

## NOTE

***Hennegoides longitudinalis* n. gen. n. sp., a myxosporean parasite of *Osphronemus gourami* from Thailand**Jiří Lom<sup>1</sup>, Kamonporn Tonguthai<sup>2</sup>, Iva Dyková<sup>1</sup><sup>1</sup> Institute of Parasitology, Czech Academy of Sciences, Branisovska 31, 370 05 České Budějovice, Czechoslovakia<sup>2</sup> National Inland Fisheries Institute, Kasetsart University Campus, Bangkok, Bangkok 10 900, Thailand

ABSTRACT: A new myxosporean parasite, *Hennegoides longitudinalis* n.gen. n.sp., is described from the intestinal submucosa of gouramy *Osphronemus gourami* from Thailand. The genus is characterized by asymmetrical spores with caudal extensions, by polar capsules with polar filament arranged in elliptical turns lying in the longitudinal axis of the capsule, and by the absence of pansporoblasts in sporogenesis. Its pathogenic potential is yet to be assessed.

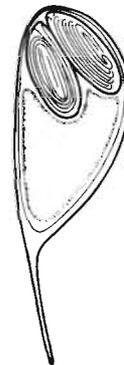
While checking the health condition of gouramy *Osphronemus gourami*, an economically important Southeast Asian fish species, established in cultures in the reservoir at Kanchanaburi Province about 250 km from Bangkok (Thailand), we came across a myxosporean infecting the intestine. Adult specimens were collected during March 1988. The overall prevalence of the infection was 100 % (22 specimens infected out of 22 examined). The infection was generally moderate. Infected gouramy were also found in rivers north of Bangkok. Fresh spores released from mature trophozoites were measured and photographed. Samples of infected tissue were fixed in 10 % neutral formalin. Some of them were postfixated in 1 % OsO<sub>4</sub> in 0.1 M cacodylate buffer, embedded in Epon-Araldite and ultrathin sections examined in a Phillips 420 B electron microscope.

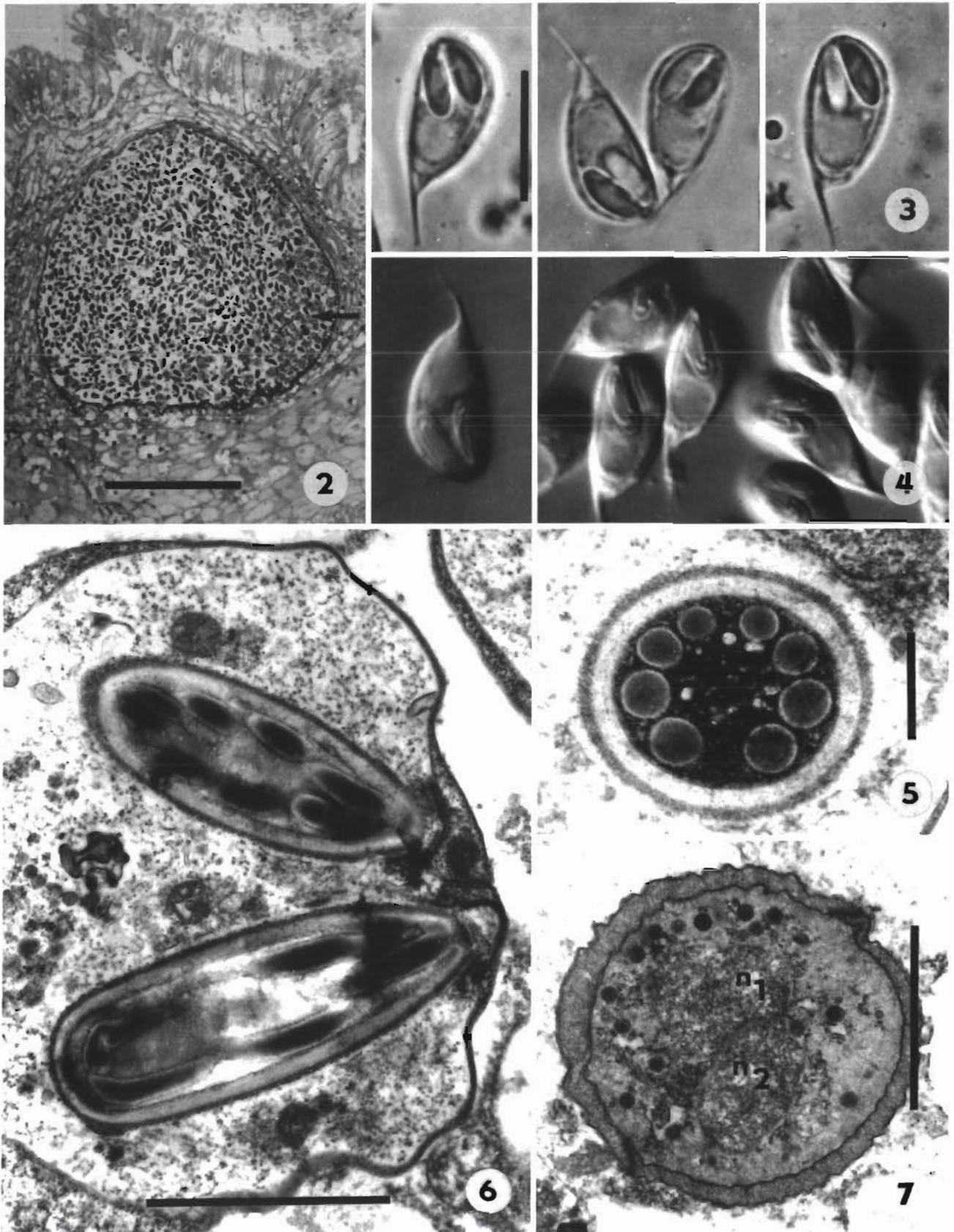
The trophozoites in the form of plasmodia about 0.25 to 0.3 mm in size were localized in the subepithelial layer of the middle part of the intestine (see Fig. 2). In a grown state, the plasmodium had a rather thin cortical layer beneath which were the developmental stages and, eventually, only mature spores.

The mature spores are quite asymmetric in frontal view (Fig. 1). One side is slightly, the other strongly vaulted and the caudal appendages extend to one side,

not axially. Thus the outline is slightly reminiscent of the profile of a mouse with a short tail. In fresh state, the size of the spore body is 11.5 (10.9 to 12.2) × 5.4 (4.7 to 6.3) μm (n = 20). Caudal appendages, 5.3 (3.4 to 6.8) μm long, extend obliquely from the posterior end and are only slightly divergent posteriorly. The ellipsoidal polar capsules of equal size, 5.2 (4.3 to 5.7) × 2.1 (1.7 to 2.2) μm are set obliquely in the anterior part of the spore. In fresh spores (Fig. 3) the polar filament is difficult to discern within the capsule; in Nomarski interference phase contrast it can be seen to be coiled in longitudinal threads parallel to the longitudinal axis of the capsule (Fig. 4).

The electron microscope reveals 4 threads of a filament which is – using the terminology applied in microsporidia – anisofilar, i.e. tapers gradually to its end (Fig. 5). The longitudinal orientation of the threads is also seen in longitudinal sections (Fig. 6). The structure of the polar capsules complies in other respects with the pattern found in most myxosporean species

Fig. 1. Line drawing of *Hennegoides longitudinalis*



Figs. 2 to 7. *Henneguya longitudinalis* parasitising *Osphronemus gourami*. Fig. 2. A trophozoite in the subepithelial layer of the intestine, containing mature spores except for the right side (arrow) where developmental stages can still be seen. Bar = 100 µm. Figs. 3 & 4. Mature spores as seen in transmitted light and Nomarski interference phase contrast, respectively. Bar = 10 µm. Fig. 5. Transverse section through an almost mature polar capsule showing the decreasing polar filament diameter. Bar = 0.5 µm. Fig. 6. An almost longitudinal section through almost mature polar capsules within a sporoblast. Bar = 2 µm. Fig. 7. Section through the sporoplasm showing spherical sporoplasmosomes and the 2 nuclei ( $n_1$ ,  $n_2$ ) adhering closely together. Bar = 2 µm

examined thus far. At the apex of the capsule there is no distinct cap. The sporoplasm contains numerous sporoplasmosomes and 2 closely apposed nuclei reminiscent of a microsporidian diplocaryon (Fig. 7). There are no pansporoblasts; the spores are produced singly.

**Taxonomic position.** The present species has spores similar to those of the genus *Henneguya*, yet it is different from all its 114 hitherto recorded species in several important respects.

The spore is asymmetric with polar capsules set obliquely, not symmetrically to the longitudinal axis of the spore. Only *Henneguya thermalis* described by Seenappa et al. (1981) is similar; the original drawing of the spore, however, is too poor to permit accurate comparison.

The polar filament is arranged in threads situated parallelly to the longitudinal axis of the capsule and gradually tapers to the end. In most *Henneguya* species, however, the filament turns are perpendicular to, in some at an oblique angle to the capsule length and the filament has the same diameter throughout its length. In *Henneguya* (e.g. Schubert 1968, Current & Janovy 1977, Current 1979), as well as in most other myxosporeans (e.g. Lom & de Puytorac 1965, Desportes & Théodoridés 1982, Desser & Molnár 1982), the transverse section of the nascent filament has the shape of a figure 8, reflecting its longitudinally twisted form, while in the present species it is quite circular.

Another important difference from *Henneguya* is the absence of pansporoblasts in spore formation; in most genera, sporoblast formation follows the same pattern [exceptions being the genera *Kudoa* (Lom & Dyková 1988) and *Chloromyxum* (Lom & Dyková unpubl.)]. Careful comparison revealed that this organism is different from all other myxosporean genera described until now.

Summing up all the differences, we can consider the

present species a new one and establish it as *Hennegoides longitudinalis* n. gen., n. sp. The generic name reflects the similarity to the genus *Henneguya*. We assign *Hennegoides* to the family Myxobolidae Thélohan, 1892, suborder Platysporina Kudo, 1918, order Bivalvulida Shulman, 1959 with the following diagnosis:

Asymmetric spores with non-axially attached caudal appendages. Polar capsules with longitudinally arranged turns of an anisofilar polar filament located obliquely in the spore apex. Pansporoblast formation absent.

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