

Carp population study on Schaper Pond and Sweeney Lake

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outline

project background

results of effectiveness monitoring and surveys

potential factors limiting treatment effectiveness

further assess carp population and management implications

recommendations and next steps

Schaper Pond background

2011: BCWMC completed Sweeney Lake TMDL, with follow-up monitoring

2012: BCWMC completed Schaper Pond feasibility report

2011 monitoring showed 90% of phosphorus load came from Hwy 55 inlet, but short-circuited two-thirds of available treatment volume

BCWMC & Golden Valley installed floating water baffle to divert more flows to northwest corner of pond—expected to remove 81-156 pounds TP per year

2017 effectiveness monitoring indicates that Schaper Pond is not removing TSS or TP as well as it did in 2011—TP leaving the pond was higher than TP entering the pond

2011



phosphorus
($\mu\text{g/L}$)

2017
2011



total
suspended
solids (mg/L)

2017

2011



longitudinal
water quality
sampling
results

concentrations increase from Hwy 55 inlet
to Schaper outlet

Pond Location	TP ($\mu\text{g/L}$)	Chlorophyll-a ($\mu\text{g/L}$)
South	28	4.3
Center	-- ¹	--
Northwest	40	--
Northeast	35	9.2

¹—not reported due to disturbance of bottom sediment during sampling.

results of preliminary monitoring

potential factors limiting treatment effectiveness

- limited time to equilibrate to start-up conditions
- high water—flows above 25 cfs would lift curtain off bottom of pond
- carp—resuspend TSS in NW corner
- watershed construction—Douglas Dr.
- upstream water treatment—several projects since 2011
- changes to bathymetry

effects of
carp in
Schaper Pond



2018 monitoring and surveys

Results

- bathymetry indicates sedimentation has occurred—unlikely to alter treatment capacity
- longitudinal water quality monitoring confirms increasing TP/TSS concs. as flow moves through pond
- spring carp survey—biomass 4 times higher than management threshold
- Summer carp survey—included several YOY carp; likely hatched in the pond
- Recommended more carp monitoring

surveying
carp in
Schaper Pond



2018-19 carp
monitoring—
PIT tagging

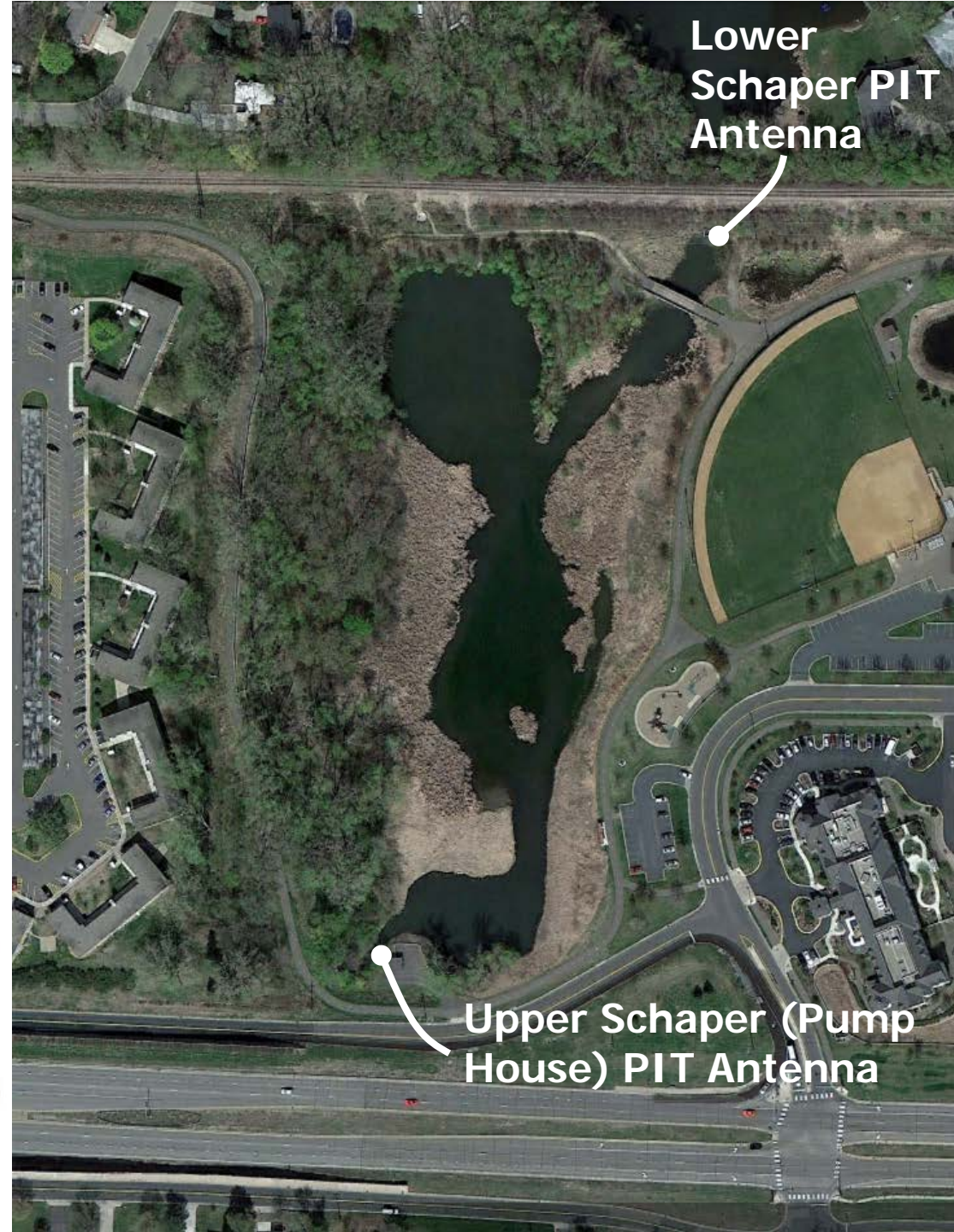
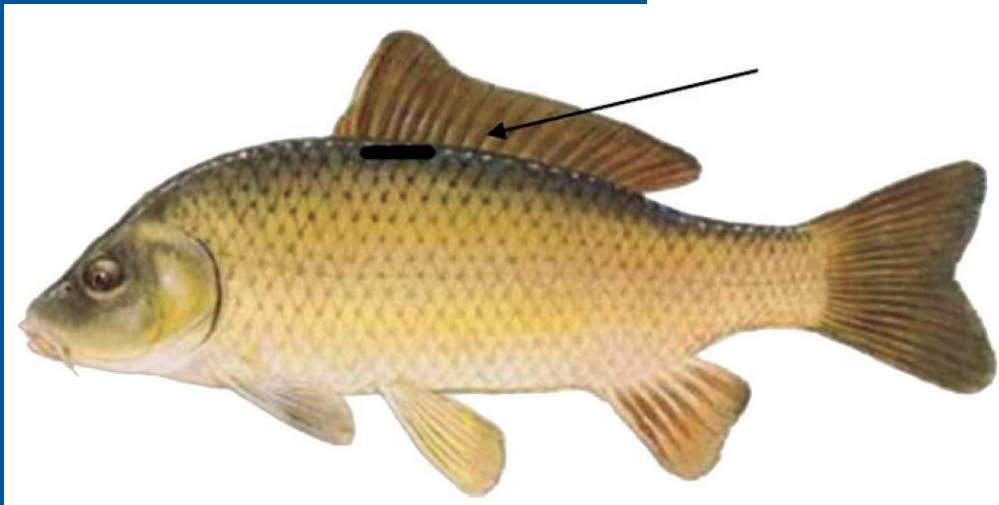
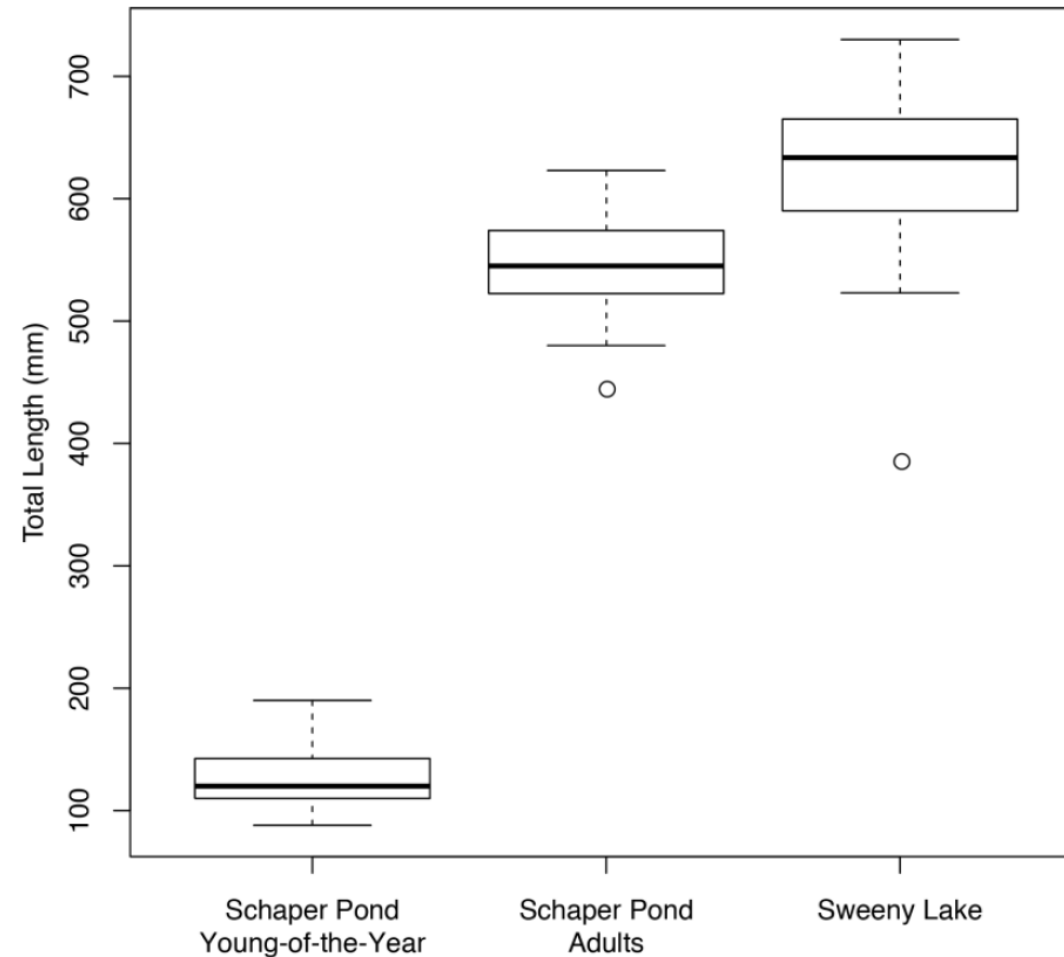


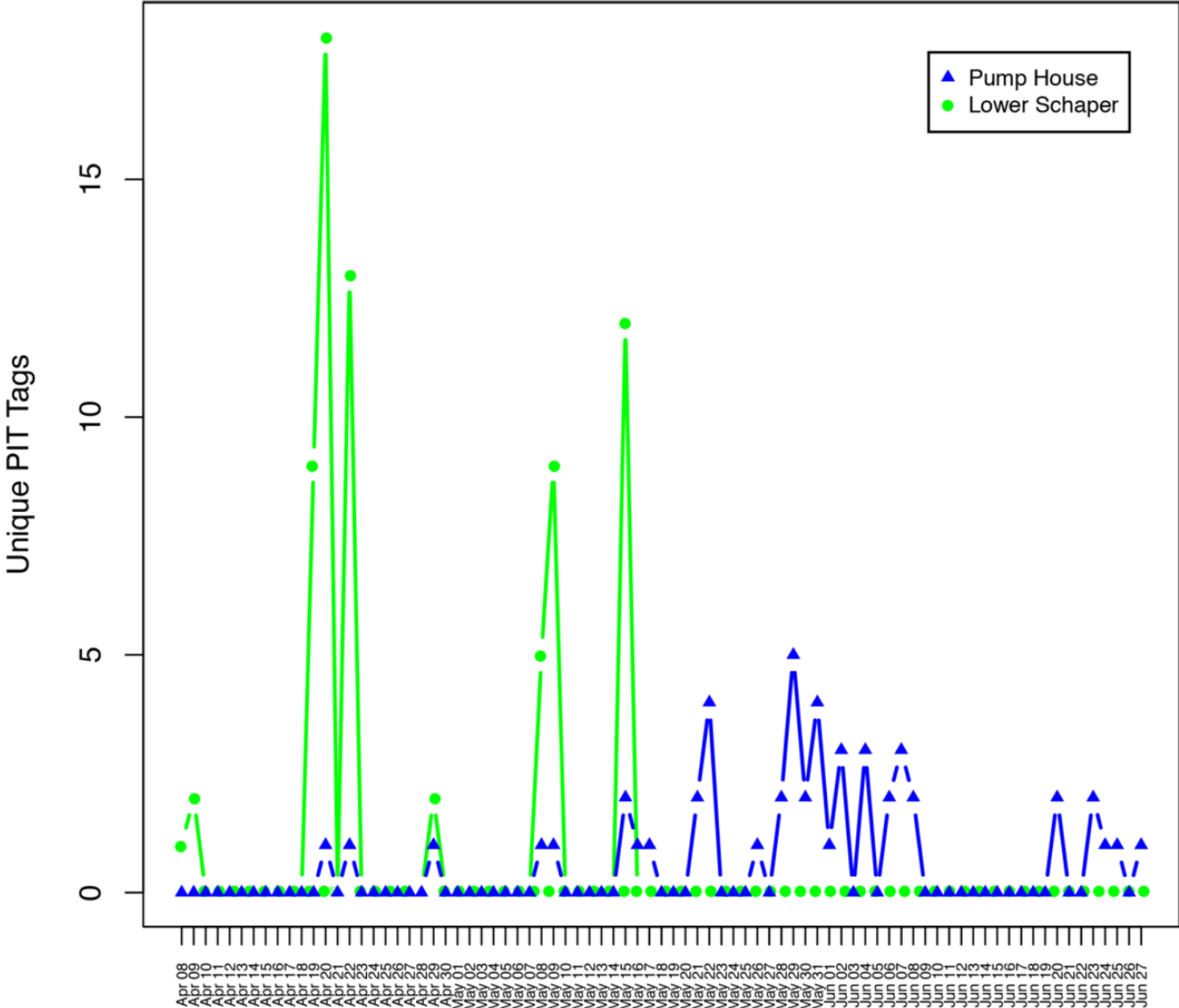
Table 1. Carp captured and PIT tagged in Schaper Pond and Sweeney Lake

Date	Lake	Survey Method	# adult Carp PIT Tagged	# YOY Carp PIT Tagged
October 1, 2018	Schaper	Electrofishing	20	50
October 1, 2018	Sweeney	Electrofishing	29	0
October 2, 2018	Sweeney	Electrofishing	73	0

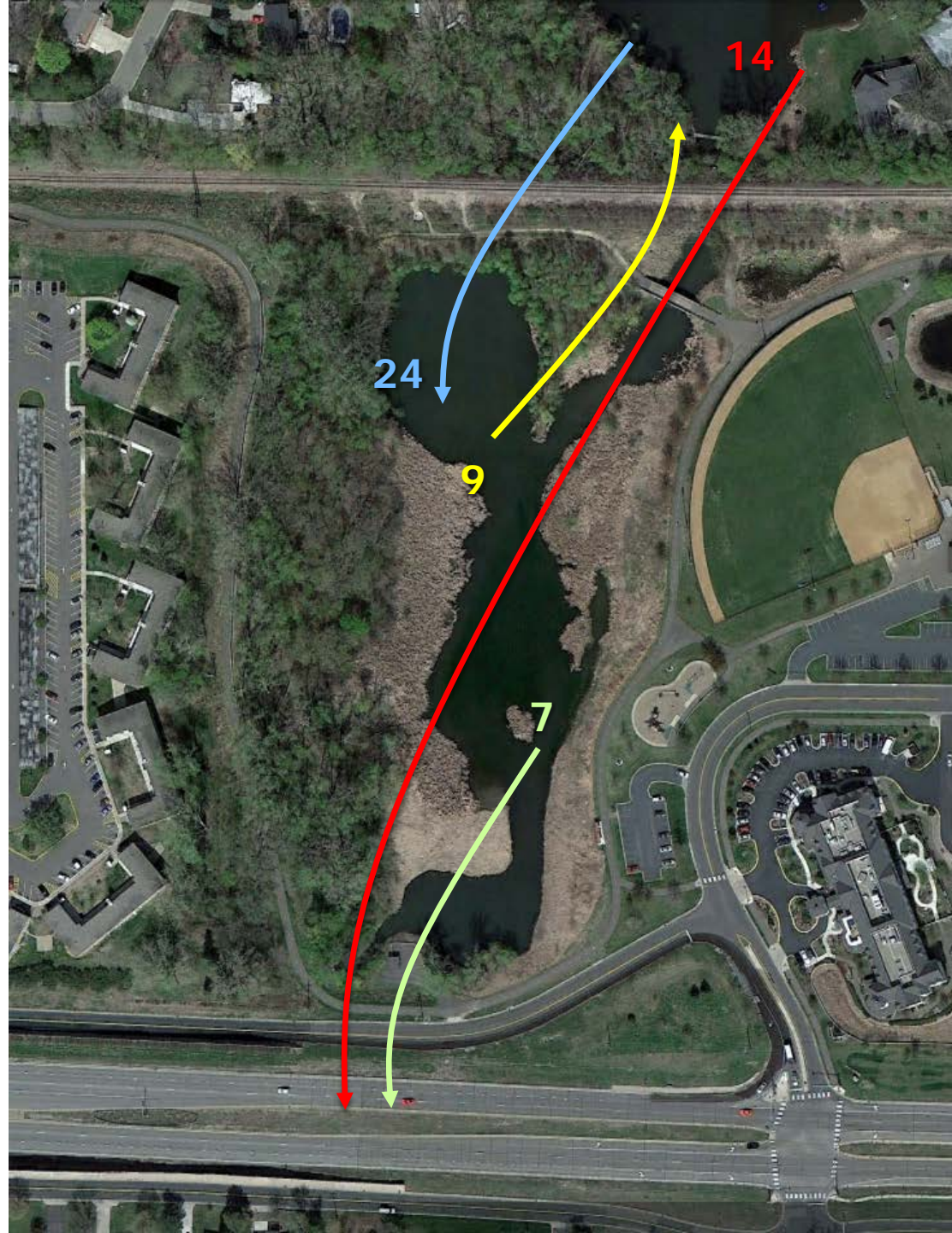
2018-19 carp
monitoring—
capture
statistics



2018-19 carp monitoring— timing of migration



2018-19 carp
monitoring—
migration
based on PIT
tag results



summary of additional carp survey

2018-19 monitoring results

- confirmed large numbers of carp inhabit Schaper Pond and Sweeney Lake
 - five to ten times higher than threshold for water quality impacts
- PIT tag monitoring indicated
 - movement between Schaper and Sweeney in spring, along with upstream movement
 - no movement from young of year carp—confirming that Schaper functions as a nursery

next steps

recommendations

- implement carp removal and control consistent with 319 grant funded workplan/budget. Design project to:
 - obtain necessary permits
 - drawdown Schaper Pond (water level)
 - electrofish & remove carp from pond
 - install four baited box nets for carp removal from Sweeney Lake
 - perform post-treatment monitoring

expected
schedule

319 grant project activities

- carp management actions—spring and summer, 2020
- first phase of Sweeney Lake alum treatment—fall, 2020

Questions?

