



*NOAA Environmental Literacy Grant Program
From Mt. Rainier to the Pacific Coast: Fostering Resilient Climate
Leaders, Communities and Coastal Ecosystems*

Summative Evaluation Report

October 2019

Acknowledgements

This Final Evaluation Report summarizes the work of Nisqually River Education Project and its partners (Capitol Land Trust, Chehalis Basin Education Consortium, Chehalis River Basin Land Trust, South Sound Global Rivers EE Network, Nisqually Land Trust, Nisqually Indian Tribe, Billy J. Frank Nisqually National Wildlife Refuge, Mount Rainier Institute, National Oceanic and Atmospheric Administration) of their program – *From Mt. Rainier to the Pacific Coast: Fostering Resilient Climate Leaders, Communities and Coastal Ecosystems* over the course of three years (2016-2019).

The overall program was made possible through a 3-year grant from the National Oceanic and Atmospheric Administration's (NOAA) Environmental Literacy Grant Program (Award # NA15SEC0080007) focused on building the awareness and impacts of climate change among teachers and students in the South Puget Sound, Grays Harbor and Pacific Ocean beaches.

The grant evaluation and this Final Evaluation Report were developed by Chuck Lennox, Principal/Consultant, of [Lennox Insites](#) who serves as the grant external evaluator.

Cover Photo: During the Summer Institute for Teachers (SIT), teachers were able to try out experiments for themselves. 2018

Executive Summary

The NOAA Climate Change Education Grant to the [Nisqually River Education Project](#) (NREP) a program of the [Nisqually River Foundation](#), *From Mt. Rainier to the Pacific Coast: Fostering Resilient Climate Leaders, Communities and Coastal Ecosystems*, focused on developing the capacity of teachers in public, private and tribal schools to bring accurate information to their classrooms about climate change and its impacts in their home region. The main activity of this grant evaluation focused on evaluating teacher experiences at the three Summer Institute for Teachers. An important component of this project was building the confidence of teachers in feeling comfortable to teach this complex subject using age/grade-appropriate methods. The evaluation of the project consistently measured teacher self-rated increase in knowledge of the topics and confidence in teaching these topics throughout the grant. Teachers who feel comfortable with these topics can become a resource for their colleagues and advocates for including climate change in existing curriculum.

In 2016, the Summer Institute for teachers, sponsored by the Nisqually River Education Project was held at the Billy Frank Jr. Nisqually National Wildlife Refuge near Olympia, WA on June 27 – 29, 2016 on two of the three Institute days with the second day being out in the field in various locations around Grays Harbor, WA and Westport, WA beaches. Over sixty teachers from second grade to high school participated in this annual event that attracts teachers in the South Puget Sound and Chehalis River Basin of western Washington State.

The 2016 Institute topic, *Oceans: Ocean Acidification & Sea Level Rise*, provided teachers hands-on learning opportunities supporting Common Core and Next Generation Science Standards (NGSS) with an in-depth look at several complicated science topics. Subjects ranged from NOAA Resources for the NGSS to Climate Change Resources for elementary and secondary students to Ocean Acidification and Sea Level Rise Resources and an introduction to Action Projects for Community Resiliency. An [extensive on-line list of resources](#) was provided to teachers for later use in their classrooms.

The comparison of the Pre-Institute survey results with the Post-Institute survey results showed a marked increase in confidence of teaching these subjects along with an increase in knowledge (self-reported) of the topics being taught. Teachers have a greater understanding of the impacts of climate change, ocean acidification and sea level rise for the Grays Harbor, Pacific Ocean beaches and South Puget Sound.

The 2017 Summer Institute for Teachers, sponsored by the Nisqually River Education Project, was held at three locations – Billy Frank Jr. Nisqually National Wildlife Refuge near Olympia, WA, University of Washington Pack Forest and Mount Rainer National Park on June 26 – 28, 2017 on two of the three Institute days with the second day being out in the field. The Institute brought 30 teachers, 12 guest speakers and 7 staff together to take a deep dive into hands-on, experiential learning about this significant environmental issue and it's impacts, present and future, on our watershed.

Teachers came from Lydia Hawk Elementary, Meadows Elementary, Lincoln Elementary, Columbia Crest A-STEM Academy, Southworth Elementary, Nisqually Middle School, Hansen Elementary, Evergreen Elementary (Shelton), Shining Mountain Elementary, Middle School, Vancouver Public Schools, Bethel Middle School, WA He Lut Indian School, Bellarmine Prep High

School, Lincoln Elementary, Salish Middle School, Avanti High School, Nova Middle School and Ecosystem Explorers.

The SIT topic, *Climate Change in the Pacific NW: Glaciers, Forests and Freshwater*, provided teachers hands-on learning opportunities supporting Common Core and Next Generation Science Standards (NGSS) with an in-depth look at several complicated science topics. Subjects ranged from NOAA Climate Education Resources to a tour and discussion of sustainable forestry and forest ecology at the University of Washington's Pack Forest to local weather patterns and their impact on glaciers at Mount Rainer National Park. An [extensive on-line list of resources](#) was provided to teachers for use later in their classrooms.

The comparison of the Pre-Institute survey results with the Post-Institute survey results showed a marked increase in confidence of teaching these subjects along with an increase in knowledge (self-reported) of the topics (i.e. Pacific Northwest forest ecology). Teachers have a greater understanding of the impacts of climate change on forests, glaciers and regional weather patterns.

The 2018 Summer Institute for Teachers, sponsored by the Nisqually River Education Project was held at the Billy Frank Jr. Nisqually National Wildlife Refuge near Olympia, WA and at various locations in the Cities of Olympia and Tumwater, WA June 25 – 27, 2018. The Institute brought 40 teachers, 19 guest speakers and 5 staff together to take a deep dive into hands-on, experiential learning about climate change in the Pacific Northwest focused on urban environments, flooding and sea level rise. Previous institutes have covered related climate change education topics, but this was the first one to focus on urban issues.

Day One focused on sea level rise and urban flooding with presentations by City of Olympia, Washington Sea Grant, Center for Sustainable Infrastructure staffs and a consulting engineer. Breakout session during the first day allowed teachers to sample activities they might use in their classrooms to teach about these topics. Day Two was focused on a tour of the Deschutes Watershed and its geology, a stop at the Yelm Highway Stormwater Facility, a walking tour of Downtown Olympia and sea level rise and an optional kayak tour to Priest Point Park. Day Three focused on exploring curriculum resources, discussing action projects and giving teachers planning time for their classrooms in the fall.

Teachers came from Avanti High School, Capital High School, Centennial Elementary, Columbia Crest A-STEM , Academy, Evergreen Elementary (Shelton), Fort Stevens Elementary, Hansen Elementary, Lincoln Elementary, Nisqually Middle School, Olympia High School, Olympia Regional Learning Academy, Rainier Elementary, Reeves Middle School, Salish Middle School, Shining Mountain Elementary, Simpson Elementary, South Bay Elementary, Southworth Elementary, Wa He Lut Indian School and Wishkah Elementary.

The Institute topic, *Climate Change in the Pacific NW: Urban Environments, Flooding, and Sea Level Rise* provided teachers hands-on learning opportunities supporting Common Core and Next Generations Science Standards (NGSS) with an in-depth look at several complicated science topics ranging from sea level rise, estuary restoration and urban flooding. An [extensive on-line list of resources](#) was provided to teachers for use later in their classrooms.

The comparison of the Pre-Institute survey results with the Post-Institute survey results showed a marked increase in confidence of teaching these subjects along with an increase in knowledge (self-reported) of the topics (i.e. urban flooding). Teachers have a greater understanding of the impacts of climate change on urban areas such as flooding and sea level rise.

Recommendation Made for Post-Institute Support

Following each of these Institutes observations were made to NREP staff for future Institutes and the upcoming school year on how to extend the adult learning by developing a means of follow-up with teachers as they consider their classroom plans and implement action projects. Phone calls, emails or interviews helped to support teachers in ensuring the information they covered in the Institute was used in their classroom and their communities. A subset of teachers initially joined the CRFs program which met 4 times a year following the Institutes and provided in-class curriculum and action project support for those who joined. The challenge for most teachers was the amount of time (and sometimes the amount of *perceived* time) it might take to be involved in a program with expectations of work outside of the classroom and attendance at specific events.

A consistent issue for teachers is time – time to think, time to plan and time in the classroom (or field) for instruction in these topics. As much as the schedule permitted during the SITs, teachers were given time to discuss and plan how to integrate climate change information with the NGSS, how to use activities demonstrated during the SITs in their own classroom and how resources (including NOAA) they had discovered during the SITs might be made applicable to their classroom. One of the more valuable components for teachers of this type of professional development is to be a “student” again and have the time to discover learning in a different context without having to be the expert or teacher.

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