Correlations: River Herring Run Counts, Discharge, and Nearshore SST

Compared run counts to monthly discharge and SST, seasonally averaged discharge and SST, and time-offset variables. Only correlations that were consistent between sites are shown here.

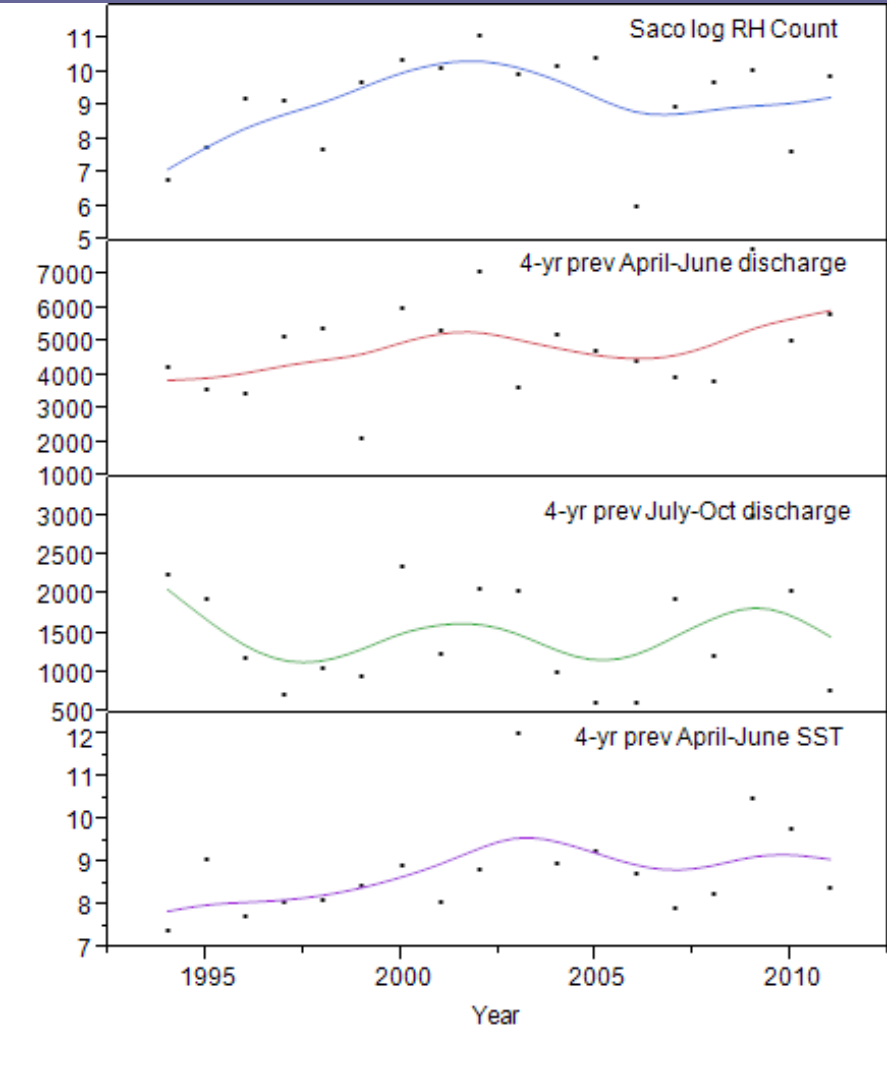
	Fishway Run Counts (log transformed)		
	Saco	Androscoggin	St. Croix
4-yr prev habitat	(+) .038	(+) .563*	(+) .764*
4-yr prev April-June discharge	(+) .319^	(+) .036	(+) .126
4-yr prev June discharge	(+) .268	(+) .110	(+) .277^
4-yr prev July-Oct discharge	(+) .072	(+) .119	(+) .219
4-yr prev July discharge	(+) .295	(+) .067	(+) .045
4-yr prev Sept discharge	(+) .092	(+) .190	(+) .326+
4-yr prev April-June SST	(+) .235	(+) .239	
4-yr prev May SST	(+) .296	(+) .254^	

Pairwise correlations between run counts at three fishways and nearest available discharge (cfs) and sea surface temperature (SST, ºC) to each site.

*significant at α = 0.05

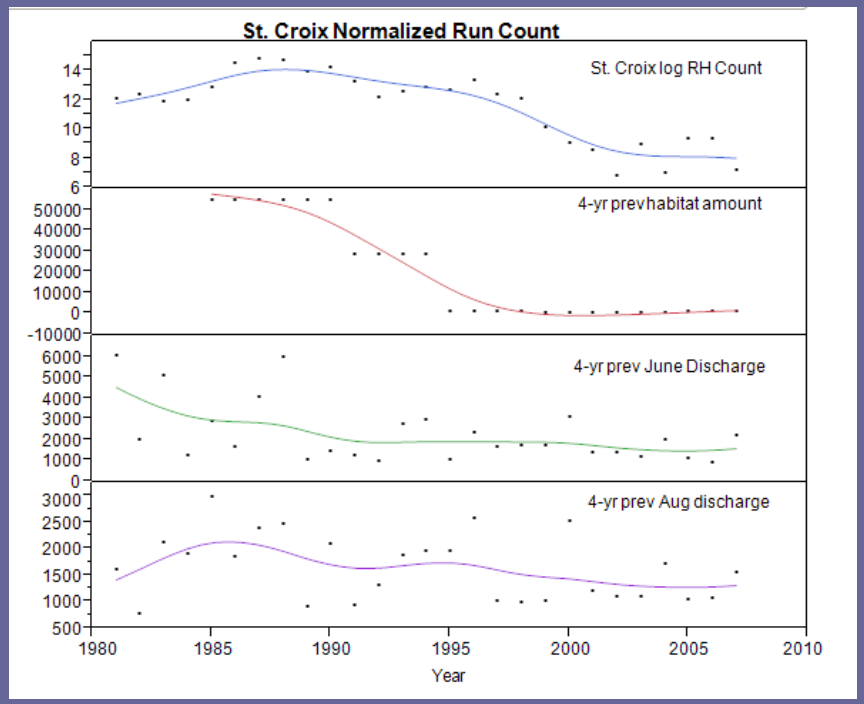
+significant at α = 0.10

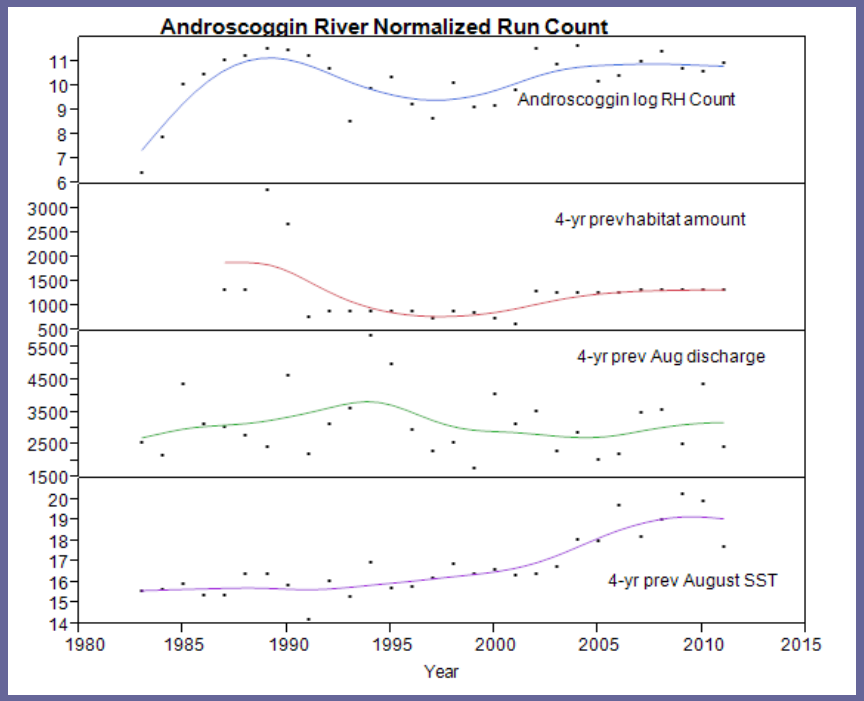
^indicates p < 0.2



"4-yr previous" indicates discharge and SST offset by four years earlier as an indication of parent adult spawning success or juvenile survival and emigration success.

Correlations: River Herring Run Counts, Discharge, and Nearshore SST





St. Croix:

No long-term SST data available

Correlations strongest with 4-year previous June and August discharge

Androscoggin:

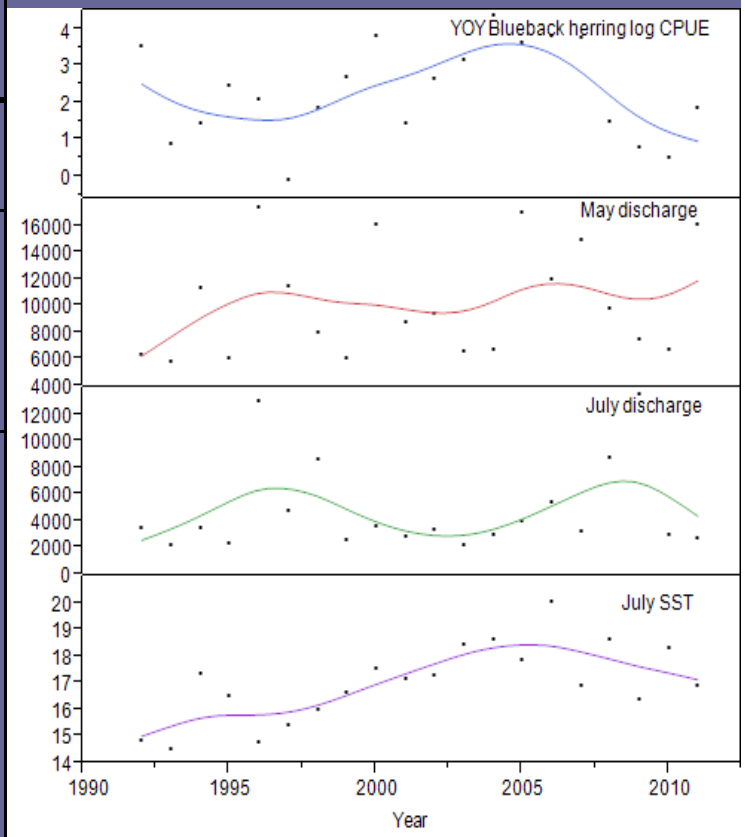
Correlations strongest with 4-year previous August discharge and SST

Indication of juvenile survival?

St. Croix and Androscoggin River normalized run counts show strongest correlations with amount of habitat available 4-years previous to the run count for a given year

Correlations: Juvenile Surveys, Discharge, and Nearshore SST

	Alewife log CPUE	BBH log CPUE	Possible explanation	Adult run count corr. sign
May discharge	(+) .213	(+) .208	Adult attraction	Mixed
July Discharge	(-) .205	(-) .274	Larval loss	+
4-yr prev April discharge	(-) .133	(-) .203	Ability to reach grounds	Mixed
4-yr prev July discharge	(+).339^{+}	(+) .157	Lake emigration	+
4-yr prev Aug discharge	(-).238$^{\wedge}$	(-) .171	Juvenile loss/emigration	+
4-yr prev Oct discharge	(-).272$^{\wedge}$	(-) .279	Juvenile loss/emigration	+
April-June avg. SST	(+) .205	(+).366$^{\wedge}$	Nursery habitat, retention	+
July-Oct avg. SST	(+) .183	(+) .516		Mixed
May SST	(+).243$^{\wedge}$	(+).421^{+}		+
June SST	(+).245$^{\wedge}$	(+).433^{+}		+
July SST	(+) .188	(+).380^{+}		Mixed
August SST	(+) .091	(+).461*		Mixed
Sept SST	(+) .200	(+).543*		Mixed
Oct SST	(+) .202	(+).534*		Mixed



Pairwise correlations between juvenile beach seine survey CPUE (combined between all Merrymeeting Bay sites) and nearest available discharge (cfs) and sea surface temperature (SST, ºC).
*significant at α = 0.05
+significant at α = 0.10
^indicates p < 0.2

Juvenile/larval beach seine surveys conducted in freshwater tidal estuary habitat below Androscoggin head-of-tide dam/fishway. No blueback herring ascend the fishway.

Assumption that this survey captures:

- Blueback herring spawning below dam
- Alewife spawning below dam
- Juvenile alewife emigration from lakes (July-Oct) and estuary use