

Research Note

**The First Distributional Record for *Paragonimus miyazakii*
Metacercaria in Fukushima Prefecture, Japan**

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(Accepted for publication; January 28, 1994)

Abstract

Eighty-four freshwater crabs, *Geothelphusa dehaani*, were collected at 4 localities in Nishiaizumachi, Yama-gun, Fukushima Prefecture in August, 1989 and were examined for *Paragonimus* infection. One of these was infected with a single *Paragonimus* metacercaria. The adult fluke recovered from the experimentally infected Wistar rat with the metacercaria was identified as *P. miyazakii* based on the morphological features. This is the first distributional record for *P. miyazakii* from crabs in Fukushima Prefecture.

Key words: lung fluke, *Paragonimus miyazakii*, geographical distribution

In Tohoku District, *Paragonimus miyazakii* occurs in Iwate, Yamagata and Akita Prefectures (Yamaguchi and Yagisawa, 1977; Saito, 1977; Tani *et al.*, 1980), but not in Fukushima Prefecture. Sekikawa *et al.* (1980) and Saito and Yamashita (1981) reported the occurrence of *P. miyazakii* in some areas of Niigata Prefecture where are adjacent to the area of present study, therefore, we supposed the occurrence of this fluke in the north-western part of Fukushima Prefecture.

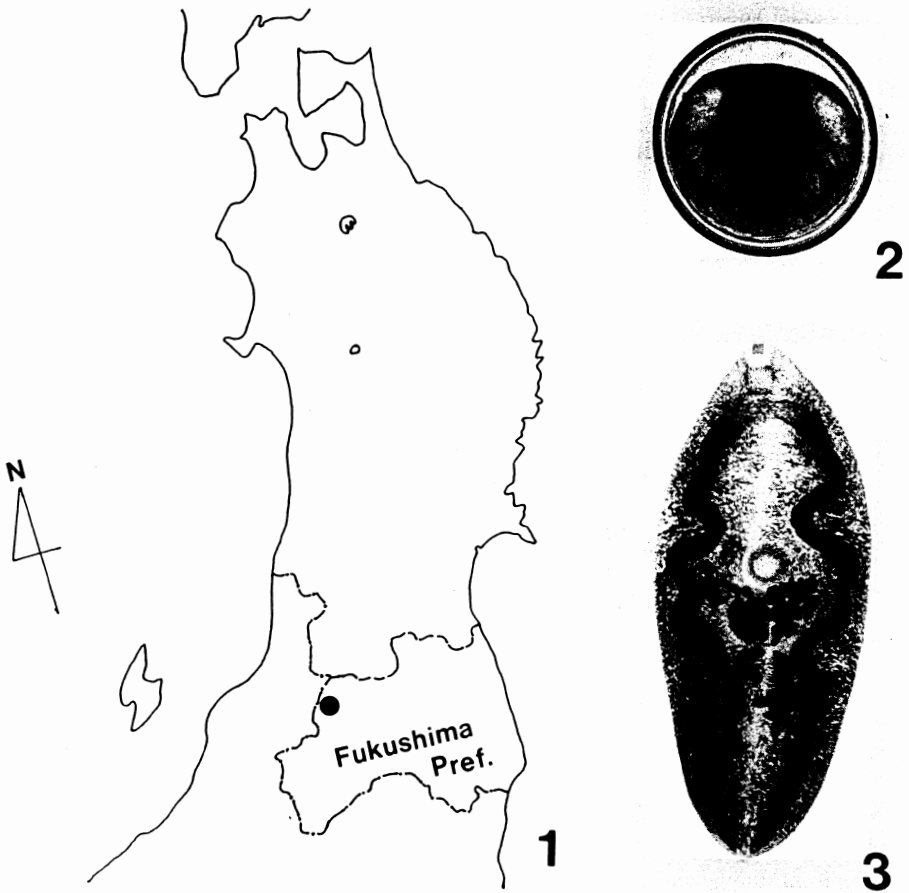
Eighty-four freshwater crabs, *Geothelphusa dehaani*, were collected from 4 localities, Gokunyu in Nishiaizumachi, Yama-gun, Fukushima Prefecture in August, 1989 (Fig. 1). They were crushed, digested in artificial gastric juice and examined for the metacercariae. Out of 84 crabs, one was infected with a single *Paragonimus* metacercaria which was spherical in shape with a thick inner cyst wall, as shown in Fig. 2. The cyst measured 482×470 µm in diameter, and the inner cyst wall was 14 µm in thickness. The larva had a large I-shaped excretory bladder, but neither an oral stylet on the dorsal aspect of the oral sucker nor pinkish granules in the parenchyma were found within the body. Based on

these characteristics, this metacercaria seemed to be *P. miyazakii*. To get the adult fluke, this metacercaria was inoculated to a Wistar rat intraperitoneally. An adult fluke was recovered from the pleural cavity of the rat 75 days after inoculation. The fluke was fixed in 70% ethanol and stained with borax carmine. This fluke was slender in shape and had a profusely branched ovary. This fluke measured 6.8 mm in length and 2.9 mm in width and the ratio of length/width was 2.3. The size of oral sucker was slightly smaller than that of ventral sucker (Fig. 3). It had singly spaced cuticular spines on the body surface. These morphological features of the metacercaria and adult fluke agreed with those of *P. miyazakii*. Accordingly, we identified this fluke as *P. miyazakii*. This is the first record for *P. miyazakii* in Fukushima Prefecture.

As to the geographical distribution of *P. miyazakii* in western Japan, Nishida *et al.* (1988) proposed a hypothesis that this fluke is distributed in the areas where had been no marine transgression since the late Miocene, because *Bythinella nipponica*, the first intermediate host of *P. miyazakii*, is distributed only in these areas. The area surveyed in this study had not undergone marine transgression since the late Miocene (Minato *et al.*, 1965). Umbrella-pine, *Sciadopitys verticillata*, which has the same geographical distribution as *P. miyazakii* in western

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Figs. 1-3 1: A map of Tohoku District showing the area where the present survey was carried out. 2: Encysted metacercaria with a thick inner cyst wall. 3: Adult worm of *Paragonimus miyazakii* (with a profusely branched ovary) recovered from an experimentally infected rat, 75 days after inoculation.

Japan, also occurs in this area (Kurata, 1964). However, Torii *et al.* (1987) reported that this hypothesis was not applicable in the northern part of Kanto District, and suggested that the first intermediate host of *P. miyazakii* in Kanto District might be different from that in western Japan. Further study must be performed to determine whether this hypothesis is applicable in Tohoku District.

Acknowledgments

The authors wish to thank Mr. Kenichi Okugawa, the Laboratory Animal Center, for his assistance in caring for experimental animals, and Mr. Takeo Yagi, Central Research

Laboratory, Ehime University School of Medicine, for his assistance in preparation of the photographs.

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