Mortality of *Colossoma macropomum* (Cuvier, 1818) caused by *Ichthyophthirius multifiliis* Fouquet, 1876 is reported from a fish-farm located in the Peruvian Amazon. The infestation of *I. multifiliis* was influenced by inadequate water conditions caused by low temperatures and high values of ammonium. Prophylactic measures such as daily evaluation of physical and chemical parameters in the water and proper management of the fish such as the location of the pond and the water supply must be taken into consideration to prevent the manifestation of diseases.

Keywords: *Colossoma macropomum* – ectoparasite – fish-farm – Peru – ichthyophthiriasis – Gamitana – white spot disease
The development of the aquaculture activity promotes the increase of inappropriate practices that disregard the care with the environment and the health of the animals. Intensive systems are often associated with increased stock density and volume and the massive use of artificial feed, often of poor quality. All these characteristics, together, act directly on the pathogen / environment / host relationship (García et al., 2013). This relationship occurs in a balanced way in the natural environment, unlike the intensive systems that invariably act favoring the development of pathogens, while negatively affecting the environmental characteristics and the defense mechanisms of the host (García et al., 2013).

Colossoma macropomum (Cuvier, 1818) (Characiformes: Characidae), known as tambaqui or gamitana, is an endemic species of the Amazon Basin and is considered the second largest fish in South America (Araujo-Lima & Goulding, 1997). The C. macropomum can reach up to 90 cm in length and 30 kg of total weight and is a highly appreciated species with great acceptance on the Amazonian market being regarded as an eatable fish of the highest quality (Gomes et al., 2006).

Ectoparasites infections on fishes are commonly encountered in the wild and in aquaculture (Hoffman, 1999). Among ectoparasites, Ichthyophthirius multifiliis Fouquet, 1876 is a cosmopolitan ciliate protozoan, which causes parasitism called ichthyophthiriasis, or popularly known as “white spot disease”. This parasite presents direct life cycle and short generation times, which may result in high infestation intensities (Noga, 2010). It is considered one of the most pathogenic parasites in fish affecting several species without showing host specificity (Yao et al., 2011).

In the present study, a case of infestation of I. multifiliis and mortality of C. macropomum is reported from a fish-farm located in the Peruvian Amazon.
According to Faria et al. (2013) tropical fish tolerate temperature between 25 and 32 °C, dissolved oxygen 1 – 5 mg·L⁻¹, pH 6.5 – 9 and ammonium with values below 0.05 mg·L⁻¹. It is known that unsuitable environmental conditions and abrupt variations of the temperature, pH and oxygen concentration in aquaculture can render fishes more susceptible to parasites (Garcia et al., 2007). In the present study, low values in the temperature together with high values of ammonium may have influenced the parasitism of *I. multifilis* in *C. macropomum* due to stress and weakening of the fish immune system.

In the Amazon, August is a month that corresponds to low water season, characterized by days with hot temperatures. However, in some days, strong rains with considerable reduction of the temperature may occur. As it was noticed in this study, strong oscillations of the temperature were registered before the presence of the pathology. High values in ammonium may be as a product of excessive organic and inorganic matter present in the water. At just 150 m of the pond, there is a farm of pigs (Fig 1B.). Residues of their food and also excrement of these animals are dragged by rains until the ponds, increasing the concentration of ammonium in the water.

Fish of importance for world aquaculture are affected by *I. multifilis* every year, from carp
Figure 2. Specimen of Colossoma macropomum (Cuvier, 1818) with signs of “white spot disease”. B. Observation of the gills of a specimen of C. macropomum. C. Body of a specimen of C. macropomum with white spots. D. Observation of damages on the gills of a specimen of C. macropomum. E and F. Microscopical observation of Ichthyophthirius multifiliis Fouquet, 1876.
Cyprinus carpio Linnaeus, 1758 (Witeska et al., 2010), trout Oncorhynchus mykiss (Walbaum, 1792) (Picón-Camacho et al., 2012), catfish Ictalurus punctatus (Rafinesque, 1818) (Xu et al., 2012), Oreochromis niloticus (Linnaeus, 1758) (Pantoja et al., 2012) and of native fish species such as the catfish Pseudoplatystoma reticulatum Eigenmann & Eigenmann, 1889 (Jerónimo et al., 2013), catfish Rhamdia quelen (Quoy & Gaimard, 1824) (Garcia et al., 2011) paco Piaractus mesopotamicus (Holmberg, 1887) (Franceschini et al., 2013), and gamitana C. macropomum (Matthews, 2005) decreasing the chances of success of the production of these fish.

The rate of ichthyophthiriasis morbidity can reach up to 100%, causing great economic losses (Osman et al., 2009). In severe cases of infestation, deaths occur primarily due to respiratory impairment (Wei et al., 2013). Microscopic lesions such as ulcers and necrosis of the integument and gill associated with the severe inflammatory response are commonly described in this disease (Matthews, 2005). In the present study, a new case of infestation of I. multifiliis is reported in the Peruvian Amazon. Our results showed also a case with 100% of mortality, observing ulcers in the gills that cause the death of the fish.

To prevent the manifestation of diseases and the death of fish, prophylactic measures and proper management such as adequate location of the pond together with the water supply must be implemented for fish-farmers. Daily evaluations of physico-chemical parameters are recommended, especially in regions with tropical weather, where strong oscillations of the temperature may be present from one day to another.

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Received October 20, 2018.
Accepted December 12, 2018.