

**RESULTS FROM MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY'S PILOT AIS SNORKEL STUDY 2014**

Lake: Duck  
 County: Muskegon  
 Date Sampled: 7/21/14

Crew: Johnson, Holden, Bacon  
 Volunteer: Tom Tissue, CLMP

Note: EWM=Eurasian watermilfoil,  
 milfoil=unknown- genetics not taken

**AIS Species & Density (1 = sparse, 2 = low, 3 = moderate, 4 = dense, 5 = monoculture, X = density not recorded)**

Target Site	Latitude	Longitude	Method	EWM	ZM	PL	Hybrid Ct	Milfoil DNA
BL1	N 43.34194	W-86.40358	Snorkel	1				EWM
			Nearshore	1				
TS1	N 43.33876	W-86.40095	Snorkel	1*				*Hybrid ( <i>spicatum x sibiricum</i> )
			Nearshore	floating	1			
TS2	N 43.33646	W-86.39182	Snorkel	1*				*Hybrid
			Nearshore					
TS3	N 43.3387	W-86.38260	Snorkel	1-milfoil				
			Nearshore		1	1		
TS4	N 43.34313	W-86.38268	Snorkel	2*				*Hybrid
			Nearshore				1	
TS5	N 43.34189	W-86.38902	Snorkel	3				EWM
			Nearshore	2		1	1	
<b>Meader Site</b>								
MS1				No AIS obs				
MS2	N 43.33687	W-86.39934	Visual/rake	1				
MS2	N 43.33653	W-86.39513	Visual			1		
MS3	N 43.33731	W-86.38606				2		*Hybrid
MS4	N 43.34123	W-86.38087	Visual/rake	1*				
MS4	N 43.34182	W-86.38095	Visual/rake	3-milfoil, mix community of plants				
MS5	N 43.34235	W-86.38586	Visual/rake	mix community				*Northern watermilfoil ( <i>Myriophyllum sibiricum</i> )
MS6	N 43.34144	W-86.39371		X-milfoil, mix community of plants				
MS6	N 43.34241	W-86.39847		X-milfoil, mix community of plants				

Waterflea				Detection*	
Location	Latitude	Longitude	Depth (m)	SWF	FHWF
Deep hole	N 43.33767	W-86.39268	4	No	No
#1	N 43.34219	W-86.38248	4		
#2	N 43.34119	W-86.39735	4		

\*Samples were composited

Dreissena Veligers				
Location	Latitude	Longitude	Depth (m)	Detection*
Deep Hole	N 43.33767	W-86.39268	16	No
#1	N 43.34219	W-86.38248	4	
#2	N 43.34119	W-86.39735	6	

eDNA species monitored for:	eDNA Results
Fishhook waterflea <i>Cercopagis pengoi</i> Daphnia <i>Daphnia cristata</i> Rusty crayfish <i>Orconectes rusticus</i> Sea lamprey <i>Petromyzon marinus</i> Golden mussel <i>Limnoperna fortunei</i> Quagga mussel <i>Dreissena bugensis</i> Spiny waterflea <i>Bythotrephes longimanus</i> Hydrilla <i>Hydrilla verticillata</i>	Zebra mussel <i>Dreissena polymorpha</i> Northern snakehead <i>Channa argus</i> Killer shrimp <i>Dikerogammarus villosus</i> Didymo <i>Didymosphenia geminata</i> Cylindro <i>Cylindrospermopsis raciborskii</i> Asian clam <i>Corbicula fluminea</i> New Zealand Mudsnail <i>Potamopyrgus antipodarum</i> Round goby <i>Neogobius melanostomus</i>
	eDNA below detection limit for all tested species

Acronyms	
EWM	Eurasian watermilfoil
ZM	zebra mussels
HCT	hybrid cattail
PL	purple loosestrife
SWF	spiny waterflea
FHWF	fishhook waterflea
TS	target sites
BL	boat launch
MS	meander survey