

2018 Environment and Natural Resources Trust Fund Proposals
Additional Information

ENRTF ID #	Last Name	First Name	Proposal Title	Organization	\$ Requested
A. Foundational Natural Resource Data and Information (SELECTED TO PRESENT: 20 Proposals / Subtotal = \$15,738,794)					
004-A	Weiblen	George	Minnesota Biodiversity Atlas: Phase II Expansion	U of MN	\$ 496,000
030-A	Duncan	Nancy	Data Acquisition to Develop Native Mussel Habitat Suitability	National Park Service	\$ 309,778
C. Environmental Education (SELECTED TO PRESENT: 17 Proposals / Subtotal = \$7,495,311)					
111-C	Poppleton	Kristen	Youth Convening Minnesota	Climate Generation: A Will Steger Legacy	\$ 300,000
114-C	Yakub	Mohamed	Integrating Environmental Science Research in High School Education	U of MN	\$ 445,000
E. Air Quality, Climate Change, and Renewable Energy (SELECTED TO PRESENT: 7 Proposals / Subtotal = \$6,637,374)					
166-E	Walsh	Kayla	Life Cycle Analysis of Anaerobic Digestion and Organics	Minnesota Pollution Control Agency	\$ 250,000
169-E	Randolph	Jimmy	Bringing Geothermal Power to MN: CO2 Power-System Test	TerraCOH Inc.	\$ 315,250

Diana Griffith

Subject: ENRTF ID: 004-A - LCCMR 2018 Proposal Selection for Further Consideration & Presentation Info

Dear Michael,

Thank you for the invitation to last month's hearing. My apologies for overlooking the memo and not confirming beforehand. I appreciated the opportunity to present and the excellent questions from the commission.

There was one question from a member of the commission about usage statistics for the Minnesota Biodiversity Atlas. I've checked our records and we've had 77,000 queries since December 1, when we installed a mechanism to exclude the bots that were haunting the system. We also currently have 73 natural resource professionals among our registered users. Registered users have privileges over and above general users of the Atlas.

My collaborators and I look forward to next week's deliberations. Thank you for

Best regards,

George



United States Department of the Interior

NATIONAL PARK SERVICE
Mississippi National River and Recreation Area
111 E. Kellogg Blvd., Ste 105
St. Paul, Minnesota 55101-1256

IN REPLY REFER TO:

October 11, 2017

Michael McDonough, Interim Director
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear Mr. McDonough:

This letter is a follow-up to questions posed at our testimony before the Commission regarding the proposal ID: 030-A "Data Acquisition to Develop Native Mussel Habitat Suitability", presented on Tuesday September 26, 2017. Michael Varien asked us to provide this additional information to the Committee.

We recently held a conference call with interested stakeholders including the U.S. Army Corps of Engineers (USACE), MN DNR, Univ. of MN, and Macalester College. In addition to these entities, numerous other stakeholders have expressed interest in the products delivered from this project. Listed below are some of those stakeholders with information on how this data would benefit them, along with previous LCCMR funded research that could apply this data to their projects. Acquisition of bathymetry data for this stretch of the Mississippi River and the lower St. Croix will provide an important building block towards acquisition of benthic data for these areas in the future. The desire/interest in collecting this high-resolution bathymetry is strong across all stakeholders.

Although the Mississippi National River Recreation Area's boundary only includes the lower 4 miles of the Minnesota River, the data acquisition could supplement ongoing sedimentation studies at the confluence of the Minnesota River with the Mississippi River. The data would also provide baseline information for future studies looking at where sediment deposition is occurring. Pertaining to dredging, the USACE collect their own sonar data for dredging purposes. However, this dataset could certainly supplement their datasets, specifically near shorelines.

If you have any additional questions, please don't hesitate to contact me at: 651-293-8434 or nancy_duncan@nps.gov.

Sincerely,

Nancy Duncan
Natural Resource Program Manager
National Park Service
Mississippi National River and Recreation Area

cc: Michael Varien

Current & Past LCCMR Projects

2017:

Rearing Native Mussels for Reintroduction and Expanding Water Quality Awareness, MN Zoological Garden

<http://www.lccmr.leg.mn/projects/2017-index.html#201704c>

Aquatic Invasive Species Research Center - Phase II, U of MN

<http://www.lccmr.leg.mn/projects/2017-index.html#201706a>

Invasive Bighead Carp and Silver Carp and Native Fish Evaluation - Phase II, MN DNR

<http://www.lccmr.leg.mn/projects/2017-index.html#201706c>

2016:

Enhancing Understanding of Minnesota River Aquatic Ecosystem, MN DNR

<http://www.lccmr.leg.mn/projects/2016-index.html#201603i>

Restoring Native Mussels in Streams and Lakes, MN DNR

- *Reintroduce up to six species historically present in the Mississippi River to Upper Pool2 in St. Paul.

- *Propagation and reintroduction of three federally endangered mussel species (Higgins' eye, snuffbox, and winged mapleleaf) and one state threatened species (mucket) will continue in the Mississippi River between the Ford Dam and the Mississippi/Minnesota River confluence. Additional species, such as the federally listed sheepsnose and spectaclecase, are currently being propagated and planned to be added to this effort.

<http://www.lccmr.leg.mn/projects/2016-index.html#201604c>

2015:

Assessing Ecological Impact of St. Anthony Falls Lock Closure, Minneapolis Riverfront Partnership

<http://www.lccmr.leg.mn/projects/2015-index.html#201503p>

Using Hydroacoustics to Monitor Sediment in Minnesota Rivers, USGS

<http://www.lccmr.leg.mn/projects/2015-index.html#201504g>

Shoreland Protection for the Lower St. Croix River, St. Croix River Association

<http://www.lccmr.leg.mn/projects/2015-index.html#201508j>

2014:

Conserving Minnesota's Native Freshwater Mussels, U of MN

<http://www.lccmr.leg.mn/projects/2014-index.html#201405k>

2013:

An Aquatic Invasive Species Research Center, U of MN

<http://www.lccmr.leg.mn/projects/2013-index.html#201306a>

Detection and Monitoring of Asian Carp Populations, MN DNR

- * allow researchers to determine areas to target from an increased understanding of their biology, associations with native species, and catch records

<http://www.lccmr.leg.mn/projects/2013-index.html#201306b>

1999:

Freshwater Mussel Resources in the St. Croix River, Macalester College

<http://www.lccmr.leg.mn/projects/1999-index.html#199915b>

INTERESTED STAKEHOLDERS and Other Potential Users

River Associations

Friends of the Mississippi River

- Support work that addressed the three-fold goals of land conservation, watershed protection, and river corridor stewardship

Saint Croix River Association

- Supporting the following 3-year goals and strategies
 - Convene and work with key players to reduce the sediment and nutrients enter the St. Croix River and its tributaries
 - Support best efforts to eliminate or reduce the impacts of aquatic invasive species

MNDNR

- increase knowledge of riverine ecosystem in and bordering the State.
- mussels are important in MN
 - In Minnesota, 28 of our 50 native mussel species are listed as endangered, threatened, or of special concern,
 - 3 species have been extirpated (are now extinct from MN),
 - at least 3 more species are in imminent danger of extirpation

MNDOT

- Data layer can be used to examine river crossing in this area
 - Road and railroad
- Construction of roads along riverway/floodplain

USFWS; USGS; NPS

- Aquatic/benthic natural resource applications - hydraulic models & habitat models
- invasive species: asian carp, zebra mussels; eurasian milfoil

- habitat assessments/restoration
- fisheries management
- channel geomorphology/sedimentation: channel formation; migration; erosion
- flood reduction studies

USACE

- Navigation control and assessment of the navigation channel
- Supplement navigation channel data with shoreline and off channel areas.
- Additional data to supplement UMRR LTRM bathymetry and topobathy data, as Pool 1 and the lower St. Croix river currently does not have bathymetry

FEMA

- Flood Hazard Mapping
- Hazard Mitigation Planning

UMRBA (Upper Mississippi River Basin Association)

- Navigation
- Ecosystem restoration

MRCTI (Mississippi River Cities and Towns Initiative)

- ties to the memo of common purpose with MRCTI and USGS
- interest in healthy ecosystems and in particular the tie to mussels filtering nutrients.

MN Local Universities

- UMN
- MN State Mankato
- St Mary's University of MN
- Macalester College
- St Cloud State
- Others

*Information products can be used by researchers at these institutions to facilitate future research for native mussel, invasive species, flood reduction, aquatic habitat assessments, and sedimentation research.

Public: Fisherman; Developers; Farmers; Floodplain landowners

WIDNR

- Currently there are 39 species of mussels (commonly called clams) found along the Wisconsin portion of the Mississippi River. Their distribution varies between localized and rare populations to those that are more widely found such as the giant floater and pocketbook. Mussel populations have been affected by pollution, siltation, development and the zebra mussel invasion as well changes in the river ecology

- Wisconsin DNR-Mississippi River Fisheries Biologists have been responsible for evaluating the effects of development and management activities on mussel populations in cooperation with other agencies in addition to monitoring the mussel harvest.

WIDOT

- Data layer can be used to examine river crossing in this area
 - Road and railroad

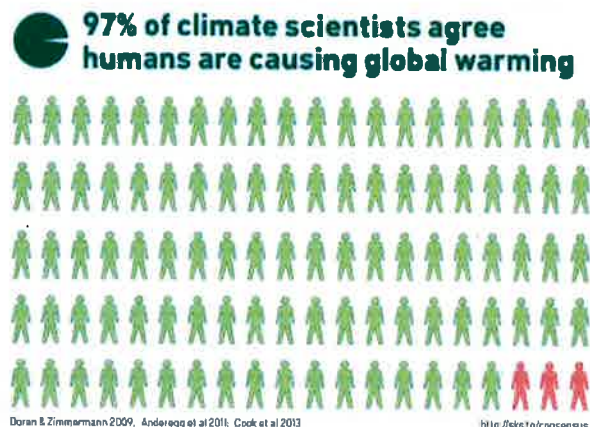
Members of the Commission:

Thank you for the opportunity to share the following information to clarify some of the statements that were made during our presentation on our project, *Youth Convening Minnesota* (ID: 111C, Project Manager: Kristen Poppleton) on September 28, 2017. There were three key questions that emerged during our conversation that are important to address. They have been answered below, with links to the sources at the end of this document.

Key Questions:

- Who says climate change is real, important, and that human activities are the chief source of the problem?
- How is the Heartland Institute incorrect in their claim that climate change is nothing to worry about?
- Why do some people claim climate change is not real?

Who says climate change is real, important, and that human activities are the chief source of the problem?



Ninety-seven percent of scientists—including the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA)—agree that humans are causing climate change. Burning fossil fuels (oil, coal, natural gas) to run our power plants, vehicles, and factories produces carbon dioxide, the most predominant greenhouse gas. The earth's atmosphere acts like a blanket around the earth, trapping the sun's heat in the lower atmosphere and causing the Earth's surface to warm.

Pope Francis' Encyclical reads...

A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system. ... A number of scientific studies indicate that most global warming in recent decades is due to the great concentration of greenhouse gases (carbon dioxide, methane, nitrogen oxides, and others) released mainly as a

Senator Lindsey Graham

I'm a Republican. I believe that the greenhouse effect is real, that CO2 emissions generated by man is creating our greenhouse gas effect that traps heat, and the planet is warming.

Our Minnesota State Climatologist Mark Seeley

I can tell you emphatically and without reservation that our climate is changing, and changing at a remarkable pace, but it's also having significant consequences already. Our data (dating back to 1850) is screaming at us, literally, that our climate is changing.

Now 50 Members strong, **the Climate Solutions Caucus** is evidence that there is a growing, diverse, and bipartisan coalition of Members of Congress ready to put petty politics aside and find meaningful solutions to the challenges posed by sea level rise and climate change. We have a responsibility to our constituents and future generations to present a united front to combat anti-climate policies and to have a productive, fact-based dialogue about market-oriented solutions, investments, and innovations that could mitigate the effects of climate change and make our nation more resilient.

National polls show 69% of Minnesotans think climate change is happening.

How is the Heartland Institute incorrect in their claim that climate change is nothing to worry about?

1. They get the facts wrong.
 - a. The Heartland Institute's most recent booklet asserts that climate change would "probably not be harmful" and "many areas of the world would benefit from or adjust to climate change." This overlooks the already documented harmful effects of climate change including droughts, flooding, extreme weather events, and massive human migrations already occurring because of this.
 - b. The booklet also asserts that contemporary climate change is inside "normal natural variability," and that sea ice losses, sea level changes, droughts, and extreme weather events are all happening as if no human was involved. These claims fly in the face of what serious climate researchers are documenting worldwide.
2. They misrepresent the scientific consensus.
 - a. Heartland claims it knows better than 97% of the scientific literature and the scientists who produce it. In support of their assertion they offer nothing. No data sets from ice cores, no analysis of ocean sediments, no revolutionary interpretations of tree ring data.
3. They cast doubt on the firmly established scientific process.
 - a. When a paper has been peer-reviewed, that means it has been evaluated



CLIMATEGENERATION
A WILL STEGER LEGACY

by a number of qualified scientists and found to have followed legitimate scientific methods. Most of the claims that are made by the Heartland Institute not based on peer-reviewed science.

4. They use sham citations.

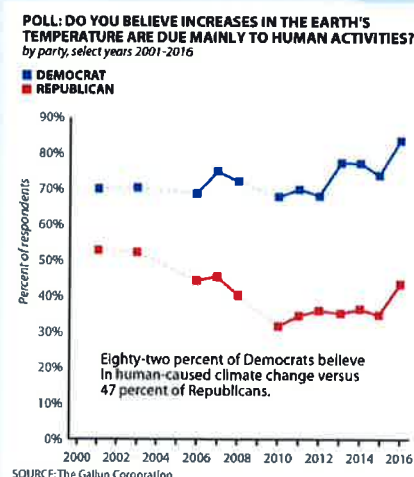
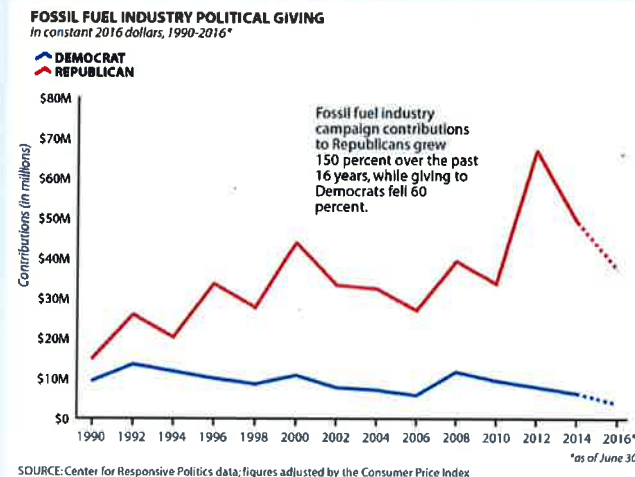
	IPCC	NIPCC
Purpose	Provide world governments with balanced assessments of climate change based on the best science available	Criticize the IPCC
Scope of work	Assessments include all scientific literature related to climate change	Assessments include mostly scientific literature that questions climate change, much of it written by NIPCC members
Number of scientific papers cited	9,200	72
Number of pages	2,500	993
Number of authors	209	49
Number of editors	2	59
Compensation to authors	volunteer	paid
Representative funding sources	United Nations Environmental Program, World Meteorological Organization, world governments	ExxonMobil, American Petroleum Institute, Donors Trust, Charles G. Koch Charitable Foundation

The table compares the Heartland Institute's NIPCC's *Climate Change Reconsidered II, Physical Science* with the IPCC's Working Group I Contribution to the Fifth Assessment Report (IPCC). The IPCC will issue three additional reports in 2014 as part of the Fifth Assessment, which will roughly triple the number of scientific papers reviewed, number of pages, number of authors, and number of reviewers for the IPCC column. Reference for the NIPCC funding sources: http://www.ucsusa.org/assets/documents/global_warming/Fossil-Fuel-Industry-Funders-of-Climate-Contrarian-Groups-2001-2011.pdf

Why do some people claim climate change is not real?

Fossil-Fuel Funding to GOP Grows, and So Does Climate Divide

Partisan polarization on climate change has grown starker, new research shows. And campaign contributions follow a parallel path: Ninety percent of fossil fuel money now flows to Republicans versus 10 percent to Democrats. In 2000, that ratio was 60-40.



PAUL HORN / InsideClimate News

Sources:



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Encyclical

http://i2.cdn.turner.com/cnn/2015/images/06/18/papa-francesco_20150524_enciclica-laudato-si_en.pdf

Climate Solutions Caucus

<https://citizensclimatelobby.org/bipartisan-house-climate-solutions-caucus-reaches-50-member-milestone/>

Minnesota Climate Change Primer- MPR

<https://www.mprnews.org/story/2015/02/02/climate-change-primer>

Yale Opinion Polls

<http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/>

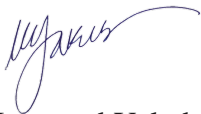
*Twin Cities Campus**Student Services Office
College of Food, Agricultural and
Natural Resource Sciences**190 Coffey Hall
1420 Eckles Avenue
St. Paul, MN 55108
Phone: 612-624-6768
Fax: 612-625-8737
<http://www.cfans.umn.edu>*

9 October 2017

Legislative-Citizen Commission on Minnesota Resources:

I submitted an LCCMR proposal this year to engage high school students in environmental based research (114-C: Integrating Environmental Science Research in High School Education) and was invited to present it to the committee. I appreciated the discussion that ensued, and I learned that I cannot ask LCCMR for funds to pay stipends. Based on this discussion and further reevaluation, I write to clarify that the 40 high school teachers who participate in this program will be expected to conduct research for no less than 160 hours, and they will be expected to design an experiment that they can setup and carry out at their schools engaging their students in ongoing research. As they conduct research, teachers will also be working with graduate students whilst supervising undergraduate students. Thus they will have deliverables which they will present before getting their summer pay. Rather than stipends, these will be summer paid positions at different research and outreach centers or University of Minnesota campuses, where teachers will conduct environmental based research. This adjustment does not change the total amount that teachers would receive, pending they work the number of hours and provide specific deliverables, and thus does not change the total amount we are requesting.

Thank you



Mohamed Yakub
University of Minnesota

Diana Griffith

From: Gauthier, Greta (MPCA) <greta.gauthier@state.mn.us>
Sent: Friday, October 6, 2017 7:58 AM
To: Diana Griffith
Subject: FW: Response to LCCMR

Hi Diana,

I'm following up on questions yesterday during our presentation of 166-E from LCCMR member Della Young about a new waste-to-energy facility in McLeod County.

We have inquired and learned that there have been small rumors about a private entity considering some kind of AD facility in McLeod County, things are in very early stages and there have been no official announcements.

Please let me know if members have further questions.

Thank you,

Greta

Michael Varien

From: John Griffin <j.griffin@terracoh-age.com>
Sent: Wednesday, October 04, 2017 9:31 AM
To: Michael Varien; Michael McDonough; Diana Griffith
Cc: Jimmy B. Randolph; Steve Price
Subject: Statue M.S. 116P.10

Michael, Michael, and Diane,

I am John Griffin, the CEO of TerraCOH, Inc.. TerraCOH presented yesterday at the LCCMR presentation session.

I looked up statute 116P.10 (Royalties, Copyrights, Patents, and Sale of Product and Assets), which is associated with the LCCMR. I have read the statute and fully understand it's implications for TerraCOH, if we are fortunate enough to be granted an award.

I attest that TerraCOH will fully comply to the conditions defined in Statute 116P.10, and to other conditions in the RFP that was the basis of our grant proposal.

A concern was expressed at the session yesterday as to where any grant money that was awarded to TerraCOH would be spent. I want both the Commission and the staff to understand that the project proposal we made will be implemented entirely in Minnesota. Our intention is to test this prototype power system in a variety of conditions that would duplicate the conditions at a field site. This testing is what our grant proposal covers.

If the grant is awarded to us, all this effort will be done in Minnesota. Subsequent to that initial testing, it is our intention to keep this system in Minnesota at a site where we can complete long term testing and act as a test unit so we can duplicate problems that may occur in the field for quicker resolution.

If you have any further questions, please contact Dr. Jimmy Randolph or myself. If there are other areas of our presentation, the Commission or the staff have questions on, please reach out and we will answer them.

Thank you,

John Griffin

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