

M.L. 2014 Project Abstract

For the Period Ending June 30, 2017

PROJECT TITLE: Diversifying Involvement in the Natural Resources Community: Bridging under-represented youth with natural resources, environmental science degrees and work experience

PROJECT MANAGER: Raymond Newman

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FUNDING SOURCE: Environment and Natural Resources Trust Fund

LEGAL CITATION: M.L. 2014, Chp. 226, Sec. 2, Subd. 09d-2

APPROPRIATION AMOUNT: \$84,000

AMOUNT SPENT: \$66,792

AMOUNT REMAINING: \$17,208

Overall Project Outcomes and Results

The lack of diversity in the natural resource workforce and its educational pipeline is problematic as the need accelerates for a qualified and diverse pool of professionals to replace the retiring generation. Many under-represented students are not aware of natural resources as an alternative to better-known science and engineering careers. To address this issue, the University, in coordination with the Conservation Corps of Minnesota (CCM) Department of Natural Resources (DNR), and US Forest Service (USFS) created a program for under-represented youth that bridged their natural resource work experience with university natural resource pathways and programs.

Overall, we engaged over 225 youth in campus activities in natural resources. During college and career days, youth toured labs and interacted with faculty and students. During summer enrichment days, 34 youth experienced a variety of research and management activities including assessment of invasive aquatics and water quality, bird banding, urban forestry, research at Cedar Creek Reserve and wetlands restoration. For many youth, this was their first opportunity to handle a fish or a bird, or collect water quality and plant community data. Youth interacted with 8 different university faculty and numerous graduate students, learning about their career paths. Our staff and students valued this experience, as many are committed to enhancing the diversity of the next generation of natural resource professionals.

Post-program surveys showed that the youth gained awareness of and interest in natural resource education pathways and careers. However, our goal of enrolling as many of these youth as possible into the university's Post-Secondary Enrollment Option (PSEO) was less successful. Only two students were accepted into and participated in this highly competitive option. Focus of our work shifted to meet the needs of the youth recruited to work for CCM - counseling and mentoring students to pursue the whole range of college readiness options in high school. In conjunction with our project partners (DNR, CCM, USFS) we developed a collection of effective resource materials and engagement strategies that can be provided to high school youth in the coming years.

Project Results Use and Dissemination

Monthly meetings with project partners (DNR, CCM, Forest Service) allowed us to provide input to and share materials that were developed in addition to coordinating efforts.

We developed a composite summary flier outlining the three most relevant majors in natural resources at the University of Minnesota. We distributed those at youth events and also at various recruiting events used by us, CCM and the DNR to recruit youth to the CCM programs. We developed a

Facebook group page to engage CCM youth and make them aware of opportunities; we shifted the group focus to alumni of the various youth programs with the aim to maintain a connection with opportunities after they left the corps.

We developed an extensive set of PSEO materials for distribution to youth and use by the CCM college and career counselor and crew leaders.

Supporting materials have been provided to our project partners (DNR, CCM, USFS) and we have a collection of programs and opportunities that can be provided to high school youth in the coming years. Internally, materials were shared with project participants and partners on a google drive. The materials are now deposited with the Conservation Corps and available from their website (<http://www.conservationcorps.org/bridges>).



Environment and Natural Resources Trust Fund (ENRTF) M.L. 2014 Work Plan Final Report

Date of Report: August 30, 2017

Final Report:

Date of Work Plan Approval: June 4, 2014

Project Completion Date: June 30, 2017

Does this submission include an amendment request? No

PROJECT TITLE: Diversifying Involvement in the Natural Resources Community: Bridging under-represented youth with natural resources, environmental science degrees and work experience.

Project Manager: Raymond Newman

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Location: Ramsey, Hennepin, Dakota, Washington, Anoka, Carver, Scott Counties

Total ENRTF Project Budget:	ENRTF Appropriation:	\$84,000
	Amount Spent:	\$66,792
	Balance:	\$17,208

Legal Citation: M.L. 2014, Chp. 226, Sec. 2, Subd. 09d-2

Appropriation Language:

\$416,000 the second year is from the trust fund to the commissioner of natural resources and \$84,000 is to the Board of Regents of the University of Minnesota to increase participation of under-represented communities in the natural resource professions and in outdoor recreation by means of targeted urban outreach and stronger linkages between Department of Natural Resources programs and academic offerings. This initiative must be coordinated with other environmental education appropriations in this subdivision. This appropriation is available until June 30, 2017, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: Diversifying Involvement in the Natural Resources Community.

II. PROJECT STATEMENT:

Minnesota's natural resource professional workforce is much less diverse than its citizenry and many other professional fields. The benefits of a more diverse workforce include the ability of the organization to increase innovation and creativity, attract a higher qualified candidate pool and ensure services that meet the interests and needs of its citizens. To accelerate the diversification of the natural resources workforce, two barriers must be removed. First more under represented urban youth and their families need to be familiar and comfortable with outdoor recreation, natural resources and natural resource professional career opportunities. Second, more under represented youth need to be recruited to natural resource programs at the university level.

To develop an active and environmentally literate citizenry that reflects the diverse faces of Minnesota this project will engage the urban community in natural resources education and in the development of outdoor recreational skills. Additionally this project will provide more under represented youth with the support necessary to bridge their outdoor experiences and interests with the steps necessary to enter into university natural resources programs, where upon graduation they will have the knowledge, skills, and experience necessary to qualified for natural resource careers. Those youth will build the bridge for others to be able to see themselves as part of the next generation of natural resource professionals and become a reflection of the diverse faces of Minnesota.

This workplan, focuses on university recruitment, and is part of a larger project (Gina Bonsignore, project manager). The University of Minnesota will:

- Recruit URM high school students to the UM Presidents Emerging Scholars (PES) and Post-Secondary Education Options (PSEO) programs, in coordination with Conservation Corps Minnesota.
- Facilitate the UM admissions process for students in the program , including consideration for the President's Emerging Scholars Program.
- Work with students admitted in this program as part of a special first-year mentoring and advising program, including assisting DNR with internship placement.

III. PROJECT STATUS UPDATES:

Project Status as of January 18, 2015: The project team has met regularly over the past six months and developed a detailed plan of action to coordinate recruiting of Conservation Corps (CCM) students to the CLIMB program. We (the CCM-DNR-UM team) developed informational materials describing the CLIMB program and UM academic programs in natural resources. We (UM staff) attended a CCM career fair and followed-up with interested students.

Amendment Request (January 18, 2015): We request that project manager responsibilities be transferred from Susan Galatowitsch to Raymond Newman. Both have been actively involved in the project and will continue to be involved; however, Dr. Newman has been providing more leadership to the CLIMB project as a result of Dr. Galatowitsch's increased responsibilities to the Minnesota Aquatic Invasive Species Research Center, as director.

Project Status as of July 1, 2015: Two quarter-time TA's were hired to work on the project during spring semester. They developed materials related to PSEO and assisted youth with navigation the PSEO application process and set up a Facebook group to facilitate communication. We attended a meeting with Spring Youth Outdoors applicants and parents to address questions and hosted a question--answer session at the Bell Museum after a University PSEO information meeting. We also hosted the Spring CCM Career day on the St. Paul campus, providing access to university computing facilities and classrooms and providing a campus tour including some natural resource research labs. The PI gave a talk about the program at the annual meeting of the Minnesota Chapter of the American Fisheries Society to generate interest and participation by DNR staff for

the summer program and ongoing efforts to reach diverse youth. We recruited faculty and grad student researchers to develop activities to demonstrate research approaches to the summer CLIMB youth. One set was conducted on 26 June and two others are planned for 10 and 17 July. We are developing plans and program for fall academic year involvement with youth at the university and assistance with placement exam, college entrance and PSEO applications.

Amendment Request (July 1, 2015): We request amending the budget to cover expenses not addressed in the original request. In the original request we only asked for funds for personnel but upon implementation of the project other costs that were not anticipated became apparent. The coordinator can provide academic year effort as cost-share to cover these costs by reducing effort charged to project by 11%. We request transferring \$2000 from coordinator effort (Personnel) to the following: \$1200 for room usage fees for computer lab and Green Hall 110, \$400 for travel for vehicle use to attend local meetings and field demonstration sites, \$250 for copies and printing of fliers and promotional materials, and \$150 for campus parking for collaborators and CCM vans bringing students. Specifically, the room useage fee will allow full CMM Youth Outdoors cohorts to meet on the St. Paul Campus on one Saturday each semester for a career planning day that includes use of a computer lab and large lecture room. Parking fees will enable the CCM vans that carry the youth to this and other events to park on campus and allow collaborators to park on campus for meetings. Promotional, informational and recruiting materials will be printed or duplicated for distribution to collaborators, schools and youth.

Amendment Approved: August 5, 2015

Project Status as of January 1, 2016: We engaged youth during July in the summer Bridges project (formerly called CLIMB) with students spending a day visiting university researchers at Staring Lake and participating in activities related to carp control and another day on campus with faculty studying emerald ash borer biology and public perceptions of ashborer impacts. In the fall we hosted the CCM Youth Outdoors Career day event on the St. Paul Campus with access to computer lab facilities, a campus and laboratory tour, a college fair, and breakout sessions. We also developed a video highlighting the summer Bridges program activities and revised other promotional and informational materials. One youth that participated in our Spring 2015 PSEO sessions applied, was accepted, and matriculated in the University of Minnesota PSEO program fall 2015. We are exploring various strategies to increase participation by students that are interested in natural resources and qualified for college admission (at the University or other metro colleges), including participating in college fairs, developing contacts with additional high schools, and developing better promotional materials.

Project Status as of July 1, 2016: Efforts first focused on providing information sessions and assisting students with PSEO applications. We assisted with a general PSEO session held at the DNR (5 youth) and hosted 4 youth at a University of Minnesota PSEO Information Session at the Bell Museum in March. Five youth applied for PSEO at the University of Minnesota in April. We also hosted the spring Youth Outdoors Career day; 47 youth attended and used the computer lab to develop resumes. In addition to career opportunity events, youth got to see Bell museum bird, mammal and fish collections and view marine organisms with the Marine Biology Club and see the inner workings of the Monarch Lab. We planned for and developed summer enrichment activities with university researchers on and off campus for the Bridges crews. Youth examined water quality, aquatic plants and fish at Staring Lake under the guidance of graduate students and faculty and then studied a wetland restoration project at the Arboretum in mid-June. During the last week of June they worked on the St. Paul campus to visit the campus tree nursery, core trees for aging and learn about dendrochronology, tour the raptor center, investigate bird-building collisions, and learn about the St. Paul campus Native American Medicine Gardens. Additional activities are planned for July.

Amendment Request (July 1, 2016): We request amending the budget to better reflected needed expenses. We request transferring \$150 from copies and printing to campus parking for CCM vans. With electronic distribution and some duplicating fees covered by partners we will not need more than \$100 for copies and

printing. We will need another \$150 to cover parking by CCM vans on campus for enrichments days, PSEO meetings and college and career events.

Amendment Approved: July 6, 2016

Project Status as of January 1, 2017: We continued our summer activities in July with the summer Bridges Crews with a session with graduate students at Fort Snelling on social sciences in natural resources and a day-long visit to the Cedar Creek Ecosystem Science Reserve. We hosted a day-long Bridges wrap-up/reflection session with the youth on the St. Paul Campus in August, reviewing activities from the summer, what was learned and reflection on career planning. Three youth from the summer Bridges program started college in the fall, one majoring in Environmental Studies at Bemidji State University. In the fall we again hosted the Youth Outdoors College and Career day. Over 50 youth attended and used the computer lab to develop resumes, got a behind-the-scenes tour of Bell Museum collections, and attended sessions on tree ascension, use of drones in natural resources, and developing a career with the DNR. Youth were also able to interact with university students in the Marine Biology Club and the Monarch Lab. Fifteen youth were interested in PSEO and other dual enrollment options; we have supplied them with additional information and are planning help and info sessions for the youth this winter.

Overall Project Outcomes and Results:

The lack of diversity in the natural resource workforce and its educational pipeline is problematic as the need accelerates for a qualified and diverse pool of professionals to replace the retiring generation. Many under-represented students are not aware of natural resources as an alternative to better-known science and engineering careers. To address this issue, the University, in coordination with the Conservation Corps of Minnesota (CCM) Department of Natural Resources (DNR), and US Forest Service (USFS) created a program for under-represented youth that bridged their natural resource work experience with university natural resource pathways and programs. Overall, we engaged over 220 youth in campus activities in natural resources. During college and career days, youth toured labs and interacted with faculty and students. During summer enrichment days, 34 youth experienced a variety of research and management activities including assessment of invasive aquatics and water quality, bird banding, urban forestry, research at Cedar Creek Reserve and wetlands restoration. For many youth, this was their first opportunity to handle a fish or a bird, or collect water quality and plant community data. Youth interacted with 8 different university faculty and numerous graduate students, learning about their career paths. Our staff and students valued this experience, as many are committed to enhancing the diversity of the next generation of natural resource professionals. Post-program surveys showed that the youth gained awareness of and interest in natural resource education pathways and careers. However, our goal of enrolling as many of these youth as possible into the university's Post-Secondary Enrollment Option (PSEO) was less successful. Only two students were accepted into and participated in this highly competitive option. Focus of our work shifted to meet the needs of the youth recruited to work for CCM - counseling and mentoring students to pursue the whole range of college readiness options in high school. In conjunction with our project partners (DNR, CCM, USFS) we developed a collection of effective resource materials and engagement strategies that can be provided to high school youth in the coming years.

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Bridging under-represented youth with natural resources, environmental science degrees and work experience.

Description: The University of Minnesota's College of Food, Agricultural and Natural Resource Sciences recognizes that there is a lack of enrollment of under-represented youth in their natural resource and environmental science degree programs. Through the creation of a high school-university bridging program for interested and academically qualified youth, students will be recruited to participate in in Post Secondary

Education Option (PSEO) and Presidential Emerging Scholars (PES) programs. They will be mentored through the admissions process for these programs, including course selection. Students in the program will be assigned a teaching assistant who will provide pre-college advising, links to professional mentor groups, and connections to university groups for under-represented minorities.

Summary Budget Information for Activity 1:

ENRTF Budget: \$ 84,000
Amount Spent: \$ 66,792
Balance: \$ 17,208

Activity Completion Date:

Outcome	Completion Date	Budget
1. Recruit URM high school students to the UM Presidents Emerging Scholars (PES) and Post-Secondary Education Options (PSEO) programs, in coordination with Conservation Corps Minnesota.	May 31, 2016	\$ 19,598
2. Enroll 10 -20 URM high-school students into the natural resources bridging program (PSEO). Assist with selection of natural resources courses	January 1, 2017	\$ 9,516
3. Provide students with pre-college advising, including course-work assistance and links to professional mentors.	June 30, 2017	\$ 35,564
4. Guide students in program through university admissions process, including consideration for the PES program. Help first-year university students in the program arrange internships with DNR.	June 30, 2017	\$ 19,322

Activity Status as of January 18, 2015: The project team has met regularly over the past six months and developed a detailed plan of action to coordinate recruiting of CCM students to the CLIMB program. We (the CCM-DNR-UM team) developed informational materials describing the CLIMB program and UM academic programs in natural resources. We (UM staff) attended a CCM career fair and followed-up with interested students. We have hired two graduate teaching assistants for spring semester who will mentor prospective CLIMB students, orienting them to natural resource academic undergraduate programs at the University of Minnesota, transfer options for students more likely to be accepted to junior colleges, and to the Post-Secondary Options program at the UM. The teaching assistants will work with CCM high school students and counselors to facilitate the PSEO application process this spring for prospective CLIMB students.

Activity Status as of July 1, 2015: The project teams continues to meet monthly and this interaction has helped develop an understanding of each organization and led to good cooperation and development of plans and strategies to develop a successful program while meeting each partners needs and objectives. Two quarter-time TA's worked on the project during spring semester. The TA's collated materials from a number of metro colleges offering PSEO programs in addition to the University of Minnesota and developed resource materials related to PSEO and the application process. They assisted youth and the CCM College and Career Coordinator with navigation the PSEO application process and set up a Facebook group to facilitate communication. We attended a meeting with Spring Youth Outdoors applicants and parents to address questions and hosted a question--answer session at the Bell Museum after a University PSEO information meeting. Identifying qualifying youth and getting them to apply to PSEO presents some challenges. Some youth are recent immigrants and language test requirements are an additional hurdle. Planning for test preparation and fees will be built into future considerations. Transportation logistics also restrict access to programs. We are devising strategies to help youth meet the challenges and to identify best approaches for different youth. We are developing plans and program for fall academic year involvement with youth at the university and assistance with placement exams, PSEO applications and applications for college admission.

We hosted the Spring CCM Youth Outdoors Career day on the St. Paul campus, providing access to university computing facilities and classrooms and providing a campus tour, including some natural resource research labs.

Few youth are aware of the campus and its focus on agricultural and natural resources sciences. The PI gave a talk about the program at the annual meeting of the Minnesota Chapter of the American Fisheries Society. The talk and discussion aimed to generate interest and participation by DNR staff for the summer program and ongoing efforts to reach diverse youth. We recruited faculty and grad student researchers to develop activities to demonstrate research approaches to the summer CLIMB youth. On 26 June twelve youth participated in a campus song-bird study, toured the Campus Nursery and examined a shoreline restoration project at Ames Lake in St. Paul. Two other sets of activities with faculty and students are planned for 10 and 17 July. The aim is to engage youth during the summer and keep them engaged during the academic year.

Activity Status as of January 1, 2016: We engaged the 12 youth in the summer Bridges project with students visiting Staring Lake on 10 July 2015 and participating in U of M research activities related to carp control (carp tracking and sampling, water quality assessment, and aquatic plant community assessments led by technicians, grad students and postdocs). On 17 July the Bridges youth met with Forest Service and University faculty/researchers to explore several emerald ashborer projects including cold tolerance and public perception of ashborer impacts. They also visited the Raptor Center. These activities along with the previously reported campus activity on 26 June were well received by the youth and their crew leaders and we aim to expand the contact and activities in summer 2016. In fall 2015 we hosted the CCM Youth Outdoors Career day event on the St. Paul Campus. Sixty youth used our computer lab facilities to develop resumes, and participated in a campus and laboratory tour that gave them an inside look into the fish, mussel, bird and mammal collections of the Bell Museum. Students then attended a college fair and breakout sessions on careers with the DNR, Forest Service and NGOs along with a session on Alternative Credit Options (including PSEO). We developed a video highlighting some of the activities the summer Bridges program. We will use it to promote the program and help recruit youth for next summer. We also revised other promotional and informational materials to assist with recruiting. One youth that participated in our Spring 2015 PSEO sessions applied, was accepted, and matriculated in the University of Minnesota PSEO program fall 2015. We are exploring various strategies to increase participation by students that are interested in natural resources and qualified for college admission (at the University or other metro colleges), including participating in college fairs, developing contacts with additional high schools, and developing better promotional materials.

Activity Status as of July 1, 2016: One 25% time TA worked on the project during spring semester and this allowed us to hire a 25% TA for summer to assist with the summer enrichment activities. During the academic year the TA went to several high school recruiting and outreach events to engage youth's interest in natural resources and inform them of the program and possible careers in natural resources. They worked with the CCM College and Career counselor to engage Youth Outdoors youth and Bridges Alumni interested in PSEO opportunities and to assist with the application process and help navigate the system. This year five youth applied to the University of Minnesota PSEO program; unfortunately, none were accepted to university. However, two youth are applying to PSEO programs with other colleges. We again hosted the Youth Outdoors Career day in May and introduced the youth to the St. Paul Campus. In addition to a brief tour of campus they learned about Bell Museum research collections from graduate students and in the afternoon were able to meet with undergrads in the Marine Biology club, see and touch marine critters and learn of the outreach and professional activities of the club. They also were able to get a behind the scenes tour of the Monarch Lab and attended sessions on dual enrollment options, careers with the Forest Service, and navigating standardized tests. We developed university enrichment activities for the summer Bridges youth with four full day sessions planned. These activities expose the youth to university researchers (faculty or grad students) and focus on either data collection or monitoring activities or opportunities at the university. The first enrichment day was held at Staring Lake, and after an introduction to careers with local units of government (parks, naturalists, and other resource managers), the youth learned to collect water quality data, identify aquatic plants and assess plant communities and sample fish and read fish scales to determine age. After lunch the students studied a wetland restoration project at the Arboretum. On 28 June the Bridges youth met on the St. Paul campus and toured the campus tree nursery and learned about its research, cored campus trees to determine tree age in the

dendrochronology lab, toured the Raptor Center, learned how the effects of bird collisions with buildings are assessed and visited the St. Paul campus Native American Medicine Gardens. Planning is nearly complete for a day at Fort Snelling State Park where graduate students are surveying park users for their attitudes and preferences. Youth will participate in this work and learn how the results are used by park managers. They will also learn how to conduct a forest inventory for the US Forest Service. The last university enrichment experience of the summer will be a day at Cedar Creek Ecosystem Science Reserve where they will interact with undergraduate, graduate, postdoctoral and faculty researchers and learn how ecosystem science is conceived and conducted.

Activity Status as of January 1, 2017: The summer TA was quite effective at organizing and coordinating our summer enrichment activities with the 12 youth in the summer Bridges program (formerly called CLIMB). In July our summer activities continued with a session on social sciences in natural resources led by two graduate students who are conducting research at Fort Snelling. A day-long visit to the Cedar Creek Ecosystem Science Reserve introduced students to this internationally renowned long-term research site and students got to see several large scale ecosystem experiments. They interacted with several university faculty and postdocs, along with a number of graduate and undergraduate research assistants from CFANS and CBS. Activities at Cedar Creek focused on science and conducting ecological experiments. The TA also assisted the DNR intern with a fish age and growth exercise to compare fish growth from the Mississippi and St. Croix Rivers. To reinforce the summer activities and prepare youth for the future, we hosted a day-long Bridges wrap-up/reflection session with the youth on the St. Paul Campus in August. The youth reviewed the range of activities they were engaged in over the summer and reflected on what they learned and how they could use that information to plan for their future. A debrief with DNR staff, CCM staff and crew leaders and university and Forest Service participants provided good feedback on what worked and what could be improved.

In the fall we again hosted the Youth Outdoors College and Career day on the St. Paul Campus. Over 50 youth attended. They used the computer lab to develop resumes, toured the upper St Paul campus, and got a tour of Bell Museum fish, bird, and mammal collections led by graduate students. A college and career “pizza with a professional” lunch allowed youth to meet with college representatives, NGO and industry professionals, and faculty and grad students to get information on summer jobs and internships as well as career and training opportunities. We engaged with about 15 youth on Post-Secondary Enrollment Options opportunities. In the afternoon, youth attended sessions on tree ascension, use of drones in natural resources, or a workshop on careers with the DNR. Youth were also able to interact with students in the Marine Biology Club (touch tank outreach) and the Monarch Lab. We followed up with youth contacts developed over the fall and supplied them with information on careers, college planning and various dual enrollment options. This winter, we are planning help and info sessions for the youth identified this fall as well as the new cohort of Youth Outdoors youth that start in March.

Final Report Summary:

Activities in 2017

During winter and spring 2017 we followed up with 15 youth that had indicated an interest in PSEO and other dual enrollment options and provided guidance on the application process. We also developed PSEO and college preparation information materials to be provided to youth and a PowerPoint presentation that Conservation Corps Youth Outdoors Crew leaders can present to their youth. We trained the incoming CCM crew leaders and gave them an overview of PSEO and pointers for preparing for natural resource majors and careers. The aim was to provide materials that CCM and crew leaders can use in the future.

We continued our hosting of the Youth Outdoors College and Career day on the St. Paul Campus in May. About 50 youth attended. They used the computer lab to develop resumes, toured the upper St Paul campus, and got a tour of the fish, bird, and mammal collections of the Bell Museum led by graduate students. In the afternoon, youth attended interactive sessions on the use of drones in natural resources, measuring tree growth rings, planting the horticultural garden, the Marine Biology Club and touch tank outreach and the Monarch Lab. The

day concluded with a coordinated presentation from the university, DNR and Forest Service on opportunities and how to prepare for careers in natural resources. Students played a career planning card game developed by the DNR and modified by the Forest Service and University personnel to strategize on how to best use their experiences and talents to land their dream job.

Finally, we planned for continued involvement of the university with the summer bridges program and activities to engage youth during campus enrichment days. The 11 youth participants this summer met faculty and university staff to learn about science and research planning at the Cedar Creek Ecosystem Science Reserve, lake water quality and invasive species management with Chanhassen Parks and the Riley Purgatory Bluff Watershed District, wetland restoration at the arboretum and bird banding, bird collision monitoring and research at the campus tree nursery. We have now developed connections with faculty and collaborators that should allow us to provide enrichment day experiences to CCM youth (and other groups) in the future after the project has ended. We have documented these activities with contacts and comments that will facilitate continued use of these connections in the future.

Overall summary

We developed an effective partnership with CCM, the DNR and the Forest Service to introduce disadvantaged high school youth to natural resources, the numerous job opportunities in natural resources and pathways to a lifelong career in natural resources. Through these efforts we connected with over 225 high school youth and introduced them to the range activities conducted by natural resource professions and provided and introduction to the University's St. Paul campus, natural resource programs, and pathways to college and a career.

The overall strategy of the program was to first reach youth in the Conservation Corp Youth Outdoors program that employs urban Minneapolis and St. Paul youth each fall and spring, introduce them to possibilities in natural resources and then provide mentorship and training to youth with an interest in exploring a college program in natural resources. We would then provide mentorship and guidance to apply to PSEO and develop a program to continue mentorship and involvement with these youth. We first connected with youth each fall and spring during the Youth Outdoors College and Career Day, a Saturday of information and events to expose CCM youth to post-secondary opportunities and careers. We decided to host the event, on the St. Paul Campus, which would expose youth to natural resource facilities and programs while also introducing them to a campus of the university many had not visited or were aware existed.

In addition to providing traditional career and college recruiting information and information and work sessions on PSEO and dual enrollment options, we used parts of each day to introduce youth to faculty, graduate and undergraduate students and a view of some of the facilities and organizations available to them if they joined the university. These activities included a behind the scenes tour of the Bell Museum research and teaching collections by grad students conducting research with museum faculty. They got to see some special specimens, such as an ivory bill wood pecker, a platypus and a narwhale horn, as well as learn about the use of molecular techniques to determine phylogenetic relations and species distributions. Perhaps as important they learned the grad students background and how they arrived at their career choice. They were also engaged with the Marine Biology Club, a group of undergraduates interested in marine biology that maintains a traveling touch tank they take to area grade schools. Again, they learned the students background and the types of activities they can engage in at the University. Other programs included the Monarch Lab, which many youth had contact with in grade school, tree ascension by the Forestry Club, the use of drones in natural resources (highly popular), dendrochronology (age and growth of trees), and the horticulture teaching garden. Interaction with DNR and Forest Service professionals made the link to careers. Throughout, the aim was to expose students to a wide array of career possibilities and how the presenters arrived at their career. The range of ages and backgrounds of presenters provided opportunities for youth to relate and see themselves at the university and in this field. Through the College and Career day we got contact information for youth interested in PSEO and followed up

with them to provide more information and to assist with applications (see below for more on the PSEO component).

The more focused component of the overall program was the summer Bridges Program developed by the Conservation Corps with active participation by the DNR, the University and the Forest Service. This program provided a smaller group of youth (8-12 each summer) with an intensive 10 week long program of outdoor activities related to natural resources. Youth got to camp for extended periods and work on DNR, Forest Service and other collaborator projects; details of the program are provided in the DNR report for M.L. 2014, Chp. 226, Sec. 2, Subd. 09d-1. Our role was to provide interactive experiences for “enrichment days” one day each week where youth would interact with and participate in projects or research activities by the DNR, Forest Service or University. We hosted three or four days each summer providing youth with unique opportunities to interact with university faculty, grad students and researchers. Overall through these days we engaged 34 youth in natural resource research and management activities ranging from assessment of invasive aquatics and water quality, to bird banding and urban forestry, to user perception surveys at Ft. Snelling State Park, to research at Cedar Creek Reserve and restoration of wetlands. For example, each summer youth went to Staring Lake where they first heard from the Nature Center Director about his career path and work with the city. Then youth got an overview of the Riley Purgatory Bluff Creek Watershed District/University of Minnesota collaboration to remove carp and enhance water quality given by faculty or watershed district personnel. Then the youth measured water quality, tracked carp or sampled and measured fish, and learned to survey and identify aquatic macrophytes. Youth also learned about evaluation of wetland restoration projects, at the arboretum or at Ames Lake (where past CCM crews had participated in the restoration actions). At Cedar Creek, student visited state of the art ecosystem research plots and also developed their own research questions. They were able to band and handle birds as well as count birds that succumbed to window strikes.

For these experiences, youth interacted with 8 different university faculty and numerous graduate students, learning about their paths to natural resource careers along with the practical experiences provided. For many youth this was their first opportunity to handle a fish or a bird, or collect water quality or plant community data. In addition to exposing the youth to university we also provided 15 graduate students an opportunity to engage high school youth from under represented communities. Our students value this opportunity and many are committed to enhancing the diversity of the next generation of natural resource professionals. In conjunct with our project partners (DNR, CCM, USFS) we developed a collection of programs and opportunities that can be provided to high school youth in the coming years and the success of the interactions is shown by our continuation this summer after funding had expired.

Our aim of enrolling ten to 20 underrepresented youth in PSEO at the university was overly ambitious and the focus on PSEO was too limited of a strategy. The PSEO program is highly competitive and the challenges faced by disadvantaged underrepresented youth make it difficult to get qualified students to apply. Our focus on inner city youth from disadvantaged families, the population that is most underrepresented in natural resources, reinforced the challenge. Most of the Minneapolis and St. Paul youth had not participated in natural resource science and management activities and few were aware of jobs and career potential in natural resources with the DNR or other governmental or non-profit organizations. Their parents are not engaged in these activities and most have not attended college. Attracting these youth to STEM careers is difficult and recruiting for natural resources is even more difficult with the low level of awareness. Academically capable youth are encouraged to pursue education in engineering, health care or biomedical fields. Yet, these are the youth we must recruit if we are to diversify the natural resources workforce and reflect the citizenry of the 21st century. Overall, we facilitated six student applications to PSEO at the University of Minnesota and only two were accepted into this highly competitive program.

To match the needs and abilities of the youth recruited to work with CCM, we expanded our academic emphasis to include PSEO programs at other Twin Cities universities and colleges and other dual enrollment options (e.g., Advanced Placement, International Baccalaureate courses) and then further expanded our efforts to high school

preparation for college and college programs emphasizing natural resources. As indicated in the companion report by the DNR and CCM (M.L. 2014, Chp. 226, Sec. 2, Subd. 09d-1) these efforts appeared successful even though they did not directly bring students to the College of Food, Agricultural, and Natural Resource Sciences (CFANS) at the University of Minnesota. As outlined under dissemination, we have developed materials that can be used by CCM (and other groups) for their continuing programs to introduce students to PSEO and other dual enrollment options and to plan for college and natural resource careers.

Continuation of similar efforts linking urban high school youth with the DNR, University Natural Resource programs and other natural resource professionals will be important to recruit the next generation of natural resource managers and scientists. Although many grade school and junior high programs that link youth to natural resources and the outdoors exist, these links are lost in high school and thus consideration of post secondary education and career options in natural resources does not occur. This high school to college link will be key to recruiting a diverse group to the profession. University faculty and students see the need for such programs and are eager to participate. We hope to continue our efforts employing the lessons we have learned.

V. DISSEMINATION:

Description: We will work with our partners at the MN DNR and Conservation Corps of Minnesota (CCM) to identify opportunities and venues for disseminating information and findings about this project. Documents prepared in connection with this project will be published and available free to citizens and will be posted at www.dnr.mn.gov. Conservation Corps of MN will be the primary disseminator and provide a link on their website describing the CLIMB (Critical-science Learning Integrative Metro Bridge) youth program www.conservationcorps.org. The partnerships developed with schools, recreation centers and youth organization will also serve as outlets for introducing families to outdoor recreational activities and career opportunities and to recruit youth to participate in the CLIMB(Critical-science Learning Integrative Metro Bridge) program. In addition, collaboration with other youth outdoor programs will provide the opportunity to promote and enhance the program.

Status as of January 18, 2015: We, in conjunction with CCM, have developed preliminary information outlining career pathways, college majors and the overall CCCM/CLIMB program to recruit CCM high school students in the CLIMB program.

Status as of July 1, 2015: We continued efforts at developing and updating information on the program and set up a Facebook Group for youth interested in PSEO and the summer CLIMB program.

Status as of January 1, 2016: We developed a “Ken Burns effect” video based on activities from the summer Bridges program and will start dissemination this winter after incorporating collaborator suggestions. We have updated our other materials and are using those and college recruiting and program information at career fairs. We provided input on the CCM Bridges webpage and will use it as a common point of contact to refer youth and counselors: <http://www.conservationcorps.org/bridges>. We will work actively this winter and spring to disseminate information about the program at career fairs and to high school science teachers and counselors.

Status as of July 1, 2016: We developed a repository for photos and videos of program activities and have been documenting most activities.

Status as of January 1, 2017: We updated all of our program information and sent out updated PSEO and dual enrollment options info to youth who requested information. We have obtained photo releases and compiled photos and video of program participants from this summer and fall and shared that with our collaborators.

Final Report Summary:

Monthly meetings with project partners (DNR, CCM, Forest Service) allowed us to provide input to and share materials that were developed in addition to coordinating efforts. For example as part of the overall project the DNR developed extensive career pathway materials for DNR positions that we provided input to and the resulting materials will be used by our faculty and counselors as we guide our students and also recruit high school youth.

We developed a composite summary flier outlining the three most relevant majors in natural resources at the University of Minnesota. We distributed those at youth events and also various recruiting events used by us, CCM and the DNR to recruit youth to the CCM programs. We developed a Facebook group page to engage CCM youth and make them aware of opportunities; we shifted the group focus to alumni of the various youth programs with the aim to maintain a connection with opportunities after they left the corps. We also developed a short video clip to attract youth to the Bridges program.

We developed an extensive set of PSEO materials for distribution to youth and use by the CCM college and career counselor and crew leaders. These materials included a listing of contact information and application deadlines for relevant PSEO programs at colleges in the Twin Cities Metro along with detailed guidance on developing a PSEO application to the University of Minnesota. We developed a Natural Resource Education Guide; a college preparation handout that provides a timeline with benchmarks and curriculum requirement for high school youth. To facilitate dissemination of PSEO and college prep information we developed background materials and a PowerPoint presentation that crew leaders can present to their youth crews.

Supporting materials have been provided to our project partners (DNR, CCM, USFS) and we have a collection of programs and opportunities that can be provided to high school youth in the coming years. Internally, materials were shared with project participants and partners on a google drive. The materials are now deposited with the Conservation Corps and available from their website.

Video

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget Overview:

Budget Category	\$ Amount	Explanation
Personnel:	\$ 65,041	Faculty coordinator (1.15 months total) to oversee all aspects of the UM subproject; Teaching assistants (4 semesters) to assist with recruiting and to serve as pre-college and first year mentors.
Travel:	\$ 400	Mileage for local travel to demonstration and school sites, cooperator meetings
Printing:	\$ 100	Printing and duplication of informational and promotional brochures and fliers to recruit and engage youth. Copies of materials to share with collaborators.
Facilities useage:	\$ 951	Room/facilities usage fee for use of specialized facilities on weekend by Conservation Corps Youth
Campus parking:	\$ 300	Parking on campus for CCM vans and CCM cooperators meeting on campus.
TOTAL ENRTF BUDGET:	\$ 66,792	

Explanation of Use of Staff:

Faculty coordinator (1.3 months total) to oversee all aspects of the UM subproject: 50% of effort for outcome #2, 50% for all other outcomes (i.e., approximately 17% each).

Teaching assistants (4 semesters) to assist with recruiting and to serve as pre-college and first year mentors: 50% for outcome #3 and 50% for outcomes #1 and #4 (25% each).

Explanation of Capital Expenditures Greater Than \$5,000: N/A

Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation: UMN Coordinator at 8.3% FTE for 2 years, UMN Teaching Assist. 50%% FTE for 4 semesters)

Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation: N/A

B. Other Funds:

Source of Funds	\$ Amount Proposed	\$ Amount Spent	Use of Other Funds
Non-state			
	\$	\$	
State			
UM-CFANS-Faculty/Administrative Support (In-Kind)	\$ 20,000	\$26,016	Post -Secondary Enrollment Options (PSEO) Coordination for 2 yrs
TOTAL OTHER FUNDS:	\$ 20,000	\$26,016	

VII. PROJECT STRATEGY:

A. Project Partners: MN DNR, Conservation Corps Minnesota

B. Project Impact and Long-term Strategy: This project will establish a focused approach to integrate diversity into the natural resource community and DNR workforce. This three-year comprehensive approach addresses the need to connect under represented families and their communities with outdoor recreation and natural resource higher education to create a path to professional natural resource career opportunities. The project pathway takes under represented urban youth from outdoor experience, to higher education, to real world natural resource management experiences and onto professional careers in natural resources. Their success will provide other youth with the familiar faces they need to be able to imagine themselves as part of the next generation of natural resource professionals. MN DNR, Conservation Corp of MN and UMN will continue to expand this program to ensure the DNR workforce becomes a reflection of the diverse faces of Minnesota.

C. Spending History:

Funding Source	M.L. 2008 or FY09	M.L. 2009 or FY10	M.L. 2010 or FY11	M.L. 2011 or FY12-13	M.L. 2013 or FY14

VIII. ACQUISITION/RESTORATION LIST:

IX. VISUAL ELEMENT or MAP(S): *See Main Work Plan*

X. ACQUISITION/RESTORATION REQUIREMENTS WORKSHEET: N/A

XI. RESEARCH ADDENDUM: N/A

XII. REPORTING REQUIREMENTS:

Periodic work plan status update reports will be submitted no later than January 15, 2015, July 1, 2015, January 2016, July 2016, and January 1, 2017. A final report and associated products will be submitted between June 30 and August 15, 2017.

Environment and Natural Resources Trust Fund

M.L. 2014 Project Budget

Project Title: *Diversifying Involvement in the Natural Resources Community*

Legal Citation: *M.L. 2014, Chapter 226, Section 2, 09d*

Project Manager: *Raymond Newman (UMN); Gina Bonsignore (DNR)*

Organization: *Minnesota DNR; Conservation Corps Minnesota*

M.L. 2014 ENRTF Appropriation: *\$ 500,000 (total); \$84,000 (UMN)*

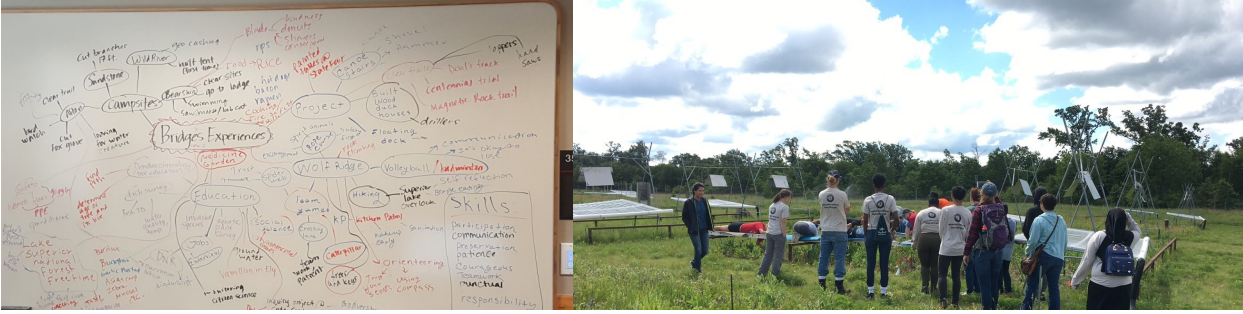
Project Length and Completion Date: *3 Years; July 1, 2017*

Date of Report: August 30, 2017

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Activity 1 Balance	TOTAL BUDGET	TOTAL BALANCE
BUDGET ITEM	<i>Bridging UR Youth with Natural Resources</i>				
Personnel (Wages and Benefits)	\$82,000	\$65,041	16,959	82,000	16,959
Faculty Coordinator, (2 nine month appointment periods, .65 months (0.5 months) each appointment, salary 64%, fringe 36%) - \$17,032		\$7,197			
Teaching Assistant, 4 semesters, (\$16,242 per semester- 49% salary, 51% fringe) - \$64,968		\$57,844			
Travel expenses in Minnesota					
Mileage/vehicle pool rental for local travel to demonstration and school sites, cooperator meetings	\$400	\$400	0	\$400	\$0
Printing					
Printing and duplication of informational and promotional brochures and fliers to recruit and engage youth. Copies of materials to share with collaborators.	\$100	\$100	0	\$100	\$0
Other					
Room/facilities usage fee for use of specialized facilities on weekend by Conservation Corps Youth	\$1,200	\$951	249	\$1,200	\$249
Campus parking for Conservation Corps Vans and DNR and CCM cooperators meeting on campus.	\$300	\$300	0	\$300	\$0
COLUMN TOTAL	\$84,000	\$66,792	\$17,208	\$84,000	\$17,208

University of Minnesota provided a bridge between the crew's natural resource work experience and education pathways in environmental science by:

- Engaging over 220 youth in campus activities during college and career days
- Organizing enrichment days on and off campus to engage with researchers in the field for 32 youth
- Supporting youths' efforts to apply for college-track options in high school



Teaching assistants led career workshops and connected youth to field research for the 32 summer crew members



Graduate students led behind-the-scenes lab tours on the St Paul campus and shared their education experiences.