



2016 GeoFIT: *Human Geography: Faces and Places*

August 1-4, 2016 – NE Quadrant of ND

FINAL REPORT



The North Dakota Forest Service (NDFS) and North Dakota Geographic Alliance (NDGA) partnered to deliver their ninth **Geographically FIT** (*Forestry Institute for Teachers*) entitled **Human Geography: Faces and Places** in 2016. GeoFIT is a professional development opportunity for all PreK-12 educators across the state and is held each summer in a different location. The institute provides experiential learning and resources for curriculum planning and development and how to help foster environmental responsibility of natural resources in stewards of all ages. Educators had an opportunity to expand their content knowledge and study how geology, geography and forests can work together to minimize environmental impacts and land disturbances, as well as improve and protect surface and ground water. The four-day traveling “classroom on wheels” (charter bus) tour began in the Pembina Gorge forest near Walhalla and traveled to the Gingras Trading Post, Icelandic State Park, a Christmas Tree Farm, a riparian restoration site at Park River Bible Camp, viewed the algal bloom at Homme Dam, discussed community forestry in Grafton, took water samples at Drayton, studied human geography at Pembina, and returned to Walhalla to discuss how environmental issues may be addressed and resolved.

This workshop was made possible by in-kind support, grant funds, or donations from: **Enbridge, National Geographic Society Education Foundation, North Dakota Forest Service, North Dakota Geographic Alliance, North Dakota State University, Project Learning Tree, State of North Dakota, and the US Forest Service.** THANK YOU sponsors!

The annual GeoFIT institute focus is a collective decision by both education coordinators, guided by agency missions and with input from past participants. We leverage scarce resources to annually study the social, economic and environmental issues and possible solutions of a different geographic area around the state. NDGA and the NDFS both have a mission to help ensure a sustainable environment for the future. Safe and sufficient water and depletion of natural resources are the top concerns for our state and nation, as well as minimizing any negative impacts. The 2016 workshop focused on the Enbridge Line 3 pipeline in northeastern North Dakota.

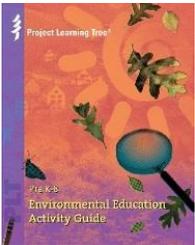


Sovak stressed all teachers have a responsibility to help students learn how to read and write, and showed them some useful techniques.

The GeoFIT workshop began at the Frostfire Ski Lodge in the Pembina Gorge forest near Walhalla with a welcome, overview, and an icebreaker of introductions by **Jeannie Sovak, a Great Plains Writing mentor and Jim Hill Middle School educator.**



Sovak followed the ice breaker with a presentation that stressed all teachers have a responsibility to help students learn how to read and write. She modeled some techniques that help students become familiar with new vocabulary, how to encourage them to say it correctly, understand the meaning, and use it properly in a sentence. This is the foundation for effective citizen involvement in future environmental decision-making processes, which involves a careful study of all sides of an issue, along with the ability to differentiate between honest, factually accurate information, and propaganda.



Glenda Fauske, Information and Education Coordinator for the North Dakota Forest Service, gave an synopsis of *Project Learning Tree* and the resources available to teachers and distributed the K-8 guides and 9-12 high school modules. PLTs goal is to help foster personal responsibility utilizing creativity and scientific processes. Some of the PLT environmental education activities were done during the institute and many ready-made lessons relating to the places we visited and material presented by speakers are found in the books and can be implemented immediately in the classroom this fall.

Dr. Clark Markell, Minot State University geology professor (retired), gave an overview of how geology impacted the geography of North Dakota throughout time to create North Dakota's three distinct regions today. He provided background on the creation of the Pembina Gorge and an overview of features we would be viewing throughout our stops on the tour. The better we understand Earth's history, the better we can foresee how events and processes of the past might influence the future. Some of society's most important problems to be addressed include energy, water, and mineral resources; the environment; climate change; and natural hazards like landslides, volcanoes, earthquakes, and floods.



Dr. Clark Markell gives an overview of the geology of the Pembina Gorge.



Dr. John Hoganson took us through time with an extensive PowerPoint of plant and animal fossils.

Following our noon lunch, we planned to go to the fossil site in the gorge, but it rained hard and we got over an inch making it impossible to get to the site. Fortunately, we had Plan B in mind and **Dr. John Hoganson, ND State Paleontologist** (retired), had an extensive and informative PowerPoint to show the participants. His presentation covered how the structure and scale of an ecosystem are influenced by factors such as soil type, climate, and water. He took us through a timeline of ND history from the inland sea 100 million years ago to the time of the dinosaurs; the thoughts on the catastrophic events that created such change on the earth; and the decades of ice sheets and their receding impacts. Participants had a lot of questions and were encouraged to visit the new Heritage Center in Bismarck and view the fantastic displays of plant and animal fossils found in North Dakota and several from the Pembina Gorge.



The Gingras Trading Posts highlighted the first fur-trade community in ND.

The last half of the afternoon was spent at the Gingras Trading Post near Walhalla, which was the first settled fur-trade community in the state. Participants had the chance to learn from the site visit, pictures, and presenter **Jeff Blanchard, curator for the State Historic Site**, how different the community, lifestyle, and environment was in the 1840s compared to today. The Gingras Trading Post preserves the home and trading post of Métis legislator and businessman Antoine Blanc Gingras. Métis, meaning "mixed blood" or "mixed race," is a term used by people of combined Indian and European ancestry to describe themselves.

Gingras's hand-hewn oak log store and home are among the few tangible remains of the fur trade in the Red River Valley, and the site is listed on the National Register of Historic Places.

Ila LaChapelle, North Border School District educator in Walhalla, shared with the teachers many of the activities she has compiled over the years to use with her students that relate to the area or the environment in the Pembina Gorge. She offered them a variety of hands-on activities they could “make and take” home, such as making a rain stick or the Metis hoop and stick game that built the skills needed to throw a spear!



LaChapelle provides the teachers a variety of "make and take" projects.

That evening an optional tour of the historic Walhalla Cemetery was offered. **Judge Jim Benjaminson** told participants about some of the martyrs and legendary people buried there.



The charter bus departed the second day for **Icelandic State Park**. Dr. Markell did some landscape interpretation on the way and **Park Manager Justin Robinson** welcomed us at the Pioneer Heritage Center. The park is located on the north shore of Lake Renwick, which offers visitors a wide array of recreational opportunities and highlights North Dakota's homesteading heritage. Within the park is the Gunlogson Homestead and Nature Preserve. This early homestead preserves the state's pioneer spirit, while the 200-acre natural wooded area along the Tongue River is a sanctuary for plants, birds and wildlife.

Dr. Joseph Zeleznik, NDSU Extension Forester, shared with the participants some of the invasive species concerns for the forests of North Dakota, such as the emerald ash borer, as well as some information on dendrochronology – the study of tree rings. From a tree’s rings, we can infer environmental conditions that might have occurred in its life. We can also correlate the time it takes a tree to grow with events in human history. Cooperation directed toward conserving resources and protecting environmental quality is beneficial to human health and the well-being of other life forms. The teachers also had some time to explore the woodlands and the historic buildings before departure.



Dr. Zeleznik presented information on invasive tree species and dendrochronology.



The second stop was at the **Campbell Beach Christmas Tree Farm** owned and operated by **Shawn and Margaux Lindsay of Cavalier**. Real Christmas trees benefit the environment while they're growing, support life by absorbing carbon dioxide and other gases, and emit fresh oxygen. The farms that grow Christmas trees

stabilize soil, protect water supplies and provide refuge for wildlife while creating scenic green belts. Often, Christmas trees are grown on marginal soil that doesn't support other crops and provides an additional income. Their farm offers choose and cut your own. Real Christmas trees are renewable and recyclable. There are many non-traditional ways to recycle your Christmas tree. Zoos give trees to animals for enrichment or they can be used for wildlife habitats (fish refuge, bird feeders), soil erosion barriers, mulch, etc.

Danielle Gorder, Environmental Program Manager for the Red River Regional Council (RRRC), showed participants a very successful riparian restoration project at the **Park River Bible Camp** that was impacted by severe stream bank erosion. The RRRC has worked on a regional scale addressing water quality, with a focus on riparian health in northeastern North Dakota watersheds. The goals of the program are made possible through financial and technical assistance. The results of a successful project include long-term measurable improvements of water quality and the river system health.



The successful riparian restoration of a severely eroded stream bank.



The blue-green algae bloom at Homme Dam is toxic and poisonous.

Just a few miles away, we stopped at the **Homme Dam** on the Park River to visit with **Sarah Johnston, Watershed Coordinator for the Walsh County Three Rivers Soil Conservation District**, about the blue-green algae bloom with confirmed microcystin presence at twice the recommended levels. People and animals that swallow water containing the algae can become sick with severe diarrhea and vomiting, numb lips, tingling fingers and toes, dizziness, or rashes, hives or skin blisters. Children are at higher risk than adults because of their smaller size. The solution to the problem is found in limiting the amount of excess nutrients available for facilitating its growth, in this case phosphorus is the excess nutrient. The way to address this type of pollution is to reduce the loading of eroded soil into the south branch of the Park River upstream.

The late afternoon concluded with a presentation by **Lezlee Johnson, Community Forestry Specialist with the North Dakota Forest Service**. She covered the many benefits of community forestry and the Tree City USA program, as well as ideas on how technology related to trees can be used. Tree City USA is sponsored by the Arbor Day Foundation and the North Dakota Forest Service and provides technical assistance, program direction, and national recognition for a healthy, sustainable forestry program in a community. The benefits include reduced costs for energy, stormwater and erosion control, a boost in property values, etc. She also showed the teachers how to use i-Tree to calculate the benefits trees provide, and how to set up a Google Earth tour (we partially toured the Tree City USA communities in ND). The “Tree Selector” webpage was also shared and will be useful for teachers, homeowners, and professionals. We concluded with a brief walkabout outside to look at some community trees.



Figure 1 Johnson shared information about Community Forestry and tree-related technology programs useful to teachers, homeowners and professionals.



On the third day, **bus driver Gerry Wettlaufer** took us on the charter bus to the riverside in the city park at Drayton to meet up with our next presenter.

Dr. Janet Rith-Najarian, biogeographer and educator for the Minnesota Geographic Alliance (MGA), serves as a professional development instructor for a collaborative project sponsored by National Geographic between MGA, the Canadian Geographic Education, and the North Dakota Geographic Alliance called the OPEN Water Planning Project. This joint international OPEN Water project plans to enable elementary and high school students to undertake place-based investigations in the Nelson/Lake Winnipeg watershed, a vast basin that touches four American states and four Canadian provinces. At Drayton, Dr. Rith-Najarian showed teachers one way to test the turbidity of water from the river with students. We also stopped at the “geocache” site at the museum.



Dr. Janet Rith-Najarian shows teachers how to test turbidity in the river water at Drayton.

Our “classroom on wheels” proceeded on to the confluence of the Pembina and Red Rivers on the east side of Pembina, ND. Dr. Rith-Najarian talked about the importance of the confluence and then the group drove to the Pembina Museum where a PowerPoint of the watershed and some additional water sample tests were completed. Participants had time to view the Pembina Museum and take the tower tour, if desired. The Pembina settlement was associated with the histories of French Canada, the North West Company, the Hudson's Bay Company, the



Red River Colony, Battle of Seven Oaks, the Red River Rebellion, Assiniboia, and Manitoba. Through much of the nineteenth century, Métis families used the two-wheeled Red River ox cart trains to travel into the Great Plains where the men would hunt bison and women would process the meat, skins, and bones. Their regular trade routes became known as the Red River Trails.



Jeff Beck, who will serve as the **North Dakota Geographic Alliance coordinator** next year, joined us and took the opportunity to introduce himself. Then, we headed back to Walhalla. An afternoon with outdoor activities was scheduled for the Tetrault State Forest for the late afternoon. However, the air conditioner stopped working in the bus on the way back and the bus windows do not open. It was a hot ride back to Walhalla on a hot day in the 90s. We completed a journaling activity with Jeannie Sovak after we returned. This was followed by *Project Learning Tree* activities on how to resolve environmental issues with **Glenda Fauske**, **Information and Education Coordinator, for the North Dakota Forest Service.**



The last day, many asked to go and see the still visible trail of the Red River carts. So, we followed Jeannie Sovak and a local resident for a look just outside of Walhalla. Then, we returned to town for our closeout sessions.

Our keynote speaker was **Dave Hodek, Manager for Major Projects, Engineering, and Construction in the Superior Region for Enbridge from Duluth, Minnesota.** He gave an overview of Enbridge and their many projects. People in North Dakota

mostly think of Enbridge as installing pipelines, but they have many energy

related-businesses around the country and world. Particular focus was on the Line 3 Pipeline going through the Drayton area and under the Red River. The pipeline topic, which was also touched on in some form by other presenters throughout the institute, analyzed human-environmental interactions and the affects – good and bad - on natural resources, our state’s economy, and infrastructure.



Dave Hodek from the Enbridge Superior Region office in Duluth, MN, gave the keynote presentation.



Marilyn Weiser, North Dakota Geographic Alliance coordinator, closed out the workshop with a debriefing and distributed National Geographic resources to the participants. This is her last workshop as she hands over the reins to Jeff Beck this fall. **THANK YOU**, Marilyn, for your leadership and best wishes for a wonderful retirement to spend time with family and friends!

The 2017 GeoFIT traveling “classroom on wheels” tour is being planned for the northcentral area of North Dakota along the proposed Enbridge Sandpiper pipeline route near Minot.

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