

Appendix G – 2011 Cabot Station Drawdown Juvenile American Shad Stranding Survey

MEMORANDUM

TO: FirstLight Power Resource Services, LLC
FROM: Chris Tomichek, Kleinschmidt Associates
DATE: September 16, 2011
RE: Cabot Station Drawdown Juvenile American Shad Stranding Survey

INTRODUCTION

FirstLight Power Resource Services, LLC (FirstLight) conducted a drawdown of the Cabot Station power canal on Saturday September 10, 2011 to facilitate station maintenance. FirstLight contracted with Kleinschmidt Associates (Kleinschmidt) to conduct a visual survey of the dewatered power canal to document stranded juvenile American shad. The survey was conducted by a team of three biologists from Kleinschmidt and two biologists from the Conte Anadromous Fish Lab. The survey documented no juvenile shad within the power canal, stranded or otherwise.

METHODS

Kleinschmidt segmented the canal into seven distinct zones. Zones 1-6 each about 1,000-ft long were located in the section of the power canal closest to Cabot Station. The final segment, Zone 7, was substantially longer as few shad were expected in the segment of the canal that runs through the village of Turners Falls. The zones were delineated in the field by the crew using a handheld Garmin Vista GPS. A map of the GPS data is available in Attachment A.

Each zone was surveyed and visually inspected for juvenile shad by survey teams consisting of at least two biologists. In addition to shad, the field crews collected data on other stranded or observed fish species, as well as information on the location of pooled areas. The data generated by this survey are available in Attachment A. The abundance of non-shad species was estimated.

RESULTS/DISCUSSION

No juvenile American shad were observed in the Cabot Station power canal. Several riverine species, including, various centrarchid and cyprinid species, chain pickerel, channel catfish, and carp were observed in most zones. Additionally, two diadromous species were observed, American eel and sea lamprey. The majority of stranding occurred in Zones 1-4. Areas of pooled water within the power canal, representative photos and the observed species, as well as an estimate of their abundance are available in Attachment A.

The results presented herein and within Attachment A represent those fish and canal features that were readily observable by field crews. Though the majority of the canal was observable, observations in areas where pools were inaccessible, relatively deep or highly turbid were limited.

CONCLUSION

No juvenile American shad were observed in the dewatered Cabot Station power canal. Other riverine and diadromous species were observed especially in Zones 1-4. Kleinschmidt recommends reducing efforts in Zone 7 because leakage through the canal walls and gatehouse is apparently sufficient to maintain flow and depth through this section. The flow appears to be sufficient to support fish remaining in this section as it retains a relatively high proportion of water and will likely provide refugia for fish over the short term.

ATTACHMENT A

ID	Time	Coordinates
Zone 1	NA	N42 35 13.6 W72 34 42.2
Zone 2	9/10/2011 11:06	N42 35 23.2 W72 34 43.2
Zone 3	9/10/2011 11:25	N42 35 33.7 W72 34 43.5
Zone 4	9/10/2011 11:34	N42 35 40.8 W72 34 39.2
Zone 5	9/10/2011 11:41	N42 35 44.3 W72 34 32.8
Zone 6	9/10/2011 11:55	N42 35 48.7 W72 34 24.2
Zone 7	9/10/2011 12:03	N42 35 53.2 W72 34 11.3



Location of Zones sampled during the survey. Coordinates are located on the west bank of canal and mark the edges of each section.

Zone 1

Observers BRA, TM, KPN
Survey Date 9/10/2011
Survey Time 15:00 15:30

**No Shad
Observed**

<u>Species List</u>	<u>Estimate of Abundance</u>
Sea Lamprey	600
Carp	1
Black Crappie	1
Centrarchids	
Sunfish Species	6
Smallmouth Bass	4
Chain pickerel	1
Cyprinids	
Spottail Shiner	Several 100
fall fish	Several 100
chubsucker	several



Location of Zone 1 (a) and typical views of Zone 1 during the drawdown (b and c).

Zone 2

Observers KPN, Matt (Conte)
Survey Date 9/10/2011
Survey Time morning

No Shad Observed

Other Observed Species

<u>Species List</u>	<u>Estimate of Abundance</u>
Sea Lamprey	Several 1,000
Mussel Species	Several 1,000
Yellow Perch	Less than 1,000
Carp	Less than 100
Chain pickerel	Less than 100

Centrarchids

Sunfish Species Less than 1,000
Smallmouth Bass Less than 100

Cyprinids

Spottail Shiner Less than 1,000
Fallfish Less than 1,000
Darters Less than 1,000



Zone 2 views during drawdown, photos taken along the West side of canal.

Zone 3

Observers TM, Amy (Conte)
Survey Date 9/10/2011
Survey Time 11:30 12:10

No Shad Observed

Other Observed Species

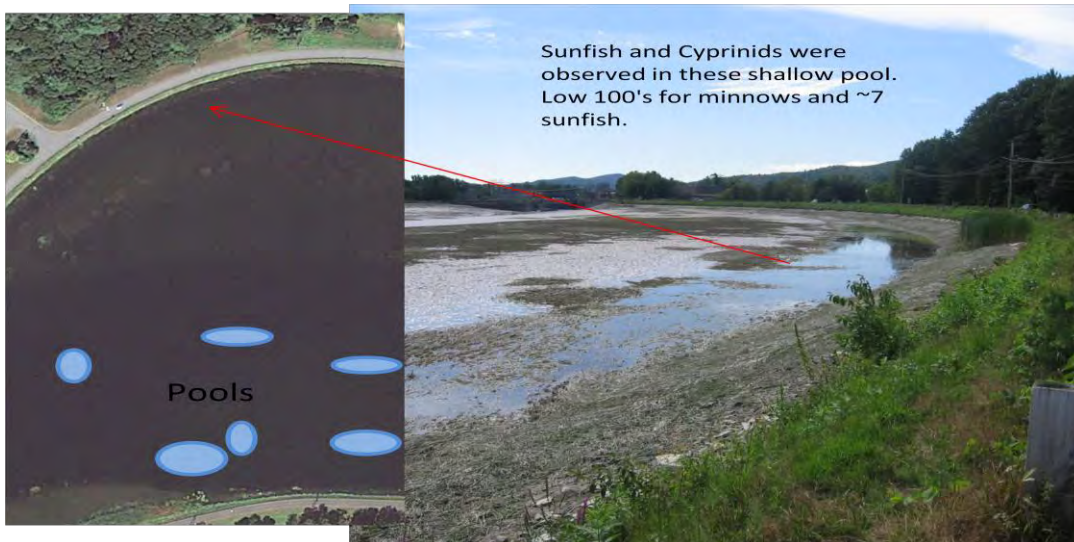
Species List	Estimate of Abundance
Lamprey	Several 1,000
Mussel Species	Several 1,000
Yellow Perch	Less than 1,000
Carp	Less than 100
Chain pickerel	Less than 100

Centrarchids

Sunfish Species 100's
blue gill and redbreast
Smallmouth Bass >50

Cyprinids

Spottail Shiner 100's
Fallfish 100's
Daters 100's
common shiner 100's



Zone 4

Observers TM, Amy (Conte)
Survey Date 9/10/2011
Survey Time 12:10

No Shad Observed

Other Observed Species

<u>Species List</u>	<u>Estimate of Abundance</u>
Sea Lamprey	Several 1,000
Mussel Species	Several 1,000
Yellow Perch	Less than 1,000
American eel	2
Chain pickerel	6
mud puppy	1
Crayfish	Less than 1,000
Centrarchids	
Sunfish Species	Less than 1,000
Smallmouth Bass	Less than 50
Cyprinids	
Spottail Shiner	Less than 1,000
Fallfish	Less than 1,000
Daters	Less than 1,000
common shiner	Less than 1,000



Typical view of pools in Zone 4.

Zone 5 and 6

Observers TM, Amy (Conte)
Survey Date 9/10/2011
Survey Time 12:35

No Shad Observed

<u>Species List</u>	<u>Estimate of Abundance</u>
Sea Lamprey	Several 1,000
Crayfish	10
Centrarchids	
Sunfish Species	20
Smallmouth Bass	10
Cyprinids	30



Typical view of Zone 5 and 6

Zone 7

Observers TM, BRA, KPN
Survey Date 9/10/2011
Survey Time 13:30 15:00

No Shad Observed



Typical view of Zone 7. One small school of fish (species unknown) observed in Zone 7.