Asian Clam Survey

Owasco Lake

July 26, 2017

Thanks to:

- Ed Wagner, OLWMC
- Drew Snell, Owasco Lake Watershed Specialist
- Tim Schneider, Kathryn Velone and Josh Allan, Owasco Lake Watershed Inspectors
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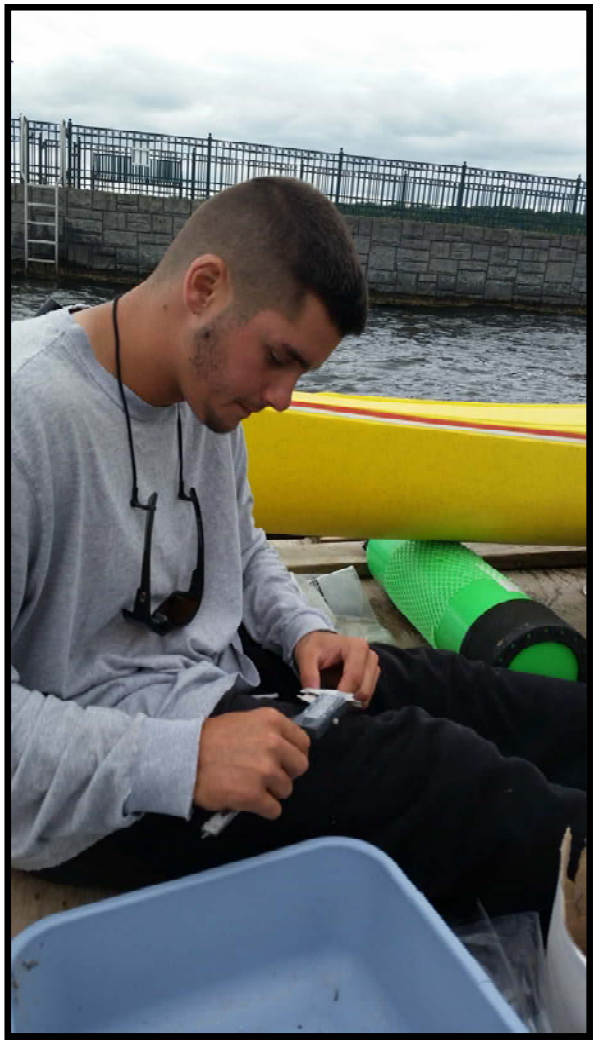
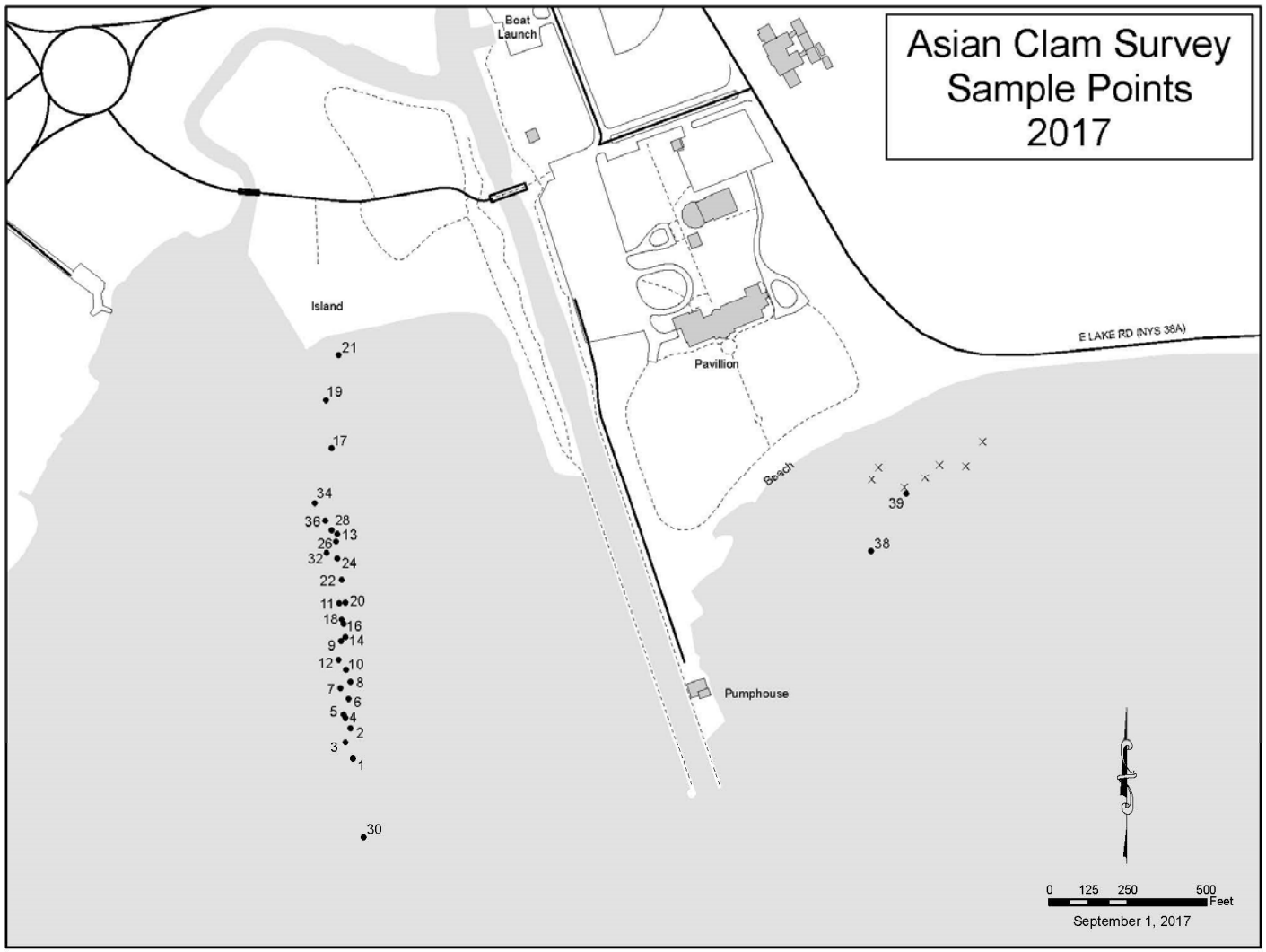


Asian Clams

- Were discovered in Owasco Lake in September 2010.
- Larval clams are released from adults at about 0.25 mm in size.
- First year growth rates after initial spawn through the summer to early fall of about 4 mm a month.
- Asian clams can reach 10-30 mm in size during their first year depending on food availability and temperatures.
- In Lake George clams were not identified as reproductive until they reached a minimum size of 12.7mm.
- Timing of reproduction in Lake George is mid June through mid October.

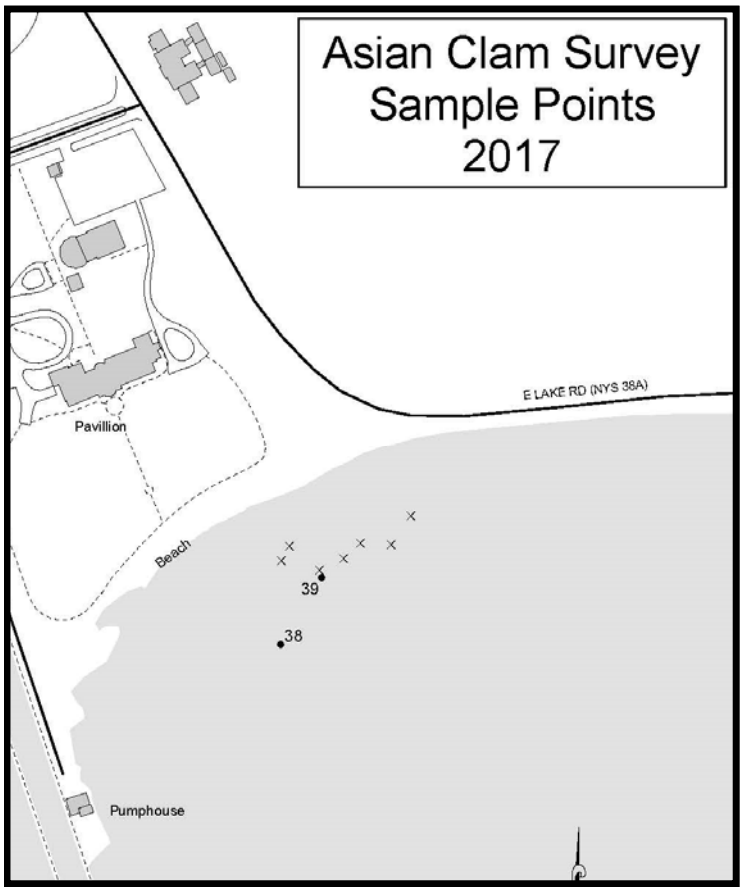
Asian Clams

- Lake George researchers have observed that winter ice contact with sediments killed Asian Clams.
- Lowest lake level during a cold snap: Owasco Lake was at 710.75 feet (above sea level) with low temperatures of 1 degree F on January 7, 2017.


Asian Clam Survey
Sample Points
2017
Boat
Launch
Island
E LAKE RD (NYS 38A)
Pavillion
Beach
Pumphouse
21
19
17
34
36
28
13
26
32
24
22
11
20
18
16
9
14
12
10
7
8
6
5
4
2
3
1
30
39
38
0
125
250
500
Feet
September 1, 2017

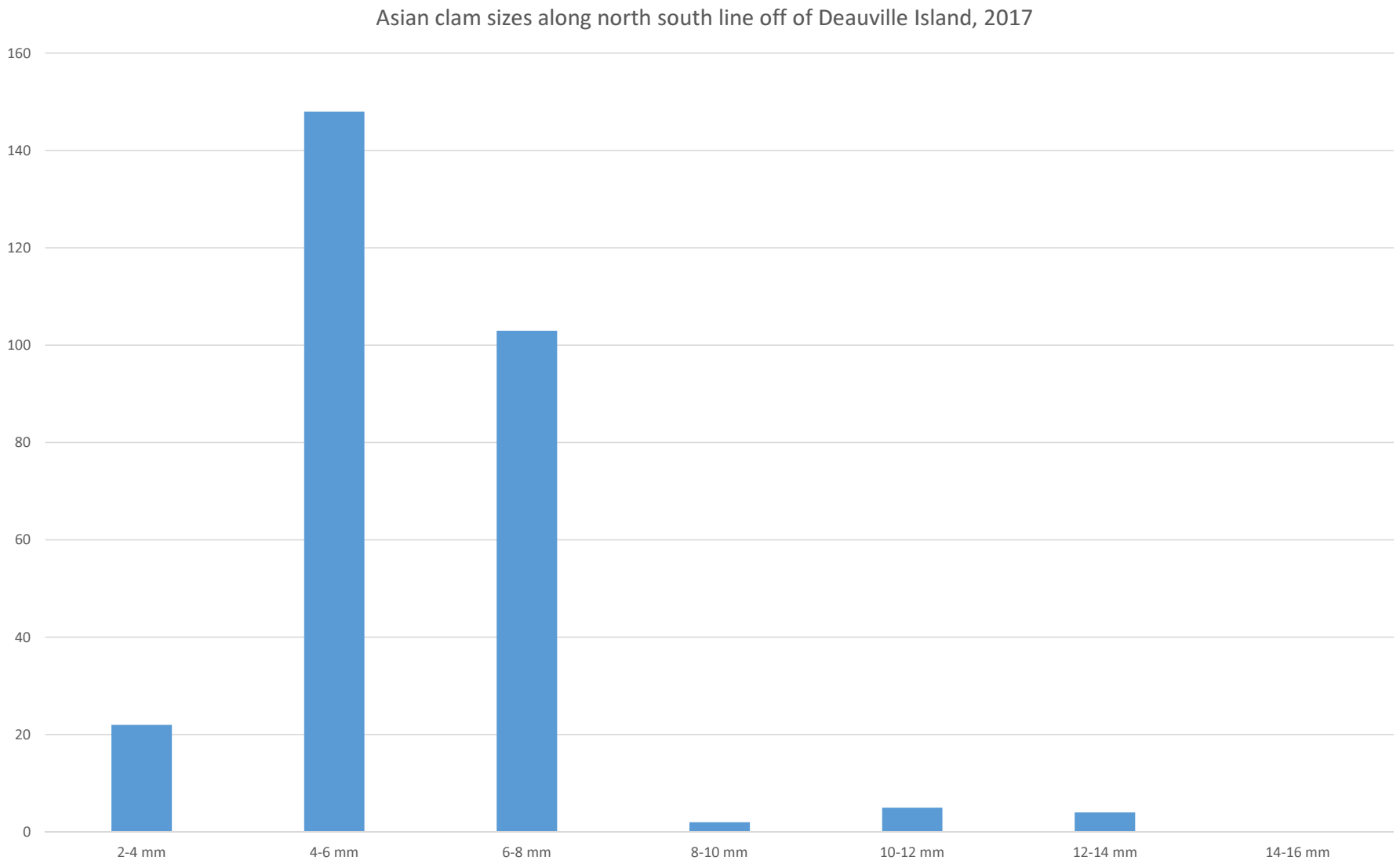
East Side off of Pavilion Beach, 2017

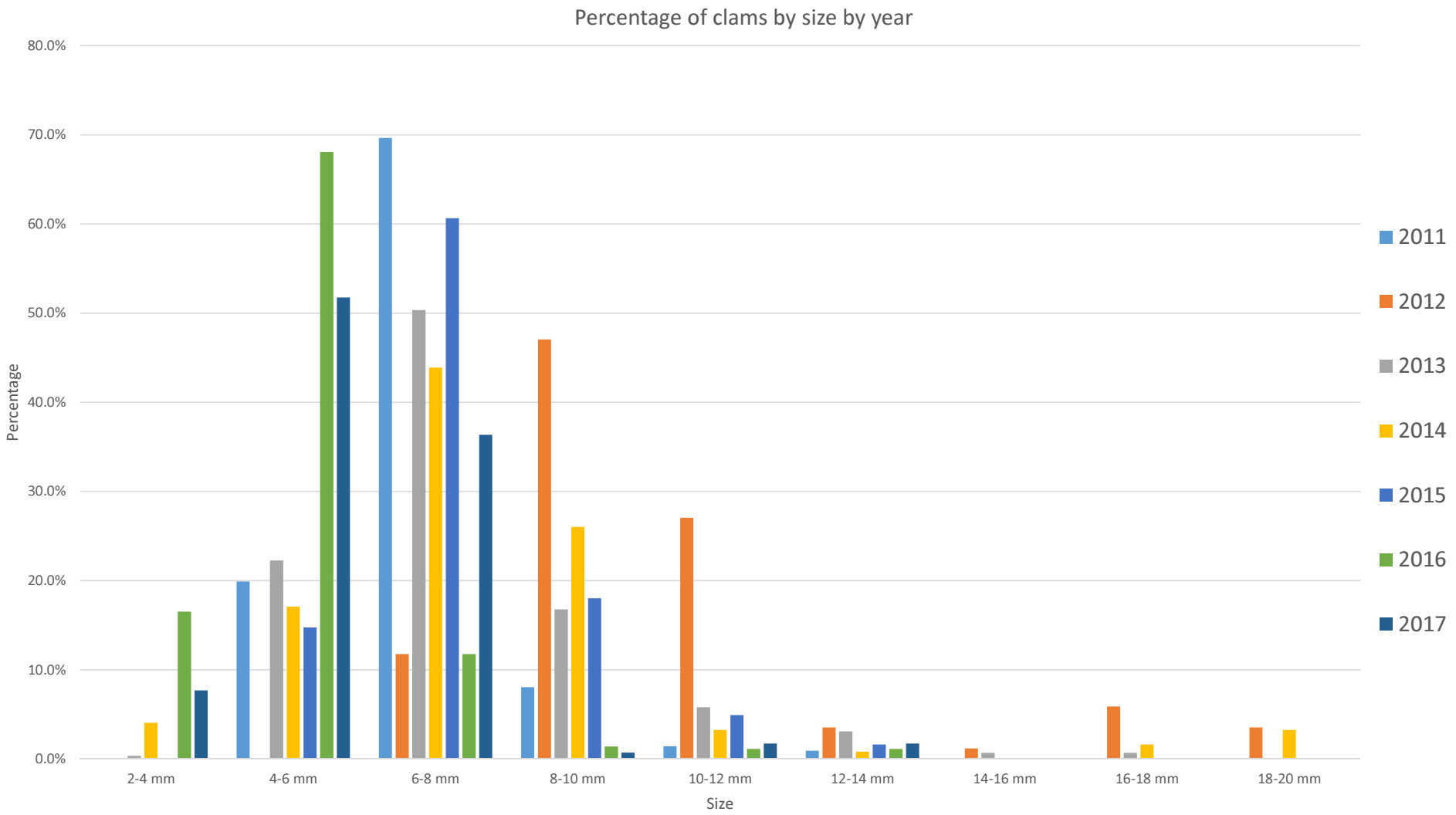
- Only two clams found with multiple sample sites.
- One of the two of the clams was less than 10 mm (point 39).
  - In 2016, 100% were less than 10 mm (33 clams).
  - In 2015, 83% were less than 10 mm (6 clams).
  - In 2014, over 50% were larger than 10 mm (15 clams).
- One of the clams found was 12.3 mm which is close to reproductive size.
- 40% were larger than 16 mm in 2014. No clams of reproductive size found since 2014.
- Survival is poor on this side of Emerson Park.



West Side off of Deauville Island, 2017

- Transect to shore.
- 97% of the clams were smaller than 10 mm. Similar to 2014-2016.
- 1.1% were of reproductive size (one clam at each point 5, 7 and 8).
- 11% of samples had more than 20 clams and 68% had less than 10. Largest number of clams found at points 13 (42 clams) and 28 (67 clams).
  - In 2016, 40% of samples with clams ha
  - d more than 20 clams.
  - All samples in 2015 had less than 7 clams.
  - 90% of samples in 2014 had less than 10 clams.
- More clams in areas that adults could survive in over winter.
- Poor survival of adults.


Asian clam sizes along north south line off of Deauville Island, 2017
160
140
120
100
80
60
40
20
0
2-4 mm
4-6 mm
6-8 mm
8-10 mm
10-12 mm
12-14 mm
14-16 mm


Percentage of clams by size by year
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Percentage
2-4 mm
4-6 mm
6-8 mm
8-10 mm
10-12 mm
12-14 mm
14-16 mm
16-18 mm
18-20 mm
Size
2011
2012
2013
2014
2015
2016
2017

Quantitative Samples

- 2011: 1018 clams per m^2
- 2012: 429 clams per m^2
- 2013: 1,462 clams per m^2
- 2014: 1,018 clams per m^2
- 2015: 511 clams per m^2
- 2016: 2,632 clams per m^2
- 2017: 1,023.4 clams per m^2

- Lake George: up to 6,000 per m^2

Observations

- Very few clams found on east side.
- The clams on the west side is mostly young of the year.
- Only the west side had clams that were of reproductive size. One on the east side was close (but only two clams found).
- It appears young of the year clams are transported into the shallow areas by wind and wave action since there are no mature clams there to reproduce.
- Some occasionally denser population areas but less dense than Lake George.
- Past surveys have shown that drawdown appears to cause 100% mortality of clams in areas where the substrate was exposed during the winter.

Darrin Freshwater Institute Research

- Hypothesis: *Chaetogaster limnaei* adversely affect the Asian clam population with respect to size distribution and relative abundance.
  - Have been observed eating the offspring of Asian clams inside adult clams
  - May alter the population structure of Asian clams
  - Will infect Asian clam within a short time period in a scale experiment
  - Can transfer from one clam to another in a small scale lab experiment
- County Planning staff took clam samples in 2015 and sent them to Darrin Freshwater Institute for research and DNA analysis. None of the parasites were found in Owasco Lake samples.
- Not sampled this year. Maybe 2018.