

THE USE OF GEOTECHNOLOGIES TO ASSESS THE RISK OF *Neoechinorhynchus buttnerae* (Acanthocephalan) DISSEMINATION IN FISH FARMS IN THE MACHADO RIVER BASIN, RONDÔNIA

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Rondônia is Brazil's leading producer of tambaqui (*Colossoma macropomum*), with approximately 56 thousand tons in 2024 (PeixeBR). Despite its economic relevance, regional aquaculture has been increasingly challenged by outbreaks of the acanthocephalan *Neoechinorhynchus buttnerae*. Transmission is linked with the presence of ostracods in aquatic environments, often transported by macrophytes and algae, in addition to failures in biosecurity practices, such as the absence of quarantine for fingerlings and the uncontrolled transfer of fish between farms. In Rondônia, most earthen ponds are directly connected to surface water bodies and are frequently interconnected, creating a high risk of disease spread throughout the drainage network. To address this issue, a project based on geographic information systems (GIS) was developed to: (i) map earthen ponds using satellite imagery, (ii) classify pond water sources (rain-fed, groundwater, or dammed surface water), (iii) delineate the hydrographic basin and drainage network as the spatial unit of analysis, (iv) identify georeferenced occurrences of *N. buttnerae*, and (v) evaluate hydrological connectivity to generate three classes of infection risk exposure (low, moderate and high) to support monitoring strategies. Findings indicated that ponds supplied by dammed streams or located directly within river channels presented the most vulnerable due to their direct upstream connectivity with farms. By contrast, ponds supplied by rainwater or groundwater were classified as lower risk, although still susceptible to infection through the introduction of contaminated fingerlings or the transfer of fish between farms. Priority monitoring areas were identified downstream from confirmed infection sites, where topographic position and hydrological connectivity increased the likelihood of parasite spread. These findings demonstrate that geotechnologies provide strategic tools for sanitary surveillance in aquaculture, enabling the identification of critical areas, supporting preventive actions, and guiding more effective decision-making in response to outbreaks of *N. buttnerae*.