

# THE NON-NATIVE MONOGENEA *THAPAROCLEIDUS CAECUS* (MONOGENEA: DACTYLOGYRIDAE) IN INDIA ON ITS INTRODUCED HOST, *PANGASIANODON HYPOPHTHALMUS* (SAUVAGE, 1878): ABOUT TWO DECADES OF UNNOTICED PRESENCE



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## ABSTRACT

In the context of biological invasion, scientists increasingly aware the impact of invasive species on native communities. The introduced species can act as vector of non-native parasites with devastating effects. Exotic species tremendously cause economic loss, modify ecosystem functions and can threaten the native ones. During a survey of non-native monogenean parasites of Meerut region, India, the freshwater iridescent shark of family Pangasiidae, *Pangasianodon hypophthalmus* (Previously *Pangasius sutchi*) was found infected with monogenean parasites. *P. hypophthalmus*, a freshwater fish popular for used as food fish in India which is also abundantly available in Vietnam, Bangladesh, Indonesia and Thailand. It is a native of Mekong River in Vietnam, has been introduced in several ecosystems worldwide, reproduced at a high rate, resulting in dense population of small specimens. *P. hypophthalmus* has been proven adaptable for intensive production in many countries and culturing this fish to boost up the aquaculture.

Parasitological examination of *P. sutchi* revealed the presence of a non-native monogenean parasite of genus *Thaparocleidus*. The large number of parasites (~200) on a single fish, suggests their successful reproduction in the non-native Indian geographical region. Morphology and morphometrics of the parasite showed similarity with *Thaparocleidus caecus* (Mizelle and Kritsky, 1969) Gussev, 1978 of Southeast Asia. After morphological analysis, we have examined 28S rDNA sequences of the parasites to substantiate the findings. The 28S rDNA sequence of *T. caecus* showed close relationship with other *Thaparocleidus* species represented in GenBank, with most closely to *Thaparocleidus* sp. BDY (EF100555) (98%). The 28S tree showed a better resolution within the clade for *T. caecus* (high bootstrap values of 100%). This is the first and only 28S sequence of *T. caecus* (KF361477) available on Genbank database. This represents the first record of *T. caecus* in India and provides a clear avenue for human-assisted introduction of *P. hypophthalmus*. Thus, it seemed possible that this non-native monogenea has remained unnoticed over the past decades.



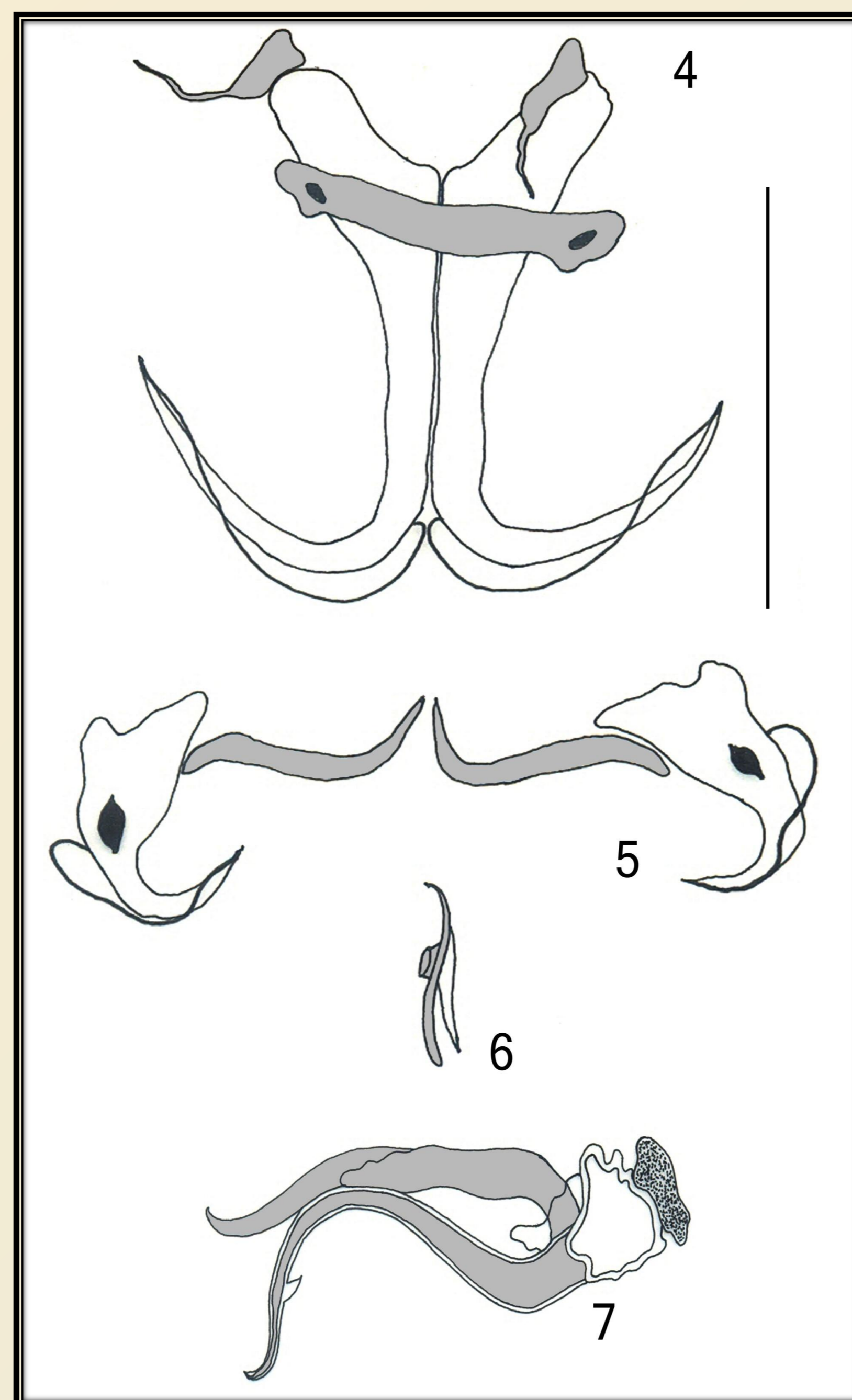
Fig. 1 *Pangasianodon hypophthalmus* collected for the study.



Fig. 2 Male copulatory organ of *Thaparocleidus caecus*.



Fig. 3 Haptor armature of *Thaparocleidus caecus*.



Figs 4-7 Haptor armature of *Thaparocleidus caecus* (Mizelle and Kritsky 1969) Gussev 1978. (4) Dorsal anchor and dorsal bar (5) Ventral anchor and bars (6) Hook (7) Male copulatory organ. Scale = 50  $\mu$ m

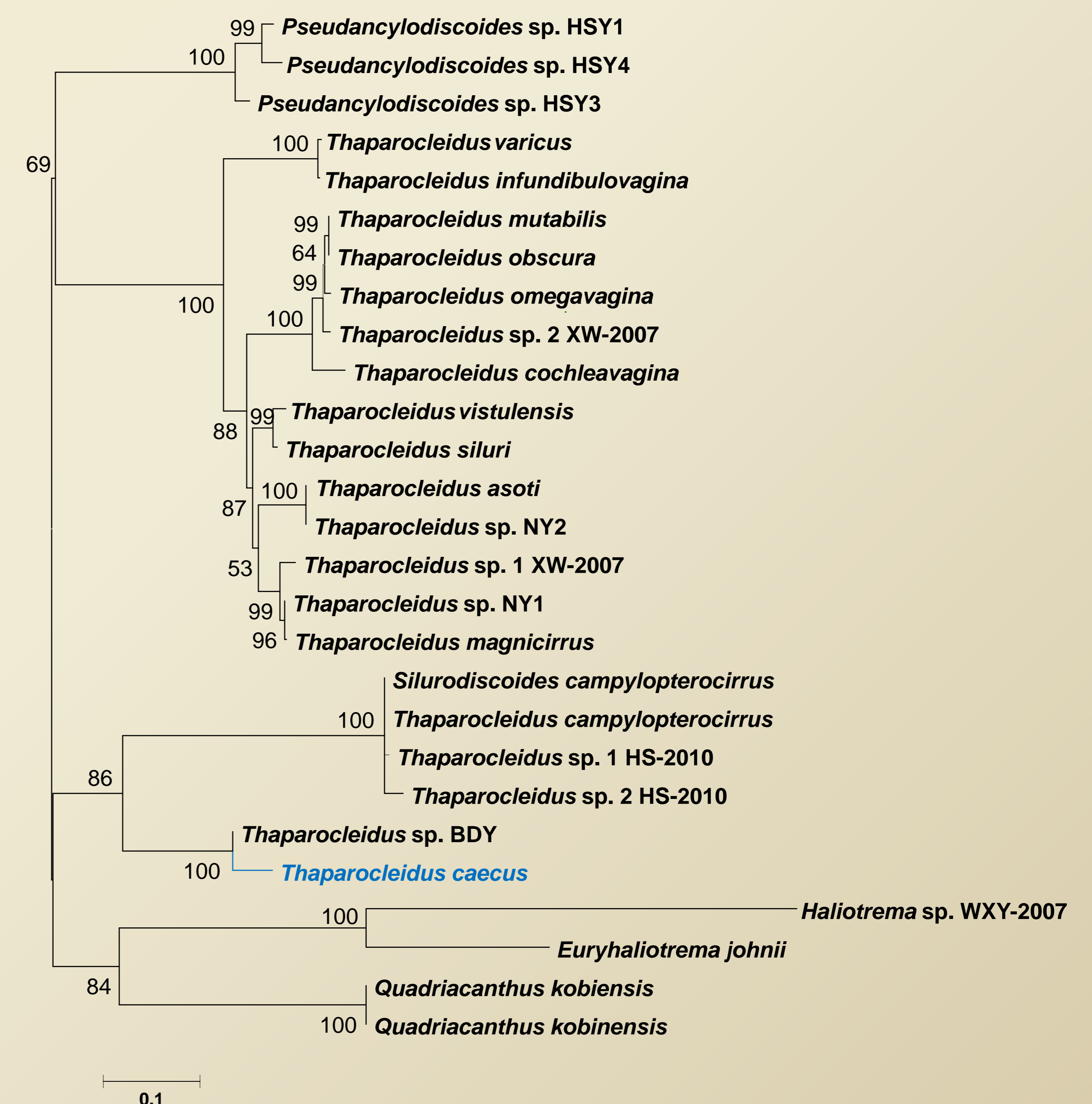


Fig. 8 Phylogenetic tree generated by maximum likelihood analysis of the 28S rDNA sequences of *Thaparocleidus caecus* and its relatives.

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