

ABSTRACT

Investigation of Factors Affecting the Prevalence of Selected Parasites and Bacterial Pathogens on Three Species of Freshwater Catfishes Exported from Trinidad

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There is an active wild-caught export market for freshwater fishes from Trinidad, in particular the catfish species *Hypostomus robinii*, *Ancistrus* sp. and *Corydoras aeneus*. Currently there is a dearth of information on the prevalence of bacterial infections and parasitic infestations of these fishes which has implications for fish health, trade and zoonotic infections of collectors. In this study, the factors affecting the distribution of parasitic infestations as well as bacterial infections of the three catfish species exported from Trinidad were investigated. A total of 1197 catfishes from 46 sites within 10 drainages across Trinidad were collected and analyzed, together with physical, chemical and bacteriological quality of habitat water.

Catfish densities differed significantly ($P < 0.05$) amongst species, river order, season and drainage (river basin). Among the bacterial pathogens investigated, the prevalence of *Aeromonas* spp. (36.7%) was the highest followed by *Pseudomonas* spp. (13.6%), *Escherichia coli*. (8.1%), *Plesiomonas* spp. (6.1%), *Serratia* spp.

(4.7%), *Vibrio* spp. (3.9%) and *Salmonella* spp. (0.5%). Generally, *H. robinii* had the highest prevalence of bacterial pathogens followed by *Ancistrus* sp. and *C. aeneus*. Human pathogenic serovars of *Salmonella* sp. (Kottbus, Indiana and Caracas) were isolated from *H. robinii* and serovar Bousso was isolated from one water sample. The presence of bacteria in water was significantly ($P < 0.05$) associated with the presence of the same bacterial species in fishes. Generally, season, drainage, river order and catfish species also significantly ($P < 0.05$) influenced the presence of bacterial species. However, water quality parameters had no influence ($P > 0.05$) on bacterial association with fish. Most of the bacterial species were highly resistant to commonly used antibiotics.

H. robinii had the highest association with parasites: *Argulus* sp. (5.3%); freshwater mussel glochidia or eggs (6.2%); *Dactylogyrus* sp. (0.2%). Some of the fish (1.9%) also had a condition that manifested as hard wart-like growth of unknown etiology. *Argulus* sp. was noted to have a localized distribution in two 2nd Order rivers of the Caroni Drainage. Other parasites were also found to be associated with *Ancistrus* sp., *H. robinii* and *C. aeneus*: leeches (3.8%, 6.0% and 20.3% respectively, overall prevalence 7.3%); nematodes (3.8%, 2.1 % and 13.6 % respectively, overall prevalence 3.5%); unknown cyst (1.9%, 5.6% and 10.2% respectively, overall prevalence 5.8%) and unknown arthropod (5.8%, 5.3% and 0.0% respectively, overall prevalence 4.8%). Generally, drainage, river order and catfish species were significantly associated with ($P < 0.05$) parasite types.

In conclusion, organisms identified and water quality played only a small role in the health of the catfishes. There are however health risks to the collectors and persons handling the fishes since the bacteria identified have potential zoonotic implications.

Keywords: *Ancistrus* sp., *Corydoras aeneus*, *Hypostomus robinii*, *Aeromonas* spp., *Pseudomonas* spp., *Plesiomonas* spp., *Serratia* spp., *Escherichia coli*, *Vibrio* spp., *Salmonella* spp., freshwater mussel, glochidia, *Argulus* sp., *Dactylogyrus* sp., leeches, water quality.