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## NEOMYLEPIS GEN. N. — A NEW GENUS OF HYMENOLEPIDID TAPEWORMS (CESTODA, CYCLOPHYLLIDEA), PARASITES OF WATER SHREWS

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*Neomylepis* gen. n. — новый род гименолепидид (Cestoda, Cyclophyllidea), паразитов кутор. Ткач В. В. — Устанавливается новый род гименолепидидных цестод *Neomylepis* gen. n. с единственным видом *Neomylepis magnirostellata* (Baer, 1931) comb. n., который является специфическим паразитом землероек рода *Neomys*. Систематическое положение этого вида длительное время было спорным. Между тем, комплекс морфологических признаков *N. magnirostellata*, таких как форма хоботковых крючков, расположение органов репродуктивной системы, а также водный жизненный цикл и строение личинок отличают этот вид от представителей всех остальных ныне известных родов гименолепидид. Приведен диагноз нового рода и рисунки хоботковых крючков и сколекса типового материала и экземпляров из Украины и Средней Азии. Ключевые слова: Cestoda, Hymenolepididae, куторы, *Neomylepis* gen. n., *Neomylepis magnirostellata* comb. n.

*Neomylepis* gen. n. — a New Genus of Hymenolepidid Tapeworms (Cestoda, Cyclophyllidea), Parasites of Water Shrews. Tkach V. V. — A new genus of hymenolepidid cestodes, *Neomylepis* gen. n., is established. The genus includes a single species, *Neomylepis magnirostellata* (Baer, 1931) comb. n., a specific parasite of water shrews (genus *Neomys*). The systematic position of this species until now was controversial. Meanwhile, some of the morphological characters of *N. magnirostellata* such as shape of rostellar hooks, topography of the reproductive system organs, and, besides, water life cycle and morphology of larvae, differ the species from representatives of all other known hymenolepidid genera. Generic diagnosis of the new genus is given and rostellar structures of the type material and specimens from Ukraine and Middle Asia are figured.

Key words: Cestoda, Hymenolepididae, water shrews, *Neomylepis* gen. n., *Neomylepis magnirostellata* comb. n.

### Introduction

*Hymenolepis magnirostellata* Baer 1931 was first described from the common water shrew *Neomys fodiens* in Switzerland (Baer, 1931). The first description did not contain any illustrations, however the drawings of scolex and rostellar hooks were published in the paper of Baer (1932). Later this species was reported from *Neomys fodiens* and *Neomys anomalus* in different parts of Europe (Soltys, 1954; Prokopič, 1957; Mituch, 1964; Euzet, Jourdan, 1968; Prokopič, Matsaberidze, 1971; Vaucher, 1971; Genov, 1984; Tkach, 1993), and, recently, in the South-Eastern Kazakhstan, Middle Asia (Tkach, Zhumabekova, 1996). I have found it also from *N. anomalus* in Ukrainian part of Carpathian mountains. Similarly to all the other known cestodes of water shrews (exception is the dilepidid *Molluscotaenia estavarensis*) *H. magnirostellata* possesses water life cycle and its larvae were found in gammarid crustaceans (Prokopič, Mauer, 1969; Prokopič et al., 1970). Because of the peculiar shape and large number of the rostellar hooks and some features of the strobila morphology, the systematic position of the species was unclear and, as result, unstable. This species has been allocated by different authors to *Hymenolepis* (Baer, 1931; Vaucher, 1971), *Rodentolepis* (Tkach, Zhumabekova, 1996) and *Vampirolepis* (Spasskii, 1954; Yamaguti, 1959; Schmidt, 1986). However, Vaucher (1992) has demonstrated that *Vampirolepis* includes only cestodes parasitic in bats and is characterized by more or less typical fratermoid hooks. I have examined the type material of *H. magnirostellata* deposited in the Museum of Natural History, Geneva (8 preparations of the strobilae, scoleces and histological sections; slides N 11/42–48) as well as specimens of adult tapeworms from Ukraine and Middle Asia. Because the

morphology and life cycle of this species are different from all other known hymenolepidid genera, we establish for it a new genus *Neomylepis*.

***Neomylepis* gen. n. (Fig. 1)**

Type-species: *Neomylepis magnirostellata* (Baer, 1931) comb. n. (syns *Hymenolepis magnirostellata* Baer, 1931; *Vampirolepis magnirostellata* (Baer, 1931) Spasskii, 1954; *Vampirolepis heleni* Schaldybin, 1964; *Rodentolepis magnirostellata* (Baer, 1931) Tkach et Zhumabekova, 1996).

Diagnosis: Cyclophyllidea, Hymenolepididae. Strobila long, craspedote, with numerous proglottids and progressive maturation. Scolex wider than neck. Rostellum retractable; its anterior surface only slightly invaginable. Rostellum with simple crown of 24–46 hooks of identical length and very characteristic shape (Fig. 1). Genital atria

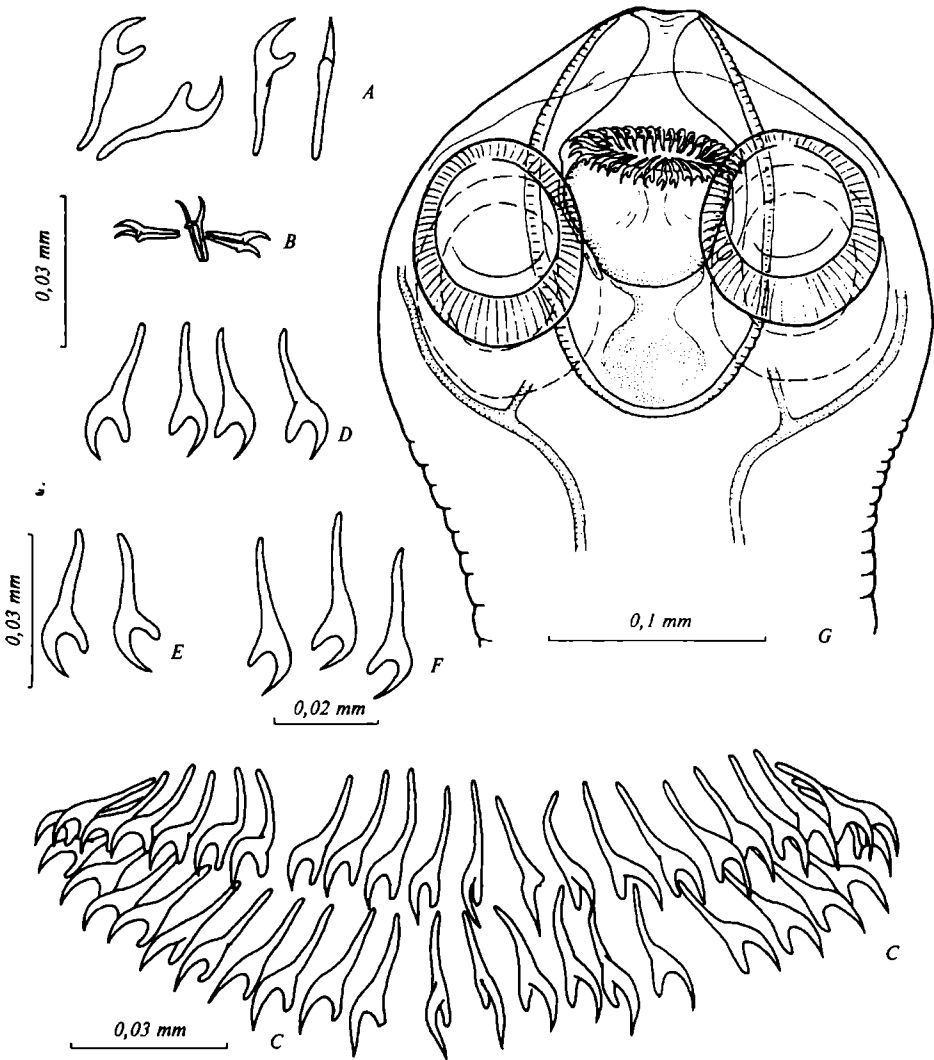


Fig 1. *Neomylepis magnirostellata* comb. n.: A, D–F — rostellar hooks; B — oncospherical hooks; C — complete crown of hooks; G — scolex. A, C — type material; B — sectioned material from the collection of J.-G. Baer; D–G — specimens from different regions: D — Zailiyski Alatau; E — Danube delta; F–G — Carpathian Mountains.

Рис. 1. *Neomylepis magnirostellata* comb. n.: A, D–F — хоботкові гачки; B — онкосферні гачки; C — повна корона гачків; G — сколекс. A, C — типовий матеріал; B — гістологічні зрізи з колекції J.-G. Ваєр; D–G — особини з різних регіонів: D — Заїлійський Алатау; E — дельта Дунаю; F–G — Карпати.

unilateral, in the anterior third of lateral margin of proglottid. Three testes disposed in a line. Testes are not separated into poral and aporal groups by the female gonads. External and internal seminal vesicles present. Cirrus-sac elongate. Cirrus armed with numerous small spines. Ovary transversely elongated, lobed, in the middle of proglottid, partly overlapping all three testes. Vitellarium median, post-ovarian, slightly lobed or not. Gravid uterus saccular with invaginations, occupies the whole proglottid between the excretory ducts. Uterus contains numerous eggs. Parasitic in shrews of the genus *Neomys* (Insectivora, Soricidae) in Palaearctic region.

Remarks. In some of its morphological features (long strobila with numerous proglottids, armed rostellum, three testes arranged in a line, saccular uterus), the new genus is close to the genera *Vampirolepis* Spasskii, 1954 and *Rodentolepis* Spasskii, 1954. *Neomylepsis* gen. n. clearly differs from *Vampirolepis* in the type of the rostellar hooks (most representatives of *Vampirolepis* possess typical fraternoid hooks). Furthermore, as demonstrated by Vaucher (1992), genus *Vampirolepis* includes only parasites of bats. The peculiarities of the biology of *Neomylepsis* (water life cycle with crustacean intermediate hosts) also represent very serious, although not morphological, differences between *Neomylepsis* and *Vampirolepis*. The new genus differs from *Rodentolepis* in shape of rostellar hooks, testes not separated into two groups by female gonads and uterus not extending laterally beyond the excretory vessels in the gravid proglottids like it takes place in *Rodentolepis*. In the most recent revision of Hymenolepididae by Czapliński & Vaucher (1994) the insectivores are not listed among the host groups of *Rodentolepis*. No one of rodent hymenolepidids, at least in Palaearctic region, has water life cycle and rostellar hook shape similar to that in *N. magnirostellata*.

It is necessary to note that the cestode with an unarmed rostellum described as *Hymenolepis magnirostellata* sp. n. by Sawada (1992) from *Sorex unguiculatus* in Japan, 1992, has no relation to *Hymenolepis magnirostellata* (Baer, 1931) nor to the genus *Hymenolepis* s. str. Furthermore, as it can be concluded from the photomicrograph in the paper of Sawada (1992), the rostellar hooks of this cestode most probably have been lost before the tapeworms were fixed.

## Discussion

Specimens of *N. magnirostellata* collected in Carpathian Mountains, Danube delta and Zailiyski Alatau, are similar in their strobila characteristics and rostellar hook shape and size to the descriptions given by different authors in Europe, therefore morphological description is not included in the present paper. Even such variable character of *N. magnirostellata* as the hook number, is relatively stable in our material from all above mentioned regions. Different authors mentioned from 24 to 46 rostellar hooks in this cestode (for the review see Vaucher, 1971). In my material the specimens from Carpathian Mountains had 32–34 hooks, from Danube delta — 36–37 hooks and from Zailiyski Alatau — 34–36 hooks. In the preparations of scoleces from the collection of Jean Baer deposited in the Geneva Museum of Natural History, I calculated 34 hooks (probably, incomplete crown of holotype) and 43 hooks (complete crown — Fig. 1, C). Despite the large variability in hook number, no significant differences were observed in strobila and scolex morphology of *N. magnirostellata* from different parts of its area. Taking into account that the helminths of water shrews are relatively well investigated throughout the Palaearctic region, finding of another representative of *Neomylepsis* is hardly possible and, to my opinion, the genus *Neomylepsis* is really monotypical. This may suggest that it comparatively recently evolved from one of the closely related genera, most probably, from *Rodentolepis*.

Some remarks should be made on the host specificity and systematics of mammalian hymenolepidids in relation with establishing of *Neomylepsis*. Insectivores possess a rich and highly specific fauna of hymenolepidid tapeworms, most genera of which are restricted to this mammalian order. Moreover, after establishing of *Neomylepsis*, all genera of water shrew hymenolepidids (except *Pseudobothriolepis* which includes one species from *Neomys* and one from *Sorex*) are specific to this host genus. Among the

mammalian hymenolepidids only those parasitic in *Neomys* are known to use crustacean intermediate hosts. The morphological peculiarities of *Neomylepis* are enough discriminative to differentiate it from other hymenolepidid genera. However, even taking into account only the life cycle and larval morphology of *Neomylepis*, it is obvious that this cestode cannot be included into *Vampirolepis* or *Rodentolepis* despite the certain similarity of adult tapeworms. This case is a good example of the existing controversy between the needs of practical taxonomic work and the needs of systematics. The taxonomy needs the "convenient" system facilitating easy determination of taxa. It cannot use such characters as the life cycle pattern or larval morphology, because specialists usually deal only with the adult worms, frequently with incomplete strobilae. Contrary to this, the aim of systematics is the "natural" system of organisms. It should take into consideration all possible characters of evolutionary and phylogenetic importance, not only morphology of an adult stage.

Looking at the system of hymenolepidid cestodes from these positions, we can see that some genera still include cestodes, which differ one from another by important characters and should be seriously re-examined to improve the system of this group of tapeworms.

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