The Weather Vane

The Newsletter of the Heartland Network Inventory and Monitoring Program

Volume 4 / Number 1, February—March 2008

News in Brief

GIS and Data Management

Data management staff continue to develop monitoring databases for stream fish communities, stream macroinvertebrates, grassland birds and plant communities. Staff have been writing data management Standard Operating Procedure (SOPs) as part of the new protocols for stream fish and stream macroinvertebrate monitoring.

Vegetation Monitoring

Staff archived and analyzed 2007 field data. We submitted baseline draft reports for Pea Ridge NMP and Hot Springs NP for review. Staff continues revising vegetation monitoring protocol and SOPs, as well as updating field guides and taxonomy for the 2008 field season.

Invasive Plant Monitoring

The finalized invasive plant monitoring protocol has reached the publication and printing stage.

Rare Plant Monitoring

PIPE park staff continue repairs on soil moisture monitoring probes associated with western prairie fringed orchid monitoring.

White-tail Deer Monitoring

The 2008 deer surveys began January 3 at WICR. Staff surveys deer at ARPO, PERI, and WICR once a week for six weeks, weather permitting, making three replicates each visit.

Grassland Bird Monitoring

The Board of Directors approved the bird community monitoring proposal. Resource managers at affected parks will review and comment on a field guide and a bird identification key for the expanded monitoring program. Staff continues working with parks and local birding groups to obtain volunteers for the 2008 sampling season.

Fish Community Monitoring

We continue to process 2007 fish samples and to make reports to state permitting agencies this month. We completed and published the river fish protocol for BUFF and OZAR, while revision of new protocol for small stream parks continues.

Aquatic Invertebrate Monitoring

Staff completed field collections at OZAR and continues collections at BUFF. We have completed sample processing of all "prairie" stream samples for FY 07. Peer-review continues on the Springs Protocol and internal review soon starts on the revised "prairie" (small streams) and contaminant-metals protocols. We completed databases for each protocol.

Multi-Park Perspective: Invasion in the Heartland

National park managers work to prevent introduction of invasive plants, to detect and respond rapidly to new plant invasions and to eradicate, reduce or at least attempt to contain established invasive plant populations. The probability of successful control decreases as level of invasion increases.

Early detection and rapid response generally require far fewer resources than managing established invasive populations. Studies show that eradication efforts are most successful for invasions less than 2.5 acres and are typically not successful for invasions exceeding 250 acres in size.

The HTLN staff and contractors surveyed and documented the locations of high priority invasive plants in network parks. We then summarized the results to provide a multi-park perspective on plant invasion in six parks dedicated to interpretation of American history and culture (ARPO, GWCA, HEHO, HOME, LIBO).

Chinese yam growing into the canopy at LIBO

These park landscapes contain forests or prairies in three ecoregional provinces. We sampled 589 search units in the six parks, covering 1,199 total acres. These surveys required approximately 30 person-days to complete.

Private shrub at LIBO

We documented the presence of 53 high priority invasive plant species across the six parks. We detected vast differences in invasive plant coverages among parks despite high levels of uncertainty in invasive plant cover estimates.

The survey found relatively high invasive plant richness and cover throughout the parks. Seventy-five percent of the high priority plants occupied 10 acres or less, and 2/3 of those occurred on less than two acres across the parks.

Maximum cover estimates indicated that only about 10 percent of the high priority plants (six species) may occupy more than 100 total acres. Of these six species, Japanese honeysuckle, sweet clover, reed canary grass, and trifoliate orange occupied at least 10 acres each, while smooth brome and bluegrass each occupied at least 43 acres.

Even if we accept the lowest estimate of combined cover (165 acres) as an accurate estimate of invasive plant cover in parks, plant invasion at a multi-park scale suggests the need for a strategic management approach in all six parks. For example, the relatively low abundance of the majority of invasive plant species may offer managers the opportunity to control a large number of plant species within and across parks.

Successful invasive plant management is a goal at all six parks, but parks often have little financial support for this need. Individual parks do not face this problem alone. Thirty-eight of the 53 high priority invasive plant species encountered during surveys occurred on at least two of the six parks.

The power of the Heartland Network to summarize data may contribute to tackling this common challenge. Greater power lies in HTLN parks working together to address widespread resource management issues, than in parks tackling each issue alone.

— Craig Young

The Weather Vane is published by the Heartland Network Inventory and Monitoring Program of the National Park Service. Visit www.nps.gov.

. . . protecting the habitat of our heritage

Archeologists and Biologists Collaborate at Buffalo National River

The geology of southeastern United States has provided archeologists with a special feature used by Paleo-Indians. The high sedimentary rock bluffs surrounding river valleys provided well protected settings for rock shelters called *bluffshelters*.

The Ozark Uplift of northwest Arkansas shields a treasure trove of scattered dry bluffshelters, preserving organic material dating from Late Archaic/Early Woodland through Late Mississippian periods. Some of these sites preserved middens, or dumps for domestic waste.

Prior to establishment of Buffalo National River (BUFF) in 1972, Arkansas state parks administered approximately 2,000 acres of what is now the National River. The Smithsonian Institution and University of Arkansas began archeological excavations there in the 1920s. Archeologists focused analyses on burial items from the bluffshelter burials and left middens unexcavated.

Since that time, scientists have recognized the value of these sites in learning about animals harvested by the bluffshelter dwellers. Middens contain uneaten animal parts, such as bones and shells. They provide a window to understanding pre-historic species composition, particularly for animals with hard parts, such as mussels.

Slippershell mussel, a species not currently found

Unfortunately, people with little interest in public preservation of antiquities have also found these sites. Looters have taken advantage of the prehistoric bluffshelters along Buffalo River, illegally digging in 90 percent of the more than 300 recorded sites. Looting permanently destroyed the usual archeological value of these sites by removing context and origin of artifacts (depth and location) that tell the story of the occupants.

An example of a rock shelter, often called a bluffshelter, in the Ozark Uplift.

Instead of writing off these heavily disturbed sites, cultural and natural resource managers at BUFF work together to interpret clues about the native mussel communities of the river. Archeologists agree that most of the shells in these sites date from the prehistoric past, most in excess of 1,000 years ago. Although Paleo-Indians interacted with and impacted their environment, we consider the river ecosystem of that time to be pristine. The mussel shells collected from these waters can help biologists understand changes in species diversity and distribution since prehistoric time.

Presence and absence of mussel species provide a glimpse of past species diversity and prehistoric conditions. Mussels from undisturbed bluffshelter sites provide additional information about unusual or rare species and about the context of the species.

Overall, mussel species diversity and distributions are similar to current conditions. This suggests that the river ecosystem, as reflected by mussel species, has remained stable over a long time.

Two species within the prehistoric middens are rare in the current ecosystem. One species, slippershell (*Alasmidonta viridis*) occurred at three sites, but has not been seen in modern times. Also, one rabbitsfoot (*Quadrula cylindrical)* appeared in the prehistoric samples, but is an uncommon modern-day Buffalo River species. Biologists found an abundance of rabbitsfoot during a 1912 survey. The rarity of this species prehistorically and again now coupled with the abundance in 1912 presents a mystery yet to be solved.

The salvaging of both archeological and biological data creates an avenue for NPS scientists to reinvest significance to heavily damaged archeological resources. The resource specialists have more to learn from these sites and others in the area.

— input from Caven Clark, BUFF

A Little Milkweed Lore

A discussion of plants that impacted readers' childhoods ran on a native plant list-serve recently. Writers told of playing with many, many native plants in imaginative ways. The discussion finally came around to memories of children plucking the silk from milkweed pods as part of the war effort during WWII. The following response ensued:

"It's a bit late, but I want to thank you and all the other milkweed pod pickers of the 40's for your efforts. I'm 63 years late, but I hope it's better late than never.

"I was a Navigator/Radar operator with the 8th Army Air Force during WWII, operating out of England and I wore a life-vest that was filled with milkweed. As I never had an occasion to need the use of it, let's just say it worked as it was intended to whether it got wet or stayed dry."

More on the Web

HTLN invasive plant reports:
http://science.nature.nps.gov/im/units/HTLN/reports.cfm

Invasive species and NPS:
http://www.nature.nps.gov/biology/invasivespecies/

General invasive species information:
http://www.invasivespeciesinfo.gov/

Weed management:
http://www.weedcenter.org/weed_mgmt_areas/wma_overview.html

More about middens:
http://archaeology.about.com/od/boneandivory/a/shellmidden.htm