Spring 2019

WATERSHED ED

Promoting watershed education and stewardship in Nevada

STEM Education in Nevada

Governor Steve Sisolak's top priority is education, and the State's STEM Advisory Council's vision is that "every student in Nevada will have access and opportunities to experience a high-quality science, technology, engineering and mathematics (STEM) education, with the ultimate objective that students are prepared to thrive in the New Nevada economy..."

All schools are encouraged to adopt practices that engage and expose students to real-world problem solving, creative design, innovation, critical thinking, and career opportunities through STEM-focused formal and informal education.

Schools in Nevada that meet the highest standards of STEM instruction are identified and recognized as STEM schools, as outlined in the Governor's Designated STEM School Action Guide.

The Governor and his wife recently visited and participated in Bordewich Bray Elementary School's Family Science Night presented by Sierra Nevada Journeys in Carson City. He spoke about how important education is to Nevada and how he was committed to supporting teachers, educators, students and families around the State.

It's not just the schools that must recognize and participate in the STEM experience. Families, businesses, industry and the community at large are also encouraged to help drive STEM curriculum and experiences.

(Continued on page 5)

Look Inside

1	Stem Education in Nevada
2	2019 Golden Pinecone Awards
3	Featured Watershed
4	NDOW Aquatic Fauna—Beaver
6	Science Career Highlight
8	Opportunities/Events
9	Resources/Contact

FEATURED

Science Career

Learn what it's like to be a water quality scientist (see page 6).

Northern Nevadans recognized for their Environmental Leadership

The **2019 *Golden Pinecone Sustainability Awards,*** held at The Renaissance Reno was themed, "The Art of Sustainability". As part of the event, there was an 18-piece recycled art exhibit curated by Kimberly Rios, Community Educator with Keep Truckee Meadows Beautiful. Our communities are replete with committed individuals and organizations that help make Northern Nevada a desirable place to live. We are proud to announce this year's winners:

Educator: Kristina Britt – Bordewich-Bray Elementary School

Educational Program: Truckee Meadows Parks Foundation Student Stewards Program

Youth Leadership: Alex Marsh, Reed High School

Individual/Volunteer: Christi Cakiroglu

Nonprofit Organization: Keep Truckee Meadows Beautiful, Reno

Nonprofit Organization: The Greenhouse Project, Carson City

Government Agency: Diamond Peak Ski Resort, Incline Village

Small Business: Great Basin Community Co-op, Reno

Medium to Large Business: Intuit, Reno

Sustainability Milestone: City of Reno

Honorable Mention: The Regional Transportation Commission of Washoe County

More Information

GreeNEVADA sponsored this year's event.

For more information about the winners

"Nevada Recycles has a new website! For information on recycling in Nevada, community sustainability spotlights, and access to updated recycling curriculum that is available for all Nevada educators, check it out."

STEM Education

Some awesome STEM links to explore:

- STEM Hub
- Pathways to STEM Nevada
- Northern Nevada Girls Math and Technology Program
- Nevada STEM Coalition

Lower Truckee River near Pyramid Lake

Truckee River Watershed

The beloved Truckee River begins as water from Lake Tahoe that spills over the dam located in Tahoe City at the lake's northwest shoreline. This is a good beginning for any river, as the water leaving Lake Tahoe is clear and cold. The Truckee River flows approximately 120 miles to its terminus at Pyramid Lake, located approximately 40 miles northeast of Reno. This gorgeous desert lake is the last remaining remnant of Lake Lahontan, the large, ancient lake that covered much of Northern Nevada years ago. It's located entirely within the Pyramid Lake Paiute Reservation. The Truckee River is an endorheic river, never reaching the ocean, as is the fate of many rivers.

There are many impacts to the Truckee River as it makes its way to Pyramid Lake. It travels through a bit of California, Washoe County, the cities of Reno and Sparks, picking up sediment, nutrients, trash, and other pollutants along the way. The 1905 Derby Dam diverts river water to supply irrigation needs in the adjacent Carson River watershed. All of the cumulative impacts on the Truckee have affected both plants and wildlife in the watershed, as well as the people who live there. Measures have been taken to protect some of the threatened and endangered species in the river, such as the Lahontan Cutthroat Trout and the Cui-ui fish, found only in Pyramid Lake and upstream in the river where they pass through the Marble Bluff Fish Complex a few miles away from Pyramid Lake.

The Truckee River is unique and a local treasure for many reasons. This river provides nearly 85% of the drinking water in the Truckee Meadows.

(Continued on next page)

Resources

[Truckee Meadows Water Authority's video]

[Nevada Department of Wildlife]

(Continued from page 3)

People also turn to the Truckee River to recreate and enjoy nature. We fish, float, swim and stroll along the river. We travel along the Tahoe Pyramid Trail by bike, skateboard and stroller. We sit by the river and write poetry or cuddle our loved ones and we walk our dogs along the river.

It's not all rainbows and butterflies on the Truckee River, as you are probably aware. Those impacts that were mentioned earlier happen when we go about our business and live our lives unaware in the watershed. Litter, excessive fertilizer and pesticides, automotive fluids from leaks, and sediment from disturbed earth are getting to the river due to our personal activities. We all live in a watershed and have a responsibility to love the rivers like our lives depend on it, because they absolutely do.

Our local, state and federal governments and other organizations are also working within our communities to help protect and restore the river. Projects are being funded to do river restoration. Sites are being cleaned up. Nonpoint source management projects are being installed to reduce pollution and bring back water resources to a natural conditions.

What can you do to help protect the Truckee River?

Derby Dam diverting water to the Carson River Watershed.

Nevada Department of Wildlife's Aquatic Fauna Spotlight

North American Beaver (*Castor canadensis*)

Beaver have long been an integral part of northern Nevada's ecosystems, but did you know they are the only animal second to humans in the magnitude of change they are able to create within their environment? It's true! By damming streams, the largest North American rodent is able to improve existing habitats and water quality or create completely new habitats that can be used by a number of species including waterfowl, mammals, amphibians, fish, insects, and humans.

These "ecosystem engineers" are also known to be busybodies, as they've been observed building and repairing damaged or destroyed dams within hours. You'd think being nocturnal would slow them down, but beaver are tenacious critters! Adults must work tirelessly to retain the water level of their ponds in order to access their lodge's underwater entrances and their cache of sticks stored at the muddy bottom for winter meals. These lodges

(Continued on next page)

(Continued from page 4)

are crucial as they provide refuge from frigid winter temperatures and predators like coyotes and mountain lions. They also serve as a safe space for beaver to raise their young.

Beaver families are multigenerational and typically consist of a monogamous adult pair, adolescents, and babies, depending on the time of the year. Kits are born in the early summer, and parents can expect 2-4 per litter. These kits will remain with their parents until they're nearly sexually mature, usually at around two years old. By this time they aren't quite fully grown (adults average 45 lbs. and 3-4 feet in length), but they will have learned all the tricks of the beaver trade necessary to construct their own lodges and dams and eventually find a mate.

The current beaver population in Nevada is estimated to be approximately 70,000, a shocking number to most considering it is the driest state in the US. They can be found anywhere there's an adequate water supply to construct a dam and create a pond; this is made possible by their incredible ingenuity and hardy work ethic! In recent years the Bureau of Land Management and other environmental agencies have started to recognize the advantages of beaver on Nevada's desert landscapes. Dams can help remove pollutants from waterways by acting as natural filters for trash, sediment, and debris, resulting in cleaner and healthier water. They can also help restore aquatic ecosystem biodiversity, reconnect floodplains, and replenish water tables. Even during drought years!

In northern Nevada the recognition of these ecosystems benefits has led to combined experimental efforts between humans and our industrious aquatic friends to transform and improve life in the Great Basin. Northeastern Nevada has already seen success in using beavers to restore Susie and Maggie Creek, previously parched areas due to drought and damage from harmful livestock grazing. Research is also being done to determine potential to mitigate climate change, which could improve future management of Nevada's diverse and valued wildlife including species like the Lahontan cutthroat trout, Nevada's state fish. With similar goals in mind and unparalleled dedication, Nevadans and beavers can work together to transform the arid landscape and provide clean and healthy water to all who reside in the state.

STEM Education in Nevada

(Continued from page 1)

Family Science Nights and community STEM events are gaining popularity in our communities.

Who is participating in and leading the way in STEM education in Nevada?

> Nevada Governor's Office of Science, Innovation and Technology provides more information on the state of STEM education in Nevada. There are various individuals, organizations, and communities involved in supporting, offering, and promoting STEM education in Nevada. The Desert Research Institute's Craig Rosen has been selected as a National STEM Ambassador and has been working with the STEM Leadership Alliance, representing Nevada and learning about STEM education around the nation. The City of Fernley hosts an annual STEM Festival and is widely received by the entire community. Several informal educators in our area offer STEM education in their programs. Some of the STEM offerings are expanded to include using art as part of the interdisciplinary approach. The Nevada Museum of Art is a local leader of STEAM education.

Science Career: Thoughts of a Surface Water Quality Standards Scientist

Way back in 1997, John Heggeness began working for the State of Nevada in the Water Quality Standards Program. He is now the supervisor of the program and has a group of other like-minded professionals working alongside him.

Prior to coming to this long-held position at the State, John worked for various mining and consulting companies doing mining exploration and environmental work. His Bachelor's degree from Utah State is in Geology and he apparently loved the discipline so much he went on to obtain a Master's degree in Geology from the University of Nevada. He works with a well-educated, diverse team of scientists with degrees in Environmental Sciences:, geology, hydrology, geochemistry and eco-hydrology.

But what do scientists like John and his crew actually do?

The Surface Water Quality Standards Program is within the Bureau of Water Quality Planning in Nevada's Division of

(Continued on next page)

(Continued from page 6)

Environmental Protection (NDEP). That program works to adopt, update, and revise surface water quality standards throughout Nevada. They also monitor surface waters throughout the state utilizing both chemical and biological macroinvertebrate sampling. Another responsibility of this group of scientists is to evaluate whether surface waters are meeting the water quality standards, which are set by the Environmental Protection Agency. That is a huge responsibility and takes dedicated individuals to collect and assess great quantities of data. These scientists go out into the field in every season to collect water quality data. They also collect biological data, checking for the numbers and composition of aquatic macroinvertebrates that are so important in our aquatic ecosystems.

When John was asked to describe the changes he has seen over his long career, he mentioned that technology has come a long way from the time he started. Initially he was using a mainframe with punch cards, but has since adapted nicely to his modern desktop. Mercury thermometers were once used to measure the temperature of the streams but those were replaced with hand-held meters, then sensors with data loggers, to current sonde meters that can be left in the streams for months.

John has sound advice for future water quality scientists. Be willing to learn constantly. Be adaptable to various conditions. Speak up when necessary - even for clarification. And, be able to admit that you will make mistakes and move on.

Collecting and identifying benthic aquatic macroinvertebrates help understand the health of an aquatic resource.

He also wants scientists to know that if they work in the field collecting data, they should be prepared for all sorts of situations. There are many things scientists might encounter in the field, including but not limited to cattle, dogs, deer, badgers, snakes, mosquitoes, ticks, deer flies, hunters and any and all types of weather.

Even here in the driest State in the Nation there is water, water everywhere! And this water is precious to life and lifestyle. It takes the help of educated, committed professionals to help ensure that we protect our water resources. Check back in with the next edition to meet another scientist!

"John has sound advice for future water quality scientists. Be willing to learn constantly. Be adaptable to various conditions. Speak up when necessary. And be able to admit that you will make mistakes and move on."

Opportunities and Events

Fallon - Paiute-Shoshone Tribe Earth Day

When: April 20, 10:00 a.m.—2:00 p.m.

Where: Oats Park, 151 E Park St, Fallon, NV 89406

Description: Family-friendly educational event themed Protect Our Species

KTMB Great Community Clean Up

When: April 27, 2019

Where: Various locations in the Truckee Meadows

Description: GCC focuses on the cleanup of illegal dump sites and removal of noxious weeds in the open spaces surrounding the Truckee Meadows.

Truckee Meadows Earth Day

When: April 28th, 9:00 am—3:00 pm

Where: Mayberry Park and River Farm School, 101 Woodland Av, Reno

Description: Enjoy pollinator gardens, ecological walks and demonstrations, yoga by the river, morning bird watching, delicious food, cultural performances, scavenger hunts, art installations, dancing, live music, a kid's zone, educational displays and activities, and much more.

Northern Nevada Science and Technology Festival

When: May 13th—-17th

Where: various locations in Northern Nevada

Description: K-12 schools and community partners host family friendly events.

19th Annual Truckee River Snapshot Day

When: May 17th 9:00 a.m. -12:00 p.m.

Where: Various locations in the Truckee River/Pyramid Lake watershed

Description: 2019 Flyer

One Truckee River Month

When: May 1—May 31

Where: throughout the Truckee River watershed

Description: Celebration of the Truckee River with opportunities to visit and learn about this gem of our region.

Flood After Fire Workshops

When & Where: April 30th—Elko, May 1st—Reno

Description: 2019 Flyer

Featured Event

Learn more about this very special event https://ndep.nv.gov/water/rivers-streams-lakes/water-education-and-outreach/snapshot-day

Nevada Department of Conservation and Natural Resources

STEM in the News

- Elko
- Jobs
- Community
- Tesla
- UNR
- STEAM

JOIN WATERSHED ED

To submit an article or comment on an error, please contact Patricia Tierney.

ptierney@ndep.nv.gov

(775) 687-9454

Watershed Education Resources:

- Desert Research Institute Science Alive
- Envirolution
- Great Basin Institute
- Great Basin Outdoor School
- Keep Truckee Meadows Beautiful
- Nevada Department of Wildlife
- Nevada Museum of Art
- One Truckee River
- Sierra Nevada Journeys
- Terry Lee Wells Nevada Discovery Museum
- Truckee Meadows Parks Foundation
- Urban Roots

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

Nevada Department of CONSERVATION & NATURAL RESOURCES

Watershed Ed is made possible by the Nevada Division of Environmental Protection, an agency in the Nevada Department of Conservation and Natural Resources.