



Missouri National Recreational River  
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MISSOURI  
NATIONAL  
RECREATIONAL  
RIVER

Phone: (605) 665-0209

We're on the Web!  
[www.nps.gov/mnrr](http://www.nps.gov/mnrr)

Mail to:

**MNRR 2011 Research Projects**

An NPS research permit is required to conduct research within MNRR. The application process is quick, easy, and free. To apply go to: <https://science1.nature.nps.gov/research/ac/apps/apply/AppInstructions>

The following are current research projects being conducted along the Missouri National Recreational River.

- Adult Census and Productivity Monitoring of Least Terns and Piping Plovers on the Missouri National Recreation River– Pavelka, USACE
- Assess pallid sturgeon capture efficiency and survival after handling– Klumb, USFWS
- Botanical Survey of the Missouri National Recreational River– Korman, NPS-MNRR
- Evaluation of Vegetation Removal and Control Methods to Create Emergent Sandbar Habitat on the Upper Missouri River– Huber, USACE
- Factors Affecting the Reproductive Status, Movements, and Habitat Use of Pallid Sturgeon and Shovelnose Sturgeon in the Missouri River – DeLonay, USGS
- Gunderson Backwater Monitoring– Cowman, University of South Dakota
- Historic, Present, and Future Cottonwood Forest Dynamics along the Missouri National Recreational River– Dixon, University of South Dakota
- Missouri River Native Fisheries Long Term Monitoring Program– Stancill, USFWS
- Missouri River Catfish Ecology and Management– Pegg, University of Nebraska, Lincoln
- Missouri River Studies– Mestl, Nebraska Game and Parks Commission
- Missouri River Native Fisheries Long Term Monitoring Program downstream of Fort Randall Dam– Klumb, USFWS
- Natural Resource Damage Assessment Addendum to the Work Plan for Determining Injury to the Piping Plover (*Charadrius melodus*) from the Deepwater Horizon (MC 252) Oil Spill Bird Study 7– Catlin, Virginia Polytechnic Institute And State University
- Pilot Study to Monitor Water Quality Parameters on the Lower Reach of the Niobrara River– Wilson, NPS-NGPN
- Predator Management to increase Nest Success and Survivability of Least Terns and Piping Plovers on Sandbars of the Missouri National Recreational River– Pavelka, USACE

Missouri National Recreational River

National Park Service  
U.S. Department of the Interior



"Current" News

Newsletter of the Missouri National Recreational River  
Resource Management Division

Summer–Fall 2011

Inside this issue:

Flood Waters and Weeds: Friends or Foes?	2
Flood Photopoint Example	2
Realities of Early Steamboat Travel, Cont.	3
Invading the Classroom: Using Invasive Species	4
Trash Talk: Cleaning Up the Missouri	5
Volunteer Spotlight	5
Do You Know Me?	5
Current Research Projects	6

Flood Response Monitoring at Bow Creek

Approximately 83 acres of MNRR's Bow Creek Recreation Area (BCRA) has been inundated by the 2011 Missouri River flooding. Located north of Wynot, NE near River Mile 788, Bow Creek Recreation Area is a federal parcel managed by MNRR and open to the public.

The lower floodplain area of BCRA, a mix of grassland, shrub, and wetland areas is under 5-6 feet of water (10+ feet in the former wetland areas). Wetland areas and remnant channels have become areas with substantial -lying portions of the upper floodplain are also under several feet of water, extending beyond the MNRR property line and into adjacent farmland. Bow Creek is 1-2 feet from topping

its high bank.

To gauge how BCRA responds to long-term flooding, MNRR and partners have established

monitoring plans to determine plant and animal response. Aquatic monitoring on BCRA includes water quality, aquatic macro-invertebrates, and zooplankton sampling. MNRR is also gauging vegetation response to long-term inundation. Specific invasive species of interest include cedar trees, leafy spurge, and Russian olives. The South Dakota Game, Fish and Parks will also conduct fish monitoring and a graduate student from USD assisted with frog surveying. Understanding the floodplain response to long-term flooding is crucial to river health.



Searching for Aquatic Macro-invertebrates.



The crew used canoes to reach the areas of interest while surveying.



MNRR Team

Contact us:

We'd love to hear from you! Contact us at 605-665-0209 with story ideas, questions, and comments.

Flood Photopoints

Missouri National Recreational River (MNRR) has established a series of photo points along the 39-mile and 59-mile segments of the Missouri National Recreational River to document the 2011 Missouri River flooding. Photos will be used to document several conditions during the flood and changes in the landscape after flood waters recede. Points are taken from land and are designed to show the height of the water at a particular location at varying discharges. This

project will also show what areas of its floodplain the river connects to with changes in the amount of water flowing through the system.

Photos will be organized by location as a time-series and will eventually be made available in an online clickable map on our website. The data will provide flood documentation and assist in assessing post-flood outcomes.

Example found on Page 2.

## Flood Waters and Weeds: Friends or Foes?

Historically high flooding on the regulated Missouri River has everyone talking about what to expect next, weed management is no exception.

All noxious weeds in Nebraska and South Dakota are emergent (meaning from wet areas but extending above the water surface, such as purple loosestrife and phragmites) or terrestrial plants (such as thistles, leafy spurge, knapweeds, etc.) None are adapted to being completely covered by water. So the big question is: 'What does flooding do to an emergent or terrestrial plant?' Plants need oxygen, but they generally produce more than they use for cellular respiration. If a plant can conduct photosynthesis, it gets all the oxygen it needs. Terrestrial plants do not have specialized photosynthesis and respiration processes for surviving without air (only truly aquatic plants do). When covered by water its supply of carbon dioxide is also limited. Without carbon dioxide they can no longer conduct photosynthesis, reducing their supply of both oxygen and food. This forces the plant to shut down and use its energy reserves to remain alive. Perennial weeds like purple loosestrife and Canada thistle have large energy reserves in their roots, so prolonged flooding will be required to kill them. How long? The answer depends on several variables including length of inundation, depth and oxygen content of the water, temperature, and health of the plant prior to flooding.

The good news is that initially a reduction in noxious weeds in flooded areas should occur. Flooding is often cited as an effective control strategy for wetland emergent weeds. Unfortunately, very little published information exists on weed control with flooding similar to what we are seeing on the Missouri River. It would normally be unusual to flood a stand of noxious weeds with 10-feet of water for several months! The bad news is most of the native plants are also going to be damaged by the high water. As plants die, the bare soil that remains will be the perfect place for weeds to become established by seed. Most noxious weeds have seeds that last for a long time in the soil (some seeds can survive for more than one hundred years under the right conditions); and flooding most likely will not have a negative effect on seed viability.

The recommendation is to be vigilant and act quickly when you find noxious weeds in currently flooded areas. Weed control efforts are much more successful when applied to young or stressed plants.



Canada Thistle

## Flood Photopoint Example



59-mile segment at the NPS property, Bow Creek Recreation Area.

## Do You Know Me?



Missouri River users are often quite familiar with the effect of a Chigger bite. However, there are many myths & misconceptions associated with these miniscule irritants. Chiggers are the larval form of a type of mite. Contrary to popular belief, they do not burrow under the skin nor do they suck blood. Chiggers attach much like a tick, using saliva to dissolve the skin, and drink the liquefied tissue. The itching is caused by the saliva & continues due to the stylosome, a hardened tube of cells that forms around the saliva, which causes an allergic reaction. Itching stops once the stylosome has been absorbed by the body. Chiggers need not be suffocated by nail polish because scratching will dislodge them. The best way to prevent chigger bites is take a hot bath & scrub them off before they bite.

<http://mdc.mo.gov/discover-nature/avoid-outdoor-pests/chiggers>

[http://www.dirtdoctor.com/pics/content\\_img.3833.img.jpg](http://www.dirtdoctor.com/pics/content_img.3833.img.jpg)

## Trash Talk: Cleaning Up the Missouri



Volunteers showing the great teamwork that took place at the eighth annual clean-up.

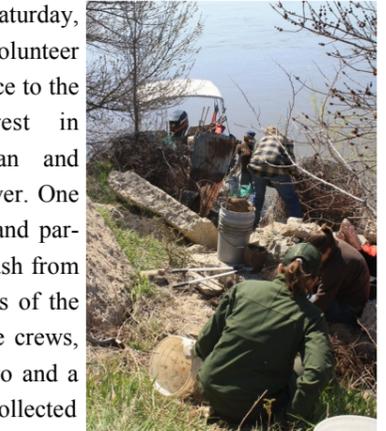


Volunteers line up to receive life jackets.

The eighth annual Missouri River Clean-Up was successfully completed on Saturday, May 7th. A great volunteer turnout gave evidence to the community's interest in maintaining a clean and healthy Missouri River. One hundred volunteers and participants removed trash from the upper eight miles of the 59-mile stretch of the Missouri to Gavins Point Dam. The crews, divided into eight boats, collected 3.52 tons of trash in two and a half hours. The trash collected included 0.21 tons of metal, 1.87 tons of garbage, and a whopping 115 (1.44 tons) tires. A great "thank you" goes out to the numerous agencies, businesses, and individuals who contributed to the success of this year's project.

This project concluded a week full of clean-up activities for the Missouri National Recreational River.

Earlier in the week, National Park Service employees along with members of Missouri River Relief and several other volunteers worked to remove garbage from the Clay County bank at approximately RM 790.5. In two days, the crew removed an estimated six tons of metal, two washing machines, a hot water heater, a grain bin, and many cans, bottles and miscellaneous trash. Several cleanups are being planned for 2012.



On day one the crew worked hard to remove trash by hand.



On day two the crew received the help of a backhoe to remove the remaining trash.

## Volunteer Spotlight

Andrew spent many hours behind a microscope sorting through Bow Creek macro-invertebrate samples for Resource Management. Andrew also volunteered with the Interp Division helping with fishing clinics, maintenance and visitor surveys. His help was greatly appreciated and we could not thank him enough!

If you are interested in volunteer opportunities at Missouri National Recreational River, call Dugan Smith, Park Ranger, at 605-665-0209.



Andrew at the fishing clinic.

### Invading the Classroom: Using Invasive Species to Teach

Purple Loosestrife (PLS) is an invasive wetland plant that quickly takes over areas favored by native cattails and sedge grasses. It is a significant threat to the ecosystems in the Missouri and Niobrara River valleys as well as smaller lakes, ponds and streams. The seeds were brought here on ships both accidentally and for medicinal reasons. Unfortunately, none of its natural consumers tagged along. The plant quickly spread west and is now infesting almost all wetlands in the U.S. Local conservation agencies have been working to control it since the mid-1990's, having the greatest success using a small beetle that loves to eat PLS. The beetle originates from the same region as PLS and, in fact, is "host-specific;" it relies on PLS exclusively for food and housing, much like the Monarch butterfly and milkweed.

A group of teenagers from Niobrara, Nebraska are partnering with conservation agencies in controlling PLS. The project began five years ago when their teacher, Mrs. Sharla Hanzlik, was in-



*Galerucella beetles being released on Purple Loosestrife along the Niobrara River.*

vited to bring her class to watch "The Root Dig." This activity involves agents from Nebraska Game and Parks, various county weed management boards and conservation groups harvesting PLS roots in order to raise the *Galerucella* beetles in captivity in order to be released into areas without the beetles. Open to an engaging extension of the classroom (aka "fun excuse to go outside"), students happily worked with



*The Galerucella beetle circled in red.*

the agencies, even making a small "bucket garden" themselves to grow the beetles. Also, from classroom discussion of the project grew the realization

of Niobrara's economic dependence on the local environment. Students created a survey and determined that businesses relied on travelers for a majority of their income. The same survey also indicated the average traveler's reason for being in town: to enjoy the beautiful area. Students quickly made the connection between the health of the ecosystem and the health of the town's economy.

The project has expanded to raise thousands of beetles and to inform the community of stewardship. The students have been rewarded by receiving regional and national awards including Seaworld/Busch Garden Environmental Excellence Award, State Farm National Youth Service Learning Project, and RC&D Youth Project of the Year. Future research will include studying the impact of the flooding this summer on the local environment and economy that depends on it. Restoration and recovery will be a priority in the future.

### Realities of Early Steamboat Travel

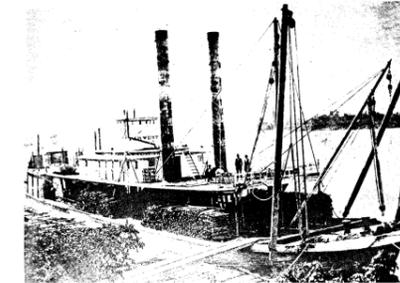
Though often romanticized, steamboat travel in the 1800's was actually a harsh and dangerous endeavor. Inexperienced travelers were at the mercy of the elements, unscrupulous crews and captains, and potential dangers from the operation of the boat itself. A set of travel guides, like those used by early Midwestern settlers, are chronicled in The Explorations in Iowa History Project, Frontier Life 1830-1870, "Helpful Hints for Steamboat Passengers. They provided advice on what passengers could expect and today offer us an excellent perspective on the realities of river travel during this time-period.

Most steamboats offered both expensive cabin and deck passage at half the cabin rate. Generally, deck passengers outnumbered the cabin passengers three-to-one. In the years of heavy immigrant flow, a boat may have had 40 cabin passengers and 200 deck passengers.

"Cabin Passengers...the typical cabin may be seven or eight feet square... improved steamers provide clean mattresses and sheets on the berths...(there are) two washrooms located near the wheelhouses...there are only two washbasins, with one hair brush, a comb, a community toothbrush, and a roller type towel. The crew keeps the pitchers filled with river water. The toilets are... placed over the paddle wheel, other times they are built next to the wheel."

"Deck Passage...most captains load the cargo, including animals, on the deck first...deck passengers scramble for the space that is left. Find boxes or bales marked for port farther than your own destination. These should make a good bed for your journey...If you can, avoid

the boat's guards. The danger of being pushed overboard is too great. There is little or no protection from the elements. A passenger can reduce his fare by wooding on a trip. The job of cutting and carrying wood is a hard one. It should be attempted by only those used to hard work. The crew will also need help in scooping animal manure off the deck. Most captains try to clean the deck once each day. Deck passengers are in constant danger from possible



*The Far West steamboat transported the wounded from the Custer Massacre to Fort Lincoln. A Trip of 710 miles.*

boiler explosions. Escaping steam from broken pipes may scald the passengers. If the boat is too crowded, passengers may be shoved overboard. In case the boat sinks, deck passengers may be trapped by the cargo. Life as a deck passenger, by any standard, is very unpleasant..."

"WARNINGS...Thieves, con agents, and gamblers ride the steamboats. Many of these undesirable citizens hang around levees, wharves, hotels, and taverns in the river towns. Travelers are advised to buy bank drafts. Some prefer letters of credit from their own bank. If you need to carry a large sum of money, wear a money belt. Avoid games of chance on the riverboats.

There are unscrupulous steamboat cap-

tains...Patronize those boats whose captains have a good reputation. The packet companies will not tolerate shady dealings by their officers and crews. These examples should serve as a warning:

Boats are often caught on sand bars and snags. If you leave the boat, you may lose your fare. If you board a passing boat, the new captain will charge another fare.

If the water level is too low, the captain may put passengers ashore to lighten the load. Some captains have not returned to pick up passengers.

The river abounds with thieves. Some suspect steamboat officers of being in league with the thieves. Secure your own luggage and valuables while on board.

The dreaded disease, cholera, has infected many of the Mississippi and Missouri river boats. Health authorities believe that immigrant ships from Europe bring the disease. The crowded and unsanitary conditions on the main decks of river craft help to spread the disease... The Christian captains will stop their boats...at deserted spots along the bank... the crew will bury victims in the early morning hours with a brief religious service. Other captains will simply have the crews push the deceased into the river. Some captains try to provide medical services for those with the illness. However, less humane captains will put those with the disease ashore to care for themselves."

To read these guides in their entirety, "navigate" to [www.uni.edu/iowahist/Frontier\\_Life/Steamboat\\_Hints/Steamboat\\_Hints2.htm](http://www.uni.edu/iowahist/Frontier_Life/Steamboat_Hints/Steamboat_Hints2.htm)