STEWARDSHIP FINAL REPORT

Synopsis

- **Project Title:** Youth Engagement & Monitoring
- **Grantee Organization:** Huron River Watershed Council
- **Project Team** (Please list all members of the project team who should be credited with contributions to the work, including name and institutional affiliation)
    1. Jason Frenzel, Huron River Watershed Council
    2. Paul Steen, Huron River Watershed Council
    3. Janet Kahan, Huron River Watershed Council
    4. Jennifer Kangas, Huron River Watershed Council
    5. Laura Rubin, Huron River Watershed Council
    6. Rebecca Esselman, Huron River Watershed Council
- **Contact Person** (Please identify the person(s) who should be contacted with questions about the work, providing a name, institutional affiliation, and e-mail address for each.
    1. Jason Frenzel, Huron River Watershed Council, jfrenzel@hrwc.org
- **Grant Amount:** $50,000
- **Time Frame:** 4/1/2018 – 3/31/2020
- **Focus Area:** Stewardship

FINAL NARRATIVE REPORT

Background/Overview

1. Briefly summarize the project description as outlined in the original proposal.

The Huron River Watershed Council's (HRWC) Youth Education and Stewardship project involves youth in river ecology and monitoring activities, applying science, engineering and math subject matter, and developing life-long stewardship values for Great Lakes water resources. Through hands-on, placed-based STEM education, students participate in water quality education programs, are introduced to scientific principles, apply classroom learning to real life applications, and develop stewardship knowledge. The goal is to create an environmentally engaged citizenry.

Specifically, HRWC engaged and taught 4th-12 grade educators on water monitoring and teaching techniques, and assisted them in obtaining or borrowing monitoring equipment. HRWC conducted river-side educational modules for the students; ran a ten week snorkeling program in the summer of

2018 and 2019 for YMCA campers; and ran monitoring events that combine students with people of various ages into teams to collect water monitoring data.

2. Was the project completed as originally intended? If not, indicate how the final outcome(s) differed from what was anticipated. Does your experience suggest that original expectations were realistic? What factors hindered or helped progress?

The program was accomplished as expected.

Outcomes

1. What activities were pursued in relationship to intended outcomes, and to what extent did you achieve the following intended outcomes listed in your proposal? (Merge intended outcomes from proposal.)

TASK 1. HRWC'S YOUTH SCIENCE EDUCATION PROGRAM

A. TRAIN EDUCATORS IN RIVER STUDY TECHNIQUES

In the spring, summer, and fall of 2018 and 2019, educators attended half-day HRWC training sessions on the standard methods of evaluating wadeable streams, including several biological and physical parameters and materials for classroom use. Dates were on 4/7/18, 5/8/18, 9/29/18, 4/5/19, 5/5/20, and 9/20/19. Attendee count were respectively 8, 21, 9, 26, 15, and 13.

B. ADVISE EDUCATORS AND ASSIST THEM IN ADAPTING TECHNIQUES TO THE CLASSROOM

HRWC guided each new participating teacher in locating one or two study sites, assisted them in selecting and obtaining equipment (either through direct purchase or borrowed from HRWC, both through this grant), and supported them in making and implementing their study plans. HRWC assisted the teachers in adapting scientific techniques to their classrooms.

C. STREAMSIDE EDUCATION PROGRAM

In 2018 and 2019, approximately 35 teachers from 13 schools and 1500 students participated in this program. At a stream near the school, HRWC staff and volunteers led groups of students in a series of hands-on modules that each teach a different aspect of stream ecology. Students studied the physical characteristics of the streambed and banks, took precise measurements such as stream stage, water flow, temperature, conductivity, and stream transects. Students were taught to recognize and document properties of the stream that provide habitat for aquatic plants and animals, as well as properties that make it difficult for living things to survive there. Students were taught how to collect aquatic benthic macroinvertebrates, how to identify them, what these organisms can tell us about the health of the stream, and how their physical adaptations allow them to live in a dynamic water system.

TASK 2. SNORKELLING AND SEINING PROGRAM

In partnership with Ann Arbor YMCA and Michigan SeaGrant, in the summer of 2018 and 2019 HRWC conducted ten weeks of summer educational program for middle school and high school aged students

where they visited a park along the Huron River and snorkeled to look for fish, underwater plants, and aquatic insects. Roughly 15 students per week attended these events (About 300 students over the two summers). The students also learned how to operate seines and dip-nets to catch fish and aquatic bugs and were taught how to identify them. Through a discussion-based lesson, the students were taught about the concept of a watershed, how pollution enters a river, and how good land management can alleviate pollution inputs to freshwater systems.

TASK 3. INTERGENERATIONAL VOLUNTEER MONITORING EVENTS

HRWC organized an additional 7 visits to the river aimed at exposing students to additional and more advanced monitoring techniques. During these events, elementary and high school students joined teams made of retired folks, parents and professionals of all ages, and college students. It is a wonderful opportunity for experienced older people, many of whom are retired engineers and scientists themselves, to communicate with and teach the younger generations. HRWC's intergenerational monitoring events included Benthic Macroinvertebrate Sampling and identification, water quality and stream flow monitoring, and invasive species monitoring.

2. What audience(s) were you particularly hopeful of reaching? To what extent did you reach them? Did you receive any feedback?

The Ypsilanti school district is particularly challenging to work with. Ypsilanti is the most underserved community in the Huron River watershed and the teachers from this district are under-funded and regularly leave their employment, which makes it difficult to build the long-term relationships which we need to have to make the program succeed. However, we were able to develop a strong partnership with the Southeast Michigan Stewardship Coalition (SEMIS), which provided funding to the Ypsi schools by providing rented vans so the students could attend the event. The combination of the GLFT project dollars supporting HRWC's coordination and staff time and the SEMIS project dollars in getting the students to reach the study site resulted in a very positive experience for all students involved.

3. What relationships or opportunities were developed or strengthened through the work?

Our strong relationships in the Ann Arbor High Schools have continued to blossom, bringing on new teachers and thus more students each year. While we have continued to struggle with keeping strong relationships in the Ypsilanti schools, we have had a few new relationships developed through the legwork in previous years. Turnover in the district continues to be an issue, but our network through the schools, district, and SEMIS Coalition (see question #2) continue to ensure our recovery from those disruptions is minimized.

4. Was an evaluation included as part of this project? If so, what were the key findings? (Please attach a copy of the evaluation report).

HRWC Pre Post Eval.docx

5. Whether they were intended or unintended, what do you consider the most important benefits or outcomes of this stewardship project?

HRWC's education program has been teaching students for over twenty years now, and the program is more organized and reaching more students now more than ever. The most important benefits that HRWC sees in running this program is the long term effects of having students experience the stream-side lessons and monitoring, eventually moving on to college with passion and motivation to take science classes, and finding careers where they can make real world differences. We have had several instances where past students have told HRWC that our programming made a real difference in their lives, which is very gratifying, and we hope that this is also the case for many people that we don't know about!

Related Efforts

6. Was this project a standalone effort or was there a broader effort beyond the part funded by the GLFT? Have other funders been involved either during the time of your GLFT grant or subsequently?

This project was not a standalone effort, and HRWC is continually searching for new funders to keep the long-term program alive.

7. Has there been any spinoff work or follow-up work related to this project?

Coronavirus issues have shut down our educational season in May 2020 and perhaps the fall of 2020, and the 2020 summer snorkeling program is currently in limbo. However, HRWC intends to continue to seek funding to conduct this important program in the future. We see this as a long-term program and one of HRWC's top organizational priorities. It ties in close with our water monitoring efforts which also influence our management activities.

Communication/Dissemination

8. List publications, presentations, websites, and other forms of formal dissemination of the project deliverables, tools, or results, including those that are *planned* or *in process*.

Through the GLFT grant, HRWC has been able to work with a small team of teachers in Ypsilanti to curate real scientific data for students to analyze in the classroom, after their field data collection. In this way, the connection between citizen science and professional data analysis will soon enrich more student's learning.

HRWC, along with youth from the programming, have presented at a regional conference put on by the SEMIS Coalition. This presentation tracked the trajectory of youth receiving HRWC's STEM education programming, through their growth and ultimate assistance in delivering the same programming to other youth. Portions of this program were also presented at the Michigan

Clean Water Corps conference on 11/19/19, The Stewardship Network conference on 1/12/19, a webinar to the River Network on 1/10/19, and a Stewardship Network webinar on 7/11/19.

Educational materials for program delivery and use by teachers can be found at this website: https://www.hrwc.org/what-we-do/programs/knowledge-networks-outreach/education-program/teacher-resources/. Here is an example of materials that were updated and/or created during the GLFT grant: https://www.hrwc.org/wp-content/uploads/Stream-Speed.pdf

Additionally, see Attachments, below.

9. Please characterize your efforts to distribute and encourage use of products, processes, programs, etc. developed through this grant.

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Reflections

10. Please describe any unanticipated benefits, challenges, surprises, and/or important lessons learned over the course of the project.

As noted earlier, our biggest challenges, wins, and lessons are related to underserved schools. The disproportionate amount of disruption that happens with fairly routine changes (such as a teachers changing positions) is significant. Creating additional infrastructure and redoubling social networks greatly assists in buffering these issues. We've had these challenges and successes in the past 2 years. While we understand that they will continue, we feel we have greater awareness and capacity to work within them and resolve them.

As part of the GLFT grant, We created and started using pre and post education event surveys. While the amount of reponses was low due to us not mandating the surveys, we still receieved results from 5 classrooms. The responses nearly entirely showed an increase in the complexity and depth of knowledge of water quality. A short report can be seen here:

https://hrwc.sharepoint.com/:w:/g/prop/EcfHMVGK0JxKn6Dpj23J6pcB_WaqIgOtpaC5CLOEUhNBkw?e=62qIHJ

11. What recommendations (if any) would you make to other project directors working on similar efforts or to the GLFT?

These are important activities. They are long term efforts that can produce immediate fruit, but the full impact of them is a slow societal change toward a population that is more scientifically minded and more appreciative of our natural systems. Therefore, the recommendation that HRWC offers is an encouragement to continue to fund these types of projects. They do make a difference for

our society, making us more culturally enriched, more in touch with people and nature, and producing long term benefits, even if distinct deliverables are hard to quantify.

Attachments

12. Please attach any reports or materials developed through the grant.

Blog: https://www.hrwc.org/stoneflies-in-the-snow/

Blog: https://www.hrwc.org/working-with-impact-hrwc-interns/

Blog: https://www.hrwc.org/river-roundup-april-2018/

Newsletter: Thank you to interns (page 3) (https://www.hrwc.org/wp-content/uploads/Huron-River-Report-Fall-2019.pdf)

Newsletter: Engaging Youth in Nature and Science (cover) (https://www.hrwc.org/wp-content/uploads/Huron-River-Report-Fall-2018.pdf)

Monitoring Reports: Stonefly Search 2020, https://www.hrwc.org/wp-content/uploads/Stonefly-Search-Report-Winter-2020-2.pdf

River Roundup, April 2019: https://www.hrwc.org/wp-content/uploads/River-Roundup-Summary-april-2019.pdf

River Roundup, October 2019: https://www.hrwc.org/wp-content/uploads/River-Roundup-Summary-oct-2019.pdf

Financial attachments:
"GLFT final report – detailed_budget_worksheet"

"GLFT Quickbooks report – final.pdf