

Endoparasites in two species of ranid frogs from Peninsular Malaysia, *Odorrana hosii* (Boulenger, 1891) and *O. monjerai* (Matsui and Jaafar, 2006), with comments on modes of infection

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Abstract

Odorrana hosii and *O. monjerai* from Peninsular Malaysia were examined for endoparasites. Only Nematoda were found. For *Odorrana hosii*, *Amphibiocapillaria bufonis*, *Cosmocerca ornata* and *Abbreviata* sp. (cysts) were found. For *O. monjerai*, *A. bufonis* and *C. ornata* were found. All are new host records.

Key Words

Nematoda, *Amphibiocapillaria bufonis*, *Cosmocerca ornata*, *Abbreviata* sp., new hosts, Peninsular Malaysia, prevalence

Odorrana hosii is known from southern Thailand, through the Malay Peninsula to Sumatra and throughout Borneo; it is nocturnal and occurs around the edges of rocky creeks or rivers (Grismer 2011). *Odorrana monjerai* is known only from the type locality: Teroi River on Gunung Jerai, Kedah State, West Malaysia 5°47'N, 100°27'E (Matsui and Jaafar 2006). There are, to our knowledge, no published reports of helminths for these species. The purpose of this note is to establish the initial helminth lists for *O. hosii* and *O. monjerai*.

We conducted a helminthological examination on five *O. hosii* (mean SVL = 67.2 mm ± 15.3 SD, range = 51–84 mm) and three *O. monjerai* (mean SVL = 67.3 mm ± 4.6 SD, range = 62–70 mm) from Peninsular Malaysia collected from 2004 to 2012 and deposited in the herpetol-

ogy collection of La Sierra University (LSUHC), Riverside, California as: *O. hosii* LSUHC 6493, 7227, 10761 (Pahang State); LSUHC 9647 (Kedah State); LSUHC 8217 (Johor State) and *O. monjerai* LSUHC 10479, 10480, 10497 (Kedah State).

A lateral incision was made through the body wall and the digestive tract was removed. The oesophagus, stomach and small and large intestines were opened longitudinally and searched for helminths utilising a dissecting microscope. Helminths were cleared in a drop of lactophenol, placed on a microscope slide, cover-slipped and studied under a compound microscope.

Only Nematoda were found. Identification was made utilising Anderson et al. (2009) and Gibbons (2010). For *A. bufonis*, we also used drawings in Morishita (1926)

and for *C. ornata* we also utilised Bala (2016). For *O. hosii*, one female each of *Cosmocerca ornata* was found in the large intestine of LSUHC 6493 and 8217 (prevalence, number hosts infected/ total hosts examined X 100 = 40%). Two females of *A. bufonis* were found in the small intestine of LSUHC 8217 (prevalence = 20%). Three and four cysts of *Abbreviata* sp. were found encysted in the stomachs of LSUHC 8217 and 9647 (prevalence = 40%). For *O. monjerai*, two males of *A. bufonis* were found in LSUHC 10479 and 4 (two males, two females) in LSUHC 10497 (both small intestines) prevalence = 66%. Two (one male, one female) *C. ornata* were found in the large intestine of LSUHC 10497 (prevalence = 33%).

Amphibiocapillaria bufonis has previously been found in amphibians from China and Japan (Goldberg and Burse 2002). Capillarids typically have a direct life cycle with infection occurring when larvated eggs are ingested (Anderson 2000). *Cosmocerca ornata* is widespread and occurs in the Afrotropical, Neotropical, Oceanian, Oriental and Palearctic regions (Baker 1987). Infection may occur by larval skin penetration (Anderson 2000). Frogs serve as transport (= paratenic) hosts for larvae of *Abbreviata* sp. as they remain in cysts and complete development when eaten by a definitive host. Vouchers of *A. bufonis*, *C. ornata* and *Abbreviata* sp. were deposited in the Harold W. Manter Laboratory, (HWML), University of Nebraska, Lincoln, USA as: *O. hosii*: *A. bufonis* (HWML 110437), *C. ornata* (HWML 110438), *Abbreviata* sp. (HWML 110439); *O. monjerai*: *A. bufonis* (HWML 110441), *C. ornata* (HWML 110440). All are new host records.

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