

Invasive species research at the Great Lakes Laboratory-SSM



Thomas Pratt, Lisa
O'Connor & many
collaborators

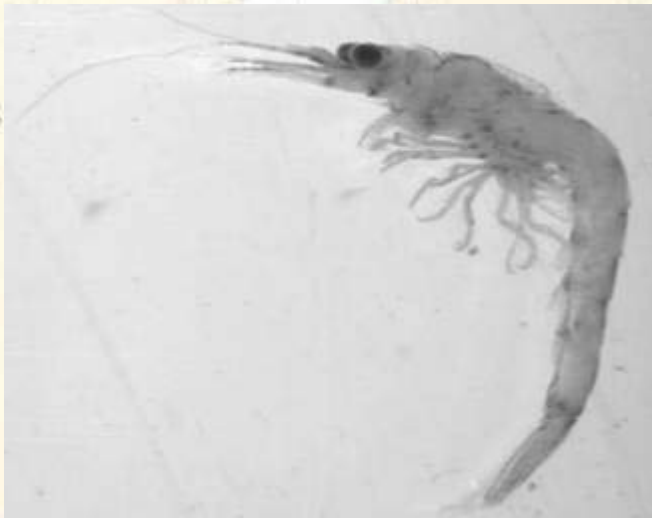
Background

- DFO-Great Lakes Laboratory Fisheries and Aquatic Sciences
 - DFO's Centre of Expertise for Aquatic Risk Assessment (CEARA)
 - to develop a national standard for conducting biological risk assessments of AIS;
 - to develop a process for prioritizing risk assessment needs



Background

- DFO-Great Lakes Laboratory Fisheries and Aquatic Sciences
 - Ballast water research
 - Scientist (Sarah Bailey), team working with CAISN Scientific Director Hugh MacIsaac at University of Windsor



Our history

- Primarily sea lamprey control related
- Recent AIS surveys in the St. Marys River



GENERAL CHART
OF THE
GREAT LAKES

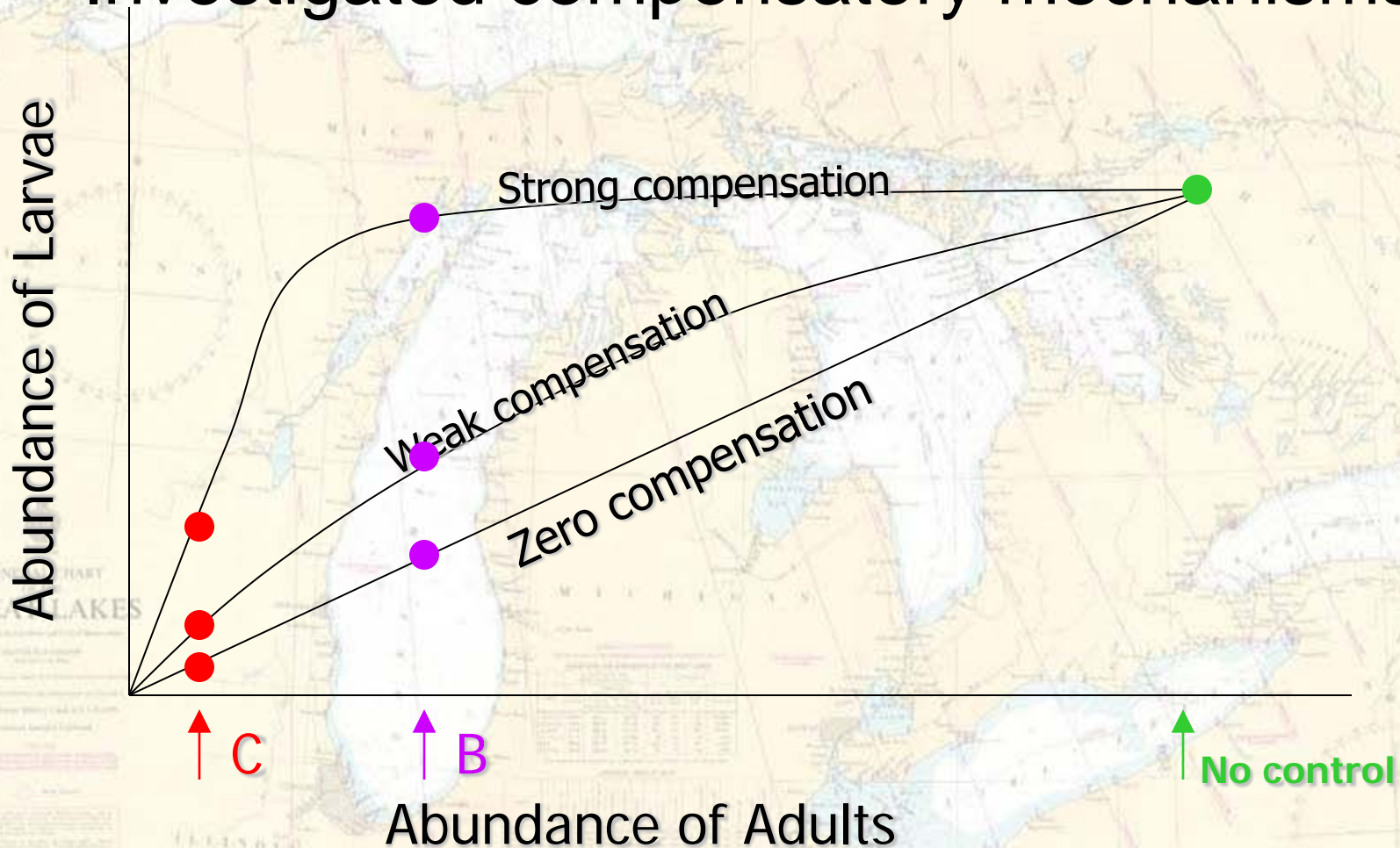
Sea lamprey sterile male control

- Examined behaviour of sterilized male lampreys
 - Determined no difference between sterilized and normal individuals

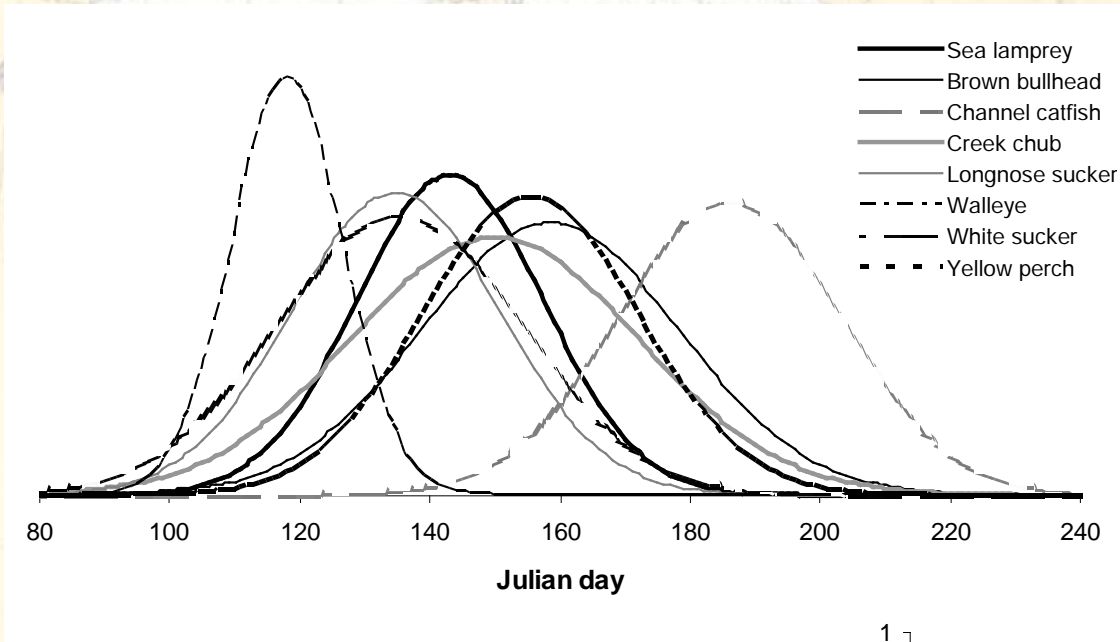


Sea lamprey biology

- Investigated compensatory mechanisms

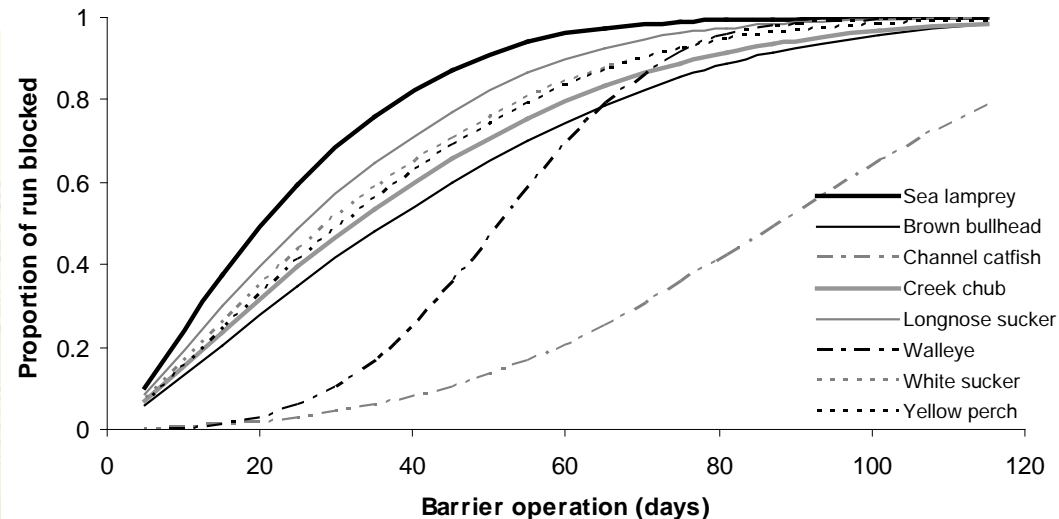


Sea lamprey migration & barriers



- Determine the migration phenologies of sea lamprey and key non-target species

- Predict impacts of barriers on spawning success



Sea lamprey migration & barriers

- Field-tested prediction of walleye and sea lamprey spawning to determine if opening a barrier to enhance walleye spawning was possible without sea lamprey escapement



Sea lamprey migration & barriers

- Assess the efficacy of fishways for passing non-target fishes, but blocking and retaining sea lamprey



Sea lamprey migration & barriers

Table 3: The number of fish detected on the antennas within a reproductive season, and the distance moved between streams (measured in stream units moved).

Species	Stream units moved														
	2005					2006					2007				
	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
Brown bullhead	64					15					20	1			
Blacknose dace	1														
Brown trout	27					3					2				
Brook trout	52	1				14	1			1	17	1			
Creek chub	216	3				62				1	84				
Chinook salmon	1					2									
Common shiner	14	1				15	2				19	3			
Emerald shiner	1					2									
Round goby						3					5				
Golden shiner						5									
Lake chub	52		1			13					1				
Logperch	3										3				
Largemouth bass						2					7				
Longnose dace	15					7					3				
Mottled sculpin	1														
Northern pike	1					1									
Pumpkinseed	11					15	1	1			1				
Rockbass	169					23					25	1			
Rainbow smelt						2									
Rainbow trout	479	12	2			259	10				12				
Sea lamprey	46		1			213	4	6		1	84	1			
Smallmouth bass	4	3					1				4				
White sucker	382	8	1	1		213	8	1	1		14				
Yellow perch	15					6					6	1			
Non-targets	1508	28	4	1		662	23	2	1	2	223	7			
Grand Total	1554	28	5	1		875	27	8	1	3	307	8			

- Inter-stream movement study to assess meta-population impacts of barriers to control AIS

Sea lamprey, lake sturgeon & lampricide



- *In situ* assessment of age-0 lake sturgeon survival during a lampricide treatment



St. Marys River AIS survey

- 5 year nearshore fish community survey

