NOTE

An eimerid apicomplexan causing pathology in wild and farmed lumpfish, *Cyclopterus lumpus*

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Abstract
Due to an increasing demand for lumpfish, *Cyclopterus lumpus*, as a biological control against sea lice in Atlantic salmon farms, infectious agents infecting lumpfish have lately received considerable attention. Here we report an eimerid apicomplexan from farmed juveniles in Norway and wild-caught broodfish from Iceland. It infects the intestinal tract, causing clinical signs and severe histopathology. Both merogonic and gamogonic stages were detected, suggesting a monoxenous life cycle, but no mature oocysts were observed. Therefore, further research is needed to establish its generic identity and to fully understand the potential negative impact this apicomplexan has to the aquaculture industry.

The most problematic parasites affecting farmed Atlantic salmon in sea cages are without doubt caligid copepods (sea lice), especially the salmon louse, *Lepeophtheirus salmonis*, which costs the industry millions of dollars annually to control (Costello, 2009). Due to increasing resistance of these parasites to established chemotherapeutic agents, as well as the potential negative impact of these compounds on the environment (Denholm et al., 2002; Espedal et al., 2013), new strategies for louse control are needed. Cleaner fish, such as lumpfish, *Cyclopterus lumpus*, are increasingly used as an alternative to control these parasites in salmon sea cages, and their use has rapidly increased during the last few years (Igboeli, 2013; Imsland et al., 2014). Lumpfish are psychrophilic fish species that actively feed on sea lice (Powell et al., 2017), and studies have demonstrated that they are effective agents for the biological delousing of Atlantic salmon (Imsland et at., 2014). In Norway alone, which is currently the largest producer of lumpfish, production has grown from 450 thousand fish in 2012 to around 20 million in 2016 (Bornø et al., 2016) and estimates for 2017 are around 30 million fish.

The expansion in the production of lumpfish for aquaculture has led to disease outbreaks, which not only pose a threat to lumpfish culture but

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