7, *1*) is weakly sclerotised, elongated oval, with slight lateral notches, smooth; small solenostomes 7 pairs (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). The dorsal setae are mostly very short, with the exception of a few pairs of elongated ones (AM1, AL4, PM3, PM4). All setae are smooth, pointed, except for weakly serrated PM4 with fusiform clubs, relatively very long (more than 2 times longer than PM2 setae). Seta AL1 is equal to 2/3 of the distance to the seta AL3. Setae AL1 and AL3 are equal in length. The seta PL1, PL2 and PL3 are also approximately equal in length (the difference may be 1–2 μm). Setae PS are short; setae AS are microchaetes. Peritremes long, extending beyond the base of setae AD1. The ventrianal shield is slightly wider than the genital shield, elongated, with lateral notches, smooth; anal pores rounded, close together (fig. 7, *2*). The anterior metapo-

Fig. 7. *Amblyseius microorientalis* Wainstein & Begjarov, 1971. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* —ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

dal shield is small and narrow, the posterior one is elongated-oval (fig. 7, *3*). The posterior part of the peritremal shield is slightly curved, with a small pore at the widened coracoid end (fig. 7, *4*). There are 9 large teeth on the Df chelicerae, and 3 on the Dm (fig. 7, *5*). The spermatheca is small, the funnel is finger-shaped, asymmetrical; the outer walls of the funnel are completely covered with very small tubercles (fig. 7, *6* shows a general view of the spermatheca and a fragment of the surface of the funnel); seated atrium. Leg IV has 3 macrochaetes; on the knee it is longest, on the tibia and basitarsus it is shorter (fig. 7, *7*); on the knees are the 3rd–1st pairs of legs, also along a short macrochaete.

Measurements: Lds 370, Wds 210, Lvas 117, Wvas 88, Lian 24, Ltar IV 120; setae length: AD1 24; AD2 7; AD3 6; AD4 7; PD2 8; PD4 6; AM1 39; AM2 6; AL1 16; AL3 16; AL4 58; PL1 13; PL2 10; PL3 10; PM1 6; PM3 65; PM4 145–160; AS 18; PS 10; PV 55; MCh IV: ge 65, ti 58, ta 52; MCh III: ge 33; MCh II: ge 27; MCh I ge 30.

Male. Preanal setae 3 pairs of setae; anal pores are large, oval (fig. 7, *8*). The spermatodactyl is slightly curved, significantly narrowing at the end, without processes, but with a narrow longitudinal lobe (fig. 7, *9*). Lds — 270.

Differential diagnosis. The combination of the distinctively long dorsal setae PM4, which are more than twice as long as the setae PM3, and a finger-shaped spermatheca with a funnel covered with very small tubercles, distinguishes this species within the genus. See also differential diagnosis of *Amblyseius irinae* Wainstein & Arutunjan.

Distribution, habitat, occurrence. Europe (Russia: Primorsky Krai; Ukraine). In Ukraine: Polissia, trees, shrubs; common.

Note. Description, morphometry and illustrations are given for non-type specimens from the Sumy Region after comparing them with specimens from the collection of B. A. Wainstein and illustrations of this species in publications by various authors.

Amblyseius nemorivagus Athias-Henriot, 1961 (fig. 8)

Typhlodromus nemorivagus Athias-Henriot, 1961: 424.
Typhlodromus hispaniensis: Hirschmann, 1962: Tab. 10, fig. 202.
Typhlodromus hispaniensis: Westerboer & Bernhard, 1963: 696.
Amblyseius nemorivagus: Ghiliarov et al., 1978: 236; Kolodochka, 2006: 229.

Material. **Syntypes.** 4 ♀, 1 ♂, Algeria, La Reghaia, route de Ménerville, forêt de *Quercus suber*, 19.06.1958 (No. of the specimen unknown), (*cit.*: Athias-Henriot, 1961: 424), not examined) (LAEP).

Non-types. 279 specimens (185 ♀, 94 ♂) — Autonomous Republic of Crimea, Kherson Region.

Redescription. Female. Dorsal shield (fig. 8, *1*) well sclerotised, broadly oval, without lateral notches, smooth; 7 pairs of solenostomes (*it, iv, id, isc, il, is, ic*). Seta AD2 displaced laterally from the center line of the shield. Seta PM4 much longer than the other dorsal setae. The setae AD2–AD4, PD2, PD4, AM3, PM1, PL1, PL2, PL3 are miniature. Seta AM1 longer than distance to theca AL1. Peritremes long, reaching the level of theca AD1. The ventrianal shield (fig. 8, *2*) is noticeably wider than the genital shield, near pentagonal with lateral notches, the anal pores are round, small, widely spaced. The metapodal scutes are widened, oval, the anterior one is smaller than the posterior one (fig. 8, *3*). The posterior part of the peritremal shield is curved and ends rectangular (fig. 8, *4*). Chelicera with 8 teeth on Df and with 3 on Dm (fig. 8, *5*). The spermatheca is bell-shaped with thickened walls, the atrium is sessile (fig. 8, *6*). Leg IV with 3 long macrochaetes: on the tarsus and genu they are almost equal, macrochaeta

Fig. 8. *Amblyseius nemorivagus* Athias-Henriot, 1961. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* — ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

on tibia somewhat shorter (fig. 8, *7*). Genu and tibia III and genu II with short macrochaetae.

Measurements: Lds 344, Wds 245; Lvas 110, Wvas 106, Lian 42; Ltar IV 110; setae length: AD1 28; AD2 5; AM2, PM2, PD1 — 5.5; PD4, PL2, PL3 — 8; AM1 36; AL1 22; AL2 39; AL3 58; PL1 11; PM3 83; PM4 115; AS 19; PS 14; PV 66; MCh IV: ge 56, ti 42, ta 58; MCh III: ge 30, ti 37; MCh II: ge 36.

Male. The ventrianal shield is triangular, with 4 pairs of preanal setae and anal pores not close together (fig. 8, *8*). The spermatodactyl is L-shaped, the lateral process at the end is bent to the side and expanded in the form of a scapula (fig. 8, *9*), Lds — 320.

Differential diagnosis. Only two known species of the genus *Amblyseius*, namely *A. nemorivagus* and *A. filixis*, with a dorsal seta AL1 twice as short as AL3. Moreover, they clearly differ in the proportions of the ventrianal shield, which in *A. nemorivagus* is widest in the anterior third, while in *A. filixis*, on the contrary, it is widest in the posterior third (fig. 8, *1* and fig. 2, *1*).

Distribution, habitat, occurrence. Europe, North Africa (Algeria). In Ukraine: Wood-and-Steppe, montane Crimea (Main ridge: yayla, Karadag), grass, soil, forest litter, moss on stones, bark and dust of an old stump; rotting algae, small pebbles on the seashore; common in marine outfalls, rare in other habitats.

Note. Descriptions, morphometry and illustrations are given for non-type specimens from Crimea after comparing them with specimens from the collection of B. A. Wainstein and illustrations of this type in publications by various authors.

Amblyseius neobernhardi Athias-Henriot, 1966 (fig. 9)

Typhlodromus intermedius Bernhard, 1963 (preoccupied name, non *Amblyseius intremedius* Gonzales & Schuster, 1962).
Amblyseius neobernhardi Athias-Henriot, 1966: 201 (replacement name); Wainstein & Shcherbak, 1972: 38; Ghiliarov et al., 1977: 236; Beglyarov, 1981: 68.

Material. **Types.** Holotype ♀, France, Cote D'Or, litter (collection date, No. of the specimen unknown; not located; not examined).

Non-types. Ukraine, Kyiv Region, env. Kyiv, slopes of the Dnipro River, clearing in a broad-leaved forest, *Lamium* sp., 14.07.1974, specimen #1061, 1 ♀; ibid., the same data, 1 ♀; Lviv Region, Morshansk District, valley of Berezhnitsa River, Grabniki, *Abies alba*, 22.07.1983, specimen #4545 a, 1 ♀; ibid., the same data, specimen #4375 a, 1 ♀ (Kolodochka); Odesa, Odesa District, Khadzhibeysky estuary, near the dam, litter, 28.07 1971, specimen #6054, 1 ♀ (Volyansky) (SIZK).

Redescription. Female. The dorsal shield (fig. 9, *1*) is well sclerotised, smooth, the dark marginal border is weakly expressed, oval, with light lateral notches. The shield is so convex that the lateral edges are folded to the ventral side, and a long longitudinal fold is formed on the sides of the shield on both sides. In the case when a particular individual is more sclerotised, the shield bursts and is located in one plane without bending to the ventral side of the idiosome. There are 7 pairs of small solenostomes on the shield (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). All dorsal setae are smooth and sharp. Setae PM4 are very long, whip-shaped, PM3 are long, AD1, AL4, AM1 are elongated, the rest are microchaetes. Seta AM1 extends behind theca AL1. Peritremes extend beyond thecae AD1. The ventrianal shield (fig. 9, *2*) is somewhat wider than the genital shield, rounded-pentagonal with almost parallel lateral edges, transversely striated, the anal pores are small, spaced. Metapodal scutes are oval, the anterior scute is somewhat

Fig. 9. *Amblyseius neobernhardi* Athias-Henriot, 1966. ♀: *1* — dorsal shield; *2* — ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicerae; *6* — spermatheca; *7* — fragment of leg IV.

shorter and almost twice as narrow as the wider posterior one (fig. 9, *3*). The posterior part of the peritremal shield is curved, in a narrow terminal part with almost parallel lateral edges, blunt-pointed, with a pore at the end (fig. 9, *4*). There are 8 teeth on Df of chelicerae and 3 on Dm (fig. 9, *5*). The funnel of the spermatheca is thin-walled, cylindrical, slightly expanding as it passes to the sac; the atrium is sessile, placed asymmetrically on the funnel (fig. 9, *6*). Leg IV has 3 long macrochaetes; the longest is on the genu (fig. 9, *7*). The genu and tibia III, as well as genua II and I, also have significantly shorter macrochaetes.

Measurements: Lds 380, Wds 255; Lvas 103, Wvas 88, Lian 42; Ltar 110; setae length: AD1 21; AD2 4; AD3 4; AD4 4; PD2 5; PD4 9; AM1 36; AM2 4; AL1 5; AL3 5; AL4 82; PL1 6; PL2 6; PL3 8; PM1 6; PM3 115; PM4 215; AS 8; PS 5; PV 37; MChIV: ge 100, ti 75, ta 60; MChIII: ge 38, ti 30; MChII: ge 37; MChI: ge 38.

Male. Unknown.

Differential diagnosis. See the diagnosis of *Amblyseius meridionalis*.

Distribution, habitat, occurrence. Europe (Finland, France, Germany, Moldova, The Netherlands, Slovakia, Russia, Ukraine). In Ukraine: Wood-and-Steppe, Steppe (coniferous trees, grasses, litter); rare.

Note. Descriptions, morphometry and illustrations are given for non-type specimens after comparing them with voucher specimens from the collection of B. A. Wainstein and illustrations of this type in publications by various authors.

Amblyseius obtusus (Koch, 1839) (fig. 10)

Zercon obtusus Koch, 1839: 13.
Seius obtusus: Berlese, 1889: 7.
Typhlodromus obtusus: Chant, 1957: 306.
Typhlodromus (*Amblyseius*) *obtusus*: Chant, 1959: 90.
Amblyseius (*Amblyseius*) *obtusus*: Muma, 1961: 287.
Amblyseius obtusus: Ghiliarov et al., 1977: 235; Kolodochka, 2006: 229.

Material. **Type.** Germany(?), from "gardens, meadows and bank of stream and pool" (*cit.*: Demite et al., 2024), (collection date and No. of the specimen unknown; not located; not examined).

Non-type. 54 specimen (45 F, 6 M) — Autonomous Republic of Crimea, Cherkassy, Chernihiv, Kyiv, Mykolaiv, Ternopil, Transcarpathian Regions.

Redescription. Female. The dorsal shield (fig. 10, *1*) is well sclerotised, with a dark wmarginal border, smooth, broadly oval, the lateral notches are not pronounced; 7 pairs of solenostomes, of which *ic* are the largest (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). Setae AD1, AM1 of moderate length; AL4, PM2 are long, PM3 are very long, whip-shaped, the rest are microchaetes. Seta AM1 equal to or slightly longer than the distance to the theca of seta AL1. Seta PM3 approximately equal to width of dorsal shield at level of setae D4. Peritremes extend beyond thecae AD1. The ventroanal shield (fig. 10, *2*) is somewhat wider than the genital shield, rounded-pentagonal; anal pores are small and round. The posterior metapodal shield is elongated-oval, no less than twice as long as the linear anterior one (fig. 10, *3*). The posterior part of the peritremal shield is narrow, slightly curved, and rectangularly cut off at the end (fig. 1, *4*). There are 10–11 chelicerae on Df, and 3 on Dm (fig. 10, *5*). Spermatheca with a tube-shaped corrugated neck and a small saucer-shaped funnel (fig. 10, *6*). Leg IV has 3 long macrochaetes; the longest is on the knee (fig. 10, *7*). Genu and tibia III, genu II and I also with macrosetae, but shorter.

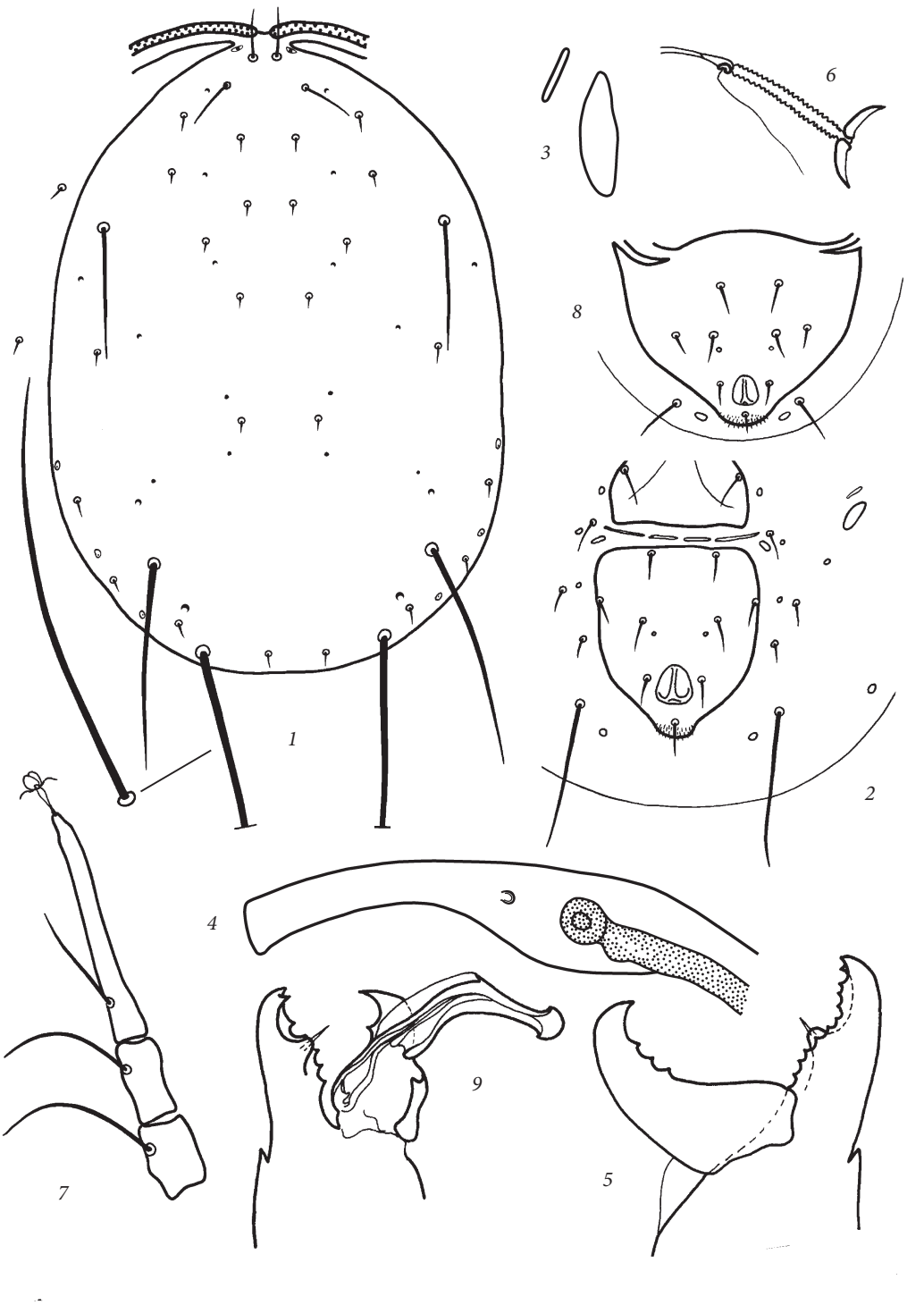

Fig. 10. *Amblyseius obtusus* (Koch, 1839). ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* —ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

Measurements: Lds 405, Wds 290; Lvas 125, Wvas 110, Lian 33, Ltar 128; setae length: AD1 28; AD2 6; DD3 6; D4 6; PD2 8; PD4 8; AM1 33; AM2 6; AL1 8; AL2 8; AL3 90; PL1 13; PL2 11; PL3 10; PM1 8; PM3 140; PM4 280; AS 11; PS 8; PV 100; MChIV: ge 110, ti 90, ta 75, MChIII: ge 40, ti 54, MChII: ge 38; MChI: ge 36.

Male. Preanal setae 3 pairs; anal pores are round (fig. 10, *8*). The spermatodactyl is massive, L-shaped, flattened at the end in the form of a rounded "scapula" (fig. 10, *9*). Lds — 310.

Differential diagnosis. Females of *A. obtusus* differ from the other species of the genus by the longest dorsal setae of the PM4 pair (280 μm). The characteristic shape and structure of the spermatheca also serves as a reliable distinguishing feature of this species (fig. 10, *6*).

Distribution, habitat, occurrence. Europe (20 countries), South Caucasus (Azerbaijan, Armenia), North Africa (Tunisia), Western Asia (Iran, Turkey), North America (Canada), Hawaii, southwestern Pacific Ocean (New Zealand), South America (Venezuela). In Ukraine: Wood-and-Steppe, Steppe, Polissia, Transcarpathia, Crimea (yayla on Main ridge), prefers herbaceous plants with low-lying rosette leaves or lying on the ground, occasionally found on trees, incl. conifers; common.

Notes. The holotype of this species has been lost, but judging by repeated redescriptions and images on material from various countries, it is quite widespread and well known as a species that does not cause controversy in assessing its independence.

Description, morphometry and illustrations are based on non-type specimens from the Kyiv Region after comparing them with voucher specimens from the collection of B. A. Wainstein and illustrations of this species in publications by various authors.

Amblyseius omaloensis Gomelauri, 1968 b (fig. 11)

Amblyseius omaloensis Gomelauri, 1968 b: 702; Ghiliarov et al., 1977: 236; Kolodochka, 2006: 229.

Material. **Type.** Holotype ♀, Georgia, Tusheti, Omalo, moss and lichen on the bark of a rotten birch, spiecemen #1112 (IZGT).

Non-type. 18 ♀ — Autonomous Republic of Crimea; Kharkiv Region.

Redescription. Female. The dorsal shield (fig. 11, *1*) is well sclerotised, with an expanded dark marginal border, smooth, oval with weakly defined lateral notches; There are 7 pairs of medium-sized solenostoms (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). Setae AM1, AL4, PM2, PM3 are longer than the others (PM3 is the longest), AD1, AL1, AL3, PL1 are short, the rest are miniature. Seta AM1 reaches the theca of seta AL1. Long peritremes extending to the level of thecal setae AD1. The ventroanal shield (fig. 11, *2*) is wider than the genital one, pentagonal with almost light or slightly concave lateral edges; anal pores round, spaced. The posterior metapodal shield is irregularly oval, one and a half times longer than the anterior one (fig. 11, *3*). The peritremal scutellum is wide in the middle part, narrow and curved in the posterior part, and ends beak-shaped (fig. 11, *4*). There are 17 chelicerae on Df (2 larger distal and 15 small ones), on Dm - 3 (fig. 11, *5*). The funnel of the spermatheca is large, long, swollen at the atrium, then widens narrow to half the length of the funnel and widens towards the sac; the atrium is seated (fig. 11, *6*). Legs IV have 3 macrochaetes; the longest on the genu, the shortest tarsus on (fig. 11, *7*). Genu II, genu and tibia III with short macrochaetes.

Fig. 11. *Amblyseius omaloensis* Gomelauri, 1968 b. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* — ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

Measuremants: Lds 415, Wds 295; Lvas 110, Vvas 106, Lian 42; Ltar IV 110; setae length: AD1 22; AD2 7; AD3 7; AD4 7; PD2 7; PD4 6; AM1 41; AM2 30; AL1 16; AL2 17; AL3 65; ML 8; PL1 11; PL2 9; PL3 9; PM3 95; PM4 130; AC 19; PS 14; PV 66; MS IV: 56, 42, 58 MS III: 30, 20; MCH II: 28 years old.

Male. Ventroanal shield covered with net sculpture; anal pores are small, round (fig. 11, *8*). The spermatodactyl is L-shaped (fig. 11, *9*). Lds — 370.

Differential diagnosis. Similar to *A. kalandadzei*, differing in the shape and structure of the female spermatheca and the presence of a large number of small teeth on the Df chelicerae.

Distribution, habitat, occurrence. Europe (Ukraine), Southern Caucasus. In Ukraine: Autonomous Republic of Crimea (Main and Inner mountain ranges, litter in oak-hornbeam forest, on tree bark), common; Kharkiv Region, on *Apodemus flavicollis*, rare.

Note. Descriptions, morphometry and illustrations are given for non-type specimens from Crimea after comparing them with voucher specimens from the collection of B. A. Wainstein and illustrations of the appearance of this text.

Amblyseius rademacheri Dosse, 1958 (fig. 12)

Amblyseius rademacheri Dosse, 1958 a: 9.
Amblyseius rademacheri: Dosse, 1958 b: 44.
Typhlodromus (*Amblyseius*) *rademacheri*: Chant, 1959.
Typhlodromus rademacheri: Hirschmann, 1962: Tafel 11, 222.
Typhlodromus (*Typhlodromus*) *rademacheri*: Westerboer & Bernhard, 1963: 658.
Amblyseius (*Typhlodromips*) *rademacheri*: Karg, 1971: 215.
Amblyseius (*Amblyseius*) *rademacheri*: Karg, 1993: 185.
Typhlodromips rademacheri: Moraes et al., 1986: 145.
Amblyseius rademacheri: Kolodochka, 2006: 229.

Material. **Type**. 1 ♀ Germany, "Obstgarten des Instituts für Pflanzenschutz der Landwirtschaftlichen Hochschule Stuttgart Hohenheim" (Baden Wurttemberg, Stuttgart, on apple) ("in der Sammlung des Instituts für Pflanzenschutz"; slide No. unknown).

Non-type. 1104 specimens (796 ♀, 308 ♂) — Donetsk, Chernihiv, Cherkassy, Kyiv, Lviv, Mykolayiv, Rivne, Sumy, Transcarpathian, Zhytomyr, Vinnitsa Regions.

Redescription. Female. The dorsal shield (fig. 12, *1*) is moderately sclerotised, ovoid, with reticulate sculpture, tapering anteriorly, the lateral notches are barely outlined; 7 pairs of small solenostomes (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). Dorsal setae sharp, short and smooth except for AL4, PM2, PM3, which are much longer than the others. The setae of PM2 and PM3 are thick and roughly serrated. Seta AM1 slightly shorter than the distance to the theca of seta AL1. Setae PL1 and PL2 equal and longer than PL3. The length of the PM3 seta is more than 7–10 times the length of the PL3 seta. Seta AS more than twice as long as PS. Peritremes long, extending beyond the thecae of setae AD1. All ventral setae are thin, smooth and sharp, except for the roughly serrated PV. The ventrianal shield (fig. 12, *2*) is wider than the genital shield with concave anterior and lateral edges, slightly covered with light reticulate sculpture; anal pores semilunar, obliquely located. The posterior metapodal scutes are larger and wider than the oblong anterior ones (fig. 12, *3*). The posterior part of the peritremal shield is as in fig. 12, *4*. There are 9 teeth on Df of chelicerae, and 2 on Dm (fig. 12, *5*). Spermatheca with a wide cup-shaped funnel and a large sessile, complexly arranged atrium (fig. 12, *6*). Leg IV

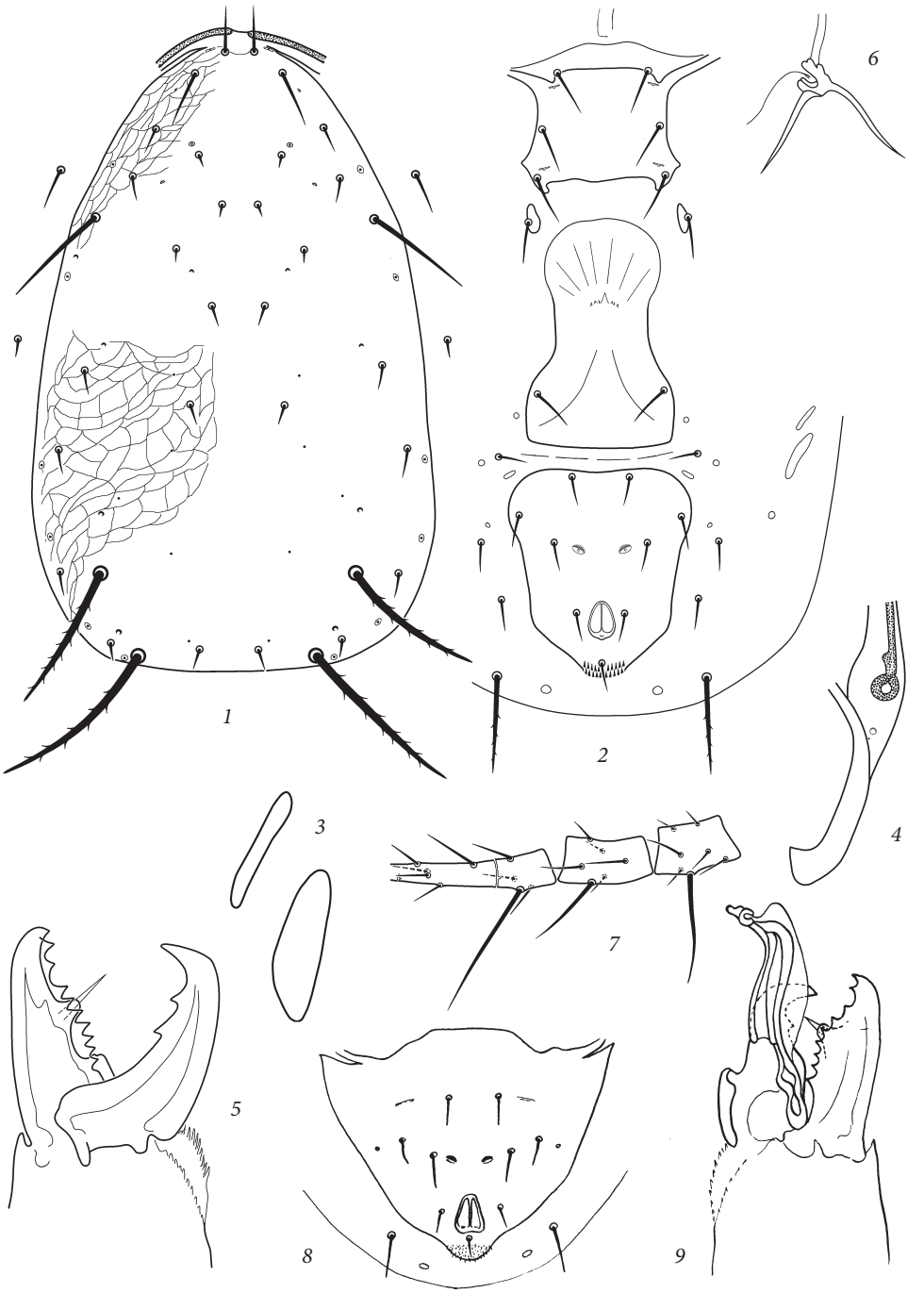

Fig. 12. *Amblyseius rademacheri* Dosse, 1958. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* — ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

has 3 elongated sharp macrochaetes, the longest on the basistarsus (fig. 12, *7*). On the genu and tibia III and on genu II and I along a short macrochaetes.

Measurements: Lds 380, Wds 233: Lvas 120, Wvas 100, Lian 30–32: Ltar IV 130; setae length: AD1 22; AD2 7; AD3 8; AD4 9; PD2 9; PD4 9; ML, PL 11; PL2 12; AM1 33; AM2 7; AL1 14; AL3 15; PL3 8; AL5 60–70; PM3 80–90; PM4 100–110; AS 20; PS 8; PV 45–56; MCh IV: ge 61–63, ti 45, ta 81; MCh III: ge 34, ti 27; MCh II: ge 27; MCh I: ge 32.

Male. Preanal setae 3 pairs; anal pores are large, oval (fig. 12, *8*). The spermatodactyl is L-shaped (fig. 12, *9*). Lds — 300.

Differential diagnosis. *A. rademacheri* is similar in the pattern of dorsal setae to *A. andersoni* and *A. wainsteini* both. However, it differs well from them in the presence of thick, inflexible, roughly serrated setae PM3 and PM4, as well as by the ventrianal shield clearly expanded in its anterior third. In addition, the anal pores in *A. rademacheri* are not located horizontally, as in the other two species, but obliquely at an angle of about 6–7° (see fig. 12, *2*).

Distribution, habitats, occurrence. Europe (15 countries), Southern Caucasus (Armenia, Azerbaijan, Georgia), Middle East (Iran), Far East (China, Japan, South Korea, Russia: Primorsky Territory). In Ukraine: Autonomous Republic of Crimea (Main ridge of mountains, yayla), Polissia, Wood-and-Steppe, Steppe; grasses, rarely trees and shrubs; frequent.

Note. Description, morphometry and illustrations are based on non-type specimens from the Kyiv Region after comparing them with voucher specimens from the collection of B. A. Wainstein and illustrations of this species in publications by various authors.

Amblyseius sparsus Kolodochka, 1990 (fig. 13).

Amblyseius sparsus Kolodochka, 1990 b: 162; Chant & McMurtry, 2007: 81.

Material. **Type.** Holotype♀, Caucasus, Karachaevo-Circassian Republic, Teberda Nature Reserve, alpine wasteland, soil, 07.10.1983, specimen 4739 (H-4(0-2) (Petrova-Nikitina); paratype ♀, Ukraine, Kherson Region, Askania-Nova Nature Reserve, soil 0–-5 cm, 10.27.1973, specimen S–452 (1385–1389) (G. Shcherbak) (SIZK).

Redescription. Female. Dorsal shield (fig. 13, *1*) well sclerotised, with a distinct dark marginal border, smooth, oval, without lateral notches; 7 pairs of solenostomies (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). Dorsal setae AL3, PM2 and PM3 thick at the base, whip-shaped; AD1 and AM1 are of moderate length; AL1, AL2 and PD2 are short, the rest are microchaetes (5–7 μm). All bristles are smooth, only on PM2 and PM3 1–2 serrations are difficult to distinguish. Peritremes reach the bases of AD1. The ventrian shield (fig. 13, *2*) is broadly pentagonal, with shallow lateral notches, well sclerotised, transversely striated in the anterior third; anal pores are small, round, not close together. The metapodal scutes are not large, the anterior one is irregular in shape, elongated, smaller than the fusiform posterior one (fig. 13, *3*). The posterior end of the peritremal shield is narrow, straight or slightly curved, beak-shaped at the end (fig. 13, *4*). There are 6 teeth on Df and 2 on Dm (fig. 13, *5*). The funnel of the spermatheca is well sclerotised, with thick walls, narrow, widening towards the sac, warty in the narrow part; the atrium is sessile (fig. 13, *6*). Leg IV with 3 long thick macrochaetes (fig. 13, *7*), leg III has 3 much shorter macrochaetes, and leg II has one small macrochaete.

Measurements: Lds 366, Wds 252; Lvas 113, Wvas 109, Lian 48; Ltar IV 154; setae length: AD1 29; AD2 5; AD3 5; AD4 6; PD2 7; PD4 12; AM1 31; AM2 5; AL1 11; AL2 13;

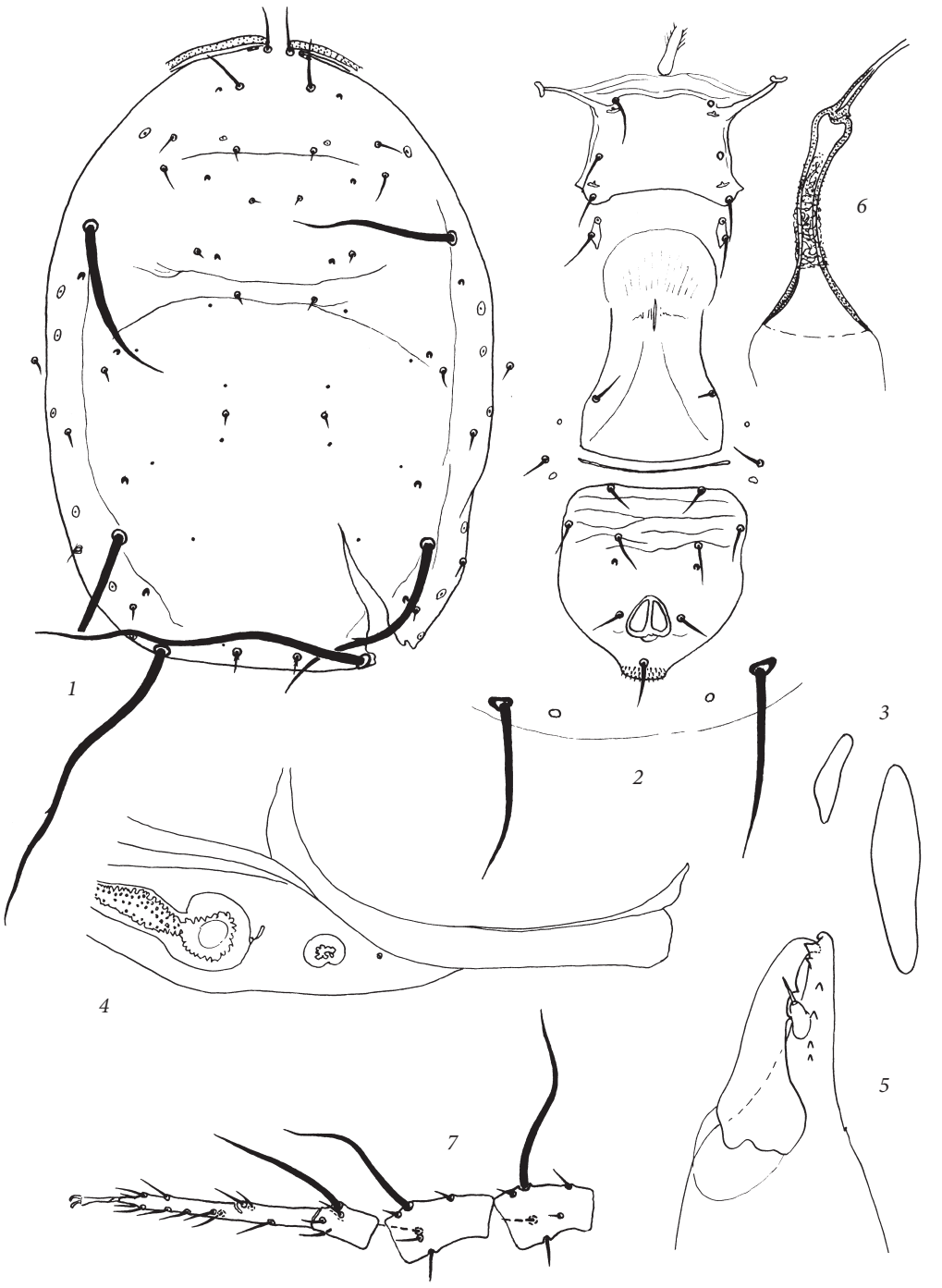

Fig. 13. *Amblyseius sparsus* Kolodochka, 1990. ♀: *1* — dorsal shield; *2* — ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV.

AL3 100; ML 8; PL1 8; PL2 8; PL3 7; PM3 134; PM4 192; AS 13; PS 8; PV 98; MCh IV: ge 107, ti 95, ta 84; MCh III: ge 52, ti 31, ta 25; MCh II: ge 30.

Male unknown.

Differential diagnosis. *Amblyseius sparsus* differs from other species inhabiting in Ukrane soil and litter (for example, *Amblyseius filixis*, *A. kalandadzei*, *A. nemorivagus*, *A. neobernhardi*, *A. omaloensis*) having similar setal pattern on the dorsal shield with powerful setae PM3 and PM4 by its peculiar structure of the spermatheca.

Distribution, habitat, occurrence. Europe (Ukraine), Southern Caucasus, alpine wasteland and steppe zone, in soil; rare.

Notes. Description, illustrations and morphometry are based on the holotype. This species is known only from the two type specimens.

Amblyseius terreus Kolodochka, 2003 (fig. 14)

Amblyseius terreus Kolodochka, 2003: 73; Chant & McMurtry, 2007: 81; Călugăr et al., 2023.

Material. **Types.** Holotype ♀ (marked No. 1), Ukraine, South-Eastern Crimea, Nature Karadag Reserve, Sviata Mountaine, slope with SW exposition, ravine with stream, litter near the roots of *Quercus* sp., 15.06.1975, specimen S–520 (37/1); paratypes (together with holotype): 1 ♀ (marked No. 2), 1 ♂; paratype, 1♀, specimen S–518 (38a), litter under of the oak trees, the same data; (Колодочка); specimen S–381 (3852), ♀ specimen S-381 (3852), litter with topsoil, oak grove, Karadag ravine, 18-08-1980 (H. Sherbak) (SIZK).

Non-type. 17 specimens (14 ♀, , 3 ♂) — Autonomous Republic of Crimea.

Redescription. Female. Dorsal shield (fig. 14, *1*) well sclerotised, with a distinct dark marginal border, smooth, oval, without lateral notches; 7 pairs of solenostomies (*it*, *iv*, *id*, *isc*, *il*, *is*, ic). Dorsal setae AL3, PM2 and PM3 thick at the base, whip-shaped; AD1 and AM1 are of moderate length; AL1, AL2 and PD2 are short, the rest are microchaetes (5–7 μm). All setae are smooth, only on PM2 and PM3 1–2 serrations are difficult to distinguish. Peritremes reach the bases of AD1. The ventrianal shield (fig. 14, *2*) is broadly pear-shaped in form, with barely noticeable lateral notches, well sclerotised, transversely striated in the anterior third part; anal pores are small, round, spaced. The metapodal scutes are not large, the anterior one is irregular in shape, elongated, smaller than the fusiform posterior one (fig. 14, *3*). The posterior end of the peritremal shield is narrow, straight or slightly curved, beak-shaped at the end (fig. 14, *4*). There are 6 teeth on Df and 2 on Dm (fig. 14, *5*). The funnel of the spermatheca is well sclerotised, with thick walls, narrow, widening towards the sac, warty in the narrow part; the atrium is sessile (fig. 14, *6*). Leg IV with 3 long thick macrochaetes (fig. 14, *7*), leg III has 3 much shorter macrochaetes, and leg II has one small macrochaete.

Measurements: Lds 366, Wds 252; Lvas 113, Wvas 109, Lian 48; Ltar IV 154; setae length: AD1 29; AD2 5; AD3 5; AD4 6; PD2 7; PD4 12; AM1 31; AM2 5; AL1 11; AL2 13; AL3 100; ML 8; PL1 8; PL2 8; PL3 7; PM3 134; PM4 192; AS 13; PS 8; PV 98; MCh IV: ge 39, ti 32, b/ta 43, MCh III: ge 22.

Male. Preanal setae 3 pairs; anal pores not close together (fig. 15, *8*). The spermatodactyl is curved as in fig. 15, *9*. Lds — 300.

Differential diagnosis. *Amblyseius terreus* is similar to *A. nemorivagus* Athias-Henriot, which also may be found in the soils of Crimea. *Amblyseius terreus* has short setae AL1 and AL2 of equal length (in *A. nemorivagus* AL2 is twice as long as AL1). Additionly, *A. terreus* has a much larger ventrianal shield of a round shape and four 4 large teeth on Df in female (*A. nemorivagus* has 8 teeth). Beside, males in two species have different form

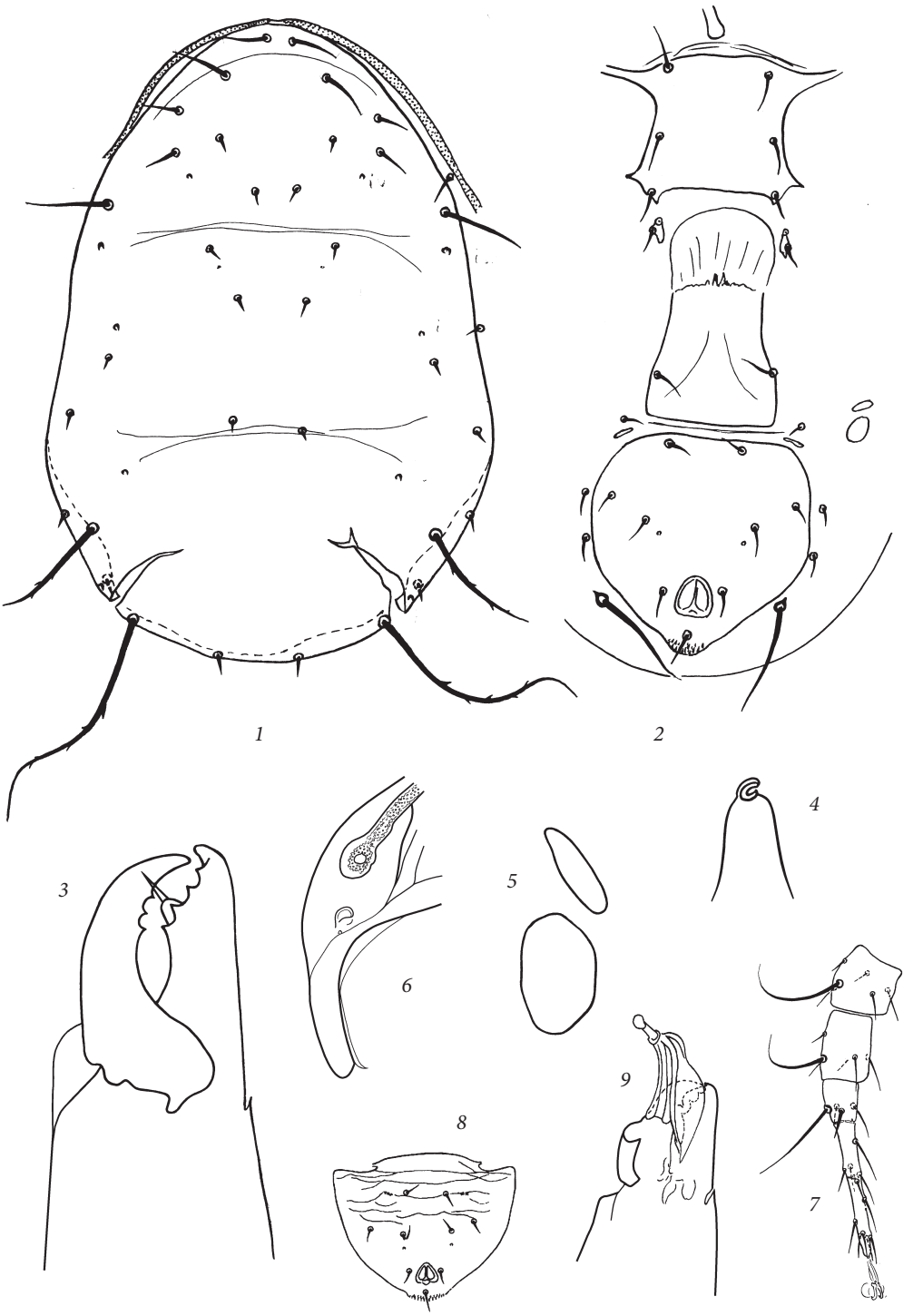

Fig. 14. *Amblyseius terreus* Kolodochka, 2003. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* — ventral body surface; *3* — chelicera; *4* — spermatheca; *5* — metapodal plates; *6* — caudal part of peritremal shield; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

and structure of spermatodactils, and an additional preanal setae on male ventrianal shield of *A. terreus* missing.

Distribution, habitat, occurrence. Europe (Crimea). In Ukraine: Steppe zone, soil; rare.

Note. Description, illustrations and morphometry are based on holotype.

Amblyseius wainsteini Gomelauri, 1968 (fig. 15)

Amblyseius wainsteini Gomelauri, 1968 a: 518.
Amblyseius (*Amblyseius*) *wainsteini*: Wainstein & Vartapetov, 1973: 103.
Amblyseius wainsteini: Karg, 1993, 181.
Amblyseius similis: Kolodochka, 2006: 229; Kolodochka & Omeri, 2011: 33;
Transeius wainsteini: Demite at al., 2024 (Phytoseiidae Database).
Zercon similis Koch, 1839 = *Typhlodromus similis* Koch, 1839: 27 — nomen dubium: Chant & McMutrtry, 2004.

Material. **Types**. Syntypes 7 ♀, Georgia, Manglisi [town], on *Corylus*, July 1956 (No. of the specimen unknown) (IZGT).

Non-type. 500 ♀, 108 ♂ (608 specimens) — Lviv, Rivne, Ternopil Regions.

Redescription. Female. The dorsal shield (fig. 16, *1*) is moderately sclerotised, elongated-oval, expanded caudally, smooth except lateral striations, relatively well-defined solenostomes 7 pairs (*it*, *iv*, *id*, *isc*, *il*, *is*, *ic*). Setae AM1, AL4, PM3, and PM4 are significantly longer than the other dorsal setae. The setae PM3 and PM4 are serrated, the rest are smooth. Seta AM1 extends far beyond the theca of seta AL1. Seta AL1 is insignificantly shorter or almost equal to the distance to theca AL3. Seta AL3 longer than AL1. Seta PL1 is 2 times longer than PL2 and 3 times longer than PL3. Peritremes long, reaching the bases of setae AD1. Setae St3 sit on small posterolateral processes of the sternal shield, between which the posterior edge of the shield is straight (fig. 15, *2*). MSt setae located on scutes. The ventrianal shield is almost equal in width to the genital shield, elongated, has lateral notches and sculpture in the form of thin transverse lines; often variable in form; anal pores close together, semilunar. Metapodal scutes are narrow, the anterior one is smaller than the posterior one (fig. 15, *3*). The posterior part of the peritremal shield is slightly curved, beak-shaped at the end, with a pore (fig. 15, *4*). There are 9 chelicerae on Df and 2 on Dm (fig. 15, *5*). The spermatheca is small, the funnel is cup-shaped, the atrium is sessile (fig. 15, *6*). Leg IV has 3 macrochaetae; longest on the tarsus, slightly shorter on the genu (fig. 15, *7*), shortest on the tibia; genua III–I have one by one short macrochaeta.

Measurements: Lds 375, Wds 210, Lvas 127, Wvas 93, Lian 22, Ltar IV 140; setae length: AD1 28; AD2 10; AD3 9; AD4 11; PD2 11; PD4 11; AM1 55; AM2 8; AL1 23; AL3 32; AL4 73; PL1 33; PL2 17; PL3 10; PM1 13; PM3 67; PM4 134; AS 29; PS 20; PV 78; MCh IV: ge 62, ti 53, ta 70; MCh III: ge 25; MCh II: ge 24; MCh I: ge 22.

Male. Preanal setae 3 pairs; anal pores are large, semilunar (fg. 15, *8*). Spermatodactyl with a coracoid process directed forward and upwards (fig. 15, *9*). Lds — 277.

Differential diagnosis. *Amblyseius wainsteini* is very similar to *A. andersoni*. The most reliable sign of the difference between females of these species is the structure of the spermatheca. The atrium in *A. andersoni* is connected to the infundibulum by a short neck, while in *A. wainsteini* the atrium is sessile and does not have a neck. Males differ in the structure of the spermatodactyl (fig. 1, *9*; fig. 15, *9*). These signs are not always in a position convenient for research when the mite is attached to a glass slide. At

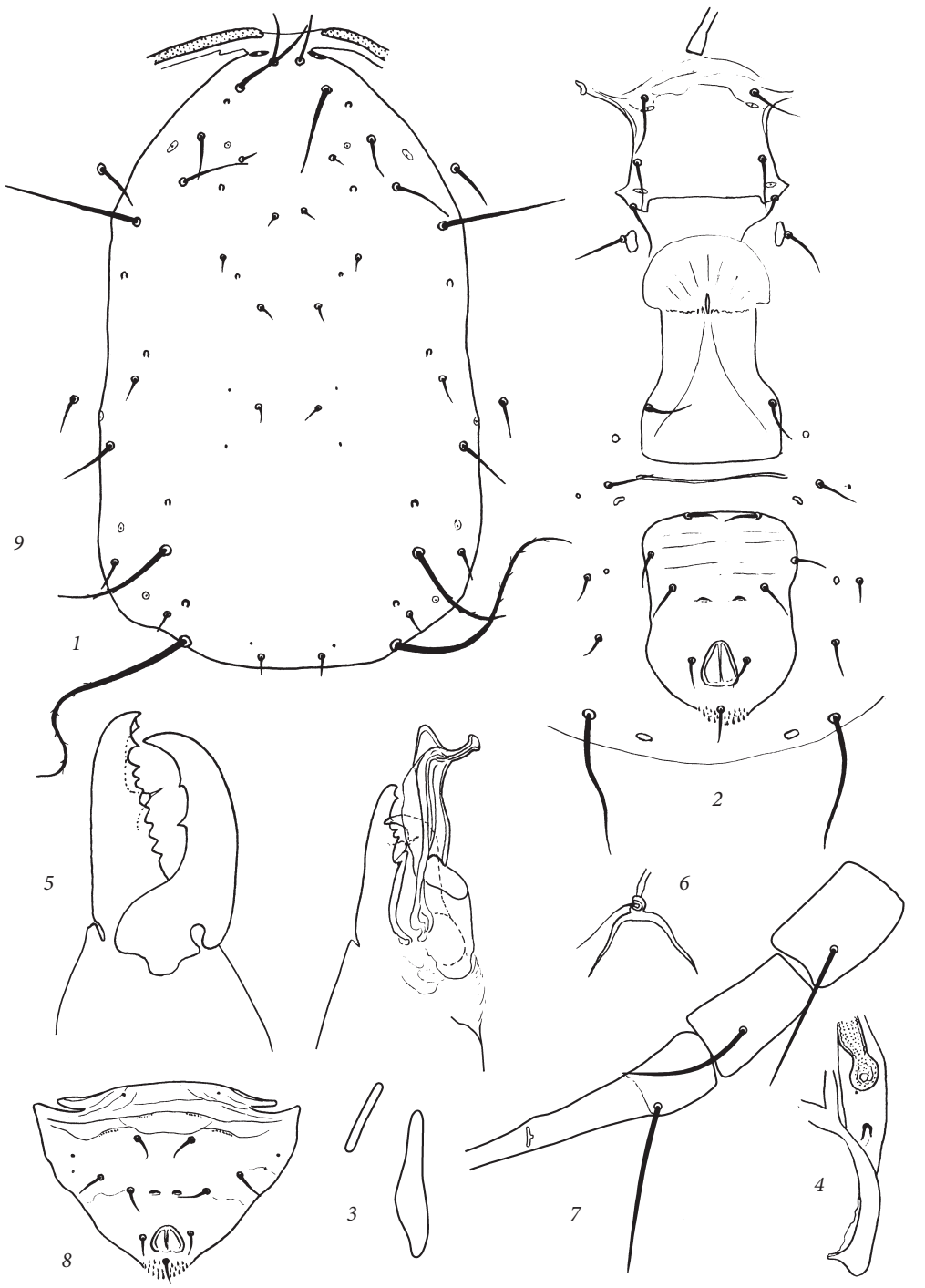

Fig. 15. *Amblyseius wainsteini* Gomelauri 1968 a. ♀ (*1–7*), ♂ (*8, 9*): *1* — dorsal shield; *2* — ventral body surface; *3* — metapodal plates; *4* — caudal part of peritremal shield; *5* — chelicera; *6* — spermatheca; *7* — fragment of leg IV; *8* — ventrianal shield; *9* — chelicera.

the same time, the use of the dorsal chaetom provides clear differences between these species in the length of the dorsal setae AD2 7; AM1 39; AL1 14; AL3 22 (in *A. andersoni*) and, accordingly, AD2 10; AM1 55; AL1 23; AL3 32 (in *A. wainsteini*). This difference is persistent and, according to our data, serves as a reliable basis for separating these species when serially identifying specimens. An even simpler way to distinguish these species is to use the ratio of the length of the AL1 setae to the distance between the AL1 and AL3B setal thecae (Kolodochka and Omeri, 2011: 33–36). The AL1 seta in *A. wainsteini* is almost equal to or slightly shorter than this distance (the differences are not significant at a significance level of less than 1 %), whereas in *A. andersoni* the length of the AL1 seta does not exceed half the length of the AL1 seta. A sign that is convenient at first glance – the difference in the number of teeth on Dm – is not always a sign that one should rely on, since (Attention!) in A. andersoni the middle tooth on one from any Dm may be absent.

Distribution, habitat, occurrence. Europe (Germany, Denmark, Slovakia), Southern Caucasus (Georgia), Northern Caucasus (Karachayevo-Cherkessia), Western Asia (Iran, Turkey). In Ukraine: only a few local habitats of *A. wainsteini* are known in three western regions, where it is found on trees and shrubs, occasionally on perennial grasses. Under natural conditions, it can sometimes form mixed populations with the widespread *A. andersoni*. Such cases occur in 10 % of the total number of samples containing these species together or separately. In cultural phytocenoses of the Wood-and-Steppe zone of Ukraine, *A. andersoni* is common, and A. *wainsteini* occurs sporadically. The possibility of the presence of hybrid individuals in the territory of coexistence of these species was checked by us and not confirmed at the morphological level. Unilateral reduction of the middle tooth on the Dm chelicerae in *A. andersoni* could be taken as a sign of hybridization, but such individuals are very rare and can be found in places far from the natural range of *A. wainsteini*. In addition, differences in the morphology of these two species simultaneously in several stable characters confirm their independence and indicate a possible relationship.

Note. Description, morphometry and illustrations were prepared using material from Rivne Region.

A key to species of the genus *Amblyseius* of Ukrainian fauna (females)

1 (24). Pair of setae V2 is present on the membrane near the ventrianal shield....24
2 (7). Dorsal shield partially or completely covered with fine reticulate sculpture 7
3 (4). Seta AM1 shorter than distance to theca of seta AL1....*A. rademaheri*
4 (3). Seta AM1 more longer than distance to theca of seta AL1 5
5 (6). Length of seta AL1 almost equal to or slightly shorter than distance to theca AL3; atrium of spermatheca sessile..... *A. wainsteini*
6 (5). Length of seta AL1 does not exceed half the distance to theca; atrium of spermatheca on short neck .....*A. andersoni*
7 (2). Dorsal shield smooth 7
8 (9). Dorsal setae AL1 are shorter than AL3.....8
9 (10). Seta AL1 shorter than distance to theca AL3; the posterior half of the ventrianal shield is wider than the anterior half..... *A. filixis*
10 (9). Seta AL1 is the same length or slightly longer than the distance to the theca AL3; the anterior half of the ventrianal shield is wider than the posterior half.....*A. nemorivagus*
11 (12). Dorsal setae AL1 and AL3 are of equal length 11
12 (11). Funnel of spermatheca is saucer-shaped, its diameter is 1.5 times smaller than the length of the thin and "corrugated" neck..... *A. obtusus*
13 (14). Funnel of spermatheca another shape and structure.....13
14 (13). Funnel of spermatheca thin-walled; atrium located asymmetrically on the funnel 14

15 (16). Ventrianal shield pentagonal with straight lateral edges ..... *A. neobernhardi*
16 (15). Ventrianal shield pear-shaped, narrowed caudally ..... *A. terreus*
17 (18). Seta PM4 is club-shaped at the end 17
18 (17). Funnel of spermatheca is large; the anal pores are closely related to the thecae of setae PrA2 ..... *A. irinae*
19 (20). Funnel of spermatheca is of medium size, narrow, finger-shaped, its outer walls are covered with very small tubercles; the anal pores are not closely related to the thecae of setae PrA2..... *A. microorientalis*
20 (21). Seta PM4 is pointed..... 21
21 (22). Funnel of spermatheca is warty, tubular, thick-walled in the middle part, widens from one end to the sessile atrium, from the other end to the sacculus ..... *A. sparsus*
22 (23). Funnel of spermatheca is smooth-walled, long, with walls moderately thickened up to the middle of its length, swollen at the atrium, then smoothly widening towards the sacculus ..... *A. omaloensis*
23 (24). Df with no more than 4 teeth, Dm with 0–2 4
24 (25). Df with 4 teeth (large medial tooth masked by base of pilus dentilis), Dm with 2 teeth; length of spermatheca funnel 30 μm (excluding atrium)..... *A. meridionalis*
25 (24). Df with 3 teeth, Dm without teeth; length of spermatheca funnel 40 μm (excluding atrium) .... *A. kalandadzei*
26 (1). Pair of V2 setae in ventrianal shield absent ..... *A. krantzi*

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