COMMUNICATION PLANNING WORKSHEET

Issue/Event	Dragonfly Mercury Project (DMP)
Date	
Comm team	OEO + Colleen Flanagan Pritz/Melanie Peters
Parks involved	DMP Map--All Years

Background:

What

The Dragonfly Mercury Project (DMP) is a national-scale study coupling citizen engagement and education with scientific efforts to understand mercury pollution risks to protected lands.

The DMP is unlike any other Servicewide study. It combines easy to achieve fieldwork, collecting dragonfly larvae samples, with sophisticated laboratory and data analyses to shed light on the risk of mercury contamination across varied ecosystems of our national parks. Ultimately, such research can help the NPS better manage risk and protect resources and park visitors from the ill effects of mercury.

Mercury is a toxic pollutant that can harm human health and wildlife health. Mercury often enters parks as air pollution from distant, human-caused, sources, like coal-burning power plants. Once mercury reaches parks, it can enter the food web and build up in top predators.

Dragonflies are predators in aquatic systems. They live as larva in water bodies for up to 9 years eating insects and even small fish. Mercury levels build up in the larvae, making them good indicators of the amount of mercury in system, water quality, and the health of local fauna, including fish. Dragonfly larvae are also easy to capture and identified.

The information generated by the DMP helps park managers understand where mercury contamination is elevated. This will inform the resource management strategies and raise awareness of the potential for mercury contamination of fish in seemingly pristine areas. The data will shed light on ecosystem health by characterizing the risk and potential transfer of mercury around food webs.

The program's purpose is to:

1. Increase the understanding of mercury contamination in national parks across the United States
2. Engage and educate citizen scientists in the collection of scientific data
3. Inform NPS policy and management decisions

Who

The Dragonfly Mercury Project is a partnership between the University of Maine (UMaine), US Geological Survey (USGS), the National Park Service, and other institutions. The NPS Natural Resource Stewardship and Science Directorate Air Resource Division coordinates the project for the NPS. The USGS conducts mercury analyses and manages the database. UMaine coordinates park participation and leads outreach and reporting of results.

The study began as part of Acadia Learning, a collaboration among Schoodic Institute at Acadia National Park, UMaine, and Maine Sea Grant. The project was funded in large part by the NOAA B–WET (Bay Watershed Education and Training) Program and the University of Maine through Faculty Research Funds.

Early on, the research wasn't solely focused on dragonflies and wasn't concentrated in national parks. That changed when UMaine and NPS ARD teamed up in 2011 and worked with 4 NPS units to pilot the collection and analysis of dragonflies for mercury, along with partners at Dartmouth College. The study grew from there. In 2014, USGS joined the effort, receiving an NPS/USGS Water Quality Partnership grant that expanded and funded the project for three years, effectively coining the study "Dragonfly Mercury Project". The partnership among UMaine/USGS/NPS is expected to continue into the foreseeable future.

Over 100 NPS units from California to Maine and Alaska to Florida have participated. Since 2013, more than 4,000 citizen scientists have contributed more than 10,000 hours and collected close to 8,750 dragonfly larvae for the DMP. Each year, parks are recruited to participate in the study. Many parks continue to participate over many years, as funding allows.

How

The DMP involves citizen scientists in data collection. Volunteer citizen scientists ranging from elementary school students to retirees work with park staff to gather dragonfly larvae in parks across the country, enabling the project to cover a broad geographic scope while minimizing the cost of sampling. Thousands of participants and volunteer hours yield data that would have been impossible for the NPS to collect or fund directly. The involvement of citizen scientists contributes to our understanding of park resources and conservation while engaging the public in hands-on science experiences. In many cases, these experiences also include supplemental programs using a variety of outreach materials that have been developed by the DMP and participating parks to improve scientific literacy and engagement.

Project Timeline

- March/April/May: ARD recruits parks based on how many parks they can involve
    - Three partners present a webinar, usually in May: findings from previous years, sampling plan for coming year, outreach materials that are available.
- June/July/August: parks coordinate sampling logistics
    - Parks reach out to citizen science groups/partners/organizations to recruit public participants
    - Parks plan the day and location for sampling: DMP supports up to 3 sampling sites per park in

new or priority parks, and at a minimum, parks are asked to bring citizens to 1 site; some sites are remote and hard to include citizen scientists. In past DMP participating parks, the DMP can support only as many sites per park as funding allows. Generally, it is requested that these parks provide their own funding to support the project in their park.

- Parks freeze samples, then send shipment to USGS (on dry ice) after all sites are sampled (usually by September)
- The DMP aims to provide raw data to the parks within 3 months of receiving sample, with all data distributed no later than 1 year after the sampling season. Distribution includes:
    - 2-4 page park-specific overview of the data (Data Flyer) for each participating park, outlining park-specific data and comparison to the country for the park manager and to help staff understand and interpret the data
        - Data Flyer can then be further translated for the public audience

Important Links
Citizen Scientists Study Mercury in Dragonfly Larvae Project Page
Dragonfly Mercury Project Teaching Tools
DMP Data Web Map
US Geological Survey 2014-2016 data release

does this issue surround sensitive data and/or potentially controversial topics? if yes, explain NO

does this need to be coordinated with WASO comm? NO. *OCOMM has reviewed already….*

Audience(s):

x	participating park units	x	partners (universities, USGS)
x	citizen scientists	x	public

Goals:

The goal of the communication plan is to encourage parks and programs to share messages and help visitors understand the value and outcomes of the Dragonfly Mercury Project.

Audience-specific Communication Goals
Public Audience

1. Demonstrate the value and contribution of citizen science
2. Encourage people to seek out citizen science opportunities

3. Explain how mercury enters the food web
4. Raise awareness about pervasiveness of mercury is in the environment, & that air pollution can travel to pristine, remote places such as national parks
5. Encourage stewardship of parks
6. Show that NPS conducts and uses science to deal with ecological issues

NPS Audience (park DMP-POCs, PIOs, social media managers, interpreters)

1. NPS uses consistent messages to talk about the Dragonfly Mercury Project
2. Parks know where to get communication tools

Key Message(s):

- **Mercury** is a harmful contaminant for both humans and wildlife.
    - Mercury can impair the function of the brain and nervous system. Information about the health effects of exposure to mercury can be found on the EPA's website: https://www.epa.gov/mercury/health-effects-exposures-mercury
    - Mercury exposure can also impact wildlife. High mercury concentrations in birds, mammals, and fish can result in reduced foraging efficiency, survival, and reproductive success.
- **Mercury** can be transported by wind, dust, snow, and rain thousands of miles from its source and deposited in seemingly pristine park waters. Mercury is one of many air pollutants with potential adverse impacts on the scenic and natural resources in our national parks.
    - Sources of mercury include human-cause sources such as coal-burning power plants and natural sources such as volcanoes.
    - Some land and water management activities such as prescribed fires, wetland restoration, and reservoir fluctuations can influence how much mercury gets into the environment. Understanding the effects of management activities helps managers best decrease risks to humans and wildlife.
- **Dragonfly larvae** are excellent indicators of mercury in the food web.
- **Citizen scientists** are vital to understanding the extent of mercury contamination in park waters and other science topics.
- **Partnerships** make this project succeed.
- Ultimately, such **research** can help the NPS better manage risk and protect resources and park visitors from the ill effects of mercury. Results from the DMP can be used to:
    - track changing mercury levels in park ecosystems,
    - inform NPS involvement in the regulation and permitting process for new air pollution sources, and
    - provide impartial science to inform management decisions.

Workplan

TIMELINE - SUGGESTED Activities in Parks

This communication plan is intended to present background information and a set of key messages that the NPS can use when an NPS unit participates in the Dragonfly Mercury Project. The messages can be refined to reflect the park's resources and significance. The remainder of the plan is a template that can be downloaded and adapted for park use. Refer to this plan as you develop your communication approach.

✓	Release Date	Task	Topic/Key Points	Staff Assigned
	Spring/Summer	announce participation in DMP (if trying to recruit) (social media)	• great citizen science opportunity	
	Sampling Season	Show citizen scientists involved in collection (post on social media, NP Gallery, Flickr) Notify NRSS and DMP contacts of post and photo locations to share. NRSS Social Media Manager (Brittni_Connell@nps.gov) NRSS DMP Coordinator (Colleen_Flanagan_Pritz@nps.gov) Six-legged Scouts in the National Parks (Facebook) (Sarah.J.Nelson@maine.edu)	• citizen scientists make the scope of the DMP possible	
	When data is released	Share results of DMP (press release, social media, CMS article) Notify NRSS Social Media Manager of posts Brittni_Connell@nps.gov	• harmfulness of mercury contamination • amount of mercury in park waters • wildlife potentially at risk • connection to management topics • value of citizen science contribution	

TASKS BY TOPICAL AREA OR PLATFORM

✓	Task	Staff Assigned	Due/Release Date	Status/Notes
	Web / Social Media			

	Shared content/articles
	• DMP article
	• DMP Results and Reports in IRMA
	• Mercury contamination
	  ○ human health
	  ○ wildlife health
	• DMP Data Web Map:
	• Parks adapt park data reports for public audiences in CMS article format
				CMS tags: Dragonfly Mercury Project, citizen science, mercury contamination,dragonfly, mercury, air, water, biology
				
				Articles will appear on these pages:
				Citizen Science: What We Do
				Air: Mercury and Toxics in Nature
				Air: Science
				Air: Citizen Science

	Guidelines for social media			
	Public Publications			
X	Rack card			
	Media Relations			
	Talking points for media			

Approved by
NRSS Division Chief _____

Park _____
Region _____