

Protectors Unseen (Continued)

By: Environmental Director, Jeremy Fincher

This article is a continuation of November's article where the "base" portion of OES's Clean Water Act Section 106 grant was discussed. A brief recap: The Office of Environmental Services receives no tribal funding and has no permanent positions, as a result, OES prepares, writes, and submits its own grant applications for Federal grant funding every year in hopes that the department can continue to exist. This fiscal year OES had 3 grant applications approved where federal funding was awarded. In this article I will focus on the Clean Water Act (CWA) Section 106 grant that was awarded. This grant has been an important component to the existence and success of the OES department over the last several years.

There are two components to the grant's funding, "Base" and "Variable". The foundation, or "Base" of this grant is to perform surface water monitoring for streams and rivers and then compile the data and submit reports back to the Environmental Protection Agency. The "Variable" portion of the grant's work plan provides flexibility to program managers to include and implement more advanced components such as macroinvertebrate sampling, rural water well monitoring, habitat assessments, fish collections, and fish tissue biopsies.

Biological, chemical, and physical monitoring are utilized in the understanding and defining the function and health of the stream and its ecosystem. While the "Base" portion includes the majority of the chemical monitoring, sampling, analysis, and reporting; the "Variable" portion includes the majority of the Biological and Physical monitoring components.

Sac and Fox Nation OES performs numerous forms of biological data collection. Twice a year (winter and summer) macroinvertebrate collections are performed. Macroinvertebrates are organisms that are large (macro) enough to be seen with the naked eye and lack a backbone (invertebrate). They live in all types of running waters, from fast flowing mountain streams to slow moving muddy rivers. Examples of aquatic macroinvertebrate include insects in their larval or nymph form, crayfish, clams, snails, and worms. Most live part or most of their life cycle attached to submerged rocks, logs, and vegetation. The basic principle behind the study of macroinvertebrates is that some are more sensitive to pollution than others. Therefore, if a stream site is inhabited by organisms that can tolerate pollution and organisms that are more sensitive to pollution are missing, a pollution problem is likely.

Both fish collections/surveys and fish tissue collections (biopsies) are also both components of OES's biological data collections. Fish collections are performed in the summer months. Collections can be made through seining, rod and reel, backpack and boat shocking methods. Most collections include both seining and backpack electro shocking methods. Seining is typically accomplished in waters with low visibility. One person at each edge of a rectangular net will sein in the direction of the flowing water and then pull the net onto the shore. Seining is conducted in the same direction of the flow because fish orientate themselves to face upstream. The lengths of seines vary and are used to capture small fish, mostly minnows and young year species. The use of electric fields in water to capture or control fish is a valuable sampling technique used by OES. Electricity is passed through the water, by two types of

electrodes, the anode (positive) and the cathode (negative). When applying the correct current, fish will be stunned for a few seconds, netted, and put into a holding tank for observation. Some specimens are preserved and sent to a taxonomist for identification. Conducting fish surveys allows OES to understand the dynamics of the stream's fish community including the variety of species present, size, health, and population densities. Monitoring changes in the fish communities over time can indicate whether a pollution problem may be present. A tissue biopsy will be collected from any specimen large enough for a person to eat. Once collected the fish tissue biopsy is sent off to a certified lab for mercury analysis. Most large fish will survive the procedure and will be released back into the stream. Mercury is found in the environment as a result of natural and human activities and has increase since the industrial age. The main source of mercury is air emissions from power generation and other industrial and waste disposal activities. As the mercury passes through the environment it can undergo many chemical transformations. One of these transformations can result in Methylmercury, which is highly toxic to mammals, including people, and causes a number of adverse health effects. EPA has set a health based criterion at a level that protects all exposed populations at 0.3 mg methylmercury/kg in fish tissue. If OES was to collect a specimen that exceeds this threshold, a fish consumption advisory would be issued.

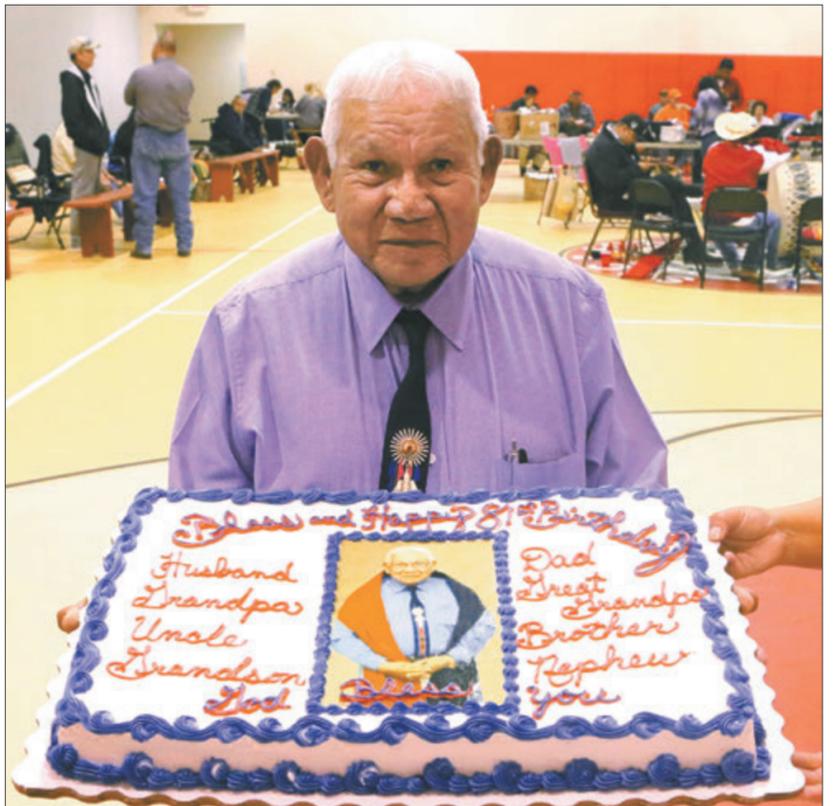
General habitat and situational data are collected anytime a biological collection is being performed. Additionally, a more intense physical habitat assessment will be conducted for scheduled streams where at least a 100 meter stretch of the stream will be assessed for multiple parameters including, channel morphology, channel width, channel depth, flow velocity, discharge, channel slope, roughness of channel materials, sediment load and sediment particle size distribution, and other riparian area traits are recorded according to the Habitat Assessment and Physicochemical Parameters portion of EPA's Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers. Tracking changes in the physical nature of the stream can help identify streams or areas of streams that may be more susceptible to pollution and require additional attention.

OES also conducts assessments on Veterans' Lake through the variable portion of the CWA grant, which includes a large majority of the same aspects performed for area streams. This upcoming year OES plans to begin a habitat mapping and characterization project for Veterans' Lake and collecting data to evaluate potential options in fishery suitability.

Lastly, OES is able to conduct a drinking water baseline assessment for tribal members that use private wells for drinking water. This is a limited first come, first served voluntary program. OES will collect water samples from an individual's home for analysis of several parameters including chemical and bacteriological. For the homeowner to conduct the same testing it would cost well over \$300.00. OES offers this service at no cost to the homeowner through this grant program.

If you would like to learn more about OES's different grant programs please feel free to call or stop by anytime to visit. Kiyakapati Aki.

Thanks for reading, JF.



Thomas Morris was recently honored with a dance celebrating his 81st birthday

ATTENTION ALL SAC AND FOX VETERANS AND ACTIVE MILITARY MEN AND WOMEN!

The Sac & Fox Veterans Women's Auxiliary is in the planning stages of creating a yearly calendar honoring all of our tribal Veterans, and the men and women currently serving in the military. We are requesting photographs of your veteran(s) along with any commendations they received (i.e., Silver Star, Distinguished Service Cross, Medal of Honor Wounded in Action, Bronze Star with V(Valor) etc.). We are asking that you also provide the date of birth for each so that it may be denoted on the calendar. We would greatly appreciate your assistance in our endeavor. All correspondence may be sent to the following address: Sac and Fox Nation, ATTN: Sac & Fox Veterans Women's Auxiliary, 920883 S. Hwy 99, Building A, Stroud, OK 74079.

MERRY CHRISTMAS				
MONTH of DECEMBER 2015				
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
30 Pulled Pork Sand Chips Pot Salad Peaches	1 Lima Beans Cabbage Corn Bread Choc. Pudding	2 Goulash Garlic Bread Green Salad Cake	3 Beef Liver Green Beans Scalloped Pots Pears	4 French Toast Bacon Boiled Egg 2% milk
7 Pork Rib Patty Cloe Slaw Baked Beans Mand. Oranges	8 Catfish Fries Green Beans Fruit Cocktail	9 Sliced Ham Mac & Cheese Squash Peaches	10 Chick Fried Steak Wild Rice Carrots Pears	11 Oatmeal W/ Raisins Sausage Toast Juice
14 Chili Broccoli Crackers Pineapple	15 Polish w/Pots & Peppers Green Bean Cass. Peaches	16 Roast Beef Mashed Potatoes Carrot Salad Fruit Cocktail	17 Corn Soup Fry Bread Green Salad Pears	18 Scrambled Egg w/Bacon Hash Brown Juice
21 Burritos Spanish Rice Salsa Pears	22 Meatloaf Mashed Pots Spinach Mand Oranges	23 Pintos w/ Ham Cabbage Corn Bread Cookie	24 OFFICES CLOSED	25 MERRY CHRISTMAS
28 Sweet & Sour Chicken White Rice Broccoli Applesauce	29 Chicken Tenders Fries Pea Salad Peaches	30 Beef Veg. Stew Fry Bread Cake	31 Black Eyed Peas Cornbread Green Beans Jello w/Fruit	2016 HAPPY NEW YEAR

DECEMBER 4, 2015

Presentation will be in Stroud, OK at the Sac and Fox Nation Learning Center in the large conference room.

Participants will receive a bag including energy saving items and information handouts on Indoor Air Quality.

Snacks will be provided!

Want to know about Indoor Air Quality?

Learn what could be in your Indoor Air.

Learn about health issues from poor Indoor Air.

Learn how to make your Indoor Air better and healthier.

Breathe Healthy Air!

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December 4, 2015 @ 2pm

Roseanna Preston
Sac and Fox tribal member

I make Sac and Fox tribe clan shields and Sac and Fox ribbonwork. I also mend clothes and do jewelry repair. If you're interested give me a call at 405-585-9527