

Stressed Stream Analysis Assignment

Use data for Northrup Creek (a slow moving, sandy bottom, headwater stream), Monroe Co., NY

- Calculate HSIs for creek chubs above/below WTP
 - See McMahon et al. (1982) for methods
- Calculate IBIs for fish above/below WTP
 - See Miller et al. (1988) for rationale
 - See Ohio EPA (1987) for metric estimators
- For the fish communities above and below the WTP calculate diversity and community similarity
 - See Haynes (2001)
- For benthic macroinvertebrates above/below WTP, determine SPP, EPT and NCO, and calculate HBI
 - See Bode et al. (1996) for methods
- Summarize and think about the results
 - You may ask me questions about the project site to inform your thinking
- With information available, write a 1 p statement indicating whether or not the WTP adversely impacts stream biota. Justify your answer.
- Present team results to the whole group

SSA Exercise for Regional Workshop: Habitat Suitability Index - Creek Chub

Variable	Description	Model Values	
		Above WTP	Below WTP
V1	% pools, summer	30%	10%
V2	dominant pool class	B	C
V3	% cover, summer	50%	10%
V4	winter instream cover	B	B
V5	stream gradient	5 m/km	5 m/km
V6	stream width, summer	4 m	4 m
V7	avg. turbidity, summer	60 JTU	90 JTU
V8	pH range, yearly	6.5 - 8.5	6.5 - 8.5
V9	vegetation index	60%	40%
V10	substrate/food production	B	C
V11	avg. temperature, summer	23	25
V12	min. DO, summer	8 mg/L	3 mg/L
V13	avg. velocity, summer	35 cm/s	43 cm/s
V14	avg. temperature, spring	15 C	15 C
V15	min. DO, spring	9 mg/L	5 mg/L
V16	avg. velocity, Apr-Jun	40 cm/s	50 cm/s
V17	% substrate, spawning areas	50%	25%
V18	avg. velocity edges, summer	10 cm/s	15 cm/s
V19	% shaded, 1000-1500 hours	40%	10%
V20	Avg. max depth, summer	18 cm	12 cm

SSA Exercise for Regional Workshop: Index of Biotic Integrity - Northrup Creek Fishes							
Species	Above WTP	Below WTP	Feeding Guild	Pollution Tolerance	Breeding Guild	Habitat Preference	River Size
<i>Minnow Family</i>	-	-					
Creek chub	170	75					
Hornyhead chub	60	1					
Bluntnose minnow	26	0					
Fathead minnow	41	1					
Blacknose dace	2	0					
Unidentified minnow	5	4					
<i>Sucker Family</i>	-	-					
White sucker	41	2					
<i>Catfish Family</i>	-	-					
Tadpole madtom	1	0					
<i>Sunfish/Bass Family</i>	-	-					
Rock bass	24	0					
Pumpkinseed	3	1					
<i>Percid Family</i>	-	-					
Johnny darter	5	14					
Tessellated darter*	13	2					
<i>Mudminnow Family</i>	-	-					
Central mudminnow	10	8					
<i>Stickleback Family</i>	-	-					
Brook stickleback	9	1					
DELT	0	6					
* Closely related to Johnny darter; probably similar							
Notes							
1. Fish were caught by backpack electrofishing and seining in 75 m sections above and below the WTP.							
2. Watershed upstream from WTP ~ 12 sq. mi.							
3. Use these metrics to calculate the IBI above and below the WTP:							
a. Number of species							
b. Number of fish per 300 m							
c. Number of headwater species							
d. Number of minnow species							
e. Number of sensitive species							
f. Percent of tolerant species							
g. Percent of omnivorous species							
h. Percent of insectivorous species							
i. Percent of pioneering species							
j. Number of simple lithophil species							
k. Percent of DELTs							
4. See Ohio EPA (1987) handout for data needs							

SSA Exercise for Regional Workshop: Biological Stream Monitoring - Macroinvertebrates					
Taxon	Tolerance	# Above WTP	Tol. * # Above	# Below WTP	Tol. * # Below
P. Platyhelminthes		4		2	
C. Turbellaria					
P. Annelida					
C. Oligochaeta		139		165	
O. Tubificida					
F. Naididae		2		9	
F. Tubificidae		1		8	
C. Hirudinea		46		55	
P. Arthropoda					
C. Crustacea					
O. Isopoda					
F. Asellidae					
G. Caecidotea		266		384	
O. Amphipoda					
F. Gammaridae					
G. Gammarus		798		354	
O. Decapoda					
F. Cambaridae		24		7	
C. Insecta					
O. Ephemeroptera					
F. Baetidae					
G. Baetis		81		4	
O. Trichoptera					
F. Hydropsychidae					
G. Hydropsyche		32		10	
O. Odonata (SO Zygoptera)					
F. Calopterygidae					
G. Calopteryx		2		1	
O. Coleoptera		40		24	
F. Elmidae					
G. Stenelmis		22		9	
F. Psephenidae					
G. Psephenus		23		15	
O. Diptera					
F. Chironomidae		208		405	
F. Ceratopogonidae		0		4	
F. Culicidae		0		1	
F. Simuliidae					
G. Simulium		178		16	
F. Tabanidae		1		0	
P. Mollusca					
C. Gastropoda					
O. Basommatophora					
F. Physidae		39		3	
F. Planorbidae		0		2	
O. Mesogastropoda					
F. Viviparidae		0		2	
C. Pelecypoda (Bivalvia)					
O. Veneroida					
F. Sphaeriidae		35		14	