SUBFAMILY ARCTOSEIINAE (ACARI, MESOSTIGMATA)
IN THE MUSEUM FÜR NATURKUNDE BERLIN

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INTRODUCTION

Acarological taxonomy encounters many problems, since the recommendations of the International Code of Zoological Nomenclature have not always been observed by workers in this field. Examples include simplified or incomplete descriptions and figures of new species. As a result revisions, redescriptions, and species variability analyses rely heavily on both type material and additional museum specimens collected in various geographical areas. Difficulties can arise here due to a lack of information about where such material is located, or what its current condition is. One of the largest collections of mesostigmatid mites (Acari: Mesostigmata) is the Karg collection held in the Museum für Naturkunde Berlin. This internationally significant collection was assembled since the 1960s till by Prof. Dr. Wolfgang Karg (Kleinmachnow, near Berlin) and comprises over 7,500 mesostigmatid slide preparations – plus additional alcohol material – including type specimens of at least 600 mesostigmatid species.

Here we concentrate on one particular mesostigmatid family: Arctoseiidae. It is aimed to document the Berlin holdings of this group as the first stage of taxonomic research which is hoped to lead to a worldwide revision. Arctoseiinae is represented...
in the Palearctic region by over forty species [Gwiazdowicz 2007]. The material in Berlin belongs to three genera, 
_Arctoseius_ Oudemans, 1905, _Iphidozercon_ Berlese, 1903 and _Zerconopsis_ Hull, 1918, and brief accounts of the characteristics of these genera are
provided. The material listed here stems primarily from eastern Germany – the former
German Democratic Republic – as well as Sweden, Chile and New Caledonia, and fur-
ther locality details are provided. In total, the Karg collection comprises seventeen Arc-
toseiine species from Germany, including type material of seven species described by
Wolfgang Karg himself [Karg 1962, 1965, 1969, 1993]. In detail, the study aimed
to verify this material, e.g. checking whether the species on a microslide corresponds
to the name on the label. In addition, current species names and/or synonyms have been
verified and in the case of holo- and paratypes, geographical coordinates of the collection area (terra typica) are given.

**MATERIAL AND METHODS**

Specimens were examined by the authors and compared to data in the appropriate
museum catalogues. All specimens have been assigned a museum inventory number
under the traditional acronym “ZMB” (for Zoologisches Museum Berlin), and addition-
ally bear Karg’s original slide number as “Karg Coll. No.”. All material consists of
slide-mounted material unless stated otherwise. Unless noted otherwise, material origi-
nates from Germany and the current federal state (or Bundesland) has been added in the
hope of assisting future efforts to digitize species distributions. The genders of adult
specimens are given and in the few cases where this could be determined, but was not
given on the original label, genders have been added here in the text. Additional ab-
breviations: D = deutonymph, P = protonymph, L = larva. Where known, brief data
on the ecology and habitat preferences of the various species have been noted based
on the studies of the senior author and/or the literature.

**SYSTEMATICS**

_Ascidae Oudemans, 1905_

_Arctoseiinae Evans, 1963_

**Remarks.** Members of this subfamily are characterised by having legs II to IV with
the median lobe of the pulvillus broadly rounded and para-anal setae inserted anterior to
the hind margin of the anus, where they are usually shorter than the postanal seta. Fur-
thermore, the maximum number of setae on genua I-II-III-IV is 12-10-8-7 respectively;
on the tibiae it is 12-9-7-7. Seta pd-3 is absent on genu and tibia I, pl-2 is absent
on genu and tibia II, and al-2 absent on genua and tibiae III-IV [Lindquist and Evans
1965].
**Arctoseius** Thor, 1930

**Remarks.** Mites of the genus *Arctoseius* usually have a schizodorsal shield with clearly visible incisions in the central region of the dorsal side. There are 30-34 pairs of setae on the shield, of which 14 pairs are located posteriorly. Marginal setae occur on the lateral integument. The dorsal setae are smooth, simple and not paddle-shaped. Ornamentation is usually poorly-defined and most frequently alveolate, areolate or colliculate. Three pairs of setae occur on the sternal shield and steta st4 is located on a membrane. The St5 setae lie outside the genital shield. In females the anal shield bears three setae. Endopodal plates between coxae II and III are usually fused to the sternal shield; rarely are they free or absent. The hypostomal groove bears seven denticulate rows. The tectum is bi- or tri-ramous, its margins are smooth, but have denticulate process tips in some species. The movable digit of the chelicera is usually bi-dentate, but the dentition of the fixed digit varies from three well-separated teeth to a row of small, closely-set teeth. The palp lacks macrosetae on the tarsus [Lindquist 1961, Lindquist and Evans 1965, Karg 1973, Halliday et al. 1998].

**Arctoseius brevichelis** Karg, 1969


**Remarks.** Epistome tri-ramous, seta Z5 at least three times longer than J5, ventral shield small, longer than wide, sternal and genital shields without sculpture [Gwiazdowicz 2007]. Occurs in litter, humus, moss and between tree roots [Karg 1969].

**Arctoseius cetratus** (Sellnick, 1940)

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Remarks. Epistome bi-ramous, setae J2, Z1, Z2 and S1, S2 short, not reaching bases of following setae. Occurs in agricultural land, compost, the litter of various stands of trees, humus and rotting wood [Bregetova 1977, Karg 1993]. The greatest number of specimens has been reported from pastures, as well as anthills, bark beetle galleries and bird nests [Gwiazdowicz 2007].

Arctoseius dendrophilus Karg, 1969


Remarks. Dorsal shield without lateral incisions, anal shield width approximately equal to its length, at least part of dorsal shield covered with puncticate sculpture, most dorsal setae spiniform. Occurs in litter, e.g. beech trees, and in rotting wood [Karg 1969].

Arctoseius eremitus (Berlese, 1918)


Remarks. Epistome tri-ramous, seta Z5 at least three times longer than J5, ventral anal shield large, distinctly wider than long. Occurs in litter, humus, lichens, rotting wood and also in the nests of small mammals and wolf excrement [Bregetova 1977, Gwiazdowicz 2007].

Arctoseius insularis (Willmann, 1952)

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**Remarks.** Epistome tri-ramous, setae Z5 same length as J5 or slightly longer, setae in row R spiniform, presternal plates absent. Occurs in both agricultural and forest soils. In forests it has usually been reported in litter, moss, rotting wood and in the nests of birds [Kalúz and Fenda 2005, Gwiazdowicz 2007].

*Arctoseius magnanalis* Evans, 1958


**Remarks.** Setae st5 outside genital shield, ventri-anal shield with five setae. Occurs in a variety of forests, most frequently in litter, humus, moss and the nests of rodents [Bregetova 1977, Gwiazdowicz 2007].

*Arctoseius minutus* (Halbert, 1915)


**Remarks.** Dorsal shield without lateral incisions, anal shield width approximately equal to its length, at least part of dorsal shield covered with puncticulate sculpture, most dorsal setae simple. Occurs in litter, moss, rotting wood and the nests of small mammals [Bregetova 1977, Karg 1993]. Gwiazdowicz [2007] reported *A. minutus* in bark beetle galleries.

*Arctoseius pristinus* Karg, 1962

**Material.** ZMB 38931, Karg Coll. No. 2563a, 1 ♀, Kleinmachnow b. Berlin (52°24′ N, 13°13′ E) 24.04.1958, **holotypus**; ZMB 38932, Karg Coll. No. 2563b, 2 ♀, Potsdamer Forst, 1961; ZMB 38933, Karg Coll. No. 2564, 1 ♀, Forst Wallitz, Gühlen, 1965;
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**Remarks.** Epistome tri-ramous, setae Z5 same length as J5 or slightly longer, setae in row R simple, presternal plates absent. Occurs in agricultural land and in the litter of various stands of trees [Karg 1962].

*Arctoseius resinae* Karg, 1969

**Material.** ZMB 39052, Karg Coll. No. 2549, 1 ♀, Nähe Hasselfelde, Harz (51°41′ N, 10°51′ E), 1969, holotypus.

**Remarks.** Epistome tri-ramous, seta Z5 at least three times longer than J5, ventral shield small, longer than wide, sternal shield with reticulate sculpture, genital shield with puncticulate sculpture. Occurs most frequently in litter and in rotting wood [Karg 1969].

*Arctoseius semiscissus* (Berlese, 1892)


**Remarks.** Epistome bi-ramous, setae J2, Z1, Z2 and S1, S2 long, reaching bases of following setae. Occurs in litter, humus, compost, grass sods in meadows, rotting wood, and also in the nests of small rodents [Bregetova 1977, Karg 1993].

*Arctoseius sessiluncus* Karg, 1965

**Material.** ZMB 39207, Karg Coll. No. 2546, 1 ♀, Müncheberg (52°30′ N, 14°08′ E), 1958, holotypus; ZMB 39208, Karg Coll. No. 2547, 1 ♀, Müncheberg, 1958; ZMB 39209, Karg Coll. No. 2548, 1 ♂, Müncheberg, 1958.

**Remarks.** Seta Z5 at least three times longer than J5, setae Z4 two times longer than Z3, setae S2 on membrane. Occurs in meadows [Karg 1965].

*Arctoseius venustulus* (Berlese, 1916)


**Remarks.** Epistome tri-ramous, setae Z5 same length as J5 or slightly longer, setae in row R spiniform, pair of presternal plates present. Occurs in agricultural lands (e.g. in alfalfa crops) in forest litter, humus and rotting wood [Karg 1993, Gwiazdowicz 2007].

*Arctoseius* sp.


*Iphidozercon* Berlese, 1903

**Remarks.** According to Lindquist [1961], Lindquist and Evans [1965] and Halliday et al. [1998], typical features of *Iphidozercon* include a dorsal idiosoma with a holodorsal shield and a vertex curved towards the body venter. Due to this j1 (vertical) setae are sometimes not visible dorsally. The dorsal shield has 32 pairs of setae (18 + 14) and its ornamentation is puncticate, reticulate or areolate. The sternal shield has three pairs of setae, the genital shield is small and narrow and setae st5 is situated outside this shield. The peritrematal shield is wide with a long peritreme and the upper part of the peritreme curve inward. Aerolate metapodal plates are present behind the peritremal shield; the anal shield has three setae. The hypostome has seven rows of 5-21 denticles; the fixed digit of the chelicera is tridentate and the movable digit bidentate. The epistome is triramous and has denticles; the palptarsus bears a macroseta [Evans 1958, Gwiazdowicz and Halliday 2008]. *Iphidozercon* was further distinguished by Karg [1993] on the basis of, e.g., the absence of the lateral boundary of the hypostomal groove on the hypostome, where seven denticulate rows are present.

*Iphidozercon gibbus* (Berlese, 1903)


**Remarks.** Peritrema ending at stigma, sternal shield narrow and not fused with the endopodals, vertex directed downwards so that vertical setae are not visible from above.
Occurs in forests, meadows and agricultural land. It prefers the surface layer of soil, litter, compost, rotting wood and rodents’ nests. It was also reported in the nests of birds [Karg 1993, Kalúz and Fenda 2005].

_Iphidozzercon validus_ Karg, 1996


**Remarks.** Part of peritreme reaching beyond stigma, dorsal shield with foveate sculpture. The ecology of this species from the Islands of the Pacific is unknown [Karg 1996].

_Zerconopsis_ Hull, 1918

**Remarks.** The dorsal shield of adult _Zerconopsis_ is entire or has lateral incisions. Females have 37-42 pairs of setae; 19-22 pairs on the anterior region and 14 pairs on the posterior region of the dorsal shield, and 6-9 pairs on the lateral membrane. The dorsal setae are smooth, mostly simple, but some (invariably s4 and Z5, and usually Z3) are paddle-shaped. Females have genital setae on the membrane of the genital shield. The ventrianal shield has anal setae plus one to six pairs of ventral setae. The tectum is triramous, each process is denticulate and similar in size. The deuterosternum bears rows of denticles bordered by conspicuously or weakly-formed lateral lines. The palp lacks macrosetae on the tarsus [Lindquist and Evans 1965, Bregetova 1977, Kalúz and Fenda 2005].

_Zerconopsis apodius_ Karg, 1969

**Material.** ZMB 39871, Karg Coll. No. 2746, 1 ♀, Wiesenburg (52°07'0" N, 12°26'59" E), _holotypus_; ZMB 39872, Karg Coll. No. 2747, 1 ♂; ZMB 39873, Karg Coll. No. 2748, 1 ♂; ZMB 39874, Karg Coll. No. 2744, 1 ♀; ZMB 39875, Karg Coll. No. 2745, 1 ♀; all from Park v. Wiesenburg (Flämning) (52°07' N, 12°27' E), 1965.


_Zerconopsis michaeli_ Evans et Hyatt, 1960

**Material.** ZMB 40746, Karg Coll. No. 2740, 1 ♀; ZMB 40747, Karg Coll. No. 2741, 1 ♀, both Müritz, 1965; ZMB 40748, Karg Coll. No. 2742, 1 ♂; ZMB 40749, Karg Coll. No. 2743, 1 ♀.

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Zerconopsis remiger (Kramer, 1876)

**Material.** ZMB 41199, Karg Coll. No. 2739, 1 ♀, Müritz, 1965.

**Remarks.** Legs I with claws, dorsal shield with three pairs of spatulate setae. Occurs in litter, moss, rotting wood, and in humus between roots [Bregetova 1977, Gwiazdowicz 2007].

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REFERENCES


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W KOLEKCJI MUSEUM FÜR NATURKUNDE W BERLINIE


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