First Record of *Eustrongylides tubifex* (Dioctophymatidae) from Little Grebe, *Tachybaptus ruficollis* in Japan

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**ABSTRACT.** A nematode species belonging to the genus *Eustrongylides* (Dioctophymatidae) was obtained from the proventriculus of *Tachybaptus ruficollis*, found in December, 1995 in Kobe City, Hyogo Prefecture, Japan. Observation under a scanning electron microscope to investigate anterior extremity with the labial papillae in two circles showed that this species is identical to *E. tubifex*. This is the first record of this species in Japan. — **KEY WORDS:** *Eustrongylides tubifex*, Japan, *Tachybaptus ruficollis*.

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On December 7, 1995, a little grebe, *Tachybaptus ruficollis* (= *Podiceps ruficollis*), which was captured in Kobe City, Hyogo Prefecture, Japan (34° 41'N, 135° 10'E), was brought to the veterinary hospital of Kobe Municipal Oji Zoo because of weakness and emaciation. However, despite medical treatment, the bird died three days later, and the body was examined parasitologically.

Upon dissection, some dioctophymatid nematodes were found in the proventriculus, but it was difficult to obtain the whole bodies of the nematodes because they had penetrated deeply through the muscle layer into the opposite serosa. However, one whole male body and several fragments of both sexes were obtained. These specimens were fixed in 10% formalin, and the male body and 2 female fragments were cleared in lacto-phenol solution for microscopic examination. For scanning electron microscopy, the anterior part of one of the female fragments was further dehydrated through a graded series of ethyl-alcohol and substituted with isamyl acetate. After critical-point drying, the specimen was coated with carbon gold by an ioncoater (Nihon-Debschi JUC-5000) and observed under a scanning electron microscope at 10 kV (Nihon-Denshi JSM-5200).

Findings. Male: Body length 41.3 mm; body width at base of esophagus 1.41 mm; 12 labial papillae in two circles in anterior extremity, each circle containing 6 labial papillae (Fig. 2), inner circle labial papillae small with narrow bases and spine-like apices (Fig. 3), outer circle papillae large with wide bases and nipple-like apices; 8 small, flat, lateral-field papillae present between inner and outer circles labial papillae in ventral; buccal cavity conical and simple, 130 µm in depth; nerve ring at 196 µm from head.

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Figs. 1-4. *Eustrongylides tubifex* from *Tachybaptus ruficollis* in Japan.

Fig. 1. Anterior extremity, lateral view. Scale bar=1 mm.

Figs. 2 and 3. Scanning electron micrographs of inner and outer circle labial papillae, and small, flat and lateral- and ventral-field papillae, anterior extremity of female, apical view. Arrow showing small, flat and ventral-field papillae. Scale bar=100 µm (2) and 10 µm (3), respectively.

Fig. 4. Posterior extremity of male, ventral view. Scale bar=250 µm.
end; esophagus very long and simple, 11.2 mm in length (Fig. 1); somatic papillae present in one row in each lateral field from anterior to posterior extremity, several caudal papillae present in dorsal field of caudal sucker, numerous papillae and fringe of projections present on inner perimeter of caudal sucker, but precise observation of these impossible because of shrinking (Fig. 4), spicule one and very long, 9.2 mm in length. Female: Esophagus 13.2 mm in length; eggs with rough shell, 68.5–73.4 µm × 37.5–39.1 µm in size; tail end blunt, anus and vulva terminal. The specimens have been deposited in the Meguro Parasitological Museum (MPM-Coll. No. 19701), Tokyo, Japan.

The morphology of the present specimens corresponded to Anderson and Bain’s key [1] of the genus *Eustrongylides* (Nematoda: Dioctophymatoidea: Dioctophymatidae: Eustrongylinae). Three species, namely *E. tubifex*, *E. ignotus*, and *E. excisus*, have been reported from Gaviiformes, Podicipediformes, Pelecaniformes, Anseriformes, Charadriiformes, Ciconiiformes, and Passeriformes throughout the world [2]. Among these species, the size and morphology of the papillae of the inner and outer circles of the present species were in accordance with those of *E. tubifex* [2].

In Japan, *E. ignotus* from *Uria troile californica*, *E. elegans* from *T. ruficollis*, and *E. mergorum* from *Mergus merganser* have been reported [3–5]. However, *E. mergorum* (syn. *E. elegans*) is considered to be a species inquirenda [2]. Furthermore, the specific status of these species should be reinvestigated, because of a lack of precise description concerning the labial papillae of the inner and outer circles [3–5]. An epidemiological survey should be carried out in the future to positively identify the Japanese *Eustrongylides* from these host species, since the original specimens appear to have been lost. Although *E. tubifex* has been reported from *T. ruficollis* in the U. K. and from several species belonging to the genera *Gavia*, *Mergus*, *Anas*, *Melanitta*, and *Ardea* in Europe and North America [2], this is the first record of *E. tubifex* from Japan.

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REFERENCES