

Project Name: Grand Traverse Adopt-A-Stream
Final Project Report (Project Code: # VSM2015-05)
Grantee Name: The Watershed Center Grand Traverse Bay

GOALS:

The main goal of the Grand Traverse Adopt-A-Stream (AAS) project was to significantly improve The Watershed Center's (TWC) current AAS volunteer monitoring program by increasing the number of consistently monitored sites, raising awareness of the program, and increasing the program's volunteer base. Launched in June 2003, AAS (then called "Stream Search") is TWC's bi-annual macroinvertebrate monitoring and habitat assessment program. Trained volunteers are assigned to a stream section within the Grand Traverse Bay watershed to monitor each spring and fall. In 2005, TWC received a MiCorps startup grant and started applying MiCorps standard volunteer monitoring procedures.

TWC's AAS program provides valuable water quality data that can be used to track stream trends and detect early changes to a stream system. The AAS program also serves as an important educational tool and is currently marketed as an asset to our freshwater community where members can take ownership and pride in their local streams, while engaging them in a fun, hands-on program and providing education to adults and children on water quality indicators and issues.

OBJECTIVES:

The purpose of this project is to significantly improve TWC's AAS volunteer monitoring program by:

- Increasing the number of consistently monitored sites by at least twelve to provide a larger dataset for the Michigan Department of Environmental Quality.
- Raising awareness of the program and provide information to the general public through biannual newsletters, press releases to area newspapers, radio stations, and television stations, and social media outlets such as Facebook, Twitter and e-news.
- Increasing the program's volunteer base by at least ten individuals by giving presentations to potential volunteer groups and creating educational materials about the program.

EXTENT TO WHICH GOALS AND OBJECTIVES WERE MET:

In general, all work plan goals and objectives were met successfully. Although TWC did increase the volunteer base by engaging at least ten new individuals, the number of consistently monitored sites did not increase over the project duration. However, the number of streams that are sampled in the AAS program did increase. Our failure to increase the number of consistently monitored sites may be due to a number of factors, which will be discussed in further detail below. In addition, we strongly believe this grant enabled us to strengthen and grow the AAS program. This included re-evaluating the program, raising program awareness and visibility, forging and maintaining volunteer relationships, building an AAS corporate sponsorship program, strengthening our quality assurance procedures, and expanding our training resources.

Task 1: Project Management

This task was completed successfully; grant reporting was timely with few problems that needed follow-up. Management of this project went smoothly, with some unforeseen challenges that were overcome by the project's end. One of the challenges was staffing changes and delays in getting a new AAS Program Coordinator in 2016. This led to a pause in grant activities and two requested timeline extensions. The first timeline extension request of two months was to enable the Program Coordinator to gain the experience of conducting a 5th sampling session. A second timeline extension of 4 months was requested to utilize remaining travel funds to allow the Program Coordinator to attend the 2017 MiCorps Conference.

Getting a new Program Coordinator in the middle of the project gave us a chance to review the entire program as the new staff person was getting up to speed on the project and AAS program. This also led to a reconnection with old and new volunteers as well as re-evaluating how we communicate with and build relationships with volunteers. We solicited volunteer feedback about volunteer satisfaction, recruitment, and longevity and strategically evaluated reoccurring themes. In addition, as part of the review of the program, TWC decided to update our monitoring QAPP for the program. A revised QAPP was submitted to MiCorps for review and approved in April 2017. Changes include revisions to the team leader training and quality assurance protocols.

Task 2: Conduct Monitoring Tasks

TWC used project funding to purchase additional supplies such as hip boots/waders, vials, thermometers, forceps, and magnifiers. Having more equipment allowed us to both grow our program, as well as make it easier for volunteer teams to check out equipment and get their sampling done without having to wait until other teams got back and returned supplies. The first batch of supplies was ordered at the start of the project in Fall 2015. A second set of supplies was ordered in Spring 2017 and included other items such as reflective safety vests and 'rite in the rain' paper.

Team leader trainings were conducted throughout the grant period, coinciding with scheduled sampling windows (first two weeks of June and October). With each training event we drew from the questions and experiences from previous monitoring events to help us train leaders better. With the start of our new Program Coordinator, we looked at our training program and, taking into account feedback from long-time volunteers, developed an online training option for the AAS program in Spring 2017. This was developed for volunteers that have attended three or more trainings in the last three years and needed only a refresher training, rather than a longer, in-person training. The module includes a PDF for review and a corresponding online quiz that requires volunteers to obtain a passing score. This new training protocol was included in the updated QAPP noted in Task 1 above. The online training option was introduced in Spring 2017. At that time, TWC updated the training attendance records to see who was due for training and who could qualify for new online training modules - 9 team leaders chose this option in Spring 2017. We should note the following about having the online training option - this could prove time consuming if volunteers don't respond and take quiz in timely fashion (*i.e.* before they sample) or if they get questions wrong on the quiz and need follow up from Program Coordinator. Overall, TWC feels that having the online training option is a great addition to the AAS program and have received positive feedback.

In addition, we developed more training resources for AAS volunteer teams. This included an invertebrate handout available for volunteer teams in PDF and print forms as well as a "Commonly Misidentified Macroinvertebrates" handout that is issued annually based on volunteers' difficulty in identification.

Five sampling events were held on October 2015, June 2016, October 2016, June 2017, and October 2017, with an average of 57 volunteers (including both adult and child volunteers) participating in each event. Team leaders received training and had a two week period in which to pick up their kits and perform the monitoring. Kits were stocked with supplies as needed and the dichotomous key for macroinvertebrate identification was revised to make it easier for volunteers when identifying in the field. Most participants had questions about what they saw and were eager to see results from theirs and others' streams. Some had useful suggestions as to additional items to include in kits (*i.e.* trash bags, more eyedroppers, etc.). Participants also received an AAS t-shirt each fall as a thank you for participating in the program (paid for with sponsorship funds).

In 2016, TWC migrated from an antiquated member database to Salesforce, which is a sophisticated Customer Relationship Management (CRM) platform database that allows us to more accurately capture volunteer information and hours. Using this new platform, TWC reports that in 2016, 47 adult volunteers participated in either the Spring or Fall 2016 AAS stream sampling. In 2017, this number increased to 62 adult volunteers. 2015 estimates predate the Salesforce system, but 2015 monitoring appeared to include

approximately 55 adult volunteers. Although there does not appear to be a large net increase in number of adult volunteers involved in the AAS program before and after the grant, the Fall 2017 monitoring season included the greatest number of volunteers within a single monitoring season with 50 adults and 28 children (Table 1).

The numbers of streams and locations varied with each sampling event as volunteer teams either joined or left the program, or chose to move to a different stream. Volunteers occasionally did not participate in a sampling season – or for an entire year – due to scheduling conflicts, but returned in subsequent seasons/years. Since the inception of the grant, five volunteer teams left the program. All five volunteer teams that left the program left in late 2015/early 2016 cited changing family dynamics and time constraints as the reason for leaving. This happened under the former Program Coordinator; detailed information about the departures of these teams is limited. Under the new Program Coordinator and marketing enabled through this grant, five new volunteer teams have joined the program.

Although TWC's AAS program did lose volunteers during the project, TWC generally has a high level of volunteer retention and we were able to recruit about 40 new volunteers (adults and children) in 2016 and 2017. TWC calculates that 70% of adult volunteers that were involved in the AAS program in 2016 returned to the AAS program in 2017. We estimate that roughly 1/3 of all adults involved in the AAS program in 2017 have been monitoring for 5 or more years.

One of the objectives of the grant was to increase the number of consistently monitored sites by at least twelve; however, this goal was not met. In 2015, 31 sites were monitored on 14 streams. Some of these sites were monitored in both the spring and fall sampling season, while others were only sampled in one sampling season. In 2016, 24 sites were monitored on 15 streams. In 2017, 25 sites were monitored on 18 streams. See Table 1 for a summary of streams/sites monitored for each AAS season. A few of the sites that were abandoned by volunteer teams who retired from the program were picked up by new volunteer teams. Other volunteer teams have reduced the number of sites that they monitored from two sites to one site. Some volunteer teams decided to abandon their former sites for sites that are either safer or more convenient for them to monitor.

Although TWC did not meet the objective of increasing the number of consistently monitored sites by at least twelve due to volunteer team dropouts, they did expand the breadth of the program. In 2015, 14 streams were monitored by AAS volunteer teams. In 2017, the number of monitored streams increased to 18 streams.

Table 1: TWC’s AAS volunteer participation and sites monitored from fall 2015-fall 2017

Training or Monitoring Event	Date	# of Volunteers	#of Sites Monitored
Fall 2015 Team Leader Training	10/3/15	17 team leaders	N/A
Fall 2015	10/3/15 - 10/17/15	46 adults, 18 kids	25 sites (14 streams)
Spring 2016 Team Leader Training	5/21/16	7 adults	N/A
Spring 2016	5/28/16 - 6/10/16	38 adults, 8 kids	21 sites (11 streams)
*Fall 2016 Team Leader Training	10/1/16	9 adults	N/A
Fall 2016	10/1/16 - 10/14/16	31 adults, 12 kids	20 sites (12 streams)
Spring 2017 Team Leader Training	6/4/17	5 adults 9 online	N/A
Spring 2017	6/4/17 - 6/17/17	33 adults, 22 kids	19 sites (14 streams)
Fall 2017 Team Leader Training	10/7/17	9 adults	N/A
Fall 2017	10/7/17 - 10/21/17	50 adults, 28 kids	23 sites (16 streams)

*New Program Coordinator start with Fall 2016 season

Task 3: Volunteer and Sponsor Recruitment and Education

Efforts to recruit volunteers and sponsors were ongoing throughout this task. The AAS Program was continually marketed through a variety of media outlets. TWC also created a monthly eNewsletter in the summer of 2017 that was sent to people interested in volunteer opportunities with the organization where the AAS program was always noted.

The new AAS Program Coordinator and other TWC staff held discussions regarding the AAS Program and aspects of it that were going to be tweaked in regards to sponsorship opportunities. Once those were finalized, a new program brochure was developed and printed for distribution to assist with recruitment efforts.

Various presentations about the AAS Program were given to local civic groups and lake associations including: Traverse City Rotary Club, Old Mission Woman's Club, Leelanau Clean Water, Grand Traverse Resort and Spa, church groups, teachers associations and the Elk-Skegemog Lake Association. In addition TWC staff presented or had booths at various festivals/events including: Friday Night Live in downtown Traverse City, 'Green ER Days' in Elk Rapids, Grand Traverse County’s Earth Day Celebration and the Inland Seas Education Association's Great Lakes Celebration. The purpose of these presentations was to both increase the number of participants in the program as well as establish relationships with potential program sponsors. TWC received feedback from the presentations and multiple citizens reported that the annual program fee was a barrier to involvement to the program. As mentioned in above sections, TWC recruited five new volunteer teams, which includes about 40 new volunteers (this includes both adult and children volunteers). However, we’ve lost five volunteer teams, which included about 30 volunteers (including both adult and child volunteers) – though estimate of

volunteer participation records that predate our use of Salesforce may be less accurate than current volunteer participation records.

Just before the Spring 2017 sampling season, TWC created an AAS sponsorship packet for organization and corporate sponsors. This packet describes the volunteer monitoring program and data use, displays marketing milestones for each sponsorship level, and features the current AAS Annual Report. TWC asks that all volunteer teams either pay a \$50 annual program fee or recruit a sponsor for their team/site. Long-term volunteers were matched with existing program sponsors in 2017. The majority of volunteer teams have corporate/organizational sponsors which precludes them from the program fee. This sponsorship packet will be used in the coming months to recruit more sponsors in order to help fund the program once this project has ended.

Task 4: Evaluation

This task was completed successfully as well. Results were compiled, summarized and reported to the media and volunteers. Beginning in 2016, each volunteer team received a customized email updating them on their corrected/adjusted score as well as probable misidentifications. Spreadsheets and tables were made to keep track of streams sampled and associated biotic indices. In addition, spreadsheets were maintained listing team leader and volunteers by season. However, as mentioned above, records predating 2016 when TWC implemented the use of Salesforce for volunteer participation records are less complete. In addition, the new Program Coordinator who started in 2016 designed a volunteer waiver, which helps us more accurately track team members. Using Salesforce, we are now easily able to capture and report AAS volunteer participation data.

At the end of each sampling season, the Program Coordinator worked with an expert volunteer team (with aquatic entomology experience) to conduct macroinvertebrate identification verification on preserved specimens (termed "QA/QC data checks"). The Program Coordinator provided each team with feedback after sample results were quality checked, and developed a "Commonly Misidentified Macroinvertebrate" handout each year. The handout reminded volunteers of the differences in specific types of insects that were commonly misidentified. The most common errors were confusion between mayflies and stoneflies and water snipe flies and crane fly larva. We also found that volunteer teams often neglected to put the correct number of individuals in the jar when encountering "common" individuals (15+). These results were and will continue to inform our training program.

Data from each sampling event were uploaded to both TWC's online water quality database (<http://data.gtbay.org/streamsummary.asp>) and the MiCorps Data Exchange database. Results were also summarized and posted on social media for each individual site, as well as a summary of all results. Each post included information about the program, as well as a link to our website for information about how readers could become involved as either volunteers or sponsors. Program and stream sponsors were also individually recognized and thanked. Results were also summarized and highlighted in TWC's newsletters, Annual Report, and website.

In 2016 TWC started compiling a specific AAS Annual Report summarizing sampling results for the past year. Data was entered into ArcMap and a GIS layer of all stream locations sampled was created. Using these data layers, a map was made displaying data by stream score category (*i.e.* excellent, good, fair, etc.) for each monitoring season. This map is included in the AAS Annual Report to provide a spatial representation of results as well. This report was emailed to all volunteers as well as uploaded to TWC's website and posted on TWC's Facebook page.

With a new Program Coordinator and updated QAPP, TWC is working on following all QAPP protocols to ensure high quality data. We continue to strive to have each site monitored by a different volunteer team every three years to ensure that sampling bias is minimized. With our model of "adopting" a stream site, some volunteers have expressed dissatisfaction with this requirement. We continue to educate

volunteers on the necessity and importance of a comprehensive quality assurance and quality control program. Volunteers have been receptive to other quality assurance procedures that were introduced in the newest QAPP version and we remain hopeful in our ability to comply with this requirement.

ENVIRONMENTAL AND OTHER BENEFITS OF PROJECT – SUMMARY OF LESSONS LEARNED, SIGNIFICANT OUTREACH ACTIVITIES, AND EVALUATION

- Environmental and Other Benefits from Project – Environmental benefits of this project are that we were able to track the general health of our area’s streams and take a ‘snapshot’ in time of stream health. TWC can note significant differences from year to year in stream scores and follow-up with a site visit to determine if something is happening to the stream. Other benefits of the project include an increased awareness of areas streams by local citizens. We bill AAS as an engaging, hands-on volunteer program where residents can get out into their environment and learn something about stream ecology (making them ‘citizen scientists’). They can then start to be aware that what happens on land can directly affect what happens in a stream and begin to make connections from their behavior to the environment.
- Evaluation and Lessons Learned –
 - Through this project, we realized the need for a comprehensive volunteer strategy that includes a plan for recruiting, retaining, engaging, training, coordinating, and rewarding our volunteers. We realize that some volunteers need more engagement – they may need either roles with more responsibility or new volunteer roles in the off season. We will continue to develop TWC volunteer programs, including seeking new water quality monitoring or aquatic entomology experiences for volunteers. We also recognize that some volunteers have the passion and commitment to become water resource advocates and intend to provide them a path towards watershed advocacy.
 - We also recognize that volunteers often times have trouble with Order-level macroinvertebrate identification and could benefit from more resources as well as one-on-one identification training. We have developed and modified a number of resources for identification and we are hopeful that our planned side-by-side QA/QC sampling with each team will help strengthen volunteer identification skills.
 - Finally, we learned that it is difficult to evaluate the success of TWC’s AAS program by only relying on two metrics: number of volunteers involved and number of sites monitored. One of the most important goals of the program is to provide citizens with a fun, educational, hands-on aquatic ecology experience to deepen their connection to our water resources. This project enabled us to holistically evaluate the program – from procedures to quality control to the volunteer experience. We will ensure volunteers have a satisfying experience, while we both increase the reach of our program and improve data integrity.

PARTNERS

List of partners and their contributions are as follows:

- Grand Traverse Conservation District (GTCD) – provided location for training team leaders for some events. NOTE: We had initially planned to work with the GTCD and their Grand Traverse Stewardship Initiative (GTSI) program that provides support for teachers to initiate and facilitate watershed curricula in their classrooms to see if any school wanted to participate in our AAS Program as part of the GTSI. However, by the time this grant started the GTCD had dropped the GTSI program due to lack of funding.

PRODUCTS

- AAS Program Brochure
- Revised dichotomous key for macroinvertebrate identification
- Additional training documents, including aquatic invasive species prevention and invertebrate identification documents.

- Volunteer waiver/release of liability
- Annual Commonly Misidentified Macroinvertebrates handout
- Annual online training module and corresponding quiz
- Standard Operating Procedures for data entry in both MiCorps and TWC's database
- AAS Annual Report (with maps)

PROJECT SUSTAINABILITY – ACTIVITIES THAT WILL CONTINUE AFTER PROJECT

- The Watershed Center intends to continue our AAS Program as we are committed to monitoring the health of our area's streams through macroinvertebrate sampling and other means. We have made adjustments to our AAS sponsorship packages and intend to continue to raise money through sponsorship opportunities and local foundation support for the program. New program goals include:
 - Provide volunteers with extra resources such as training videos
 - Sample side-by-side (QA/QC checks) with all volunteer teams in the next three years
 - Demonstrate how data is used locally
 - Share volunteer stories in newsletters and on our website
 - Provide volunteers with a path to watershed advocacy
 - Increase the reach of the program
 - Solicit feedback from volunteers by issuing an anonymous online survey
 - Provide ways for volunteers have social experiences and network
- The Watershed Center Grand Traverse Bay will continue to preserve, protect, and advocate for the environmental health of Grand Traverse Bay and its watershed through a variety of methods (education, on-the-ground restoration, monitoring, research, and advocacy).