

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Macroinvertebrates at Agate Fossil Beds National Monument

Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: University of Wyoming
Effective Dates: 7/18/2011 - 12/31/2016
Funding Amount: \$55,147 [FY13: \$13,566; FY12: \$17,430; FY11: \$24,151]

Investigators and Agency Representative:

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Project Abstract: In 1996, Agate Fossil Beds National Monument (AGFO) was part of the original Prairie Cluster Prototype Long-term Ecological Monitoring Program which then became part of the Heartland Inventory and Monitoring Network (HTLN). HTLN continued with the land birds, macroinvertebrates, and vegetation monitoring responsibilities. However, given that AGFO fits best ecologically within the Northern Great Plains, the continued monitoring of these 3 vital signs was transferred to the Northern Great Plains Inventory and Monitoring Network (NGPN) in 2010.

For the macroinvertebrate monitoring, sporadic sampling was conducted at AGFO between 1989 and 1995. In 1996, with the formation of the Prairie Cluster Prototype a more concerted effort to monitor benthic macroinvertebrates on an annual basis began at AGFO utilizing Hester-Dendy sampling plates (Peitz and Cribbs 2005). Recently the HTLN staff completed a review of their invertebrate sampling protocol and found that they needed to revise the original protocol to allow for the collection of statistically robust data (Bowles et al. 2008). Mack (2003) also determined that "Hester-Dendy artificial substrate samplers were ineffective for sampling most wetland macroinvertebrates, except oligochaetes, Chironomidae, and Mollusca".

Thus, the NGPN set up an agreement with Dr. Tronstad to compare these two sampling methods in 2010 and provide monitoring recommendations for the Network. At the end of the field season it was determined that another year of data collection using the Hester-Dendy sampling plates and the Hess Sampler would provide a more robust comparison of methods.

The objectives of this agreement are to (1) conduct a second year of research comparing Hester-Dendy sampler methodology to a more quantitative/rigorous sampling scheme (such as the Hess sampler) at AGFO in 2011 and (2) lab identification of aquatic macroinvertebrates collected at AGFO by NGPN staff in the 2012 field season.

In 2014, NPS staff will deploy and retrieve the Hester-Dendy samplers and collect Hess samples at the three legacy sites at AGFO. After the 2014 field season, NGPN will compare the two sampling methods using invertebrate metrics and select one sampling method for long-term monitoring of aquatic invertebrates at AGFO.

In 2015, the NPS staff will again sample the aquatic invertebrates at AGFO using the selected sampling methodology (either the Hester-Dendy or the Hess sampler). The objective of this modification is to have Dr. Tronstad identify the aquatic invertebrates collected in 2014 and in 2015 at the AGFO legacy sites.

Outcomes with Completion Dates: Final Report by June 30, 2014

Keywords: macroinvertebrates, inventory and monitoring, Agate Fossil Beds National Monument, University of Wyoming