

Short Communication

Detection of *Grillotia erinaceus* (Cestoda: Trypanorhyncha) in *Megalaspis cordyla* (Linnaeus, 1758) (Perciformes: Carangidae) from the Persian Gulf

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Abstract: Cestode species of the genus *Grillotia* Guiart, 1927 are among the most commonly encountered trypanorhynch cestodes, either as the adult in elasmobranchs or as the plerocercus (larval stage) in teleost fishes. In this study, we report *Grillotia erinaceus* (Cestoda: Trypanorhyncha) from a teleost fish, Torpedo scad, *Megalaspis cordyla* (Linnaeus, 1758), from the Persian Gulf for the first time. The specimens of *G. erinaceus* were obtained from subcutaneous tissues of Torpedo scad collected from a fish market in Bandar Abbas, Iran. No reaction, inflammation or exudate was seen in examined tissues.

Keywords: Fish parasite, Infection, Commercial fisheries, Marine environments, Iran.

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Introduction

Stress is most commonly defined amongst fish parasites can have a negative impact on the commercial fisheries industry (Mehl 1970; Grabda 1977; Palm & Overstreet 2000). Although only a few cases of accidental human infections by trypanorhynchs have been reported (Palm 2004), these worms may cause allergic reactions (Pelayo et al. 2009). Since large-scale commercial fishing is at developed stage in the southern waters of Iran, widespread studies on parasite fauna of marine fish from this water body are needed.

Trypanorhynch cestodes mature in elasmobranchs and mainly use teleost fishes as intermediate or paratenic hosts (Palm 1997; Palm 2000). Because of the possibility of identifying adults as well as their

larval stages based on the oncotaxy of unique hook arrangements along tentacles (Khalil 1994; Palm 2004), these marine tapeworms have been considered an interesting group for taxonomic and ecological investigations (Palm et al. 2007).

Studies on the trypanorhynch fauna of fishes from the Persian Gulf are non-comprehensive (Mirzayans 1970; Tirgari et al. 1975; Ghiasi 1988; El-Naffar et al. 1992; Saif et al. 1994; Sheini mandani 1994; Sazandegi 1996; Kardousha 1999; Hassan 2002; Peighan 2004; Haseli 2005), and have mainly focused on the most eastern region. Recently, Haseli et al. (2010) studied elasmobranchs along the Iranian coast of the Persian Gulf and identified 22 taxa. These studies demonstrate that trypanorhynch cestodes are common fish parasites in the Persian

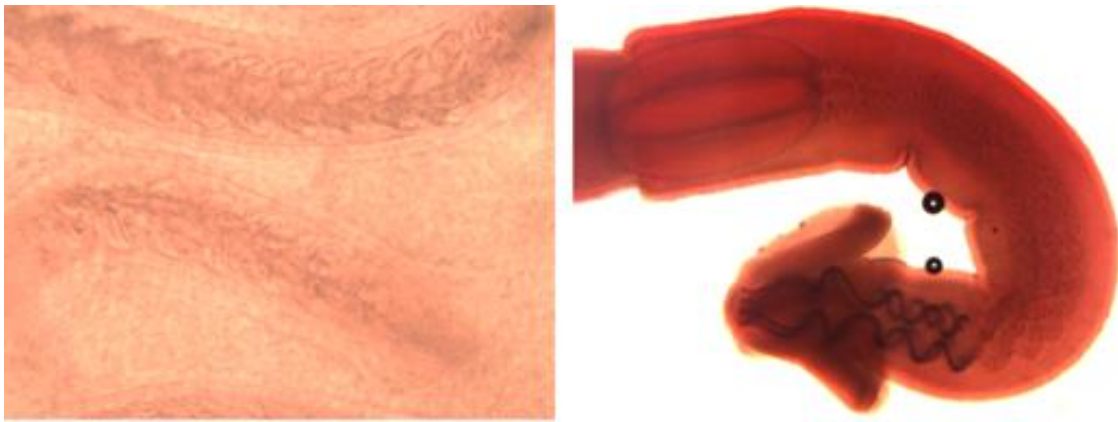


Fig.1. *Grillotia erinaceus* found in the subcutaneous tissues of Torpedo scad, collected from the Persian Gulf, Iran.

Gulf, corresponding with a diverse fish fauna in the region (Blegvad 1944; Assadi 1997; Carpenter et al. 1997; Randall 1995).

The purpose of the present study is the examination of trypanorhynch fauna of a commercially important fish species, Torpedo scad, *Megalaspis cordyla* from the Iranian coast of the Persian Gulf.

Materials and Methods

The Torpedo scad, *M. cordyla*, (Carangidae) specimens were bought from a fish market of Bandar Abbas, on the north-eastern coast of the Persian Gulf, Iran (27.1772N, 56.2788E). The specimens were identified according to published keys for the Persian Gulf (Assadi 1997; Carpenter et al. 1997).

Five fish were examined macroscopically with the help of a stereo-microscope under 6.3 magnification for larvae of trypanorhynch cestodes in subcutaneous tissues. Three encapsulated trypanorhynch larvae were freed from the blastocyst (one fish) and treated according to Palm (2004). The worms were fixed in 70% ethanol, stained in acetic carmine, dehydrated in an ethanol series, cleared in methyl salicylate and mounted on to slides in Canada balsam for further studies.

Results

Trypanorhynch species identification followed Palm (2004). All of three worms were identified as *Grillotia erinaceus* (Beveridge & Campbell 2007)

(Fig. 1). No reaction, inflammation or exudate was seen in examined tissues.

Discussion

Cestode species of the genus *Grillotia* Guiart, 1927 are among the most commonly encountered trypanorhynch cestodes, either as the adult in elasmobranchs (Haseli et al. 2010) or as the plerocercus (larval stage) in teleost fishes (Tirgari et al. 1975). Palm (2004) revised this genus and rearranged it by 16 species. *Grillotia erinaceus* was described initially from species of *Raja* Linnaeus, 1758 from the coast of Belgium but was subsequently reported from various species of rays on both sides of the north Atlantic (Dollfus 1942). *Thunnus thynnus* has been recorded to be a host fish for *Grillotia* sp. (Haseli et al. 2010). *Grillotia* sp. has been also isolated from abdominal cavity of tiger tooth croaker (*Otolithes ruber*). This fish is one of the most important commercial species in the Persian Gulf (Shohreh et al. 2014). *Melanogrammus aeglefinus* and *Hippoglossus* sp. have been recorded to be host fish for *Grillotia erinaceus* (see Rae 1958; Lubieniecki 1976).

The Torpedo scad, *M. cordyla* (Linnaeus, 1758), is a very common and important fish in fishery industries (Carpenter et al. 1997), and it is distributed throughout tropical and subtropical Indian Ocean to the western Pacific (Randall 1995). It has been recorded that *M. cordyla* from China is infected by some digenean species, including *Bucephalus*

fragilis, *Nematobothrium schistogonimum*, *Tergestia laticollis*, *Ectenurus megalaspis*, *Lecithocladium glandulum*, *Lecithocladium megalaspis*, *Aponurus laguncula*, *Opechona glossoides*, *Lasiotocus tropicus*, *Pseudopecoeloides carangis* (Liu et al. 2010). Crustaceans which are parasitizing on *M. cordyla* included *Caligus cordyla*, *Lernanthropus corniger* and *Lernanthropus indicus* (Khamees et al. 2015). In this study, we reported that *M. cordyla* from the Persian Gulf can be infected by *Grillotia erinaceus*

Some effects of larval cestodes on the host fish include growth retardation and a lower condition factor (Hoffmann et al. 1986), tissue disruption, metabolic disturbances (Richards & Arme 1981, Rosen & Dick 1984), reduced swimming speed in infected fish (Sprengel & Luchtenberg 1991) and even mortality in heavy infections (Adjei et al. 1986). However, Lubieniecki (1976) indicated that *G. erinaceus* migrated only a short distance into or through its host's gut wall and became bound in a cyst of parasite and host origin, thus not being able to stimulate a detectable humoral response. So, it seems unlikely that this parasite alone causes any adverse effects on host fish.

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مقاله پژوهشی

گزارش انگل *Grillotia erinaceus* (Cestoda: Trypanorhyncha) در ماهی کتو *Megalaspis cordyla* (Linnaeus, 1758) (سوف ماهی شکلان: گیش ماهیان) از خلیج فارس

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چکیده: گونه‌های متعلق به جنس *Grillotia* Guiart, 1927 از فراوان‌ترین سستوهای trypanorhynch هستند. این سستوها به صورت بالغ در ماهیان غضروفی پهن‌آبششیان و یا مرحله پلوسرکوس در ماهی‌های استخوانی عالی یافت می‌شوند. در مطالعه حاضر، یک گونه سستود، *Grillotia erinaceus* از ماهی کتو، *Megalaspis cordyla* (Linnaeus, 1758) که از خانواده گیش ماهیان است برای اولین بار از خلیج فارس گزارش می‌گردد. نمونه‌های *G. erinaceus* از بافت زیرجلدی ماهی کتو خریداری شده از بازار بندرعباس، جدا شدند. هیچ پاسخ التهابی در بافت‌های مورد بررسی مشاهده نشد.

کلمات کلیدی: انگل ماهی، عفونت، ماهیان تجاری، محیط زیست دریایی، ایران.