



Citizen Scientists Needed to Study Mercury in Dragonflies

Study Description:

Mercury threatens natural resources the NPS is charged with protecting. This citizen science project encourages students and visitors in national parks to collect dragonfly larvae for mercury analysis. The study connects people to parks and provides baseline data to better understand the spatial distribution of mercury contamination in national parks. Mercury is a globally distributed contaminant that can harm human and wildlife health. The main source of human-caused mercury in remote national park environments is atmospheric deposition from coal-burning power plants. Dragonfly larvae (immature dragonflies, *Odonata: anisoptera*) can serve as indicators of ecosystem health by characterizing the risk and transfer of mercury around food webs. These aquatic insects build up high levels of mercury because they are predatory and are long-lived underwater. Dragonfly larvae are also widespread across the U.S. (allowing comparisons among parks), important prey for fish species, and relatively easy to collect. Additionally, dragonfly larvae reflect the mercury sensitivity of a specific watershed. This citizen science project expands the geographic scope of research previously conducted by scientists and directly implements the Call to Action by enlightening a new generation of citizen scientists about biodiversity and the influence humans have upon natural systems. Educational content for use by interpretive and research learning center staff is also available to build an effective science-based park program.



A high school student samples dragonfly larvae in May 2012 with NPS staff at Great Smoky Mountains NP, North Carolina.

Parks Involved:

Twelve national parks in 12 states collected dragonfly larvae samples during the 2012 season. Funding expands the study by 10-15 parks (including urban parks) in 2013, and also enhances the protocol to foster biodiversity discovery opportunities and curriculum development. We'd be thrilled if your park and local citizen scientists got involved... Can you participate?

Sampling Procedure:



*Odonata,
Corduliidae*

Dragonfly larvae (left) are collected using dip nets and by wading near shore in streams, ponds, or wetlands. Upon collection, individual larvae are placed in zipper-seal bags, and later shipped on ice to UMaine for analysis. Individuals are identified to family and length is measured. Water samples are also collected for mercury and mercury-relevant chemistry. Participating parks will receive a sampling kit that includes all supplies except larger items like a dip net. Two to three water bodies are selected per park, and 15 individual larvae are requested from each sampling site. There is no cost to parks.

Study Timeline:

Dragonfly larvae samples can be collected anytime during the 2013 field season. Sampling kits will be sent out on an as needed basis. Data will be available by June 2014 as both a report and database, and a webinar will share results.

Participating Agencies and Partners:

University of Maine | Schoodic Education and Research Center (SERC) Institute | University of Wisconsin La Crosse
Dartmouth College | NPS Air Resources Division | participating national park units

For More Information:

Visit http://www.nature.nps.gov/air/Studies/air_toxics/dragonfly/index.cfm, or contact:

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