

# Potential impacts of water hyacinth invasion and management on water quality and human health in Lake Tana watershed, Northwest Ethiopia

Ayenew Gezie · Workiyie Worie Assefa · Belachew Getnet · Wassie Anteneh · Eshete Dejen · Seid Tiku Mereta

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**Abstract** Incursion of water hyacinth, *Eichhornia crassipes*, has been a potential threat to Lake Tana and its ecosystem services. Its expansion is currently managed by abstraction (removing by hand); nonetheless, the disposal of mats and formation of pools are remaining problematic. This study aimed to assess the potential effects of water hyacinth and its management on water quality and human health. Biotic and abiotic data were collected on open water, water hyacinth covered and water hyacinth cleared out habitats. A total of 3673 invertebrates belonging to twenty-one families were collected from 45 sites. *Culicidae* was the most abundant family accounting (37.2%), followed by *Unionoidea* (19.4%) and *Sphaeriidae* (8.1%). Abundance of anopheline and culicine larvae were significantly higher in water hyacinth cleared out

habitats ( $p < 0.05$ ). Water conductivity and total dissolved solids were significantly higher in habitats covered with water hyacinth ( $p < 0.05$ ). In conclusion, water hyacinth infestation had a negative impact on water quality and biotic communities. The physical abstraction of water hyacinth provided a very good habitat for the proliferation of mosquito larvae. Therefore, integrating water hyacinth management practices along with mosquito larvae control strategy could help to abate the potential risk of malaria outbreak in the region. In addition, developing watershed scale nutrient management systems could have a vital contribution for managing water hyacinth invasion in the study area.

**Keywords** Blue Nile · Lake Tana · Macroinvertebrate · Mosquito larvae · Water hyacinth

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A. Gezie · W. W. Assefa · W. Anteneh  
Department of Biology, Bahir Dar University,  
P.O. Box 79, Bahir Dar, Ethiopia

B. Getnet  
Department of Political Science, Bahir Dar University,  
P.O. Box 79, Bahir Dar, Ethiopia

W. W. Assefa · B. Getnet  
Blue Nile Water Institute, Bahir Dar University,  
P.O. Box 79, Bahir Dar, Ethiopia

E. Dejen  
Intergovernmental Authority on Development,  
P.O. Box 2653, Djibouti, Republic of Djibouti

A. Gezie · S. T. Mereta (✉)  
Department of Environmental Health Sciences and  
Technology, Jimma University, P.O. Box 378, Jimma,  
Ethiopia  
e-mail: seid.tiku@ju.edu.et