

A new anoetid mite parasitic in the swim-bladder of the aquarium fish **Pangasius sutchi***

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Summary

Histiostoma piscium sp. n. (Acari, Anoetidae) is described from the swim-bladder of a fish *Pangasius sutchi*, originating from the Far-East and dying in an aquarium in Antwerp. Numerous mites of different stages (eggs, larvae, nymphs, adult females) were found embedded into a thick gelatinous substance that had filled the swim-bladder. The epithelium of that organ had disappeared at some places.

Résumé

Histiostoma piscium sp. n. (Acari, Anoetidae) est décrite de la vessie natatoire d'un poisson *Pangasius sutchi*, importé d'Extrême-Orient et qui mourut dans un aquarium à Anvers. De nombreux acariens de divers stades (œufs, larves, nymphes et femelles adultes) furent rencontrés dans la vessie natatoire. Ils étaient englobés dans une épaisse substance gélatineuse qui remplissait tout l'organe. L'épithélium de la vessie natatoire était fortement aminci ou avait même disparu à certains endroits.

Parasitism by mites is well known in the vertebrates but until now it had never been recorded in fish. We relate herein the first case where a mite has been found associated with a disease in a fish. This mite belongs to a new species of the genus *Histiostoma* Kramer, 1876 (Anoetidae, Astigmata).

The family Anoetidae contains numerous genera and species, almost all being free living. Only a few species, belonging to

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three genera (*Loxanoetus* Fain, 1970, *Auricanoetus* Fain and Zumpt, 1974 and *Otanoetus* Fain and Zumpt, 1974) have been found in association with vertebrate hosts. All these species were collected from the ears of elephants and bovines. Their pathogenic role is so far not clearly established.

The genus *Histiostoma* contains numerous species, most of them living in very wet conditions. Two species (*H. cyrtandrae* Hughes and Jackson, 1958 and *H. nigrellii* Hughes and Jackson, 1958) are adapted to live permanently submerged in water. They were discovered in goldfish tanks in the Aquarium of New York Zoological Society. Both species have been associated with the death of the fish. It seems that some unidentified toxic substance is given off by these mites which is lethal to guppies and goldfish (Hughes and Jackson, 1958).

The species that we describe herein is morphologically close to *H. nigrellii*. It is probably also an « aquarium species » but apparently more oriented towards parasitism and able to invade the organs of the fish.

Material examined

The material found in the fish was very abundant and included eggs, larvae, nymphs and females. We have not seen males nor heteromorphic deutonymphs (hypopi).

All the specimens were located in the swim-bladder. This organ was filled with a thick gelatinous mucoid-like substance in which the mites were embedded. Histological sections of the swim-bladder revealed the presence at some places of lesions consisting of dispartition of the epithelium, probably caused by the mites.

The infected fish belongs to the species *Pangasius sutchi* Fowler, a catfish of the family Schilbeidae (Siluriformes). This popular aquarium fish is also named « iridescent shark », « Siamese shark » or « smokey glass catfish » (Walker, 1974). The fish had been imported from the Far-East, probably Thailand, to Belgium where it was kept constantly in an aquarium. This fish was in rather poor condition when it was examined by L.L.. It was blind and showed troubles of orientation.

Some questions, however, remain unsolved. Firstly the mode of invasion into the swimbladder by the mites (probably by means

of the larvae which are very small), secondly the pathogeny of the lesions (production of the gelatinous substance in the bladder and alteration of its epithelium).

Description of the mite

Histiostoma piscium spec. nov.

The description is based on 13 females, 4 nymphs and 5 larvae provided by L.L. to the senior author.

Female (figs. 1-9): Idiosoma in the holotype 375 μm long and 243 μm maximum wide. Measurements in 3 paratypes (length \times width) : 345 \times 220 ; 400 \times 262 ; 420 \times 270 μm . All these specimens are ovigerous. *Dorsum* : Propodonotum with a sculptured shield. Cuticle of the rest of dorsum with small irregular projections. Bursa opening at the anterior border of a small cordiform sclerotized plate, 22 μm long and 18 μm wide and situated at 75 μm from the posterior border of the body. The bursa runs posteriorly and opens internally in a non-sclerotized spermatheca. *Venter* : Epimeres I fused in a short sternum. Other epimeres free. Anterior pair of sclerotized rings oval, with thick walls. Posterior rings more elongate and with thin walls. Gnathosoma 63 μm long, 51 μm wide. Palps with two lateral flagellar setae with hollow bases, the anterior much longer (80-90 μm) than the posterior (30-35 μm). Chelicerae with a long and narrow apical blade bearing about 25 thin teeth ; more basally is a short blade with 2 or 3 curved teeth. *Legs* : Length of tarsi I-IV (in μm) : 66-57-53-69. There are 5 pairs of lyrifissures.

Chaetotaxy of idiosoma (length in μm) : *vi*, *ve*, *d 1*, *d 2*, *l 1* are 25-30 μm long ; *d 3*, *d 4*, *d 5*, *l 2*, *l 3*, *l 4*, *l 5* are 45 μm long ; *h* 40 μm ; *sb* is dorsal and 40 μm long. The setae *sc i* are 25 μm apart.

Chaetotaxy of legs I-IV (number of setae) : Tarsi I with 12 spines (7 apical, 3 median and 2 basal) and one long and thin apical seta curved at apex. Tarsi II as tarsi I but one basal spine is lacking. Tarsi III and IV with 10 spines (7 apical, 2 medians and 1 basal). Tibiae with 2-2-1-1 spines. Genua 2-2-0-0. Femora 1-1-0-1. Trochanters 1-1-1-0. *Solenidiotaxy* : Tarsi 1-1-0-0. Tibiae :

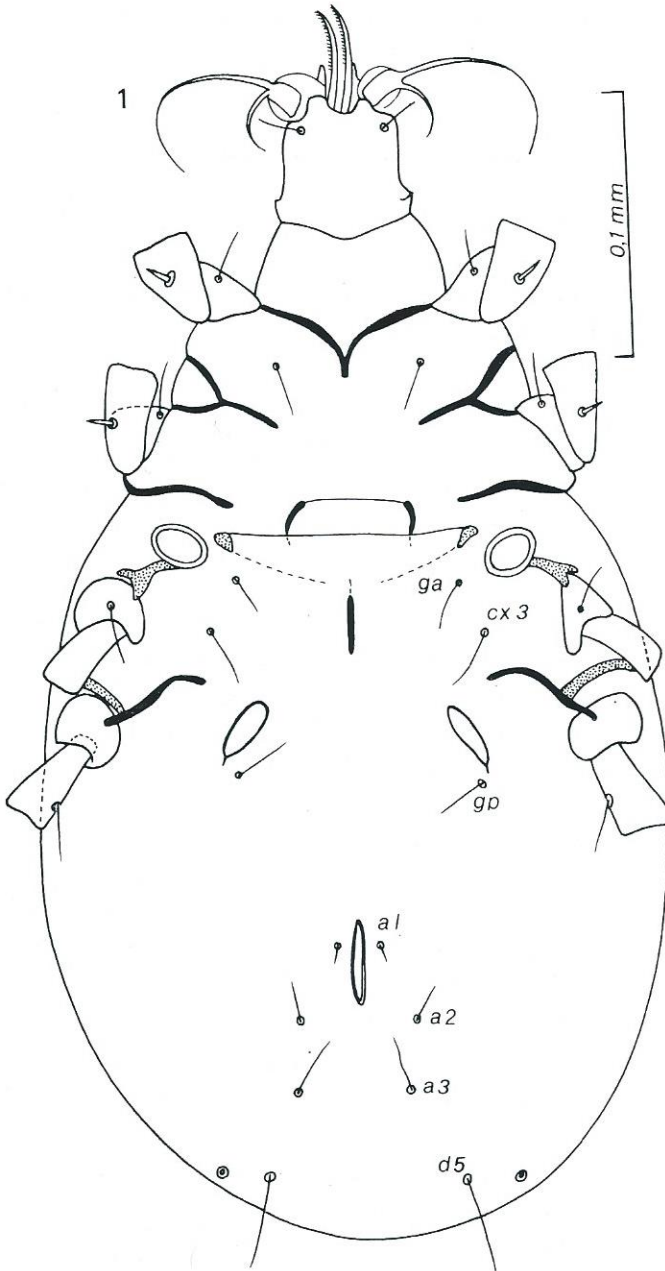


FIG. 1. — *Histiotostoma piscium* sp. n. Female in ventral view

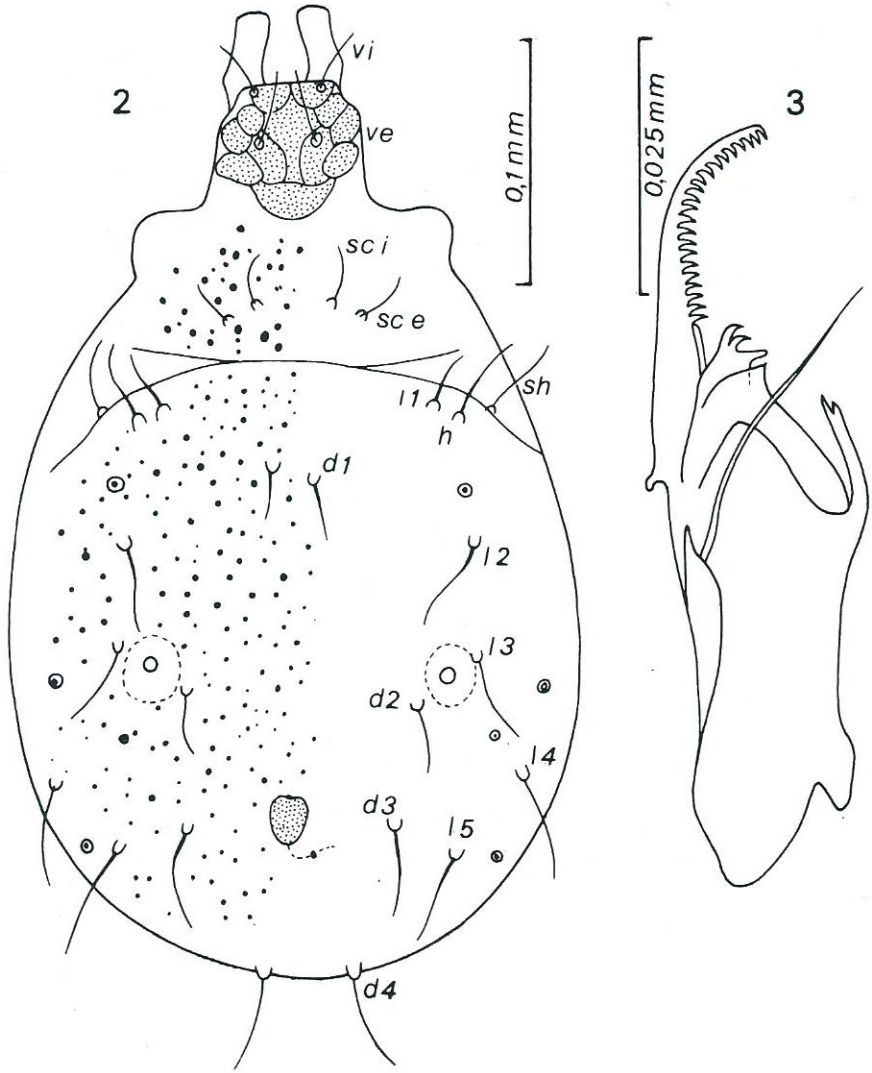


FIG. 2-3. — *Histiostoma piscium* sp. n.
Female : in dorsal view (2); chelicera (3)

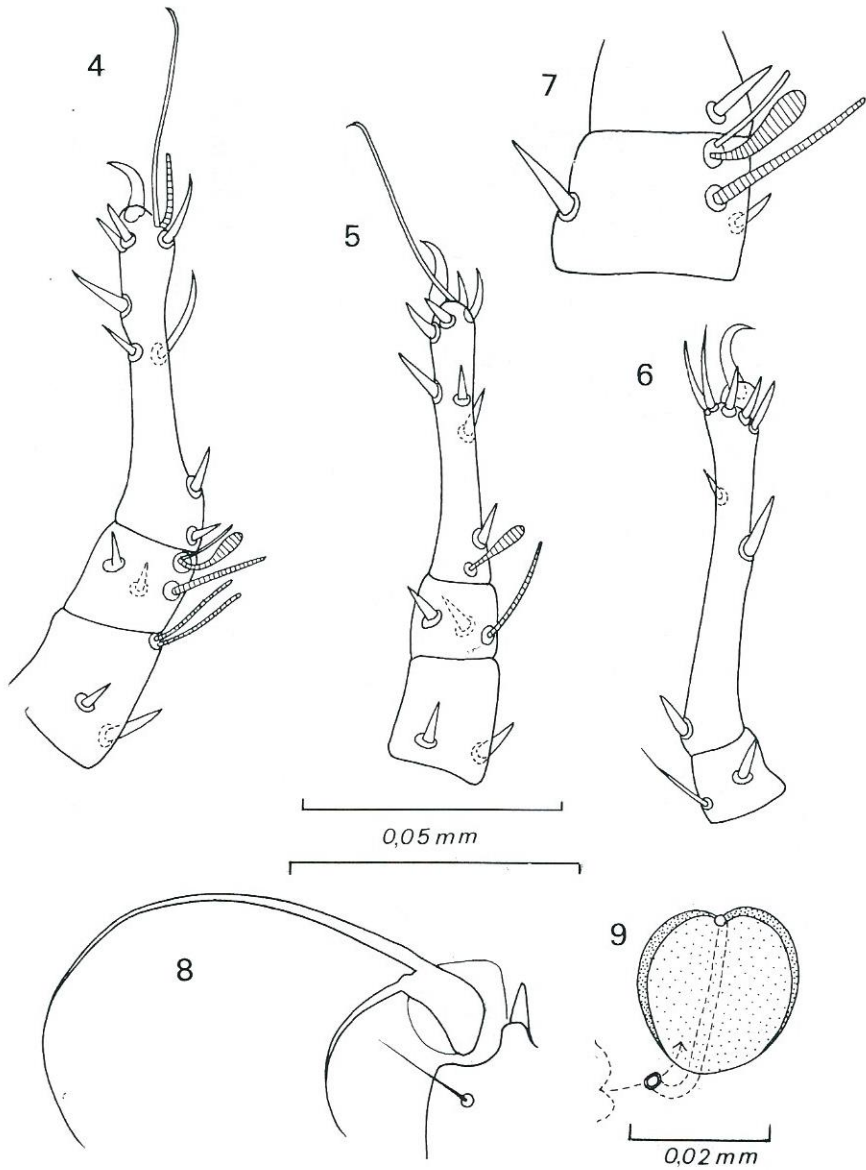


FIG. 4.9.— *Histiostoma piscium* sp. n.

Female : Leg I (4) ; leg II (5) ; leg IV (6) ; tibia and base of tarsus I (7) ;
 palp (8) ; bursa and bursal shield (9)

The tibia I bears apico-dorsally $\omega 1$ and a very narrow and rather long famulus and more basally the solenidion *phi*. Tibiae II-IV with 1-1-1 solenidions. Genua 2-1-0-0.

Male and hypopus : Not observed.

Tritonymphs : Length and width in two paratypes 180×120 and $190 \times 125 \mu\text{m}$. General characters as in the female but with two pairs of sclerotized rings both situated at the level of coxae IV.

Protonymph : One paratype is $170 \mu\text{m}$ long and $90 \mu\text{m}$ wide. Characters as in tritonymph but there is only one pair of sclerotized rings, situated on coxae IV. Palps with two unequal flagelliform setae, the anterior very long. Tibia I with $\omega 3$ and its famulus and solenidion *phi* (as in adult).

Larva : Length and width in two paratypes (in μm) : 150×102 and 145×95 . There is a pair of rounded sclerotized rings on the coxae I. Palps and tibiae I as in the protonymph.

Host and locality.

Holotype and 12 paratypes female, 2 tritonymphs, 2 protonymphs and 5 larvae, all paratypes, from the swim-bladder of the fish *Pangasius sutchi* Fowler, commonly named « Siamese shark » or « Smoky glass catfish ». This fish belongs to the family Schilbeidae (Siluriformes) and is common in Thailand. This fish was imported to Antwerp from the Far East. It died in this city after a captivity of about 10 years ; at the time it was 20 cm long. Holotype and paratypes in the Institut des Sciences naturelles de Belgique.

Remarks :

This new species is the most close to *Histiostoma nigrellii* Hughes and Jackson, 1958, found in a goldfish tank at the Aquarium in New York Zoological Society. It differs from it by the following characters : Presence of a rather large sclerotized and punctate plate behind the orifice of the bursa (no such plate in *H. nigrellii*) ; dorsal setae unequal in length, the *l 2* to *l 5* being distinctly longer than the setae *sc i*, *sc e*, *d 1* and *d 2* (these setae are equal in *H. nigrellii*) ; the setae *sc i* are more close to each other ; the greater length of the palpal flagellae ; the aspect of

the chelicerae with more teeth (about 25, for 14 in *H. nigrellii*); the dilated aspect of solenidions $\omega 1$ on tibia I and tarsus II (these solenidions are not dilated in *H. nigrellii*); the different orientation of the posterior pair of rings whose axis is directed antero-laterally (this axis is directed antero-internally in *H. nigrellii*).

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References

- FAIN A., 1970. — Un nouvel Anoeidé vivant dans la graisse de l'oreille d'un éléphant. Acta Zool. et Pathol. Antwerp. 50 : 173-177.
- FAIN A., 1983. — Notes sur les genres *Loxanoetus* Fain, 1970 et *Otanoetus* Fain et Zumpt, 1974. Revue Zool. afr. 97 : 846-851.
- FAIN A. and ZUMPT F., 1974. — Notes on three species of Anoetidae, two of which are new, living as commensals or parasites in the ear of an African Buffalo. Acta Zool. et Pathol. Antwerp. 58 : 97-102.
- HUGHES R.D. and JACKSON C.G., 1958. — A review of the family Anoetidae (Acari). The Virginia. Journ. of Science 9 : 1-198.
- SCHEUCHER R. von, 1957. — Systematik und Ökologie der Deutschen Anoetiden. In Beiträge zum Systematik und Ökologie Mitteleuropäischer Acarina. H.J. Stammer. Zool. Inst. Erlangen I. (1) : 233-384.
- WALKER BRAZ, 1974. *Pangasius sutchi*. Tropical Fish Hobbyist, 22, n° 10 : 60-64.
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