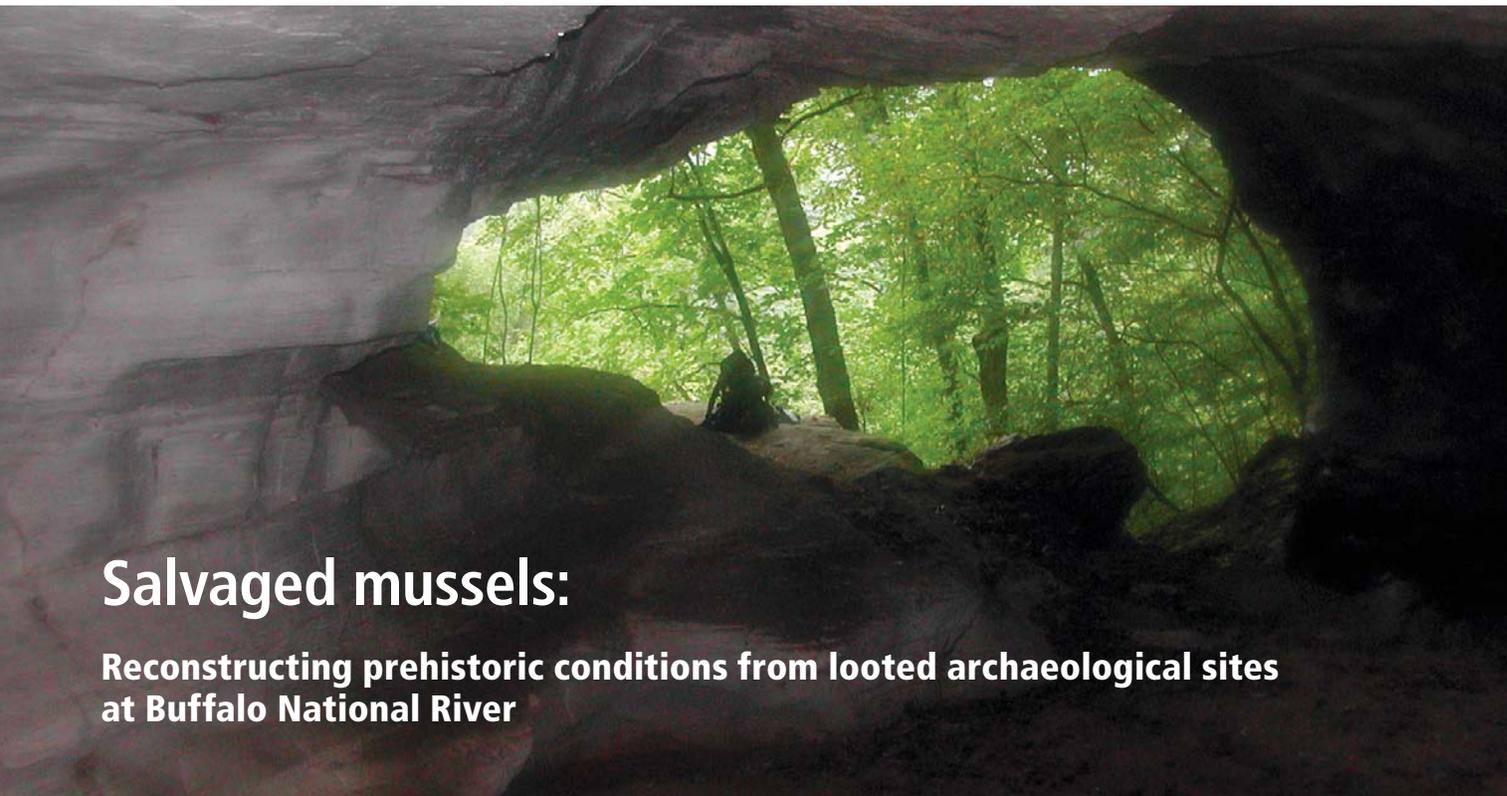


Science Notes



Salvaged mussels:

Reconstructing prehistoric conditions from looted archaeological sites at Buffalo National River

Figure 1 (above). Looting of caves and prehistoric bluff shelters along the Buffalo National River is a tremendous problem that disturbs archaeological context and damages cultural and natural resources. However, resource managers are diligently putting together clues from looted sites that add time depth to their knowledge of the Buffalo River ecosystem. Figure 2 (facing page). A slippershell mussel (length to 1.5 in [3.8 cm]) from a prehistoric shelter is a species that has not been recorded in the park from historical times.

NPS/CAVEN CLARK (ABOVE)

LOOTING OF PREHISTORIC BLUFF SHELTERS

along Buffalo National River in northwestern Arkansas is an enormous problem (figure 1). Of the more than 300 recorded bluff shelters, more than 90% have been subjected to illegal digging, which permanently destroys the scientific value of the site. This unsystematic excavation has resulted in the loss of contextual archaeological data, leaving holes in the ground and piles of dirt containing broken artifacts and faunal remains, including bivalve and gastropod shells.

Instead of writing off these heavily disturbed sites, cultural and natural resource managers at Buffalo National River are working together to interpret what is known of these native mussel communities. Mussel shells collected from disturbed sites can be used to extend our knowledge of species diversity, distribution, and change from prehistoric

times to the present. Despite the disturbed context within sites, we judge that most shells date from the prehistoric past and are in excess of 1,000 years old. Though the quantitative applications for these data are limited, the simple presence or absence of species allows us to project past species diversity and, with historical descriptions of habitat quality, we can interpret inferences of prehistoric conditions.

Methodology

In concert with conducting archaeological Site Condition Assessments for the Archaeological Sites Information Management System (ASIMS), mussel shells with diagnostic features are now routinely collected from disturbed sites. These are identified with an archaeological site number and transferred to aquatic biologists for identification. We examined mussels from controlled excavations of prehistoric sites to determine if any unusual species were represented. Dr. Alan Christian, malacologist at Arkansas State University, was instrumental in correct mussel identifications, especially for new and rare species.

The results suggest that the Buffalo River ecosystem, as reflected in the prehistoric distribution of mussel species, has remained stable over a long period.



NPS/CAVEN CLARK

Results

Overall, the mollusk fauna assemblage is consistent with modern diversity and distributions. The results suggest that the Buffalo River ecosystem, as reflected in the prehistoric distribution of mussel species, has remained stable over a long period. However, one species, slippershell (*Alasmidonta viridis*; figure 2), was identified at three locations in two counties. While believed to be present based on range and habitat requirements, it was not actually observed and has not been noted in any subsequent inventories of mussels on this river. The finding of slippershell verifies the presence of a new species within the national park, and suggests that other extirpated species are present in the prehistoric sample.

One specimen of rabbitsfoot (*Quadrula cylindrical*), an uncommon Buffalo River species, was identified. Although it was “ubiquitous” in the 1912 census, its virtual absence in both the prehistoric and modern faunal assemblages is difficult to explain.

Conclusions and future directions

The salvaging of both archaeological and biological data creates an avenue for NPS scientists to understand and document the significance of heavily damaged archaeological resources while park managers continue to battle the problem of site looting. It also shows that valuable information is available from disturbed sites and that communication between scientific disciplines is necessary to better manage the natural and cultural resources we have pledged to protect.

We intend to continue sampling looted sites on an opportunistic basis. We also expect to complete an analysis of extant collections, some from controlled excavations.

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