

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Bacterial Source Tracking, Many Glacier, Glacier National Park
Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: University of Montana
Effective Dates: 5/1/2005 - 3/1/2006
Funding Amount: \$3,024.00

Investigators and Agency Representative:

NPS Contact: William R. Michels, Glacier National Park, PO Box 128, West Glacier, MT 59936, Ph. (406) 888-7917, bill_michels@nps.gov

Investigator: James E. Gannon, University of Montana, Division of Biological Science, Campus Drive #32, HS 104, Missoula, MT 59812, Ph. (406) 243-2471, Jim.gannon@mso.umt.edu

Project Abstract:

It is currently unknown if the Many Glacier wastewater treatment facility (WWTF), which discharges into a set of percolation ponds, represents a source of fecal contamination to a regional beaver pond or to Swiftcurrent Creek. Permits associated with upgrading of the WWTF would require this type of information. The underlying question that the GNP would like answered is "are the fecal organisms found in the beaver pond (or Swiftcurrent Creek) from human or other animal origin?"

Researcher are interested in working with NPS at the Many Glacier WWTF project for two reasons: 1) they are working to develop an emerging technology known as Microbial (or Bacterial) Source Tracking (MST or BST), and 2) the GNP site (localized but with relatively broad human and animal inputs) and expertise of Park personnel (animal behavior issues) will greatly facilitate an investigation of fecal coliform sources.

BST is an area of active research in Europe and the US; it represents a method to determine the host origin of (fecal) bacteria or viruses. Most methods require development of a host origin database which allows comparison of the molecular fingerprint of an unknown fecal bacterium (E. coli in this proposal) with E. coli from many animal sources in the database including humans. At present, experts in the technology agree that BST can reliably determine if fecal bacteria are either from human or animal sources. If the bacteria are from animal sources, BST can also tell if the animals are livestock or wildlife, but less reliably than the human vs. animal distinction. Current methodologies have had less success in achieving distinctions between different types of livestock (e.g. cattle, horse, swine, poultry, etc.) or wildlife (e.g. deer, waterfowl, raccoon, etc.) or pets (dogs, cats, etc.). Many in the molecular biology community believe that such discrimination is feasible, but that it will require enhancing the resolution of the molecular methods used.

Outcomes with Completion Dates:

Final report of results in early fall of 2005.

Keywords: bacterial source tracking, E. coli, Many Glacier, Glacier National Park, University of Montana, sewage treatment plant

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Date Annual Report Received:
Date Final Report Received:
Publications, etc. on file: