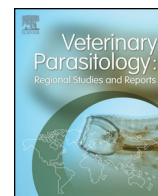




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Short Communication

Diplectanum sciaenae (Van Beneden & Hesse, 1863) (Monogenea) infecting meagre, *Argyrosomus regius* (Asso, 1801) broodstock in Catalonia, Spain. A case report

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ABSTRACT

Recurrent infection of captive meagre, *Argyrosomus regius*, by a monogenean parasite has been observed in the broodstock facilities of Institut de Recerca i Tecnologia Agroalimentàries (IRTA) in Catalonia, Spain, between 2008 and 2015. Following handling procedures related with hormonal treatment for spawning induction, one fish died. *Post-mortem* examination and detailed microscopical examination using light microscopy, SEM, and histology revealed intense infection by *Diplectanum sciaenae* (Monogenea, Diplectanidae) which caused noteworthy gill pathology. In the present study, we provide detailed description of the parasite and the pathology caused to its host. This is the first report associating this parasite with disease and mortality in farmed meagre.

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Meagre, *Argyrosomus regius* (Asso, 1801), is cultured in the Mediterranean Sea because of its excellent flesh quality (Poli et al., 2003) and the attractive biological characteristics which include high growth rates during grow-out and tolerance to a wide range of water quality parameters (Duncan et al., 2013).

One of the prerequisites for the successful integration of any new species to industrial scale production is knowledge of the pathological conditions that may arise with particular emphasis on infectious diseases caused by parasites transmitted from wild populations especially if fish are cultivated in sea cages (Rigos and Katharios, 2010). Gill monogeneans which are difficult to control and eradicate and cause serious economic losses to fish farms fall into this category (Shinn et al., 2015). Farmed meagre has already been recorded as host for the blood feeding *Sciaenocotyle panceri* (Sonsino, 1891), a monogenean associated with catastrophic impact in Italy (Merella et al., 2009) and Corsica (Ternengo et al., 2010).

A broodstock of meagre, *Argyrosomus regius*, was brought into the facilities of IRTA (Catalonia, Spain) in November 2008. Fish were given a formalin bath (1 h at 0.1 mL L⁻¹) each week for 3 weeks and were fed 5 mg kg⁻¹ of praziquantel (Duncan et al., 2013). In May 2009, there was an outbreak of an unidentified diplectanid monogenean that resulted in mortality of 6 broodstock fish. Subsequently, each spring, 2 formalin baths were administered to the broodstock as described and no further outbreaks were observed until the present report. Monogeneans are highly host-specific parasites and this applies also to species of the

Diplectanum. Up to date, 3 monogeneans have been described in wild meagre: *Diplectanum sciaenae*, *D. bocqueti*, and *D. dollfusi* (Oliver, 1980).

Following certain handling procedures related to hormonal treatment, one breeder died. The breeder in question was a 13.7 kg male captured at the coast of Algarve, Portugal. The fish had undergone a series of handling procedures including anesthesia, GnRH_a injections, sperm extraction, and transfer between tanks during May and June 2015. The fish was examined *post-mortem* and gills were found to be heavily infested (>300 and up to 1200 parasites per gill arch) by the monogenean parasite. Gill samples were dissected and preserved in 5% buffered formalin in order to identify the parasite and assess the pathology causing to its host. Parasites and gill samples were also fixed in 2.5% glutaraldehyde in sodium cacodylate buffer for scanning electron microscopy (SEM) observation. In addition, the dead fish showed over-inflation of the swim bladder, which has been observed to cause mortalities of meagre broodstock fish in the absence of any infection (Duncan et al., 2013).

We have made thorough microscopical observation of the parasite and the infected gills including light microscopy, histology, and SEM to identify the parasite and assess pathology. Samples for histology and SEM were processed as described previously (Katharios et al., 2013). SEM observations were made at the Electron Microscopy Laboratory of the University of Crete while parasites were photographed and measured (n = 20) from formalin-preserved samples using a Nikon Eclipse 50i microscope equipped with a digital camera and Image Analysis System.

Body length of the parasite was 457.83 ± 10.50 μm and width was 228.11 ± 1.39 μm. One of the main characteristic of the *Diplectanum* genus is the presence of two squamodiscs (Bikhovski, 1961)

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