

RiverWatch Volunteer of the Year Announced
11th Year in Adopt-a-Highway Concludes
Chloride Testing of Sangamon River
Natural Areas Progress Report
The Science Corner – Osmosis?



Recreation * Stewardship * Citizen Science

USRC Newsletter



Year in Review >>>

Natural Areas Invasive Removal Team 2021 Progress Report at Mahomet Greenway Park

USRC decided this year to step up its efforts in removing invasive plants along the Sangamon River corridor. Toward that end, regularly scheduled workdays started in March at the Mahomet Greenway Park. A total of 43 work events were held in 2021 with 25 volunteers participating throughout the year for a total of 359 volunteer hours. Of the 26 wooded acres, 10 were intensively overtaken by honeysuckle, and about 7 of those have been cleared. Weekly workdays were spent cutting invasive, with monthly weekend workdays used to burn the brush piles, and cut and treat stumps. Significant progress was made in Greenway Park, with work to resume in March 2022. If you would like to volunteer in this effort, contact Joe Niernberger at naturalareas@sangamonriver.org.



USRC Completes 11th Year in the Illinois Adopt-a-Highway Program Volunteer Participation Continues to Grow

The USRC is one of more than 1100 groups in Illinois' Adopt-a-Highway Program

The USRC's participation in the Illinois Adopt-a-Highway Program continues to have strong volunteer support as it completes its 11th year in the program. The ability to draw volunteers to the roadside clean-up events is due in a large part to the persistence and enthusiasm of the USRC's Adopt-a-Highway coordinator, Joe Niernberger. The program, in its 25th year in 2021, is sponsored by the Illinois Department of Transportation. Although 4 clean-ups are required when adopting a section of highway, the USRC completed 10 clean-ups this year. The designated 2-mile stretch of Rt 47 is from the I-74 interchange to County Road 2425. In addition, the USRC cleans the entrance and exit ramps at the I-74 interchange. The IDOT facility on Leverett Road in Champaign collects the bagged trash, tires, and other debris for disposal. This year 15 volunteers logged 73.5 total volunteer hours and collected 41 trash bags. The volunteers have found some unusual items over the years, such as a pingpong table and an unexpired



package of steaks. This year's items include a car tire, 2 bicycles, and a \$5 bill. The most unusual items were hundreds of individual-size Trix cereal boxes. They were empty, as they had been eaten by wildlife. And we thought Trix were just for kids. If you would like to volunteer for our next clean-up on March 20th, contact Joe Niernberger at adoptahighway@sangamonriver.org.

USRC Monitoring for Chloride

The USRC is participating in Illinois RiverWatch's new chloride monitoring initiative

Fresh snowfall can make for great sledding, and beautiful winter scenery. Winter weather events can also produce hazardous conditions for pedestrians, bicyclists, and motorists. Roads and walkways are often treated with rock salt, most typically sodium chloride (NaCl), as a way to mitigate these hazards. Although highly effective, the introduction of salt also creates concerns.

Salt is highly corrosive to concrete and metal. The damage to automobiles, roads, and bridges from salt is estimated to be \$5 billion annually (USEPA), as more than 20 million tons of salt are spread on the roads in the United States each year (USGS). In addition to damaging infrastructure and automobiles, salt can also be problematic for water supplies and wildlife.

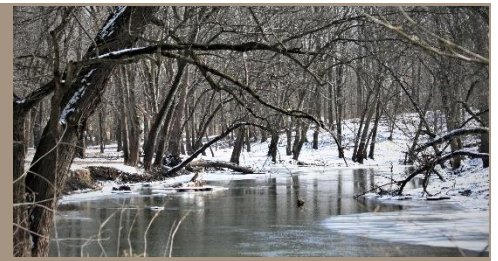
Salt entering sources of our drinking water

can create issues for those on salt-limited diets. Water sources contaminated with chloride can force municipalities to use an expensive desalination process to meet EPA minimum standards for drinking water.

Wildlife is also harmed by elevated levels of chloride in lakes, rivers, and streams. Invertebrates, such as stoneflies, caddisflies, and mayflies, make up the base of the aquatic food web in our

waterways. They are highly sensitive to elevated concentrations of chloride in the water. Adverse effects to invertebrates will, as a consequence, impact many other species within the food web, such as fish, amphibians, and birds that rely on them for food.

Since 2009, the Upper Sangamon River Conservancy has annually sampled invertebrates within the Upper Sangamon watershed as a way to monitor stream health. Beginning this year, the USRC is also testing for chloride in the Sangamon River. The testing season begins October 15 and ends May 31. For the USRC, the initial effort will consist of biweekly samples from 3 locations along the Sangamon River. Both invertebrate monitoring and chloride testing are state-wide initiatives administered by Illinois RiverWatch, a program of the National Great Rivers Research and Education Center.



Titrators for Chloride

Hach Quantab titrators for chloride are used in the Illinois RiverWatch Winter Chloride Testing program. They are an easy and fast way to test lakes, rivers, and streams. The titrators can detect chloride concentrations ranging from 30 to 600 ppm (mg/l). Consistent chloride concentrations above 100 ppm, or spikes of concentrations above 500 ppm, indicate that aquatic wildlife is being harmed by chloride pollution.



Citizen Science Opportunity >>>

Winter Chloride Watcher Program

How You Can Help Reduce the Adverse Impacts of Salt

Illinois RiverWatch is a program administered by the National Great Rivers Research and Education Center. It is a volunteer stream monitoring program with goals to:

- provide “consistent, high quality data” that can be made available to scientists to measure changes in the conditions of Illinois’ streams.
- to provide Illinois residents information and educational opportunities about the ecology and importance of the state’s water resources.
- provide for Illinois residents the opportunity “to become involved in the stewardship of the state’s rivers and streams.”

Illinois RiverWatch established its invertebrate monitoring program in 1995. This year it will be adding chloride monitoring of Illinois streams to its citizen science opportunities. Volunteers must complete a brief online training workshop. The 1-hour training workshop is offered in the evenings in the fall. Volunteers use the Water Rangers app to manage the data collected from chloride monitoring. You can become a trained volunteer by contacting Bruce Colravy at citizenscience@sangamonriver.org, or by visiting the Illinois RiverWatch webpage at ngrrec.org/riverwatch.

The goal, of course, is to keep our roadways, walkways, and parking lots safe for us to navigate winter’s hazards, while also keeping chloride concentrations in our streams below harmful levels. Here is how you can help.

- **Be an example** – There are instances in which salt may not be necessary. For example, you can shovel first, and use sand as needed on icy spots.
- **Be informed** – When salt is necessary, make sure that it is not being over-applied. Rock salt is optimally effective when the pellets are spread about 3 inches apart. Concentrations greater than that are economically wasteful, damaging to infrastructure, and unnecessarily harmful to the environment.
- **Be an Advocate** – Inform your neighbors especially schools, churches, and businesses that salt their parking lots and walkways about best practices for salt use.

Joe Niernberger Selected Illinois RiverWatch Volunteer of the Year

We proudly announce that USRC's very own Joe Niernberger has been chosen 2021 Illinois RiverWatch Volunteer of the Year. The award is given by Illinois RiverWatch "to an Illinois RiverWatch citizen scientist for their commitment, leadership, and outreach associated with RiverWatch and the water resources of Illinois." A quick look at Joe's credentials and you can see why he was recognized.

Joe, a trained RiverWatch volunteer, participated in six RiverWatch invertebrate monitoring events this year. He has participated in a total of 28 monitoring events in the previous four years. He has led a scout troop during monitoring, providing them the opportunity to learn about the importance of freshwater invertebrates to rivers and streams while they fulfill their service requirement. Joe is a key participant in RiverWatch mussel surveys with the Upper Sangamon River Conservancy (USRC), as well as river clean-up events. He understands that the health of rivers and streams extends beyond the stream banks to entire watershed. He leads roadside clean-ups that help reduce the amount of unnatural debris that would otherwise enter streams within the watershed. Joe plays a key role in the removal of invasive honeysuckle



from the streamside within the Sangamon watershed. He is a member of the East Central Illinois Master Naturalist (ECIMN) and has disseminated information, promoted RiverWatch, and recruited volunteers from the ECIMN. He is a committed volunteer for RiverWatch, the USRC, the ECIMN, and the Champaign County Forest Preserve District and has dedicated his retirement years to giving his time and talents to the missions of these fine organizations. Joe said, "I know there are many hard-working RiverWatch volunteers around the state, so I'm especially honored to be chosen for this award." Congratulations Joe! A well deserved recognition.



Become a Volunteer

To learn more about the many volunteer opportunities available at the USRC contact Mary Stech at volunteer@sangamonriver.org or visit our website at sangamonriver.org.

USRC Contacts

Mike Daab, President
president@sangamonriver.org

Mary Stech, Vice President
vicepresident@sangamonriver.org

Joe Niernberger, Secretary
secretary@sangamonriver.org

Bart Duesdieker, Treasurer
treasurer@sangamonriver.org

Scott Hays, River Runner Coordinator
riverrunners@sangamonriver.org

Bruce Colravy, Citizen Science Coordinator
citizenscience@sangamonriver.org

Michael Lambert, Webmaster
webmaster@sangamonriver.org

Feature Fauna >>>

Great Blue Heron: *Ardea herodias*

The great blue heron is North America's largest heron measuring up to 54" from head to tail with a wingspan that can be nearly 80". They are easily identifiable in flight with their slow wingbeats, neck tucked in close, and feet that trail behind. When hunting they can be seen in shallow waters slowly wading or sometimes statuesque, their neck held in as S-shape before they thrust their head forward and pluck a fish or other prey from the water. They can often be observed around lakes, streams, or even

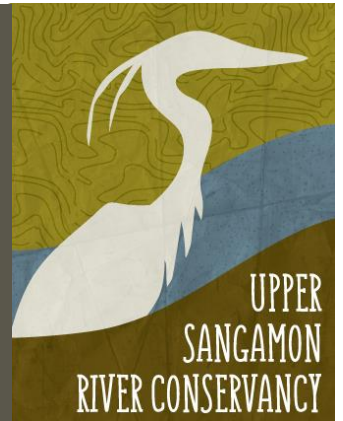
in agricultural fields. The chest feathers on the great blue heron grow continuously, fraying into a powder, that can then be used to clean-off fish slime and oils when the heron preens.

The Sangamon River corridor is home to many of these stately birds; there are about 5000 nesting pairs in Illinois. They often nest in a heronry, a more specific term than rookery. Herons have many predators, primarily egg and fledgling predation by raccoons, turkey vultures, eagles, hawks, and crows. Humans are also imposing threats to herons through habitat destruction, human persecution and disturbance, and pollution.



The Science Corner

Chloride, Osmosis, and Freshwater Animals

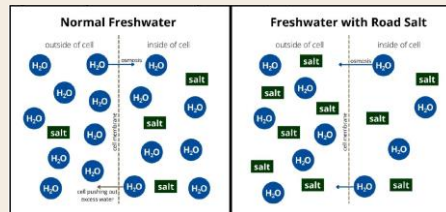


UPPER
SANGAMON
RIVER CONSERVANCY

To help reduce the hazards of winter travel, road salt, usually sodium chloride (NaCl), is applied to roadways, walkways, and parking lots. Since about 1940, this has become common practice during the winter months. Other salts are also sometimes used, such as magnesium chloride, calcium chloride, or potassium chloride. This year the USRC began chloride testing in the Sangamon River. Samples are taken every 2 weeks at 3 locations along the river from October 15th through May 30. When chloride enters our rivers and streams, it can cause harm to freshwater invertebrates, fish, and amphibians. Chloride harms animals that live in freshwater ecosystems because they have adapted very differently than those in saltwater environments. We were taught in science class (for some of us many years ago) the process that accounts for these differences.

A process called osmosis is responsible for the movement of water across cell membranes. Each cell needs some salt. The amount of salt needed for optimal function of the cell falls somewhere between what is naturally found in saltwater and what is naturally found in freshwater. Osmosis carries water across the cell membrane toward the side with more salt. The cells of freshwater animals typically have more salt inside their cells than outside their cells. In this case, osmosis tries to push water into the cell. These cells have adapted to push excess water out through the cell membrane. When the amount of salt in freshwater ecosystems is increased above that which is naturally found in

those systems, osmosis draws water out of the cells. Since the cells are not adapted to hold in this needed water, the cells become increasingly desiccated, and may shrivel and die. As cells are harmed, the aquatic animals to which they belong can be harmed and may also die.



Salt changes how water moves in and out of cells

The State of Illinois has developed water quality standards as a way to protect its aquatic life from high levels of chloride. The water quality standards for freshwater in Illinois are set at 500 mg/l. During the winter months, the concentration of salt in our lakes, rivers, and streams frequently spike to levels much higher than this, due to applying rock salt and brine to our roadways, walkways, and parking lots.

Concentrations can quickly increase following a winter storm as salty stormwater runoff enters local waterways. The concentrations may also quickly drop as chloride is diluted with additional freshwater that does not contain salt.

Some chloride can move into groundwater. In this case it can take months or even years for the chloride to find its way to our freshwater streams. This can cause concentrations of chloride to be higher, even in summer months, than they would have been prior to 1940. To do your part, use salt only when necessary and take care not to over-apply. Be safe, and enjoy our Illinois winter.



Upcoming Events >>>

2022 Winter Calendar

Adopt-a-Highway Clean-up
Museum of the Grand Prairie
March 20 – 9am – 11am
Contact Joe Niernberger at
adoptahighway@sangamonriver.org

Invasive Species Removal
Mahomet Greenway Park
Thursday Workdays
March 3 – 10am – 12pm
March 10 – 10am – 12pm
March 17 – 10am – 12pm
March 24 – 10am – 12pm
March 31 – 10am – 12pm

Burn Day
March 27 – 10am – 1pm
Contact Joe Niernberger at
naturalareas@sangamonriver.org

Chloride Testing
Jan 9 & 23
Feb 6 & 20
March 6 & 20
Contact Bruce Colravy at
citizenscience@sangamonriver.org

USRC River Runners

March 20
Time and Place TBD
Contact Scott Hays at
riverrunners@sangamonriver.org

Upper Sangamon
River Conservancy

newsletter@sangamonriver.org

PO Box 765,
Mahomet, IL 61853

www.sangamonriver.org