



2019 GLISA Small Grant White Paper

Responding to Climate Change in the Diverse Shiawassee River Watershed

Authors: Patrice Martin, Rebecca Huska, Tom Cook

May 2023



Acknowledgments



This paper provides a summary of the 2019 GLISA small grant project awarded to the Friends of the Shiawassee River. The work was supported by NOAA grant NA15OAR4310148.

Patrice Martin: Friends of the Shiawassee River (former)

Rebecca Huska: Friends of the Shiawassee River

Tom Cook: Friends of the Shiawassee River (former)

Jenna Jorns: GLISA; editor

Recommended Citation

Martin, P., Huska, R., & Cook, T. (2023). Responding to Climate Change in the Diverse Shiawassee River Watershed. Friends of the Shiawassee River. GLISA, J. Jorns (Editor). <http://glisa.umich.edu/project/2019-glisa-small-grant-responding-to-climate-change-in-the-diverse-shiawassee-river-watershed/>

Available at: <http://glisa.umich.edu/project/2019-glisa-small-grant-responding-to-climate-change-in-the-diverse-shiawassee-river-watershed/>

Background and Approach

The Friends of the Shiawassee River (Friends) was founded in 1996 by a group of individuals who wanted to continue the work of Owosso (MI) resident, Jim Miner. Beginning in the 1970's, Miner organized some of the first volunteer river clean-up events in Owosso. These events inspired a generation of river stewards, and ultimately the formation of the Friends.

As advocates for the health of the Shiawassee River, and the entire watershed, the impacts of climate change cannot be ignored. The impacts of climate change are made manifest in the Shiawassee River in two significant ways: 1) extreme storm events that cause a rapid rise in water volume and levels in the Shiawassee River and its tributaries, many of which are managed as county drains and, 2) summer droughts that lower water levels and present stressors to aquatic life and challenges to recreational users of the river. In 2019, the Friends applied for and received funding through a 2019 GLISA small grant to help them build a knowledge base and share practical information with those impacted by changing water levels resulting from increased storm events and droughts.

The diverse characteristics of the watershed (urban and rural, agricultural and wild wetlands) result in differing climate-related challenges depending on location. Stakeholders experience climate change in various ways, requiring differing responses. General messages about climate change may not be well received, because they lack both geographic specificity and are not directed at the specific needs of each constituent group. Despite their varying perspectives, all stakeholders can identify with the Shiawassee River, a defining aspect of place.

The primary goals of the project, entitled "Responding to Climate Change in the Diverse Shiawassee River Watershed" were:

- An increased knowledge of climate change—and its local impacts—by the general public;
- And those connected to the Shiawassee River;
- Specific awareness of the impacts of climate change by constituencies including local government officials, riparian and lakeside residents, real estate developers, farmers and rural landowners, conservation agencies and agri-business professionals, anglers and hunters, wildlife enthusiasts and organizations, paddlers and other recreationalists ;
- Awareness of, and connection to, actions and resources that individuals and organizations can take to respond to climate change impacts; and,
- Increased connection and commitment to the environment/the Shiawassee River.

The original project team was comprised of: Lorraine Austin, Friends of the Shiawassee River, Executive Director/Lead Investigator; Sarah Baker, Friends of the Shiawassee River, Program Coordinator; Tom Cook, Friends of the Shiawassee River, Past President.

Over time, the project team grew to include: Rebecca Huska, Friends of the Shiawassee River, Events and Communications Coordinator; Patrice Martin, Friends of the Shiawassee River, Interim Executive Director.

The original project proposal was designed to engage with local stakeholders through a series of three workshops targeted to specific constituencies (recreational users of the river, farmers and other agricultural users, and local planners/decision makers), the creation of web page(s) with specific information on the localized impacts of climate change, links to potential resources to respond to and mitigate impacts, and a report on climate change in the Shiawassee River watershed made available online, through publication, publicity, and social media promotion.

COVID-19 restrictions and significant staffing changes at the Friends necessitated changes to the project approach, while focusing on the overall project goals. Virtual meetings with project team members and GLISA staff continued throughout 2020 and 2021. To move the project forward, a survey was developed with input from the Advisory Team and Devin Gill from the Cooperative Institute for Great Lakes Research (CIGLR). The results of this survey revealed a greater level of awareness than previously thought of climate change and its impacts, both locally and throughout the Shiawassee River watershed. Out of an abundance of caution, rather than conduct in-person workshops, the idea of virtual workshops was explored. This idea evolved into the model that we ultimately employed; a series of five, stand-alone, yet cohesive videos. The first video introduces the audience to the climate awareness work of the Friends,

provides education on the watershed and its ecosystems and shares highlights of the stakeholder survey. Videos two through four feature content specific to the three constituent groups we identified in our original project design: agriculture, recreation and local units of government. The final video is a call to action; featuring resources on mitigation and adaptation as we continue to grapple with the impacts of climate change.

Finally, we have designed a comprehensive web page featuring the video series, up-to-date links to critical climate data, and highlighting the data provided to us by GLISA.

Relationships

ASAP-GLISA RELATIONSHIP

The Friends had no prior relationship with GLISA.

STAKEHOLDER NETWORKS ENGAGED

Stakeholder networks were directly engaged through the survey, and through involvement with the production of the video series. We had 438 responses to our survey. 83% of respondents to the survey were from Shiawassee County; 70% were age 50 and over; and 95% of the respondents identified as White. Respondents self-identified as stakeholders in various areas, as shown below. Please note that respondents were allowed to pick more than one category:

- 38% recreational respondents
- 19% anglers/fishermen
- 14% hunters
- 10% agricultural sector
- 6% Public officials/civil servants
- 5% NGO's/Nonprofits
- 7% "other" - Nature watcher/hiker, river property owner, gardener, bicyclist, business owner.

The purpose of the survey was to learn more about what people knew and how they felt about changes in the watershed (weather changes, natural environmental changes, and built environmental changes). We did not use the term "climate change," but rather used terminology that was less reactionary – asking about the changes people had directly observed rather than trying to identify what the cause of those changes were. The choice to avoid the term "climate change" was informed by existing knowledge of the political climate, and therefore presumably controversial nature of the term, in Shiawassee County. We also asked for the zip codes of respondents and for their perceptions about our organization.

The survey was dispersed via social media and direct email with the help of our partner organizations: the Michigan Association of Planning, Shiawassee Conservation District, the Nature Conservancy in Michigan, and U.S. Fish and Wildlife Service.

The total number of respondents was much higher than anticipated, which we credited to the fact that our partner organizations' branding helped introduce us to stakeholders with whom we had not previously engaged. Many of the respondents were watershed residents and self-identified as recreationalists, and a significant number identified themselves as agriculturalists/growers. A much smaller number identified themselves as planners/government officials, but that was most likely due to the fact that there are far fewer of these in the general population. Most were aware of changes in the watershed and saw the health of the river getting better or staying the same. The vast majority were aware of the Friends' organization and saw it as a trusted information source.

The development of the video series engaged the following stakeholders:

- Local farmer with riverfront acreage;
- City of Owosso City Manager;
- Environmental Sanitarian, Shiawassee County Health Department;
- Former City of Owosso Mayor/avid paddler;
- Executive Director, Shiawassee River Water Trail Coalition; and,
- Conservation Specialist, Shiawassee Conservation District.

Each of these stakeholders represent entities with whom the Friends has worked in the past. However, the inclusion of these individuals in our video series has deepened our relationships. We now meet regularly with City of Owosso staff to explore collaborations based around the Shiawassee River, we are co-developing a public awareness campaign on non-point source pollution with the Shiawassee Conservation District and the Shiawassee County Health Department, and we partnered with the Shiawassee River Water Trail Coalition on a Clean Boats-Clean Water project designed to increase awareness of invasive species in the watershed.

Use of Climate Information and Services

The basis of our original proposal was to increase general knowledge of climate change and to use localized climate data provided by GLISA to support observations from the surveyed stakeholders of local climate change impacts. By using local data and drawing attention to the local impacts that people have observed, we also wanted to make the threat of climate change more tangible and immediate for the members of our community. We also intended to increase awareness of and connection to, actions and resources that individuals and organizations can utilize to respond to those climate impacts. As noted above, the original design had us providing three workshops to inform about climate change impacts and share mitigation strategies, as well as through a “Climate Awareness” webpage on the Friends’ [website](#). Ultimately, we elected to craft a video series that will accomplish the original intent of our project. Our webpage will be continually updated as new resources and GLISA-provided data become available.

We worked with Frank Marsik of GLISA at the University of Michigan to produce more watershed-specific climate data to share with our audience. This data was calculated using climate data from two points surrounding the Shiawassee River Watershed (SAGINAW MBS INTL AP MI W00014845 and FLINT BISHOP INTL AP MI W00014826), and includes annual average temperature increase, annual days per year exceeding one inch of precipitation increase, annual frost-free period increase, and annual total precipitation increase. This information will be shared through social media, will be present and updated regularly on our ‘Climate Awareness’ webpage, and is featured in the video series. We also worked with Marsik to create a document that highlights climate impacts from the Great Lakes region that are relevant to the Shiawassee River Watershed and features the watershed-specific data points.

We originally intended to produce three workshops, but due to COVID-19 restrictions, our original plans were altered. We were, however, able to conduct one speaker event featuring Naim Edwards, Director of MSU-Detroit [Partnership](#) for Food, Learning, and Innovation. Edwards’ presentation focused on the role of carbon dioxide in exacerbating climate change, its presence in all living things, and the ability of untilled soil and of trees to sequester carbon. This speaker event highlighted the potential for mitigation of climate change through carbon sequestration, specifically through the cultivation of food forests and other woody vegetation and minimizing soil disturbance. The presentation also encouraged the attendees to grow their own food, plant trees, and eat locally and seasonally.

Outcomes and Outputs

The project delivered the following outputs:

- “Climate Awareness” [web page](#) on the Friends website – available to the public and promoted on social media;
- Completed survey of local community members and stakeholders;
- Five videos featuring representatives of target stakeholder groups (i.e., agriculture, local government, recreation) discussing climate change impacts and mitigation efforts – available [online](#) and screened in the Friends’ annual meeting in March 2023;
- Graphics containing watershed-specific climate data – available [online](#) and promoted on social media;
- Mitigation-focused ‘Lunch and Learn by the River’ event – available [online](#); and,
- PDF document featuring climate impacts in Shiawassee River Watershed – available [online](#) and promoted on social media.

The outputs of this project are very new. We intend to track the impact of our efforts through ongoing conversations and collaborations with our key stakeholders. Our continuing commitment to being a reliable source of information on climate change, mitigation and adaptation will be demonstrated through our public awareness campaigns, our partnerships with key stakeholder organizations and our social media/online presence.

This project also contributed to various significant outcomes as defined by the NOAA CAP/RISA program:

- **Built, increased, or maintained assets, such as data, infrastructure, tools:** Due to the receipt of this sub-grant, the Friends have added a Climate Awareness page to its website. The page highlights the data provided by GLISA, links to relevant climate websites, articles and other data sources and the video series produced to spread awareness of climate change and mitigation and adaptation strategies.
- **Boosted learning outcomes, resulting in a deeper understanding of science or local knowledge related to climate, impacts, and adaptation:** While our efforts were mainly focused on assessing the knowledge base of our local residents, we learned that many of our partners are very well-versed in climate change and its impacts. Through our webpage and video series, our expected learning outcomes are an increase in the understanding of how climate change has impacted the Shiawassee River and its watershed, and how individuals and organizations are adapting. During the soil sequestration seminar (Lunch and Learn on the Shiawassee River), attendees were fully engaged with our speaker and asked deep questions relating to the topic and climate change.

Challenges and Lessons Learned

The original proposal and the final products share a consistent throughline, albeit slightly different deliverables. Our original proposal called for three workshops designed for specific stakeholders with an attendance of 50-150 people at each workshop (150-450 attendees in all), the creation of web page(s) with specific information on the localized impacts of climate change and links to potential resources to respond to and mitigate impacts and a report on climate change in the Shiawassee River watershed made available online, through publication, publicity, and social media promotion. Each of these deliverables were to be produced in late 2019 and through 2020. The COVID-19 lockdowns made the in-person workshops an impossibility, and curtailed our ability to collaborate with our GLISA partners.

The departure of Lorraine Austin, who appeared on our initial proposal as the lead investigator further complicated our efforts. Kirk Riley, who replaced Lorraine as executive director of the Friends, departed unexpectedly after less than nine months on the job. An interim executive director was hired and began work in the Friends’ office in June of 2022. Working with the Friends team and GLISA

staff to ensure that the original objectives of the sub-grant were met, the team elected to produce a series of videos featuring local stakeholders representing the three constituent groups targeted in the proposal. Further, the webpage design was broken down into the three areas of interest featured in the video series. We were also able to secure a speaker for a luncheon workshop held on the banks of the Shiawassee River. Collectively, we have achieved our expected awareness outcomes of:

- An increased knowledge of climate change--and its local impacts--by the general public and those connected to the Shiawassee River;
- Specific awareness of the impacts of climate change by constituencies including local government officials, riparian and lakeside residents, real estate developers, farmers and rural landowners, conservation agencies and agribusiness professionals, anglers and hunters, wildlife enthusiasts and organizations, paddlers and other recreationalists;
- Awareness of, and connection to, actions and resources that individuals and organizations can take to respond to climate change impacts; and,
- Increased connection and commitment to the environment/the Shiawassee River;

The original design of our proposal assumed a general lack of awareness of climate change and the impacts on the Shiawassee River and its watershed. The model presumed to educate local residents and communities and build awareness where little existed. However, our survey revealed that our assumptions were, in fact, incorrect. In hindsight, the design of our proposal may have been more robust had we better explored the level of awareness and knowledge of our local communities.

Next Steps

The project is complete insofar as our overall efforts are concerned. The video series is ready for its final edits, and our webpage is awaiting these final versions. The video of the Lunch and Learn workshop has yet to be edited, as well. Finally, we continue to collaborate with our GLISA project lead, Marsik to finalize the .pdf referenced in this document.

The Friends believes it plays an important role in amplifying reliable and relevant climate change, mitigation and adaptation information. As such, the Friends are dedicated to updating its Climate Awareness webpage on an ongoing basis as well as sharing updates to the GLISA data through our webpage and our social media platforms.