

Program Name: Invasive Species Population Management
Project Name: **Metagenomic survey in south Florida waters**
Project ID: 2606
Lead Agency: USDA/ APHIS Wildlife Services National Wildlife Research Center

Strategy and Biennial Report Objective Addressed: 2-B.2
Invasive Species Strategic Action Framework Goal: 2

Measurable Output(s): Taxa identified from water in and near ENP

Project Synopsis: Metagenomics uses the technology of genome sequencing to obtain sequences of every piece of DNA in a single environmental sample. These are then compared to publicly available databases such as the National Center for Biotechnology Information to assess taxonomic diversity and abundance, from bacteria to birds, within a sample. This is a powerful tool for detecting species that are found in low numbers and/or are difficult to detect through traditional field methods. We have applied this tool, using cutting-edge technology, to samples of water from Everglades National Park and surrounding areas to identify the suite of invasive, native, and endangered species within the Park. The metagenomics approach could be applied as a regular monitoring tool and would be extremely powerful used in conjunction with traditional surveillance methods to measure and preserve biodiversity in our natural communities.

Current Status: Water samples were analyzed using the Titan supercomputer at Oak Ridge National Laboratory. Tentative identifications were made on thousands of taxa from viruses to mammals. These include many disease organisms and invasive species. Positive taxonomic identifications require specific genetic verifications which have yet to be performed, pending NPS input and recommendations.

Discussions with NPS scientists resulted in no definitive guidance for pursuing this line of research. At this time, continuation of the research will depend on availability of funding from sources outside USDA.

Project Schedule:

Start Date: 2014

Finish Date: ongoing

Detailed Project Budget Information

	2014	2015	2016	2017	2018	Balance to Complete	Total
Federal	\$22,000	\$12,500	\$12,500	\$12,500	\$12,500	\$50,000	\$72,000
SFWMD**							
Local							
Total	\$22,000	\$12,500	\$12,500	\$12,500	\$12,500	\$50,000	\$72,000

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