

Methods for Monitoring Fish Communities of Buffalo National River and Ozark National Scenic Riverways in the Ozark Plateaus of Arkansas and Missouri, Version 2.0

Standard Operating Procedure (SOP) 1: Preparation, Version 1.1

Revision History Log:

Previous version number	Revision date	Author	Changes made	Reason for change	New version number
1.0	7/20/2016	Dodd	Added table citations for sample sites and clarified timeline for preparing/checking equipment	Tributaries to be sampled were changed according to DeBacker et al. 2012	1.1

At least 2 months prior to fish community sampling, a plan needs to be developed that includes details for personnel, equipment, time requirements, and the sample schedule necessary to complete sampling. As an initial step in the planning process, unfamiliar sites need to be visited by the project leader or the aquatic ecologist and equipment needs and accessibility details noted. This process will help determine the time and number of personnel needed for sampling at a site. As a general rule, small stream sites can be sampled in half of a day; however, larger and inaccessible sites require eight hours or more to sample.

Establish sampling period and reaches

Fish community monitoring will be completed at 13 sites during May-June for the Buffalo National River (BUFF) in odd numbered years and during September - October of even numbered years for Ozark Scenic Riverways (OZAR). See Table 1 for a list of sites. At least 13 field days should be planned for OZAR. At least 15 days should be scheduled at BUFF, because access to sample sites in the lower Buffalo River requires a minimum of 2 days to complete with overnight camping. Based on the number of sample sites and the potential for inclement weather, a six-week time period should be scheduled to complete fish sampling in each park.

Selection and preparation of equipment

Selection and purchase of the appropriate sampling equipment at least 2 months prior to sampling is necessary to ensure that reliable, representative fish community data is collected. Equipment that is needed for fish sampling and assessment of habitat and water quality conditions is listed in SOP 5, SOP 6, and SOP 4, respectively. When selecting fish sampling equipment for a site, equipment should be matched to stream size for optimal and, perhaps more importantly, consistent sampling

efficiency. Boat electrofishing units with large generators may be necessary for thorough sampling of large streams and mainstem sites, while backpack electrofishing units or towed electrofishing barges are suitable for sampling smaller, wadeable streams (Table 1). If distance to the stream and bank slope are not excessive (for example, a distance less than 500 m from vehicle access) and enough personnel are available, sampling equipment such as small boats and electrofishing generators can be carried to the stream.

All equipment should be gathered at least one month prior to the field season and checked to ensure that equipment is in working condition and that supplies such as paper for data sheets and preservative for specimens are available. All sampling gear should be inspected, particularly nets that tear frequently and electronic equipment such as backpack shockers, flow meters, and water-quality meters, to ensure there is no damage. A field notebook for the sampling season should be prepared with pages for entry of sampling schedules, crewmember names, sites visited, field hours per day, and any conditions or circumstances that may influence how data are reported. Trip reports are based on information recorded in the field notebook; therefore, it is important that notebooks are clearly organized for ease of data entry.

Agency Notifications and Collector's Permits

State and Federal agencies are permitting authorities for the natural resources that they manage and oversee. To ensure that the equipment planned for sampling meets the requirements of permitting authorities and is best suited for the conditions that will be encountered, the project leader (fisheries biologist) needs to determine if special regulations exist for any water body where sampling is planned. If threatened or endangered species are known or suspected to occur at any sampling site, the U.S. Fish and Wildlife Service (USFWS) must be contacted to determine specific stipulations associated with sampling within the species' respective range and any permit requirements, regardless of the specific location of the sampling sites. The project leader should contact Arkansas Game and Fish Commission or Missouri Department of Conservation (depending on the park) at least 2 months prior to sampling and obtain collection permits. The project leader is also responsible for submitting sample results to these agencies to renew collection permits. In addition, the project leader should contact the park resource manager and the radio dispatcher of each park at least one week prior to sampling to make them aware that sampling will be conducted in the park. Although all sampling sites will be on NPS property, it may be necessary to cross private property to reach some sites, and permission from landowners needs to be acquired where appropriate.

Table 1. Mainstem and tributary sites sampled for monitoring fish communities at Buffalo National River and Ozark National Scenic Riverways. Site Type: M = Mainstem, T = Tributary. UTM is Universal Transverse Mercator coordinates (zone 15), horizontal datum is North American Datum 1983. m = meter, Gear: BA = Barge, BP = Backpack, BT = Boat.

Reach ID	River Basin	Site Type	Site No.	Tributary Name	Panel No.	County	Lower Sample Reach UTM Easting	Lower Sample Reach UTM Northing	Reach Length (m)	Gear Used	Approximate % Effort by Gear
Buffalo National River											
BUFFM01	Buffalo	M	01		Biennial	Newton	464259.027	3981461.484	290	BT, BP	70, 30
BUFFM02	Buffalo	M	02		Biennial	Newton	490387.376	3987727.621	440	BT, BP	40, 60
BUFFM03	Buffalo	M	03		Biennial	Newton	499922.291	3983702.401	600	BT, BP	90, 10
BUFFM04	Buffalo	M	04		Biennial	Searcy	520396.874	3981741.881	620	BT, BA	60, 40
BUFFM05	Buffalo	M	05		Biennial	Searcy	529076.108	3984910.528	560	BT, BP	40, 60
BUFFM06	Buffalo	M	06		Biennial	Marion	545843.897	3995174.566	726	BT, BP	60, 40
BUFFT07	Buffalo	T	07	Mill	Biennial	Newton	487933.175	3990589.489	180	BA	100
BUFFT15	Buffalo	T	15	Davis	Biennial	Newton	504131.918	3985033.521	200	BP	100
BUFFT19	Buffalo	T	19	Calf	Biennial	Searcy	520457.523	3981019.421	165	BA	100
BUFFT20	Buffalo	T	20	Bear	Biennial	Searcy	526899.046	3983227.746	450	BA	100
BUFFT27	Buffalo	T	27	Clabber	1	Marion	540821.629	3998527.103	180	BP	100
BUFFT30	Buffalo	T	30	Middle	1	Marion	551487.935	3993528.202	150	BP	100
BUFFT31	Buffalo	T	31	Leatherwood	1	Marion	551410.833	3996233.100	150	BP	100
BUFFT05	Buffalo	T	05	Cecil	2	Newton	479870.761	3992741.028	232	BP	100
BUFFT09	Buffalo	T	09	Little Buffalo	2	Newton	490169.939	3987680.937	260	BT, BP	50,50
BUFFT23	Buffalo	T	23	Water	2	Searcy	537965.089	3989702.352	150	BP	100
Ozark National Scenic Riverways											
CURRM01	Current	M	01		Biennial	Shannon	623330.810	4141819.358	342	BA	100
CURRM02	Current	M	02		Biennial	Shannon	637113.180	4131465.688	450	BT, BP	70, 30
CURRM03	Current	M	03		Biennial	Shannon	642631.838	4126422.535	660	BT, BP	75, 25
CURRM04	Current	M	04		Biennial	Shannon	662104.165	4112724.645	702	BT, BP	80, 20
Reach ID	River Basin	Site Type	Site No.	Tributary Name	Panel No.	County	Lower Sample	Lower Sample	Reach Length	Gear Used	Approximate % Effort by

						Reach UTMX	Reach UTM Y	(m)	Gear	
CURRM05	Current	M	05		Biennial	Shannon	666087.431	4111411.528	1,000	BT, BP 90, 10
CURRM06	Current	M	06		Biennial	Carter	685209.621	4079792.188	1,000	BT, BP 90, 10
JACKM01	Jacks Fork	M	01		Biennial	Shannon	619901.956	4101344.874	290	BT, BP 85, 15
JACKM02	Jacks Fork	M	02		Biennial	Shannon	627579.024	4102191.921	286	BT, BP 80, 20
JACKM03	Jacks Fork	M	03		Biennial	Shannon	633452.088	4108220.025	320	BA 100
CURRT14	Current	T	14	Sinking	Biennial	Shannon	640779.257	4129682.694	500	BA 100
JACKT03	Jacks Fork	T	03	Shawnee	Biennial	Shannon	650814.727	4115153.041	150	BP 100
CURRT06	Current	T	06	Blair	1	Shannon	658985.647	4116351.733	150	BP 100
CURRT15	Current	T	15	Big West	1	Shannon	623206.262	4141756.210	150	BP 100
CURRT08	Current	T	08	Rocky	2	Shannon	661931.524	4110852.285	348	BA, BP 90, 10
CURRT16	Current	T	16	Big East	2	Shannon	648341.558	4123747.999	150	BP 100