

## Abstract

This thesis discusses the author's inception and development of the Chigoe Flea Eradication Project (CFEP) and Tungiasis eLibrary web mapping applications, created to raise awareness about and actively combat tungiasis, a disease of poverty caused by the microscopic flea *Tunga penetrans*. The CFEP was designed to illustrate the efficacy of web GIS as a disease management strategy by establishing a collaborative virtual workspace for aid workers, aid organizations, and governments of afflicted regions. The apps empower the movement of epidemiological data from the local scale to the global scale using volunteered geographic information (VGI). Community aid workers can use the CFEP to track the provision of field surgeries, shoes, and medicine, to record patient demographic data, and to document the use of pesticides in sleeping shelters and communal areas during visits to stricken villages. At a regional scale, aid groups involved in tungiasis prevention and education are invited to provide contact information and delineate service boundaries on a map using the CFEP interface. The second app, the Tungiasis eLibrary, was developed in response to recent changes in World Health Organization (WHO) policy creating a pathway to assign new diseases to the neglected tropical disease (NTD) classification, which introduces greater opportunities for awareness and funding. As part of a reclassification request, WHO member states or regions are invited to submit a petition including a profile of the disease and its distribution. The Tungiasis eLibrary, a collection of georeferenced scientific literature pertaining to the disease, was designed with the intent to serve as that profile for tungiasis. The eLibrary app is populated by VGI in the form of scientific literature, white papers, and data contributed to the eLibrary by researchers and activists. Additionally, the collected articles are displayed on a global map, developing the first-ever authoritative global spatial distribution of tungiasis.