National Institute of Environmental Health Sciences

Biomphalaria alexandrina in Egypt: Past, present and future

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Abstract:

The African species of Biomphalaria appeared as a result of the relatively recent west-to-east trans-Atlantic dispersal of the Biomphalaria glabrata-like taxon. In Egypt, Biomphalaria alexandrina is the intermediate host for Schistosoma mansoni. Biomphalaria alexandrina originated in the area between Alexandria and Rosetta and has historically been confined to the Nile Delta. Schistosoma mansoni reached Egypt via infected slaves and baboons from the Land of Punt through migrations that occurred as early as the Vth Dynasty. The suggestion of the presence of Schistosoma mansoni infection in Lower Egypt during Pharaonic times is discussed despite the fact that that there is no evidence of such infection in Egyptian mummies. It is only recently that Biomphalaria alexandrina colonized the Egyptian Nile from the Delta to Lake Nasser. This change was likely due to the construction of huge water projects, the development of new water resources essential for land reclamation projects and the movement of refugees from the Suez Canal zone to the Delta and vice versa. The situation with respect to Biomphalaria in Egypt has become complicated in recent years by the detection of Biomphalaria glabrata and a hybrid between both species; however, follow-up studies have demonstrated the disappearance of such species within Egypt. The National Schistosoma Control Program has made great strides with respect to the eradication of schistosoma; however, there has unfortunately been a reemergence of Schistosoma mansoni resistant to praziquantel. There are numerous factors that may influence the prevalence of snails in Egypt, including the construction of water projects, the increase in reclaimed areas, global climate change and pollution. Thus, continued field studies in addition to the cooperation of several scientists are needed to obtain an accurate representation of the status of this species. In addition, the determination of the genome sequence for Biomphalaria alexandrina and the use of modern technology will allow for the study of the host-parasite relationship at a molecular level.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Food/Water Quality, Temperature

Food/Water Quality: Other Water Quality Issue

Water Quality (other): pollution

Temperature: Fluctuations

Geographic Feature: ☒

resource focuses on specific type of geography

Freshwater

Geographic Location: ☒

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: Egypt

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Schistosomiasis

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☒

format or standard characteristic of resource

Research Article, Review

Timescale: ☒

time period studied

Historical

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content