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New records of sea lice (Copepoda: Caligidae) from marine fishes in Jaramijó, an area with potential for sea-cage aquaculture in Ecuador

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Abstract

Farming of finfish in sea cages is gaining popularity worldwide. These systems are a suitable environment for the emergence, establishment and transmission of parasites or pathogens, such as sea lice (Copepoda: Caligidae), known to cause serious diseases and economic losses in finfish aquaculture worldwide. In coastal waters of Jaramijó, Ecuador, there are plans to culture spotted rose snapper (*Lutjanus guttatus*) and longfin yellowtail (*Seriola rivoliana*); however, the information about the occurrence of sea lice on fish from this country is scarce. To address this problem, a parasitological survey of economically important fish caught by artisanal fishermen was conducted between June 2013 and May 2014. A total of 608 fish belonging to 66 species were examined. Sea lice were found on 23 fish species. The diversity of these parasites consisted of 22 species of *Caligus* and 5 species of *Lepeophtheirus*. Most sea lice species (66%) occurred in a single fish species only, with low infection levels. The most frequently encountered species were *Caligus asperimanus* Pearse, 1951, *Caligus mutabilis* Wilson, 1905 and *Caligus rufimaculatus* Wilson, 1905. Taxonomic remarks are presented for some of the species recorded during this survey. All but two sea lice records are new to Ecuador, considerably expanding the geographical range of some species.

Key words: parasitic crustaceans, biodiversity, Eastern Tropical Pacific

Introduction

Global aquaculture has an average annual growth rate of 6.3% since 2000 (FAO 2012). In Latin America and the Caribbean, aquaculture has risen from 0.1 to 9.6% of the regional fishery output during last three decades (FAO 2011), with salmonids and shrimps being the main farmed organisms (Hernández-Rodríguez *et al.* 2001). Development trends indicate that the sector continues to intensify and diversify and continue using species not worked previously and modify its systems and practices (Subasinghe *et al.* 2009). Particularly in Ecuador, considered one of the most important countries for shrimp production, there is a growing interest in expanding aquaculture using alternative species and technologies. In fact, a local farm has already obtained the concession for sea-cage aquaculture in coastal waters of Jaramijó, Province of Manabí, where fish species such as spotted rose snapper *Lutjanus guttatus* (Steindachner) and the longfin yellowtail *Seriola rivoliana* Valenciennes, locally termed ‘pargo’ and ‘huayaibe’, would be reared.

Cages typically have a high density of a single fish species, providing a suitable environment for the emergence, establishment and transmission of parasites or pathogens, mainly of those with direct life cycles (Nowak 2007). Among the most important parasites for finfish aquaculture appear copepods of the family Caligidae (Crustacea: Copepoda), the group includes 31 genera and more than 450 species, being *Caligus* Müller and *Lepeophtheirus* Nordmann the most diverse genera with more than 250 and 110 species, respectively (Dojiri &

understanding about biodiversity and ecology of parasitic copepods would give support to the idea that climate change is altering fish parasite composition and biogeography (Palm 2011; Cantatore *et al.* 2012). Despite the fact that our fish sampling was biased to small fishes, with some poorly represented species, the present work could be a reference for future studies on marine parasitology.

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