

Research Note

Occurrence of *Pomphorhynchus laevis* (Acanthocephala) in the Marsh Frog (*Rana ridibunda* Pallas, 1771), from Turkey

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Summary

Pomphorhynchus laevis (Müller, 1776) was recovered from Marsh frogs (*Rana ridibunda*), collected in three localities, Yesilirmak River (Amasya Province), Civril Isikli Lake and Bagbasi district (Denizli Province) from Turkey. This is the first report of *Pomphorhynchus laevis* from a frog in Turkey.

Keywords: *Pomphorhynchus laevis*; *Rana ridibunda*; Turkey

Introduction

The species of the genus *Pomphorhynchus* Monticelli, 1905 (Acanthocephala: Pomphorhynchidae) are cosmopolitan and common parasites of fishes. This genus characterised by a cylindrical proboscis, and a long neck with a bulbous anterior expansion (Yamaguti, 1963).

A number of marine and freshwater fishes have been reported as definitive hosts of the acanthocephalan *P. laevis* (Ziolkowska & Rokicki, 2003). It occurs predominantly in cyprinid and also in salmonid fishes with the Palaearctic distribution (Dudiňák & Šnábel, 2001; Nedeva *et al.*, 2003).

Buchvarov (1977) recorded *P. laevis* in *Rana ridibunda* from Northern Bulgaria. Also, Veith & Erpelding (1995) observed *P. laevis* in water living larvae of fire salamander (*Salamandra salamandra*) in Germany. Surprisingly, Dimitrova *et al.* (2008) reported *P. laevis* infection of a mammal species, Eurasian otter *Lutra lutra* (L.) in Bulgaria.

So far, there have been no published studies on *P. laevis*, for amphibian species, which are distributed in Turkey.

Materials and Methods

Frog samples were collected by dip net and by hand, Au-

gust, 2005 Yesilirmak River 20 (9 males, 11 females) Amasya Province (35° 50' E; 40° 40' N), July 2006 Civril Isikli Lake 5 (3 males, 2 females), Denizli Province (38° 15' N; 29° 53' E), and April 2006 Bagbasi District 9 (5 males, 4 females), Denizli Province (37° 46' N; 29° 06' E), from Turkey.

Thirty-four *Rana ridibunda* (mean ± SD snout-vent length (SVL) of specimens were 60.10 ± 10.96 mm, with a range from 40 to 72 mm), obtained from three different localities of Turkey, were examined. Within 24 hr, frogs were over-anesthetized in ether-filled glass containers. The body cavity was opened by a longitudinal ventral incision. *P. laevis*, encysted in liver, urinary bladder, intestine walls, body cavities, and mesenteries, were teased out with needles and examined under a stereomicroscope. No comparisons were made between the sexes due to infected sampling size that were too small for each sex.

Voucher specimens of parasites were deposited in the Ege University, Museum of Zoology, Izmir, Turkey (ZDEU HEL-2006/1)

Results and Discussion

Thirty-four *Rana ridibunda* collected from three different localities of Turkey, were examined. Nine *R. ridibunda* (7 males and 2 females) were infected (26.47 %) with *P. laevis* with intensities of 1 – 20 worms per frog with a mean intensity of 8.11 ± 7.89 worms.

Seventy-three *P. laevis* (68 cysts, 5 developing worms) were observed in nine *R. ridibunda* samples, liver, urinary bladder, intestine walls, body cavities, and mesenteries, the mean length and width of *P. laevis* cysts were measured 2856.29 µm (1989.92 µm – 3640.88 µm) x 712.92 µm (410.24 µm – 1410.20 µm)

Five developing worms were observed on mesenteries (Figures 1 A – B), the morphometric measurements of

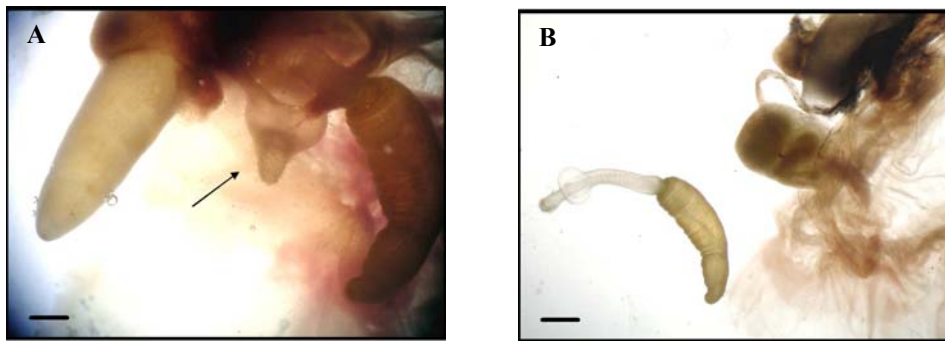


Figure 1. Encysted and developing form of *Pomphorhynchus laevis* on *Rana ridibunda* mesenteries
 A. Developing worm perforated the mesenteries (neck curved),
 B. Mesenteries removed Developing worm and encyst of *P.laevis* (Scale Bar - A: 500 μ m, B: 2000 μ m)

observed 5 developing *P. laevis* as follows: the mean total body length 10.10 mm, total body width 1.14 mm, length and width of proboscis 738 μ m x 481.75 μ m, length and width of bulb 1102.52 μ m x 1153.80 μ m, length and width of neck 3384.48 x 1448.66 μ m. There are 18 hook rows, each consisting of 12 hooks, were observed on the proboscis of *P. laevis* specimens. The mean length of anterior hooks 45.20 μ m, length of median hooks 38.54 μ m, and length of posterior hooks 36.70 μ m.

Dudiňák & Špakulová (2003), were divided to *P. laevis* according to the sex and maturity, the males and females were categorised into three groups, corresponding with three developmental stages in their study. According to Dudiňák & Špakulová (2003)'s data, the developing worms with body length from 6 to 12 mm with developed gonads.

On the basis of these characters, our specimens, are comparable to Dudiňák & Špakulová (2003), the present specimens in this paper, have a short body length (10.10 mm) males with developed testes, females with ovarian balls, and their stage is "developing worm".

The intermediate host of *P. laevis* is *Gammarus pulex* which were also observed in the Civril Isikli Lake (Denizli Province).

P. laevis, is recorded in several fish species in Turkey: the common carp (*Cyprinus carpio*), sheatfish (*Silurus glanis*), pike (*Esox lucius*) and, bleak (*Alburnus* sp.), in some aquatic areas of Central Anatolia region; crucian carp (*Carassius carassius*), chub (*Leuciscus cephalus*), loach (*Nemachilus* sp.), and bleak (*Alburnus alburnus*) in Enne Dam Lake, Kütahya Region; nase (*Chondrostoma nasus*), barbel (*Barbus plebejus escherichii*) in Porsuk Stream, Eskişehir Region (Öktener, 2003); tench (*Tinca tinca*) Kapulukaya Dam Lake, Kırıkkale Region, Beyşehir Lake, Konya Region (Yıldız, 2003; Tekin Özcan *et al.*, 2006) and a native bleak species *Alburnus nasreddini* (Buhurcu & Öztürk, 2007) in Akşehir Lake.

Pomphorhynchids are infrequent parasites of amphibians. Buchvarov (1977) recorded *P. laevis* in (*R. ridibunda*) frogs as paratenic hosts, from Bulgaria, Veith & Erpelding (1995) observed *P. laevis* in water-living larvae of fire salamander (*Salamandra salamandra*) in Germany. In view of the results obtained, it can be concluded that,

P. laevis parasitised *R. ridibunda* as a paratenic host in Turkey.

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