

***HYPOASPIS FISHTOWNI* SP.NOV.**
(ACARI, MESOSTIGMATA, LAELAPIDAE) :
A NEW PREDATORY MITE.

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TAXONOMY
MESOSTIGMATA
HYPOASPIS

SUMMARY : This paper describes a new species of *Hypoaspis* (Laelapidae), the morphological features of which differ in many ways from any previously described species of the genus. The features which are used to distinguish the new species from the closely related species *Hypoaspis angusta* Karg 1965 have been proven in serial investigations to have little variability. In contrast to *H. angusta* Karg 1965, for which no males are known (HABERSAAT, 1989 ; KOEHLER, 1984), males for the new species are found in cultures (GLOCKEMANN, pers. comm.). The morphological characteristics of the new species are given for incorporation into identification keys.

TAXONOMIE
MESOSTIGMATA
HYPOASPIS

ZUSAMMENFASSUNG : Es wird eine Art der Gattung *Hypoaspis* beschrieben, deren externe Morphologie deutliche Unterschiede zu bereits beschriebenen Arten aufweist, sodass wir sie mit einem neuen Namen belegen. Die Unterschiede zur morphologisch ähnlichen Art *Hypoaspis angusta* Karg 1965 sind durch Serienuntersuchungen abgesichert und nicht als Variabilitäten aufzufassen. Im Gegensatz zu *H. angusta* Karg 1965, deren Männchen unbekannt sind (HABERSAAT, 1989 ; KOEHLER, 1984), wurden Männchen der neuen Art in Laborzuchten gefunden (GLOCKEMANN, mündl. Mitt.). In die bisher existierenden Bestimmungsschlüssel ist die neue Art aufgrund ihrer morphologischen Unterschiede differentialdiagnostisch leicht einzuordnen.

TAXONOMIE
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RÉSUMÉ. — Cet article décrit une espèce nouvelle d'*Hypoaspis* (Laelapidae), dont la morphologie en de nombreux points diffère de celle de chacune des espèces du genre déjà décrites. Les caractères qui la distinguent de l'espèce étroitement apparentée, *H. angusta* Karg, 1965 se sont montrés maintes fois faiblement variables. Contrairement à *H. angusta* dont aucun mâle n'est connu (HABERSAAT, 1989 ; KOEHLER, 1984), les mâles de cette nouvelle espèce ont été trouvés dans les élevages (GLOCKEMANN, pers. com.). Les caractères donnés pour cette nouvelle espèce peuvent être incorporés dans les clés d'identification.

The specimens of the new species were collected from a municipal park (Bügerpark) in Bremerhaven, northern Germany, by Mrs. Brunhild GLOCKEMANN, BBA Braunschweig (Germany). She also was able to culture the species. Animals from this laboratory culture were used for the description.

Several individuals of *Hypoaspis fishtowni* sp.nov. (12 females and 2 males) were measured

and drawn using a Zeiss differential-interference-contrast microscope. Shields and setae were measured and means and standard-deviations were calculated ($n > 8$). For clearing and preparation polyvinyl-lactophenol was used. A holotype (female) and syntypes are deposited at the authors' laboratory at the University Bremen.

For the comparison with *Hypoaspis angusta*

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Acarologia, t. XXXIV, fasc. 3, 1993.

Karg 1965 Mrs. Ursula HABERSAAT from Zurich has kindly provided some females from her laboratory cultures. From our own material from a successional ruderal site (KOEHLER, 1984), several individuals of *H. angusta* Karg 1965 were measured. Thus, the intraspecific variability of some features could be registered and a comparison made with *H. angusta* Karg 1965. The nomenclature for shields and setae follows KARG (1971).

***Hypoaspis fishtowni* sp. nov.**
(Figs. 1-4)

FEMALE :

Idiosoma length 565-653 µm (Fig. 1a), brownish in colour. Dorsal shield narrowed caudally, with a

weak and regular netlike pattern over the whole shield.

Setae r_1 are very small (< 10 µm). The setae of the podonotum are long, when compared to those of the opisthonotum (i_3 : 38.2-46.4 µm, $\bar{x} = 44.6$ µm ; z_2 : 30.9-43.6 µm, $\bar{x} = 39.3$ µm ; data for opisthonotal setae see below). Setae z_3 are variable, often very small, unpaired or even missing.

The setae of the opisthonotum have an asymmetrical pattern. The number of setae between i_5 and J_4 is variable. z_3 may be absent but one pair Z_{x1} is always present. Some individuals carried an additional unpaired hair Z_{x2} . The posterior setae are shorter than those on the podonotum (J_1 : 24.5-34.5 µm, $x = 30.0$ µm ; Z_5 : 29.4-36.4 µm, $\bar{x} = 32.4$ µm). In comparison to the J -setae, Z_5 is not significantly longer.

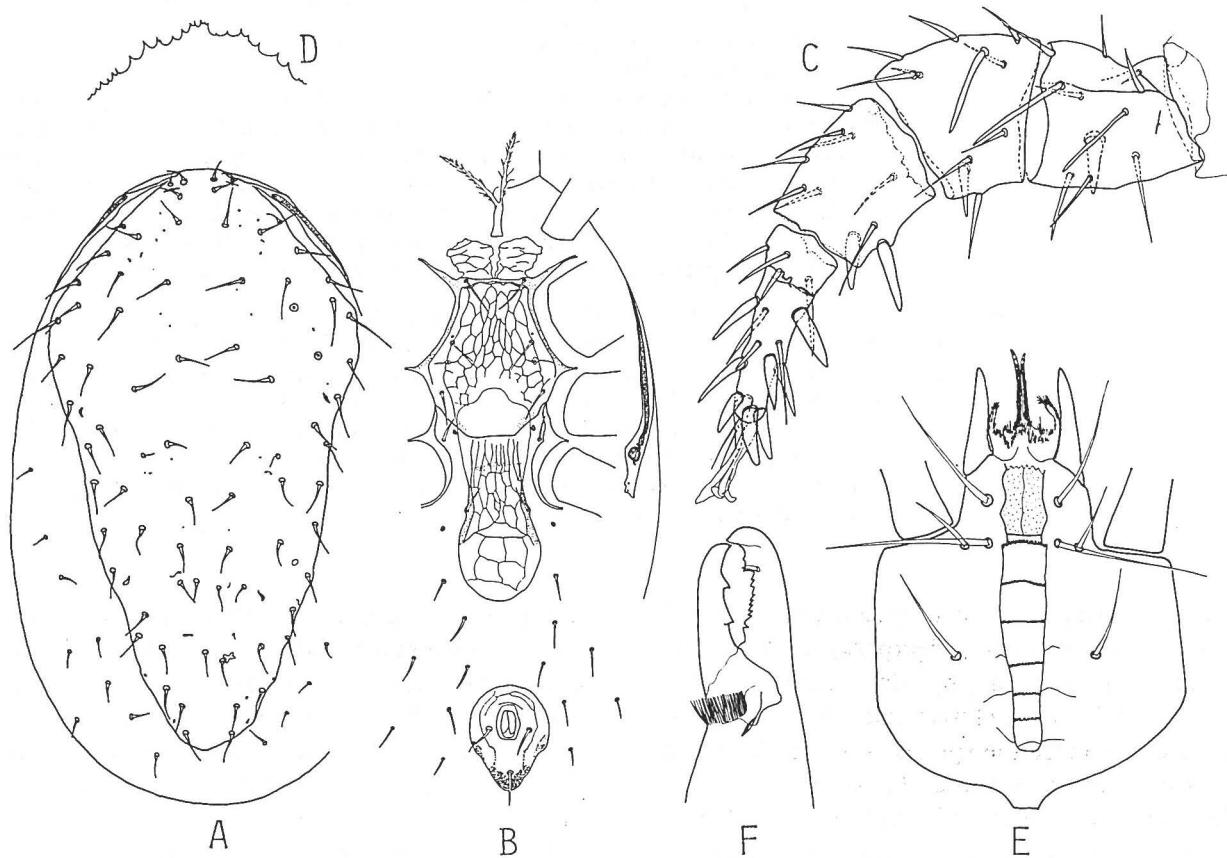


FIG. 1 : *Hypoaspis fishtowni* sp. nov., female

A. — Dorsal. B. — Ventral. C. — Leg 2. D. — Tectum. E. — Hypostome. F. — Chelicera.

The slightly elongated sternal shield (length / width = 1.66-1.82; width measured at the level of st_2 ; Fig. 1b) has an obvious netlike pattern, that fades posteriorly. It carries three pairs of setae, one pair of lyrifissures and one or two pairs of pori. The part anterior to st_1 is only slightly sclerotized, almost membranous and has a deep median cleft. The endopodalia seem to be fused to the sternal shield, from which they are mostly separated by a fine strip of membranous cuticle. The second sternal porus may be found on the sternal shield or separately on a small plate on the membranous cuticle. Metasternal shields are missing and st_4 stands free on membranous cuticle.

The genital shield broadens posteriorly slightly like a drop. It carries one pair of setae. Its large and very transparent anterior part overlaps the sternal shield to the level of st_3 . Between the genital setae and the posterior margin of the sternal shield a fringed transverse structure is visible. One pair of pori lies on separate small plates besides the genital shield, just below the level of the genital setae. Genital shield and anal shield are far apart, with two pairs of setae on the unsclerotized cuticle. The anal shield is triangular.

The extension of the peritrematic shield beyond the stigma has two pori (Fig. 1b). The peritreme reaches to the anterior part of coxa 1 (Fig. 1a).

The tectum has a curved, finely denticulate anterior margin (Fig. 1d). The deutosternal groove (hypostome) is anteriorly pitted, laterally distinctly delimited and has 6 polydont lateral rows (Q2-Q7), the first (Q1) and the last row (Q8) smooth (Fig. 1e). Digitus mobilis of chelicera with two large teeth, digitus fixus with 9-11 teeth (Fig. 1f).

Apotele claw on palp-tarsus is 2-tined.

The setation of the podomeres does not differ essentially from the basic pattern in the Laelapidae (EVANS & TILL, 1979). There are, however, some specific characters for *H. fishtowni* sp. nov.. Tarsus of leg 2 distally with 4 thornlike setae (Fig. 4) and femur and genu each with one extraordinarily thick thorn-like seta (Fig. 1c). The length of leg 1 is about the length of the idiosoma, in some individuals somewhat longer, in others shorter.

MALE :

Idiosoma 459-476 μm in length. Dorsal shield posteriorly less attenuated than in the female. Dorsal setae are generally shorter than in the female (i_4 : 31.4 μm ; z_2 : 30.9 μm ; J_1 : 31.8 μm ; J_2 : 20.0 μm). There are no additional setae on the dorsal shield.

The tectum is finely denticulate as in the female but with a trend to a tongue-like elongated median point (Fig. 2b).

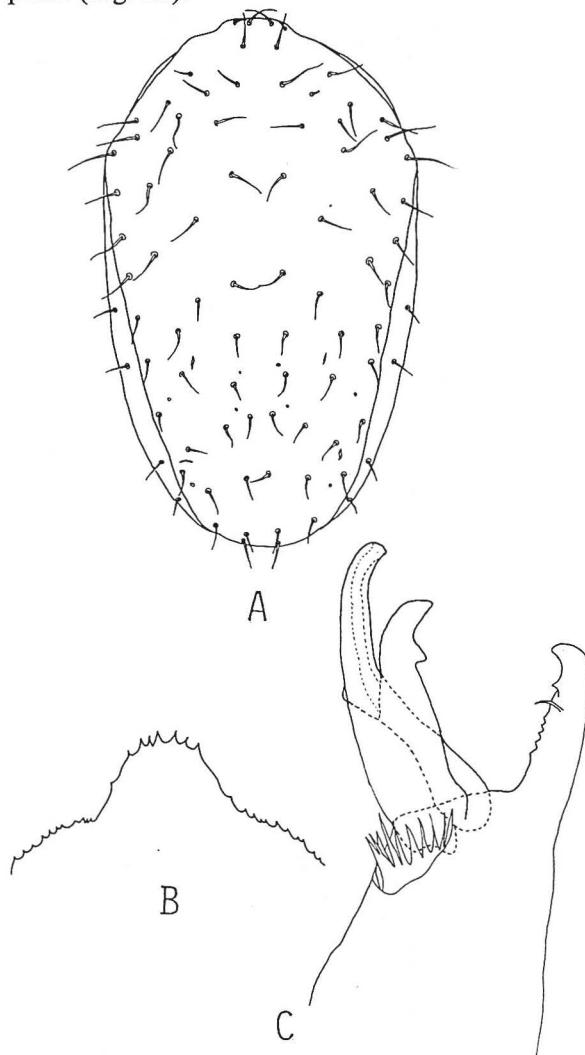


FIG. 2 : *Hypoaspis fishtowni* sp. nov., male

A. — Dorsal. B. — Tectum. C. — Chelicera.

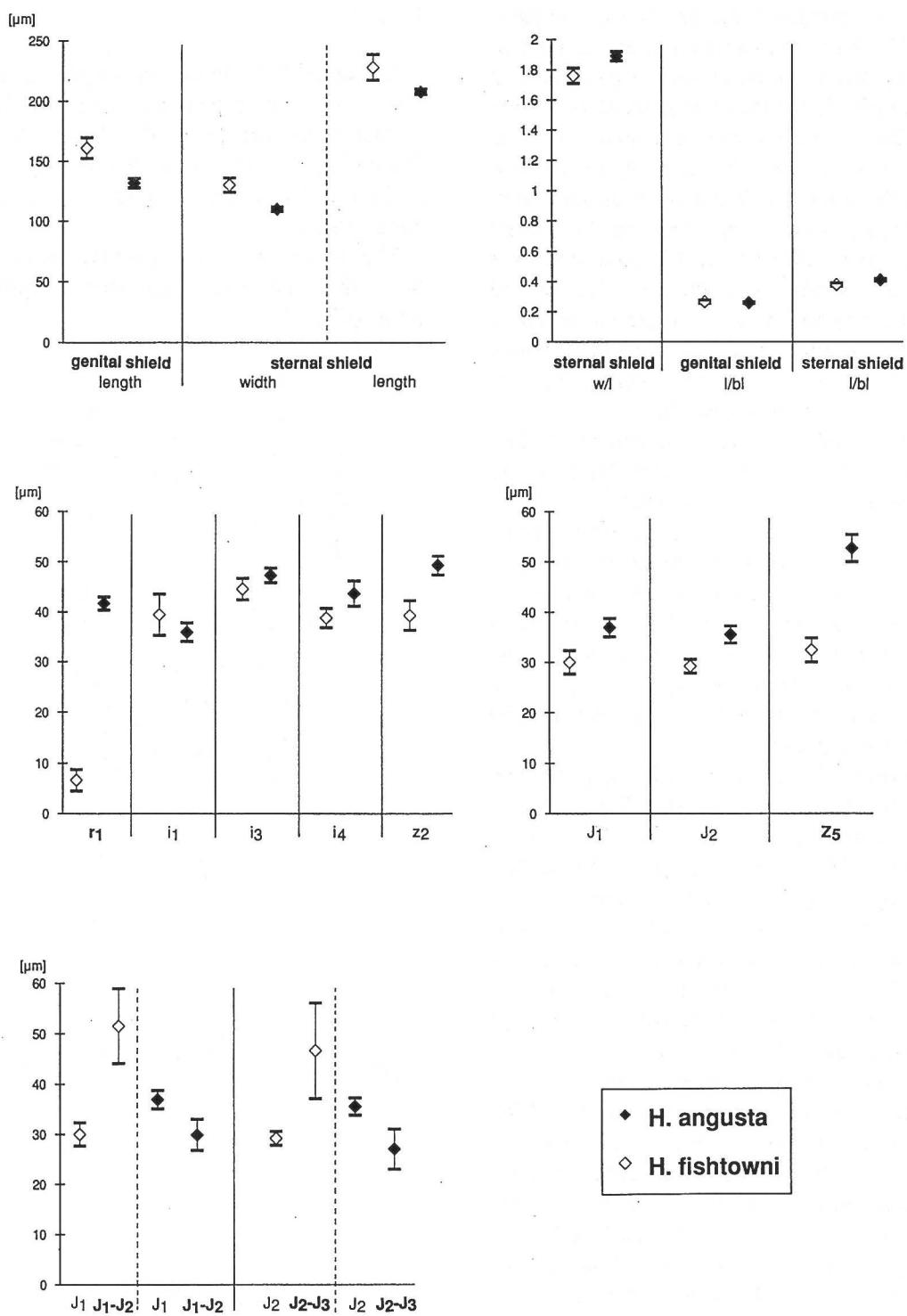


FIG. 3 : Differences between *Hypoaspis angusta* KARG 1965 and *Hypoaspis fishtowni* sp. nov. in selected characters ; means and standard deviations are given. w/l = width/length ; l/bl = length/body length (idiosoma). J₁-J₂, etc., give distances between the insertions of respective setae.

Digitus mobilis of chelicera with one big tooth, digitus fixus with 6 teeth (Fig. 2c). The spermato-dactyl extends beyond the digitus mobilis by about 1/3; it is slightly bent and fingerlike.

DIFFERENTIAL DIAGNOSIS :

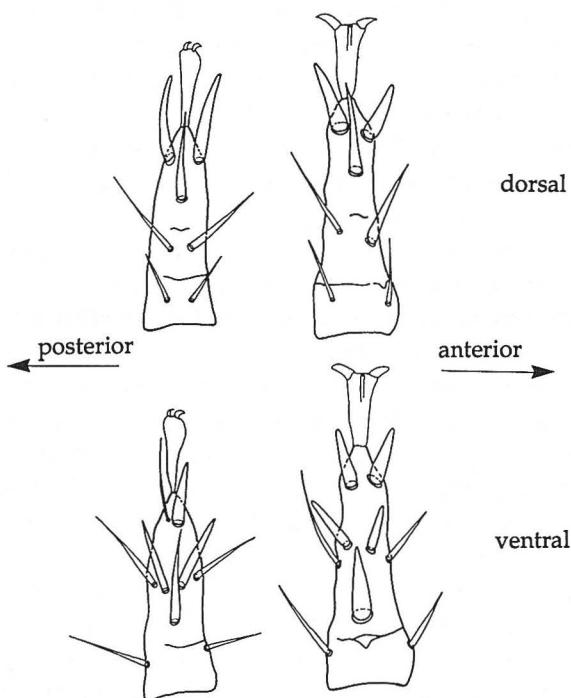
KARG (1982) reviewed the genus *Hypoaspis* and subdivided it into several subgenera and species groups. The subgenus *Geolaelaps* is characterized by a tectum in form of a toothed bow, polydont transverse rows of hypostome, smooth needlelike dorsal hairs, a small genital shield and an unshortened peritreme. Within this subgenus the *angusta*-group is characterized by a posteriorly narrowed dorsal shield of the females. Since all these features are found in the new species *H. fishtowni* sp. nov., it is placed into the *angusta*-group of the subgenus *Geolaelaps*.

TABLE 1 : Differential diagnosis of *Hypoaspis angusta* Karg 1965 and *Hypoaspis fishtowni* sp. nov.

Feature	<i>Hypoaspis angusta</i> Karg 1965	<i>Hypoaspis fishtowni</i> sp. nov.
Idiosoma length *	506 µm (after KARG 1965 : 545 µm)	617 µm
Genital shield	faintly structured	with netlike pattern
	tonguelike with +/— parallel sides	slightly droplike
Apotele	3-dented	2-dented
Tarsus 2	distally 3 thorns + 1 fine seta	4 thorns
Dorsal setation	no Z_x	at least 1 pair Z_x
	r_1 longer than i_1	r_1 very small ($< i_1$)
	J_1 reaches basis J_2	J_1 does not reach basis J_2
	Z_5 longer than J -setae	Z_5 not longer than J -setae
	males unknown	males known

*) Means from 4 (*Hypoaspis angusta* Karg 1965) and 12 (*Hypoaspis fishtowni* sp. nov.) individuals.

The main characters separating *H. fishtowni* sp. nov. from its morphologically closely related congener *H. angusta* Karg 1965 are given in Table 1 and Figs. 3 and 4. *H. fishtowni* sp. nov. is larger than *H. angusta* Karg 1965. There is no overlap of the ranges of the measurements of the lengths of the two species. In *H. fishtowni* sp. nov., the genital



H. angusta *H. fishtowni*

FIG. 4 : Tarsi of leg 2 of *Hypoaspis angusta* Karg 1965 and *Hypoaspis fishtowni* sp. nov. (compiled from several individuals, slightly schematic).

shield (sclerotized part) is longer and the sternal shield (position of st_2) is wider than in *H. angusta* Karg 1965 (Fig. 3a). Relative to the respective length of the dorsal shield, however, the genital shields do not differ in size and the sternal shield of *H. angusta* Karg 1965 is relatively longer than that of *H. fishtowni* sp. nov. (Fig. 3b).

There are obvious differences in the length of some dorsal setae (Figs. 3c, 3d). The most striking difference on the podonotum is found in r_1 , which for *H. angusta* Karg 1965 is a little longer than the adjacent seta i_1 . In *H. fishtowni* sp. nov., r_1 is very small and short. Also, the other setae are usually longer in *H. angusta* Karg 1965 than in *H. fishtowni* sp. nov., but there is often an overlap of values. On the opisthonotum of *H. angusta* Karg 1965, Z_5 is longer than the J setae, whereas for *H. fishtowni* sp. nov., these setae do not differ considerably and Z_5 is shorter than that of *H. angusta* Karg 1965 (Fig. 3d). J_1 of *H. angusta* Karg 1965 reach the basis of

J_2 . In *H. fishtowni* sp. nov. the distance J_1-J_2 is significantly greater than the length of J_1 (Fig. 3e). The distances between the subsequent setae are more variable for *H. fishtowni* sp. nov. than for *H. angusta* Karg 1965. The setation of tarsus of leg 2 separates *H. fishtowni* sp. nov. very clearly from *H. angusta* Karg 1965 (Fig. 4).

In contrast to *H. fishtowni* sp. nov., where males have regularly been found in the cultures, no males are known for *H. angusta* Karg 1965, neither from the field nor in cultures.

In our work with students, we experienced problems in distinguishing between *H. fishtowni* sp. nov. and *H. aculeifer* (Can. 1883), particularly in preparations with folded sides of the idiosoma. Podonotal setae can be used to solve this problem. They are much longer in *H. aculeifer* (Can. 1883) : in *H. fishtowni* sp. nov., i_2 never reaches the base of i_1 , whereas in *H. aculeifer* (Can. 1883) i_2 reaches the base of i_1 . The setation of the tip of tarsus of leg 2 cannot be used for a separation of these two species, they both have four spines.

The unique morphological features and the existence of males in the specimens from Bremerhaven are considered to warrant the erection of a new species for their accomodation.

NAME :

The species is named after its place of discovery, Bremerhaven (Fishtown).

ACKNOWLEDGEMENTS

We thank Mrs. Brunhild GLOCKEMANN, BBA Braunschweig, Germany, for the mites from Bre-

merhaven and Mrs. Ursula HABERSAAT, ETH Zurich, Switzerland, for *H. angusta* for comparative purposes.

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Paru en Juillet 1993.