Detection of Pathogenic *Leptospira* species DNA in Mānoa Stream

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ABSTRACT
Hawai‘i has one of the highest rates of leptospirosis in the United States. Leptospirosis is a zoonotic infection caused by pathogenic *Leptospira* bacteria. A common route of transmission is through contact with soil or freshwater contaminated with urine from infected animals. Previous studies have demonstrated that rodents and feral pigs can act as reservoirs for *Leptospira* species. In 2004, two confirmed cases of leptospirosis were identified following contact with flood waters after the Mānoa stream overflowed. While the presence of *Leptospira* species is acknowledged in freshwater sources in Hawai‘i, pathogenic *Leptospira* species detection at different locations at different times has not been evaluated. We chose to evaluate Mānoa stream because of its history as a source of *Leptospira* and proximity to homes and schools. To determine the presence of pathogenic *Leptospira* DNA in Manoa stream, water samples from two locations along the Mānoa stream were collected. Two-liter water samples were passed through sterile gauze prior to vacuum filtration with a 0.22um filter. DNA was extracted from the filter membrane. DNA concentration was analyzed by spectrophotometer. Probe-based qPCR was performed targeting the *lipL*32 gene, used for the selective detection of pathogenic *Leptospira* species. The *lipL*32 gene was detected at one of the two locations, suggesting an environmental presence of pathogenic *Leptospira*. Water sampling at additional locations along Mānoa stream for DNA extraction and bacteria isolation are ongoing.

KEY WORDS: Leptospirosis, Mānoa stream, qPCR, DNA

ACKNOWLEDGEMENTS: This research was supported in part by the Yoshitsugi Hokama Endowment, Department of Tropical Medicine and School of Life Sciences.