Asian Clam Survey

Owasco Lake

August 7, 2018

Thanks to:

- Ed Wagner, OLWMC
- Drew Snell, Owasco Lake Watershed Specialist
- Michele Wunderlich, Gary Duckett and Doug Dello Stritto, WQMA
- Boat provided by Dave Wasileski at Owasco Marine
- Partially funded by FLLOWPA

Asian Clams:

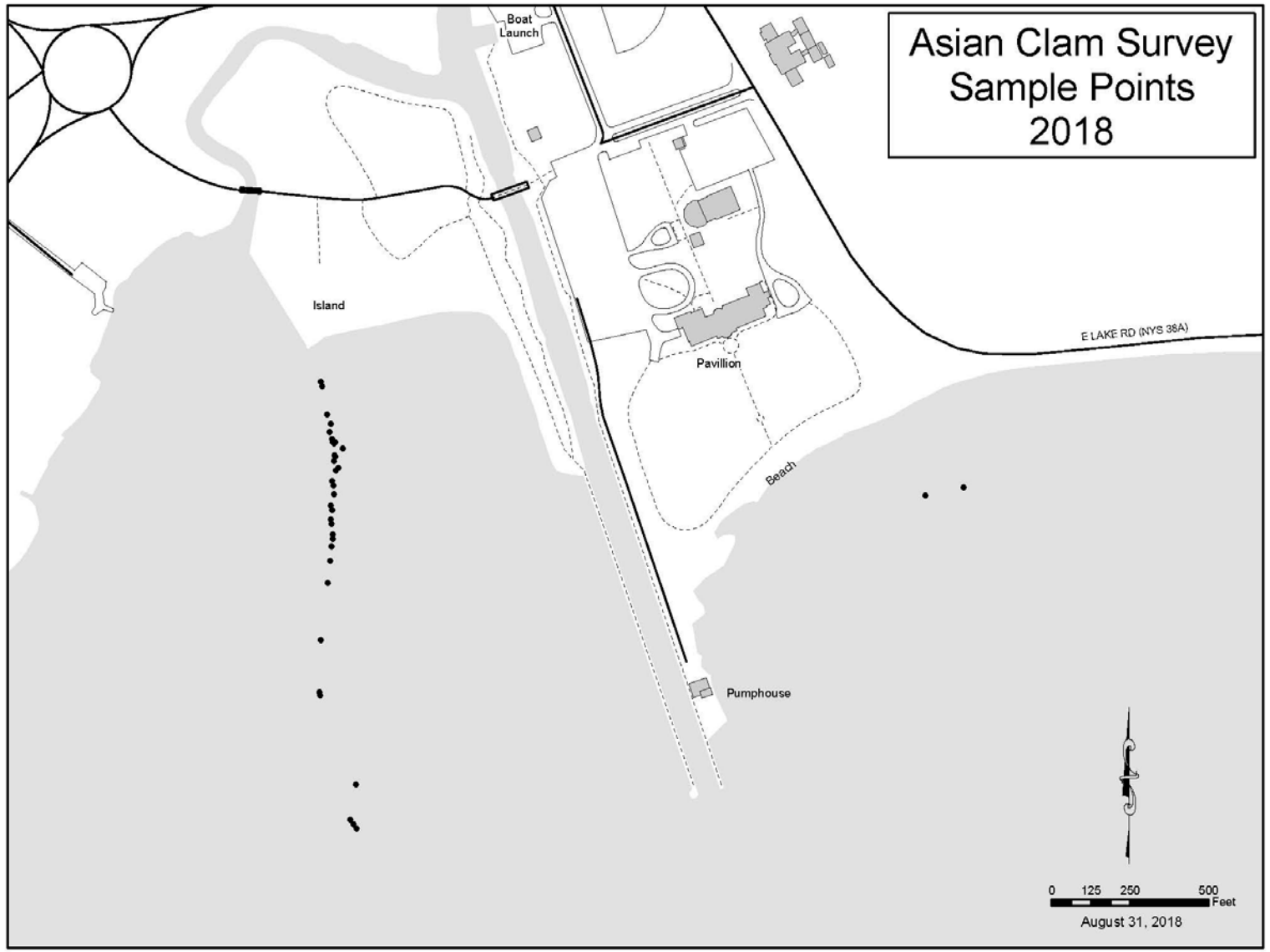
- Were discovered in Owasco Lake in September 2010.
- Larval clams are released from adults at about 0.25 mm in size.
- First year growth rates after initial spawn through the summer to early fall of about 4 mm a month.
- Asian clams can reach 10-30 mm in size during their first year depending on food availability and temperatures.

Asian Clams:

- 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.
    - Clams found in Owasco Lake this year were ~1 to 2 months old the beginning of August.

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 710.05 feet (above sea level) with low temperatures of 3 degree F on February 3, 2018.
- Lake level the day of the survey was 712.71 feet (above sea level).
  - Anything under 1.66 feet would have been under ice on February 3, 2018.

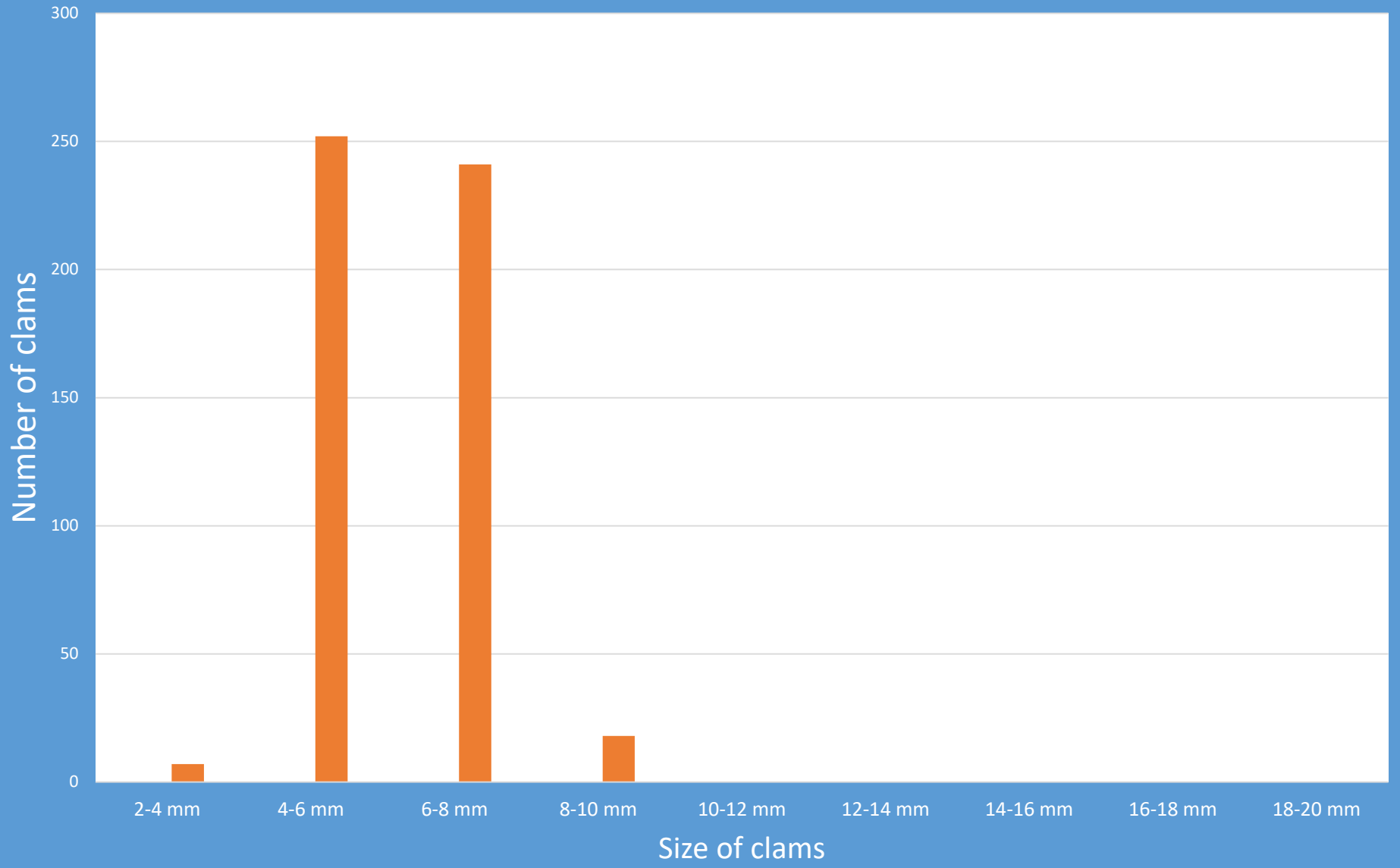

Asian Clam Survey
Sample Points
2018
Boat
Launch
Island
E LAKE RD (NYS 38A)
Pavillion
Beach
Pumphouse
0 125 250 500
Feet
August 31, 2018

CAYUGA COUNTY
Water Quality Management Agency

West Side off of Deauville Island, 2018:

- Transect from shore toward buoy.
- 100% of the clams were smaller than 10 mm.
- 0% were of reproductive size.
  - ~1% in 2014 - 2017.
- In 2018, 30% of samples with clams had more than 20 clams.
  - 40% in 2016 and 11% in 2017 samples with clams had more than 20.
  - All samples in 2015 had less than 7 clams.
  - 90% of samples in 2014 had less than 10 clams.
- Poor survival of adults.

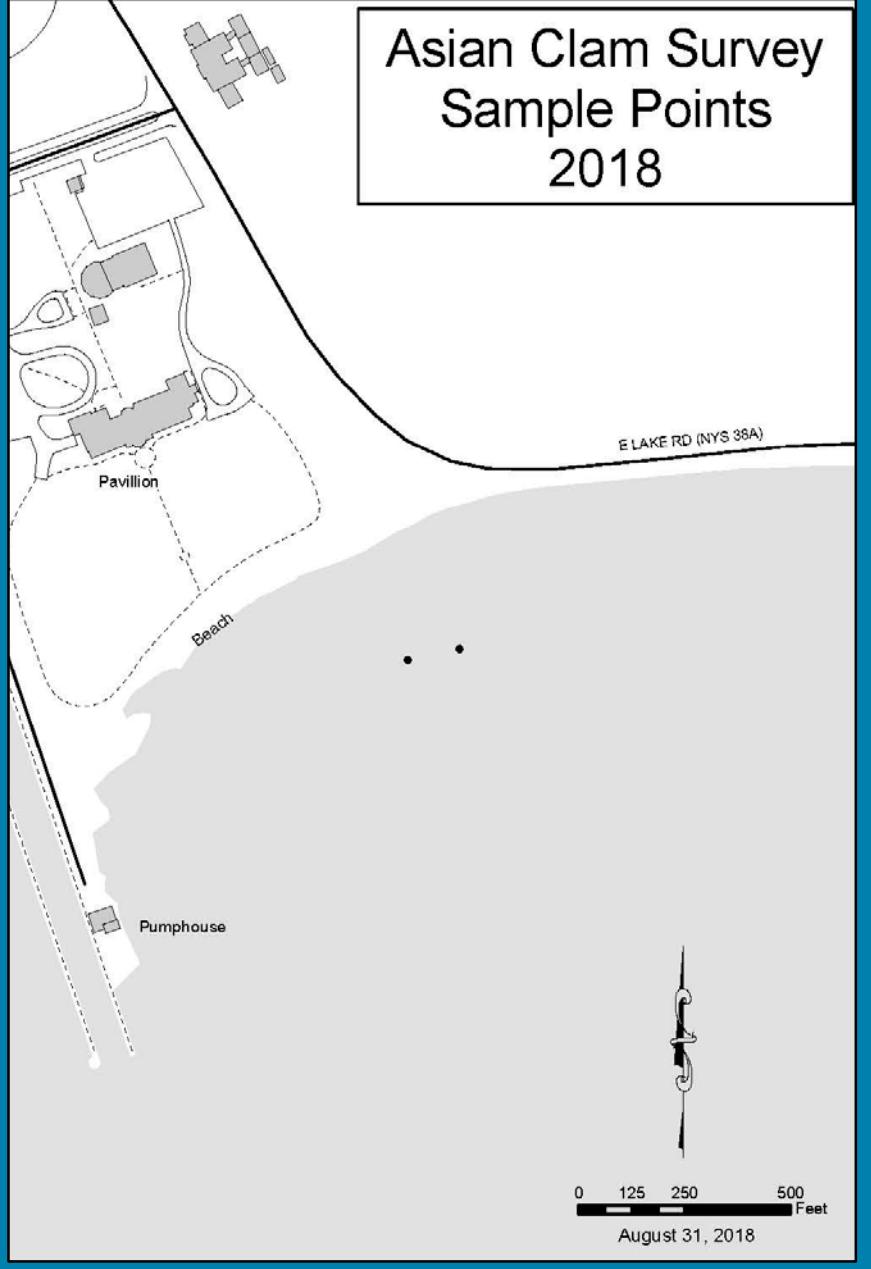
Asian clam in North South Transect

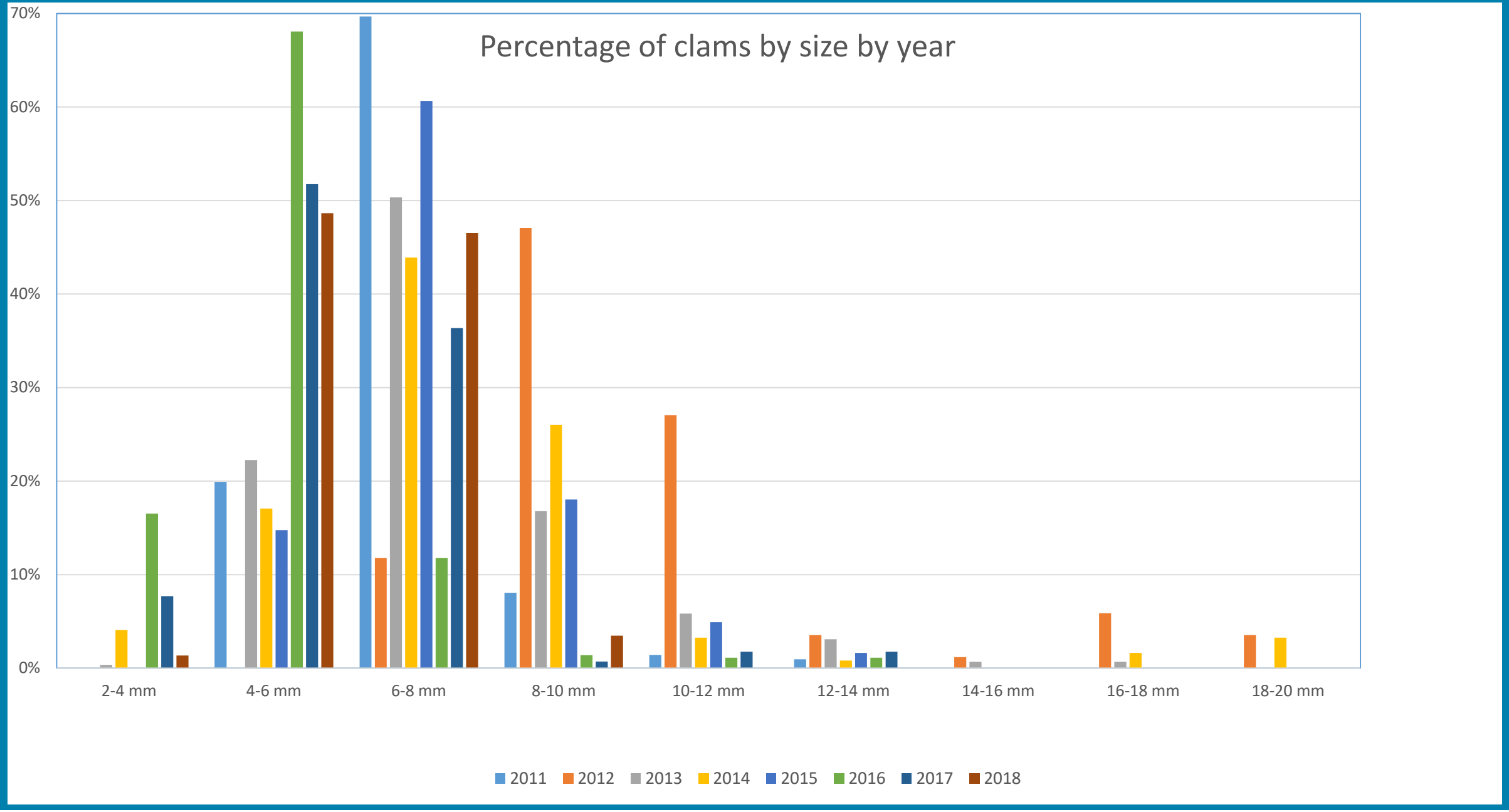


CAYUGA COUNTY
Water Quality Management Agency

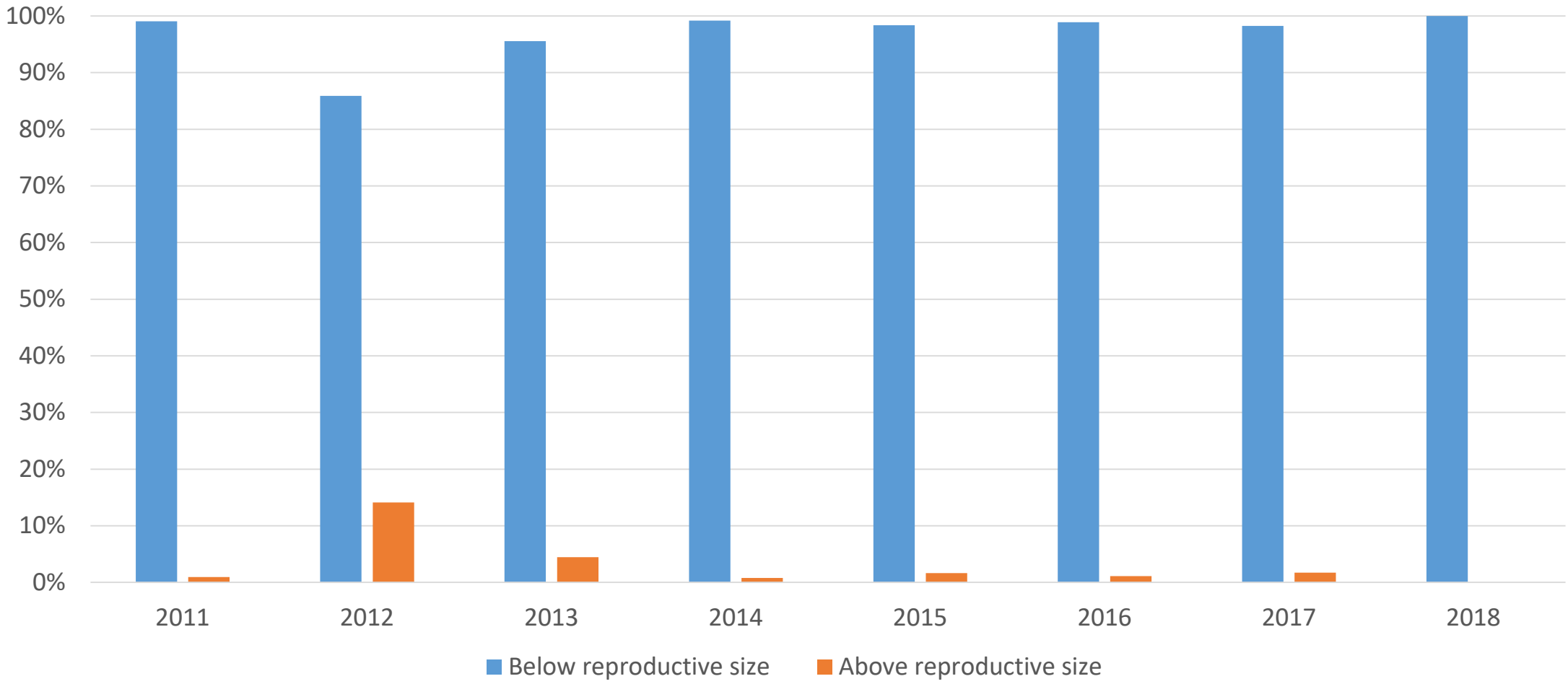
East Side off of Pavilion Beach, 2018:

- Both sites had clams less than 10 mm.
  - In 2017 found 2 clams, one above 10 mm and one less than 10 mm.
  - 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).
- None of the clams found were close to reproductive size.
  - 40% were larger than 16 mm in 2014.
  - No clams of reproductive size found here in 2015-2016.
  - One clam 12.3 mm found here in 2017.
- Survival is poor on this side of Emerson Park.




Percentage of clams by size by year
70%
60%
50%
40%
30%
20%
10%
0%
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
2011
2012
2013
2014
2015
2016
2017
2018

Reproductive size* of clams found



*based on Lake George research

Quantitative Sample:

- 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
- 2018: 877.2 clams per m^2

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

Observations:

- Very few clams found on east side.
- The clams found were all young of the year.
- Neither side had clams that were of reproductive size.
- 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 2018 sent them to Darrin Freshwater Institute for research and DNA analysis. None of the parasites were found in Owasco Lake samples.