

Date Prepared: 4/22/98

Date Revised:

Date Reviewed:

SAMPLING STRATEGY

For users other than staff associated with the MO River Benthic Fish Study, this document is for reference only. This is NOT a citable document.

- I. General Information: Where the previous section (2.2) described how to identify macro and mesohabitats, this section provides information on how segments are sampled. Replicates will be numbered and analyzed at the macrohabitat level, but they will be selected at the mesohabitat level.

- II. Choosing macrohabitats within a segment
 - A. Each river segment should be visited prior to sampling if possible, but at the least, a map should be consulted.
 1. All possible macrohabitats AND their associated mesohabitats, including wild, should be identified.
 2. The location of each macrohabitat should be recorded by river mile or GPS coordinates.
 - B. Random Macrohabitat Selections
 1. Using a random number generator or table, assign each macrohabitat, within each macrohabitat category, a number from 1 to N.
 2. Designate the habitats numbered 1-5 as the first sites to be sampled.
 3. These sites will be recorded as macrohabitat replicates 1-5 on the data sheets.
 4. For macrohabitat replicates 1-5, all mesohabitats types occurring within each macrohabitat should be sampled.
 - C. Augmenting Mesohabitat Categories
 1. Once replicates 1-5 have been sampled for each macrohabitat category, there will be mesohabitat categories that have not been sampled 5 times.
 2. Using the randomly numbered habitat list, sample the next macrohabitat on the list that contains the type of mesohabitat needed. Only the mesohabitat(s) being targeted in the macrohabitat need(s) to be sampled, not all of them.
 3. Number these additional macrohabitat replicates as 6 to N.
 4. Continue this selection of additional macrohabitat replicates until all mesohabitat types of each macrohabitat have been sampled five times. (See Table 2 for example)
 - D. The Use of "WILD"
 1. The WILD term is a legitimate macrohabitat category. It has mesohabitat

types listed in section 2.2.

2. The WILD term should be treated as any other macrohabitat.
 - a. All WILD macrohabitats and their associated mesohabitats should be identified prior to sampling.
 - b. Using the random number system, the first 5 WILD macrohabitats and their associated mesohabitats should be sampled and numbered as replicates 1-5.
 - c. Once replicates 1-5 have been sampled for each WILD macrohabitat, there will be mesohabitat categories that have not been sampled 5 times.
 - d. Using the randomly numbered habitat list, sample the next WILD macrohabitat on the list that contains the type of mesohabitat needed.
 - e. Number these additional WILD macrohabitat replicates as 6 to N.
 - f. Continue this selection of additional WILD macrohabitat replicates until all mesohabitat types of each WILD macrohabitat have been sampled five times.
3. The “WILD” term can also be used in categories other than just macrohabitat.
 - a. When a mesohabitat in any macrohabitat (including a WILD macrohabitat) is sampled, but does not sufficiently satisfy any of the mesohabitat definition guidelines provided in section 2.2, it will be called a WILD mesohabitat on the data sheet.
 - b. When a non-standard gear type such as hoop nets, trap nets, or trammel-seining is used in any type of macro or mesohabitat, it will be called a WILD gear type on the data sheet.

E. Sequencing

1. The first 5 randomly selected macrohabitats need to be numbered as replicates 1-5.
2. These first 5 replicates do not have to be sampled in chronological order.
 - a. As long as the replicate numbers are listed as 1-5, these habitats can be sampled at the convenience of the crew.
 - b. For example, if macrohabitats 2, 7, and 8 are near to each other, they can be sampled consecutively.

III. Gear Usage

- A. Macrohabitats are sampled with the gears listed in Table 1 below.
- B. As long as at least two gears can be deployed at CHXO, OSB, SCC-DEEP, TRM-SMLL, TRM-LRGE, SCN, and WILD habitats, then the site can be used as a replicate. In the remaining habitats, only one gear must be deployed in order to consider these habitats as usable sites.
- C. When certain gears cannot be used because of local conditions, the reason should be noted in the comment section of the data sheet.

- D. If two gears cannot be deployed at any habitat listed in A. above or one gear cannot be deployed in the remaining habitats, then that macrohabitat should be discarded as a replicate in favor of the next macrohabitat on the randomly numbered list.

	DTN	BT	BS	SGN	EF
CHXO	✓	✓			
OSB	✓	✓			✓
ISB-CHNB	✓	✓			
-BARS			✓		
-STPS					✓
-POOLS				✓	
SCC-SHLW			✓		
-DEEP	✓	✓	✓		✓
TRM-SMLL				✓	✓
-LRGE	✓	✓			✓
SCN			✓	✓	✓
WILD-ALL	✓	✓	✓	✓	✓

Table 1. Recommended gear usage for each habitat type

Macrohabitat Type	ISB			ISB			ISB			ISB			ISB			ISB			ISB			ISB																				
Replicate Number	1			2			3			4			5			6			7			8			9			10			11											
Mesohabitats Present	C	B		P	C		S		C			P	C	B		P	C	B		P	C		S		C		S		C	B			C		S	P	C			S	P	
Mesohabitats to Sample	X	X		X	X		X		X			X	X	X		X	X	X		X			X			X		X				X				X			X			X

Table 2. How to sample and record a macrohabitat with more than one mesohabitat type.

Prepared by:

 Bradley Young
 Graduate Research Assistant
 SDCFWRU

Approved by:

 Charles R. Berry
 Unit Leader
 SDCFWRU

 Linda Sappington
 Quality Assurance Officer