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Gastrointestinal helminthes of green-winged teal (*Anas crecca*) from North Iran

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## PEER REVIEW

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## Comments

In this research the authors presented the helminth species of *A. crecca* in Mazandaran province, north of Iran. *H. conoideum*, *Diorchis stefanskii*, *Echinocotyl* sp. and *Contracaecum* larvae were identified. Although further investigations are required in order to verify the seasonal parasites diversity and intensity of parasite infection, the results are interesting and can be used for the prevention of transmission of parasites from *A. crecca*.

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## ABSTRACT

**Objective:** To determine the helminth parasites of *Anas crecca* (*A. crecca*) in one of proper refuges of Iran, Fereydunkenar.

**Methods:** A total number of one hundred thirty-six gastrointestinal tracts of green-winged teal (*A. crecca*) were collected from Fereydunkenar, Mazandaran province during September and October 2011. The gastrointestinal tracts were examined for helminth infection.

**Results:** The total infection rate was 70.50% (96) that 68.96% (40) of males and 71.79% (56) of females shown helminthes infection. The examined *A. crecca* harbored one species of Nematoda, Cestoda and two species of Digenea which were as following: *Contracaecum* larvae (from stomach wall), *Diorchis stefanskii* (*D. stefanskii*) (from small intestine), *Hypoderaeum conoideum* (from small intestine) and *Notocotylus attenuatus* (*N. attenuatus*) (from caecum), respectively. There was no significant difference in the prevalence of infection between examined males and females ducks in *Hypoderaeum conoideum*, *D. stefanskii* and *N. attenuatus* ( $P>0.05$ ) whereas a significant relationship was observed between males and females in *Contracaecum* larvae ( $P<0.05$ ).

**Conclusions:** Based on the results of the present study, we conclude that *A. crecca* plays a prominent role in transmission of mentioned parasites. In addition, this is the first report of *Contracaecum* larvae, *D. stefanskii* and *N. attenuatus* from *A. crecca* in Iran.

## KEYWORDS

Parasite, Helminth, Intestine, *Anas crecca*, Aquatic bird, Wild duck, Iran

## 1. Introduction

The Eurasian teal–*Anas crecca* (*A. crecca*) is a common and widespread duck in the Asia and Europe that migrates

in fall from breeding grounds in Siberia in Russia to wintering areas in the northern grounds of Iran and return to its breeding grounds in spring<sup>[1]</sup>. The Eurasian teal is the smallest extant dabbling duck at 34–43 cm length with

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an average weight of 360 g in males and 340 g in females. The wings are 17.5–20.4 cm long, yielding a wingspan of 53–59 cm. Besides, the bill measures 3.2–4.0 cm in length. Diet breeding in spring and summer of this species consists predominantly of animal matter such as mollusks, worms, insects and crustaceans[2,3].

The highest total number of *A. crecca* was recorded in Iran and Azerbaijan. Annually, a great number of aquatic migratory birds migrate from northern hemisphere to the Mazandaran province, northern Iran. Almost a total number of 93 000 *A. crecca* were counted at Fereydoon Kenar, Mazandaran province, Iran in 2003. *A. crecca* is called “Khotka” by local people of north of Iran[4].

Although northern provinces of our country are appropriate winter quarters for either migratory or resident aquatic birds, there is not enough published data on prevalence and intensity of helminthic infection of their gastrointestinal tract. Therefore, the objective of the current investigation was to scrutinized the gastrointestinal parasites of *A. crecca* in north of Iran.

## 2. Materials and methods

### 2.1. Sampling

A total number of one hundred thirty-six green-winged teal (*A. crecca*) heads and their gastrointestinal tract were collected from poultry product suppliers in Fereydunkenar, Mazandaran province, north of Iran during September and October 2011. The gastrointestinal tract of each duck and its head were placed on ice plastic bags after collecting and sent to parasitology laboratory for investigation. For aims of gender recognition, male ducks were recognized by their green head and dark bill that are characteristic features for them whereas females had pale brown head, neck and dark gray bill.

For screening endoparasites of *A. crecca*, the digestive tract (stomach, small intestine and large intestine) were separated and opened along its entire and frequently rinsed in order to gather the whole contents. The contents of each organ separately were screened by aid of Mesh 70 and in the next step the remnants were conveyed to Petri dishes for more investigation. For the purpose of collecting tiny helminthes which probably are attaching to mucosal layer of the stomach and intestinal tract, a stereomicroscope were used. The collected Digenean and Cestoda samples were fixed and preserved in 70% ethanol, stained with carminic acid procedures, dehydrated, then cleared and mounted in

Canada–balsam (Merk). Nematoda specimens were killed in hot saline solution, fixed in a solution composed 70% ethanol and 5% glycerin, cleared by a drop of lactophenol, mounted by Canada–balsam. Thereafter, nomenclature and identifications of the helminths were performed according to available systematic keys of Yamaguti and Baker[5–7].

### 2.2. Study area

Fereydunkenar is a city in Mazandaran province, north of Iran. The site is located at latitude, 36°41'11" N and longitude, 52°31'21" E and also 23 m below sea level, on the coastal plain of the Southeast Caspian lowlands (Figure 1). This site is a resort on the Caspian Sea. The maximum and minimum temperatures were 28.2 °C and 8.7 °C in the July and December, respectively. The maximum annual rainfall has been reported 220.2 mm in October, and the least 0.2 mm in July 2010[8,9].



**Figure 1.** Map of Iran, the highlighting position of Fereydunkenar Country in Mazandaran province.

The area comprises four “damgahs” or duck trapping areas (Fereydoon Kenar, Ezbaran, Eastern and Western Sorkh Rud) and also a Wildlife Refuge (Fereydoon Kenar WR, 48 hectares) which is located in the northeastern part of these damgahs. Each damgah consists of a complex of shallow freshwater impoundments situated in harvested rice paddies, developed as duck–hunting areas and surrounded by forest strips and reed enclosures. The area is situated in the southeast Caspian lowlands. It is of outstanding

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