

## *Iphidonopsis sculptus* gen. n. sp. n., a new mite genus of the family Ascidae (Acari, Gamasida) from Poland

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This work presents a new genus and new species of the family Ascidae. Female and male individuals of the new species of the genus *Iphidonopsis* were collected in NE Poland, in the Białowieża National Park. Also, differences between this genus and the taxonomically closest genera *Zerconopsis* and *Xenoseius* have been analysed.

Key words: mites, Acari, Gamasida, Ascidae, *Iphidonopsis*, new species, new genus, Poland.

### Introduction

Mites of the family Ascidae belong to one of the best-studied mite groups of the order Gamasida. Within this family more than 30 genera have been described so far, of which 11 are monotypic (HALLIDAY et al., 1998). Ascid mites are predators occurring all over the world in many microhabitats, e.g. soil, rotten wood, bird and insect nests or fruiting bodies of polypores.

Research by EVANS (1963) suggests that chaetotaxy of legs is a consistent taxonomic feature facilitating analysis of species within this family, among others. Consequently, the family Ascidae was divided into three subfamilies: Platysiinae, Arctoseiinae and Ascinae (LINDQUIST & EVANS, 1965; KRANTZ & AINSCOUGH, 1990).

Analysis of mites collected from Białowieża National Park in Poland, their leg chaetotaxy such as tibia III–IV with seven setae (Fig. 1) and other taxonomic features specified by EVANS & TILL (1979) proved that this genus belongs to the Arctoseiinae subfamily. However, the analysis that followed failed to identify any recognizable genera,

thus giving grounds for description of the new genus *Iphidonopsis*.

In the present work the chaetotaxy, symbols and the numbering system of setae on dorsal and ventral side and on limbs/tarsi were used after EVANS (1963), LINDQUIST & EVANS (1965) and LINDQUIST (1994). Description of setae on hypostome and the numbering system of rows on hypognathal groove follow HIRSCHMANN (1959).

### *Iphidonopsis* gen. n.

**Diagnosis.** Dorsal shield in adults with distinct, reticulate-foveate cuticular ornamentation bearing 35 pairs of simple setae. The shield is not divided, has no lateral incisions and slightly overlaps ventral side. Ventral side in female with a relatively big anal shield markedly wider than long, bearing three anal setae. Males possess a ventrianal shield with three anal setae and eight pairs of ventral setae. Tectum triramous, and lateral tines denticulate. Deuterosternum with rows of denticles bordered by conspicuously or weakly formed lateral lines. Palp without macroseta on tarsus. Leg I

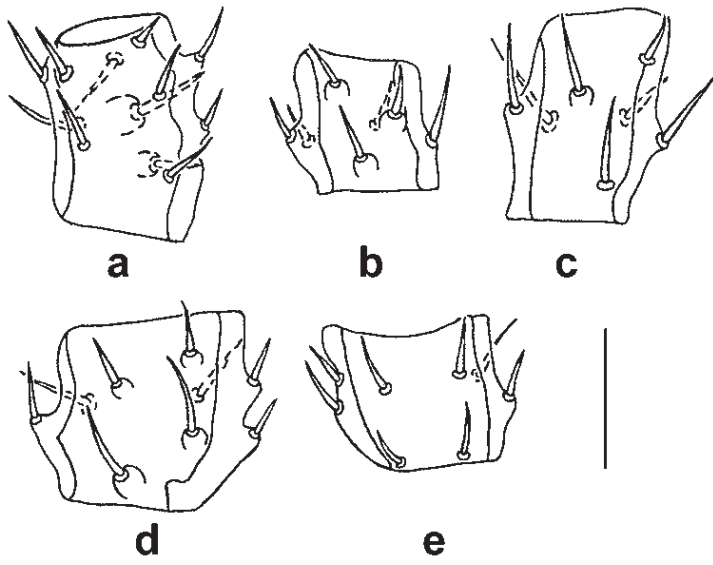
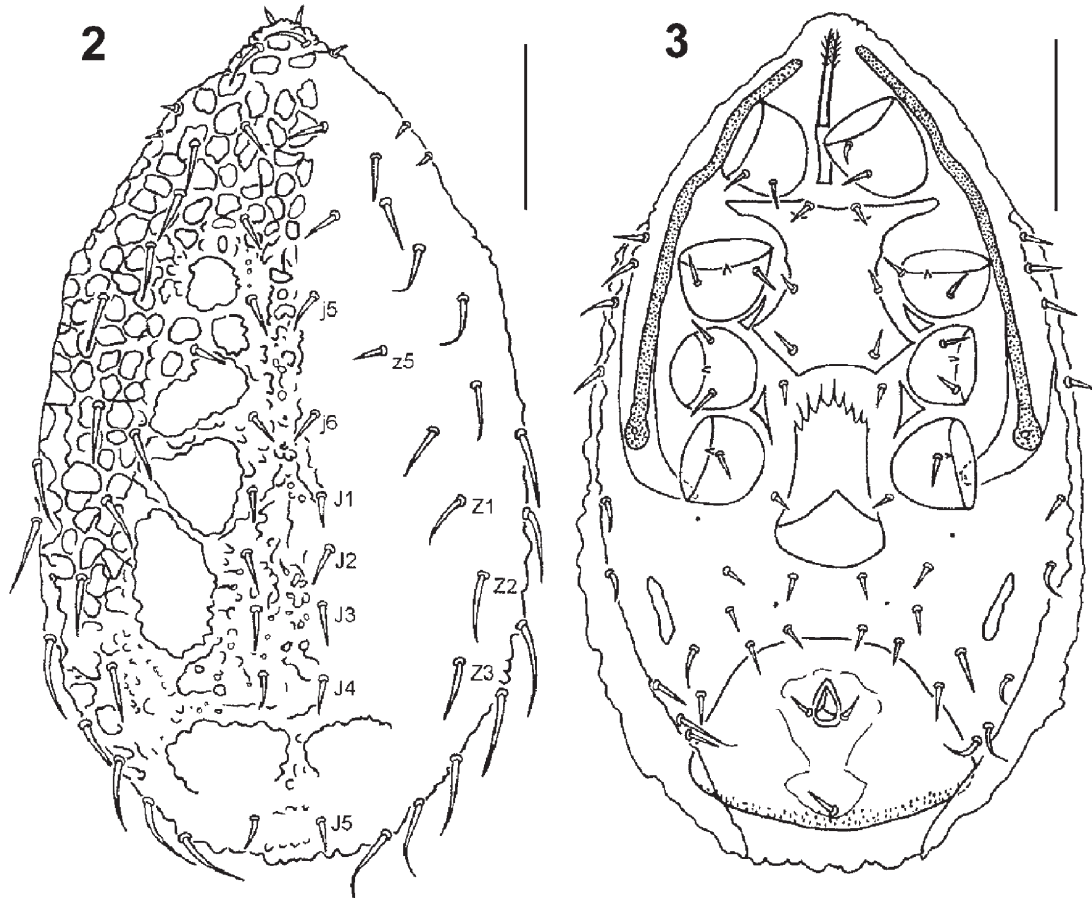


Fig. 1. Female of *Iphidonopsis sculptus*: a - tibia I; b - tibia III; c - tibia IV; d - genu II; e - genu III. Scale 25  $\mu$ m.



Figs 2, 3. Female of *Iphidonopsis sculptus*: 2 - dorsal view; 3 - ventral view. Scales 100  $\mu$ m.

with pretarsus and claws. Tarsi II to IV each with the dorsoproximal setae (ad-2 and pd-2) conspicuously elongated and curved (Fig. 5a); tibiae III–IV with seven setae; genu III with eight setae. Claws on legs I markedly smaller than on other legs. Type species: *Iphidonopsis sculptus* sp. n.

***Iphidonopsis sculptus* sp. n.**

**Description. Female.** The body of female oval, 500  $\mu\text{m}$  long and 290  $\mu\text{m}$  wide.

Dorsal side characterised by a distinct, deep, reticulate-foveate cuticular ornamentation (Fig. 2). In all analysed individuals between rows of setae 'J' and 'Z' 6 enclaves were present with no sculpture; two smaller ones adjacent to j5, and the bigger ones situated between setae: z5 and j6, J1 and Z1, J2, j3 and Z2, J4 and J5. Shield on dorsal side curved, slightly overlapping ventral side and bearing 35 pairs of simple setae of various length, e.g. setae in row 'j' (20–30  $\mu\text{m}$ ) are longer than j1 (10  $\mu\text{m}$ ), but shorter than setae 'S' (50  $\mu\text{m}$ ). Some of them may also occur on ventral side, most frequently on the margin of the shield adjacent to coxae II and III.

Ventral side with sternal shield 90  $\mu\text{m}$  long bearing three pairs of simple setae (15  $\mu\text{m}$ ). Genital shield without setae (setae st5 located posterior to shield) and anal shield with three anal setae (Fig. 3). Anal shield trapezium-shaped with anal orifice located medially. Shield 120  $\mu\text{m}$  long and 160  $\mu\text{m}$  wide. Cribrum situated posterior to setae U. Ten pairs of setae (15–25  $\mu\text{m}$ ) located adjacent to anal shield, on membrane. Long metapodal shield situated anterior to setae ZV3. Relatively long peritrema situated on peritremal shield. Stigma adjacent to coxa IV, while the opposite end of peritrema is situated anterior to coxae I. Endopodal plates are situated between coxae II and III as well as between coxae III and IV.

Hypostome with horn-like corniculus and four pairs of setae of various length (Fig. 4). C1 are the longest setae (40  $\mu\text{m}$ ), with C3 being somewhat shorter (35  $\mu\text{m}$ ), and C2 and C4 the shortest (15  $\mu\text{m}$ ). In the middle part of the hypostome there are 8 grooves, 7 of them have hypognathal denticles: Q1 (0), Q2 (13), Q3, (10), Q4 (14), Q5 (12), Q6 (14), Q7 (18), Q8 (20). Chelicera similar to those found in other species of the family Ascidae. Fixed digit with three denticles and movable digit with two denticles. Tectum is made of three processes, with the medial one obtuse and without serrations. The two external processes are of the same length, and are sharply pointed and have distinct serrations on the outside (5–8) (Fig. 5b).

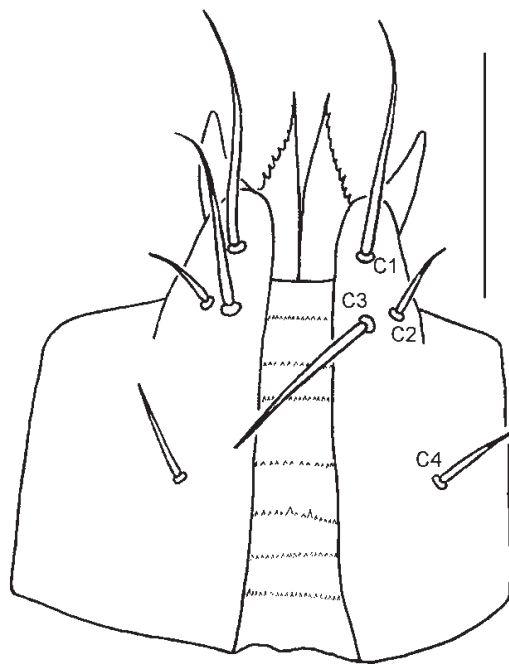


Fig. 4. Female of *Iphidonopsis sculptus*: gnathosoma. Scale 50  $\mu\text{m}$ .

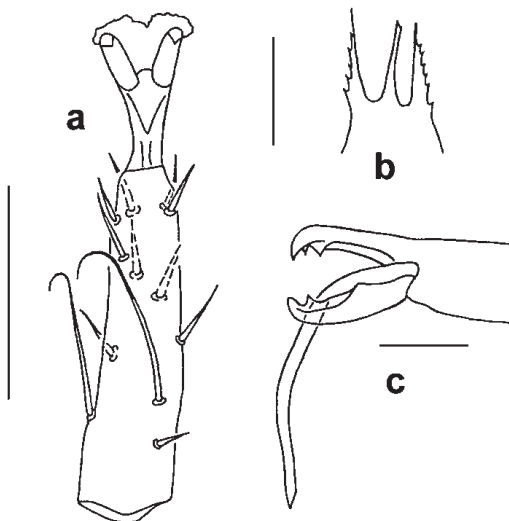


Fig. 5. *Iphidonopsis sculptus*: a – tarsus IV of female; b – tectum of female; c – chelicera of male. Scales 50  $\mu\text{m}$  (a), 25  $\mu\text{m}$  (b, c).

Legs of varied length: I (275  $\mu\text{m}$ ), II (280  $\mu\text{m}$ ), III (250  $\mu\text{m}$ ), IV (350  $\mu\text{m}$ ).

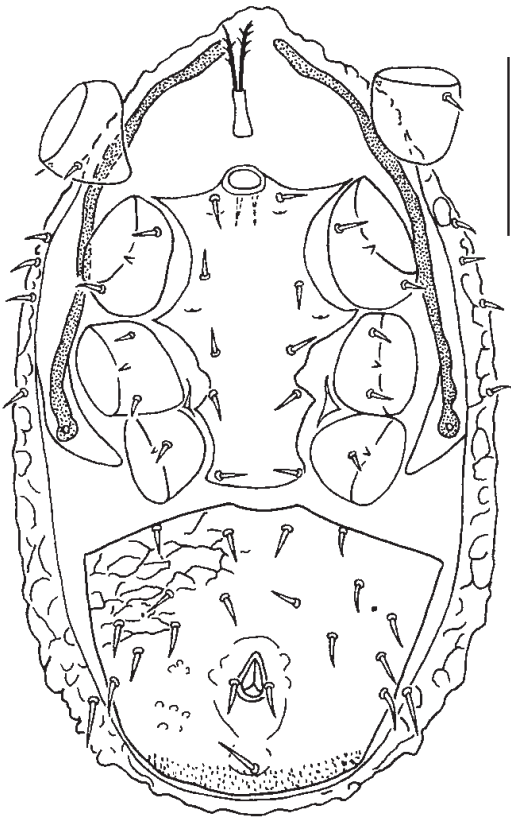


Fig. 6. Male of *Iphidonopsis sculptus*: ventral view. Scale 100  $\mu\text{m}$ .

**Male.** Dorsal shield in male similar to that of female but considerably smaller, 450  $\mu\text{m}$  long and 270  $\mu\text{m}$  wide. Chaetotaxy of setae on holodorsal as in female, though dorsal setae are somewhat shorter, e.g. j1 (5  $\mu\text{m}$ ), setae in row "j" (20  $\mu\text{m}$ ), and in row "S" (40  $\mu\text{m}$ ).

Sternal shield, 170  $\mu\text{m}$  long and bearing five pairs of setae (15  $\mu\text{m}$ ). Genital orifice is situated on this shield, between setae st1 (Fig. 6). Ventrianal shield 170  $\mu\text{m}$  long and 190  $\mu\text{m}$  wide, situated posterior to sternal shield. Apart from three circum-anal setae, ventrianal shield bears 8 pairs of setae with length 15–20  $\mu\text{m}$ . The shield is covered by a delicate ornamentation. Triangular endopodal plates situated between coxae III and IV. Peritreme, like in female, occur on peritremal shields. Stigma situated alongside coxae IV.

Gnathosoma and tectum like in female, however, chelicerae are markedly different. Fixed digit of chelicera with two serrations, and movable digit with one very long serration and very long spermatodactyl (Fig. 5c).

**Type material. Holotype:** Adult female, H. Karst., Białowieża National Park (52°47'–53°43' N, 23°48'–23°56' E), 9.VIII.1996, worm dust from underneath the bark of fallen spruce *Picea abies* (L.), leg. D. J. Gwiazdowicz; **paratypes:** 4 ♀♀, 4 ♂♂, same data as holotype; 1 ♂, fungal fruiting bodies on birch *Betula pendula* Roth, same data as holotype. Holotype and paratypes are deposited at August Cieszkowski Agricultural University, Department of Forest and Environment Protection, Poznań, Poland (in the author's collection).

**Etymology.** The generic name *Iphidonopsis* is an arbitrary combination. The species name is derived from a characteristic sculpture of dorsal shield. *Sculptus* (from Lat *sculpere* to carve) means *forming* or *possessing sculpture*.

**Differential diagnosis.** The new genus *Iphidonopsis* belongs to the family Ascidae, subfamily Arctoseiinae. *Iphidonopsis* is similar to *Zerconopsis* and *Xenoseius*, which, according to many authors (LINDQUIST & EVANS, 1965; EVANS & TILL, 1979; KRANTZ & AINSCOUGH, 1990; HALLIDAY et al., 1998) possess eight setae on genua III as well as tarsi II–IV each with dorso-proximal setae ad-2, pd-2 elongated and curved. However, comparison and analysis of other taxonomic features revealed numerous differences that finally lead to the description of a new genus (Tab. 1). In *Xenoseius*, tarsus I possesses neither pretarsus nor claws, while *Iphidonopsis* and likewise *Zerconopsis* have legs I with both pretarsus and claws (LINDQUIST & EVANS, 1965). So far, the genus *Xenoseius* includes two species: *Xenoseius clayi* Evans et Hyatt, 1960 and *Xenoseius elizae* Halliday, Walter et Lindquist, 1998. They possess tectum with 3 prongs, median prong longest. Ventrianal shield with 3 circum-anal setae and one pair of ventral setae (EVANS & HYATT, 1960). *Iphidonopsis*, in turn, has anal shield with three circum-anal setae, while all processes of tectum are of the same length. A characteristic feature of *Zerconopsis*, absent in other genera, is that it possesses some dorsal paddle-shaped setae (always s4 and Z5). *Iphidonopsis* possesses simple setae only. Furthermore, in *Zerconopsis* on ventrianal shield apart from three circum-anal setae there are also one to six pairs of ventral setae.

In view of the earlier mite taxonomy, the species described below might be associated with the genus *Iphidozercon*. *Iphidozercon* has the anal shield with three setae, absence of lateral incisions, genital shield in female narrow and without setae (EVANS, 1957, 1958; CHANT, 1963; BREGETOVA, 1977). However, later research (LINDQUIST &

Table 1. Selected characteristic features differentiating certain genera in the Arctoseiinae subfamily.

No	Characteristic feature	<i>Iphidozercon</i>	<i>Iphidonopsis</i>	<i>Zerconopsis</i>	<i>Xenoseius</i>
1.	genu III	with 7 setae	with 8 setae	with 8 setae	with 8 setae
2.	macroseta on palptarsus	palptarsus with macrosetae	palptarsus without macroseta	palptarsus without macroseta	palptarsus without macroseta
3.	tarsus I	with pretarsus and claws	with pretarsus and claws	with pretarsus and claws	without pretarsus and claws
4.	paddle-shaped setae	absent	absent	holodorsal or schizodorsal shield with paddle-shaped setae	absent
5.	setae ad2 and pd2 on tarsi II–IV	tarsi II–IV with a pair of dorsal setae (ad2, pd2) never elongate, curved	tarsi II–IV with a pair of dorsal setae (ad2, pd2) elongate, curved	tarsi II–IV with a pair of dorsal setae (ad2, pd2) elongate, curved	tarsi II–IV with a pair of dorsal setae (ad2, pd2) elongate, curved
6.	metasternal platelets	absent	absent	metasternal platelets between genital and ventrianal shield	absent
7.	ventral shields	anal shield with 3 setae	anal shield with 3 setae	ventrianal shield with three anal setae plus one to six pairs of ventral setae	ventrianal shield with three anal setae plus one to three pairs of ventral setae

EVANS, 1965; EVANS & TILL, 1979) revealed other dissimilarities, which finally made possible the differentiation between the genera *Iphidozercon* and the newly described *Iphidonopsis*. Differences between these genera consist, among others, in that *Iphidozercon* possesses palptarsus with macroseta and genu III with 7 setae while *Iphidonopsis* has no macroseta on palptarsus and has 8 setae on genu III.

On the basis of features characteristic of the genus *Iphidozercon* presented in the work by BREGETOVA (1977), that is regardless of chaetotaxy of legs, MA & YIN (1999) described a new species *Iphidozercon magnanalis*. The species is similar to *Iphidonopsis sculptus*, despite having only 30 setae on dorsal side. Regrettably, inability to analyse typical material made detailed comparative analysis impossible, the more so that description and figures included in the publication are incomplete, e.g. chaetotaxy of legs and palp tarsus with macroseta are missing.

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