

Summary of fisheries assistance project on the Oden and Mena ranger districts, Ouachita National Forest, Arkansas, July 12-18, 2003



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Background

In June 2003, resource managers from the Ouachita National Forest contacted the U. S. Forest Service, Southern Research Station, Center for Aquatic Technology Transfer (CATT) to request assistance with annual stream monitoring surveys. The CATT provided a fisheries biologist (Craig Roghair) and a fisheries technician (Eric Fitzpatrick) to assist with surveys at several long-term monitoring sites on Mena and Oden ranger district streams. The monitoring sites provide data needed to determine whether management activities on National Forest lands are affecting stream quality.

The surveys were performed from July 14-18, 2003 using methods previously established by the Ouachita National Forest. The Oden and Mena ranger districts provided two field technicians (Rhonda Huston, Gina Perry) that had worked on previous stream surveys, all field equipment, and housing at the Oden ranger district office. Lisa Hlass (former forest fisheries biologist) and Shawn Cochran (district wildlife biologist) provided training and assistance with field work when they were available.

Methods

Site Description

At each site we recorded GPS coordinates, a description of the starting and ending points, took several pictures, and painted a light blue ring around trees at the upstream and downstream end of the reach so it could be easily located in the future.

Macroinvertebrates

We sampled for macroinvertebrates using a rectangular frame kicknet. We placed the net in riffle areas within or near the long-term monitoring reach and disturbed the substrate in front of the net with our feet. Samples were typically collected in one-minute increments from five different locations within 3-4 different riffles. We field picked and sorted the samples and recorded data on an Issac Walton League Save Our Streams (SOS) datasheet. We preserved the macroinvertebrate samples in alcohol. The samples were archived by Mean/Oden ranger district personnel.

Physical habitat

Physical habitat was inventoried using a modified Basins Area Stream Survey (BASS) methodology. Each monitoring reach was divided into habitat unit types and measurements of length, width, and depth, substrate composition, bank angle, bank stability and instream and riparian cover characteristics were recorded for each habitat unit. We also noted the presence of the endangered aquatic plant, harperella (*Ptilimnium nodosum*).

Water Chemistry

We collected water samples at each site and determined conductivity, alkalinity and pH using Hach kits. Water temperature was also recorded.

Fish

We collected fish at each site by making a single pass through each monitoring reach with a Smith Root battery powered DC backpack electrofishing unit. The unit was set to J9 and we used between 700 and 1000V depending on fish response. The shocker had two circular probes, one of which was outfitted with a net. At the majority of sites the electrofishing crew consisted of one shocker, one netter, and a bucket person, however there were as many as three netters at some sites. We did not block off the upstream or downstream ends of the monitoring reach with blocknets. We identified and counted the total number of all fish species, then released them back to the monitoring reach.

The fish data will be used by the Oden and Mena districts to calculate an Index of Biotic Integrity (IBI) score. An IBI for the Lower Ouachita Mountains Ecoregion was developed by Lisa Hlass (1998) and includes the following measures or metrics: total number of fish species, number of Cyprinidae (minnow) species, number of sensitive species, proportion of green sunfish, generalist:specialist feeder ratio, proportion of top carnivores, number of fish in sample, and proportion of fish with external disease or anomalies. The higher the IBI score, the less disturbed the site.

Sites Surveyed

<u>Stream, County, Ranger District</u>	<u>Date, Time completed</u>
Little Rainy Creek, Montgomery Co., Oden	7/14, 13:30
West Gafford Creek, Yell Co., Oden	7/14, 16:30
Clear Fork, Scott Co., Mena (most upstream site ¹)	7/15, 15:30
Clear Fork, Scott Co., Mena (monitoring site)	7/15, 11:30
Clear Fork, Scott Co., Mena (electrofishing site ²)	7/15, 13:45
Clear Fork, Scott Co., Mena (most downstream site ²)	7/15, 14:30
Ouachita River Headwaters, Polk Co., Mena	7/16, 10:30
Mill Creek, Scott Co. Oden	7/16, 13:15
Johnson Creek, Polk Co., Mena	7/16, 16:20
Muddy Creek, Montgomery Co., Oden	7/17, 10:50
Irons Fork Creek, Yell Co., Oden	7/17, 14:45
Two Mile Creek, Polk Co., Mena	7/18, 10:40

¹ used diver survey to count fish, no other data recorded

² only performed electrofishing survey, no other data recorded

Remarks

Maps, background information and species lists provided by Shawn Cochran were an immense help in preparing us for the surveys prior to our arrival.

We saw 25 species of fish, the majority of which we rarely work with, during our week of sampling. We feel it is absolutely essential that someone who can positively identify fish in the field, such as Lisa Hlass, be present to train crews in fish identification at the start of the surveys. We would have had difficulty identifying the wide variety of minnow and darter species without Lisa's help.

We took several pictures of fish species we encountered. We will keep them on file in Blacksburg and will also send copies to the Oden and Mena ranger districts.

Field picking of macroinvertebrates is sufficient for the SOS protocol, however if the ranger district wants to use their archived samples for more intensive family or species level metrics the samples should be preserved in their entirety in the field and picked and sorted in a lab. This would require less time in the field and would provide more accurate results. Picking bug samples is a great rainy day or winter activity.

It was indicated that little was known of the distribution of crayfish species in forest streams. Technicians could easily be trained to identify form I males and collect these crayfish when encountered during macroinvertebrate or fish sampling.

We found mussel shells in two of the streams. Dead mussels could also be collected and identified by regional mussel experts.

Consistent effort is essential when comparing electrofishing data between years. Care should be taken to use the same number of netters at all sites and in all years.

We worked with crew sizes ranging from 3 to 5 persons. We performed surveys most quickly with a crew of five because we divided into two groups: one focusing on macroinvertebrates and fish and the other on site description, water quality, and habitat. Three persons is the minimum number needed to perform an efficient survey.

Given the amount of time it takes traveling between Arkansas and Virginia it would be best to spend longer amounts of time on site. We discussed coordinating with other ranger districts that may be in need of assistance in the future. In addition, if enough districts need assistance and funding is available we could dedicate a crew to stay on the Ouachita National Forest for the entire summer, assisting with fisheries projects wherever needed.

We thank Rhonda Huston, Gina Perry, Shawn Cochran and all those at the Oden ranger district office for their hospitality during our stay at the ranger district house. Their restaurant recommendations, directions, and overall positive attitude made for an enjoyable experience in the Ouachita National Forest.