

Dragonfly Mercury Project

Engaging citizens with resource conservation



Overview

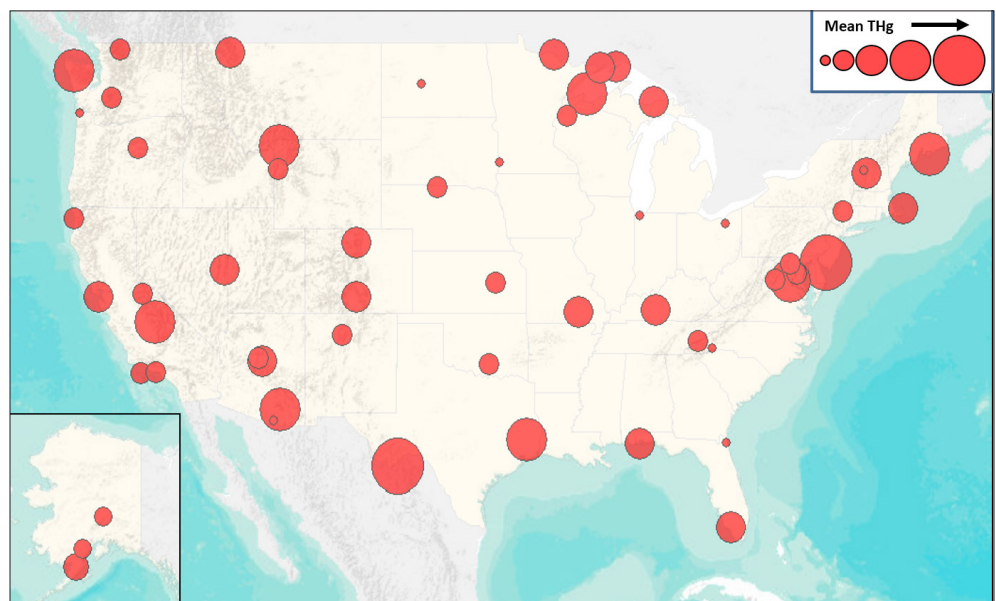


The Dragonfly Mercury Project (DMP) is a dynamic national scale program coupling scientific efforts to understand mercury pollution risks to protected areas with citizen engagement and education. Developed in collaboration with US Geological Survey (USGS), University of Maine (UMaine), and the National Park Service (NPS), and implemented at more than 100 national parks across the country, the DMP utilizes citizen scientists as key participants in data collection of dragonfly larvae, which serve as indicators of mercury in aquatic food webs. This research helps the NPS better manage risk and protect resources and park visitors from the ill effects of mercury, a toxic pollutant that can harm human and wildlife health. Entering its 9th field season in 2019, the DMP seeks to untap its potential - increase data relevancy, enhance the experience of the public participants, expand partnerships, and inform sound resource management decisions.

Data

Results indicate that: (a) dragonfly larvae are widespread and effective bioindicators of ecosystem risk to mercury – providing a technique that connects people with parks and parks with science; (b) the risk from mercury varies widely across the landscape, influenced by a combination of mercury emissions and deposition, landscape processes that control the entry of mercury into aquatic food webs, and food web structure; and

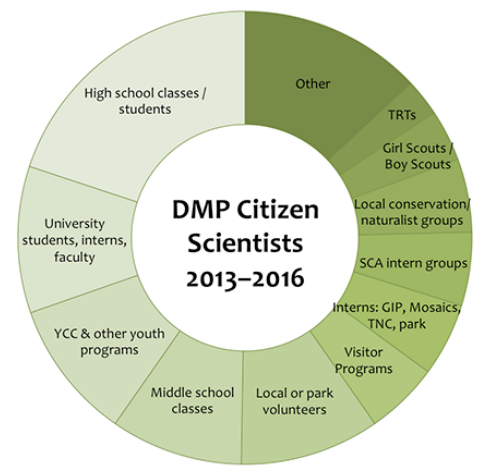
(c) concentrations vary as widely within parks as across parks – facilitating development of models to predict risk across unsampled water bodies in order to prioritize future conservation and research efforts. These core findings have been summarized in numerous national and international presentations at scientific meetings, a USGS fact sheet, a project report, and several pending journal articles.



Mean total mercury (THg) concentrations in dragonfly larvae from national parks.

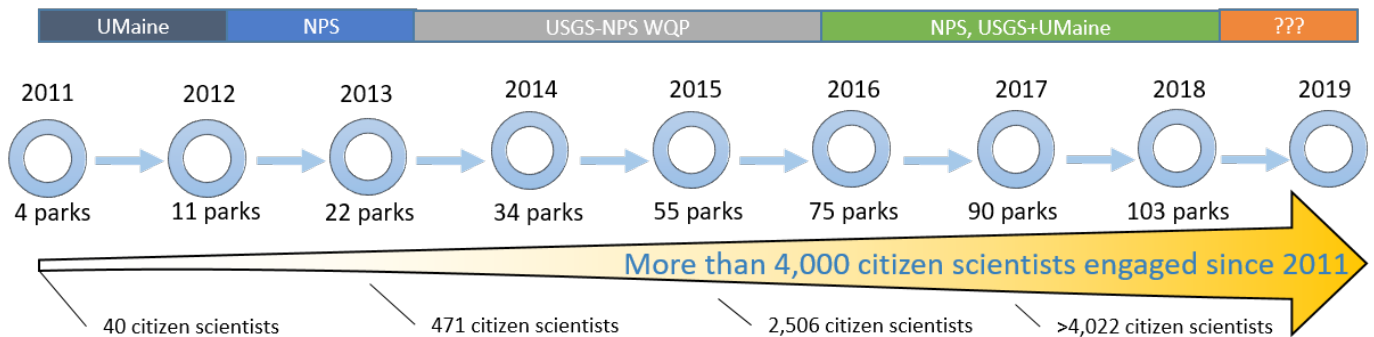
Citizen Science Participants

The DMP utilizes citizen scientists, such as students, as key participants in the sample collection of dragonfly larvae. The scope and broad geographic coverage of this sampling is only possible because of public participation. DMP goals for citizen scientist engagement are to: (1) provide an opportunity for biodiversity discovery; (2) connect people to parks; and (3) provide for education and outreach about mercury, both sources of it and effects. Since the DMP's inception, more than 4,000 citizen scientists have engaged in the study, contributing 10,000 hours or the equivalent of 2.5 FTEs. The majority of citizen scientist participants fall into three main categories based on the interview results: high school students (20 percent), interns and youth groups (24 percent), and local community groups (15 percent).



DMP= Dragonfly Mercury Project; GIP= Geoscientist-in-Parks; SCA= Student Conservation Association; TNC= The Nature Conservancy; TRTs= Teacher-Ranger-Teachers; YCC= Youth Conservation Corps.

Timeline of Funding Progress and Support



Next Steps: DMP Steering Committee

The DMP is an excellent example of an experiential partnership that brings together government and academic scientists, resource managers, and public participants of all ages. Facilitated by extensive training materials and protocols, it provides a hands-on means for connecting people to parks and science, and helps the NPS move forward with its second century of park stewardship and public engagement.

The DMP's success has resulted in substantial growth of the project with the opportunity to expand across DOI lands. The core DMP team has assembled a steering committee to transition

the project's initial stages of development and growth to long-term sustainability, with the ultimate goal of identifying core stakeholders (organizations interested in contributing to or using the data, or interested in the educational and engagement aspects of the project) beyond the NPS and the USGS, refining the project to meet the needs of those stakeholders, and eventually establishing base funding. Committee members include representatives from the US Fish & Wildlife Service, US Environmental Protection Agency, National Park Foundation, USGS, NPS, and UMaine. With an overall vision to broaden the study's impact, the committee will convene in the fall 2018.

For More Information

Project Webpage:
<http://go.nps.gov/dragonflymercury>

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References: Eagles-Smith, C.A., et al., 2018, USGS data release, <https://doi.org/10.5066/P9TK6NPT>.

Flanagan Pritz and Nelson, 2017, Maine Policy Review 26.2: 50-54, <http://digitalcommons.library.umaine.edu/mpr/vol26/iss2/9>.

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