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Parasite-host interactions at elevated temperatures- Getting into hot water: Sick guppies frequent warmer thermal conditions

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One of the major predicted effects of climate change within 50 years is a 4-6°C projected increase of ambient temperature. Many of the effect of these increases to tropical freshwater ecosystems those are still unknown. One particular importance is the interaction of ectoparasites and their ichthyofaunal host during this increase in temperature. This project proposes a series of experiments at elevated temperatures investigating fish behavior on a model species, the Trinidadian guppy (*Poecilia reticulata*), parasite tolerance, parasite interactions and parasite transmissions (*Gyrodactylus turnbulli*). A choice chamber experiment was used to investigate the thermal preferences of *P. reticulata*, when infected with a common helminth ectoparasite *G. turnbulli*, in female-only and mixed-sex shoals. The temperature tolerance of *G. turnbulli* was also investigated by monitoring parasite population trajectories on guppies maintained at a continuous 18, 24 or 32°C. Regardless of shoal composition, infected fish frequented the 32°C choice chamber more often than when uninfected, significantly increasing their mean temperature preference. Parasites maintained continuously at 32°C decreased to extinction within three days, whereas mean parasite abundance increased on hosts incubated at 18 and 24°C. We have showed for the first time that gyrodactylid-infected fish have a preference for warmer waters and speculate that sick fish exploit the upper thermal tolerances of their parasites to self-medicate. The implications of this on tank based aquaculture will be discussed as a potential mechanism for ectoparasite control on fish.

Biography

Ryan S Mohammed is currently pursuing his PhD in "Aquatic parasite and host dynamic at elevated temperature" at The University of the West Indies. He is also the President of the Aquaculture Association of Trinidad and Tobago and the Chairman of the Tilapia Task Force under the Ministry of Agriculture, Land and Fisheries. His main research interest lies in Aquatic Ecology and Aquaculture.

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