Snail fever expected to decline in Africa due to climate change

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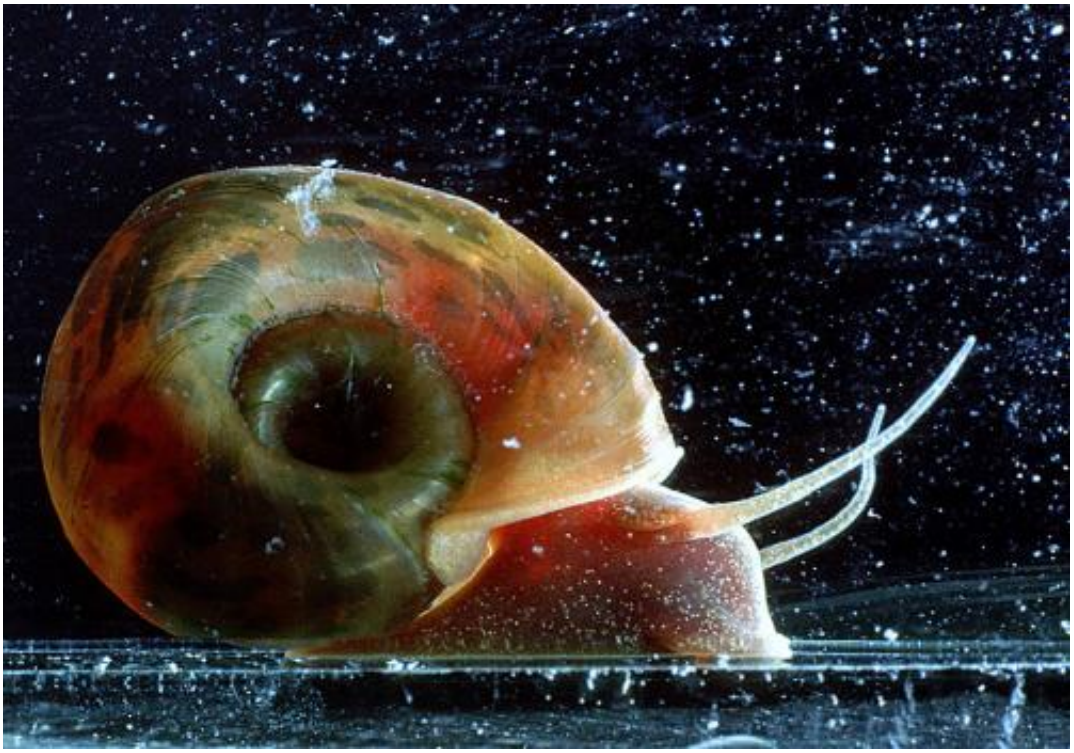

Several of the freshwater snails acting as intermediate host for the schistosomiasis parasite, are predicted to have fewer climatically suitable habitat areas in the future. Credit: Henry Madsen, Department of Veterinary Disease Biology.

The dangerous parasite *Schistosoma mansoni* that causes snail fever in humans could become significantly less common in the future a new international study led by researchers from the University of

Copenhagen predicts. The results are surprising because they contradict the general assumption that climate change leads to greater geographical spread of diseases. The explanation is that the parasite's host snails stand to lose suitable habitat due to climate change.

"Our research shows that the expected effects of climate change will lead to a reduction in suitable habitats for four out of five species of host snails for the parasite. According to our models, several areas will become too hot for the snails in the future and new precipitation patterns will affect the freshwater areas where they live", says postdoc Anna -Sofie Stensgaard from the Danish National Research Foundation Center for Macroecology, Evolution and Climate at the University of Copenhagen.

Schistosomiasis is an infectious disease caused by parasitic flatworms of the genus *Schistosoma*.They infect humans by penetrating the skin when in contact with water. They spread in freshwater areas such as rivers and lakes where fresh water snails act as intermediate host for the parasite's larvae.

Therefore, the snails' habitats are of great importance for the spread of the disease.

Up to 19 % reduction in infectious areas

The researchers modeled the changes in snail habitat from today to 2080 under various climate change scenarios, and what that will mean for the spread of the parasite. The forecasts show up to 19 % reduction in the total geographical area of infection risk in Africa, as the geographical distribution of the main host snail will be reduced significantly.

"Our results are consistent with the scientific view that climate change leads to lower biodiversity, but not that climate change necessarily leads

to a greater spread of diseases", Anna -Sofie Stensgaard explains about the study that has just been published in the scientific journal *Acta Tropica*.

New areas at risk

Even though the overall infection is predicted to decline in Africa, the study also identifies some areas where the disease could spread. Senior researcher Thomas Kristensen from the Department of Veterinary Disease Biology explains:

"Our models are not designed to pinpoint changes on a local scale but they provide an overall picture of a decline in areas suitable for the parasite in West and Central Africa, while it may be able to establish itself in new areas especially in Africa's southern regions."

In addition, climate change will affect the host snails differently and one of the studied species actually stands to benefit from the changes. The study underlines that it is essential to include biological knowledge of different host species in the models to gain robust future scenarios for the spread of diseases.

Climate is not everything

The research also shows, however, that climate is not necessarily the most important factor for the spread of diseases such as snail fever. Natural and human-induced changes of the snails' habitats, which are difficult to predict, may also play a very important role.

"Over results highlights that especially anthropogenic environmental change - in combination with climatic factors - is crucial for the present distribution of host snails in Africa", concludes Anna -Sofie Stensgaard.

This is consistent with other studies showing that man-made changes in the environment such as the damming of rivers, irrigation of fields and construction of large water reservoirs can create new habitats for the snails, which could in turn increase the risk of infection.

The research was conducted in collaboration with researchers from Switzerland, Zambia, Uganda and Cameroon.

Provided by University of Copenhagen