Asian Clam Survey

Owasco Lake

August 11, 2021

Thanks to:

- Ed Wagner, OLWMC Member
- Adam Effler, OLWMC Executive Director
- Ally Berry and Dillion Shults, Owasco Lake Watershed Inspection and Protection Division
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Asian Clams:

- Were discovered in Owasco Lake in September 2010.
- Like warm shallow water with sandy sediments.
- Adults can reach a length of about 2 inches (5 cm). Live 3-4 years.
- Shell is yellow-green or brown with concentric rings when alive, looking more black and white once dead.
- Found at the sediment surface or slightly buried.
- Can suspension feed (filter feed) and deposit feed (with their foot) in the substrate.

September 2010

Asian Clams:

- In Lake George only 3% of clams smaller than 13mm were reproducing.
- Can reproduce at about 60 degrees F.
  - Buoy data show Owasco Lake around 60 degrees F starting around June 2, 2021.
- Timing of reproduction in Lake George is mid-June through mid-November.
- Highest rates in the fall in Lake George.
- Self fertilize.
- Single adult can release an average of 400 juveniles per day and up to 70,000 per year.

Asian Clams:

- Larval clams are released from adults at about 0.25 mm in size.
- Transported by currents using a mucous “parachute” or hitchhiking.
- Asian clams typically grow between 0.2-0.3 mm per week during the growing season in Lake George.
  - Can get to 6 -10 mm in 3 to 6 months.
  - Can grow to 10 to 30 mm during their first year depending on food availability and temperatures.

Asian Clams:

- Can alter food webs.
- Clog raw water intakes with clam shells or by juveniles that are sucked into the intake and grow in the system.
- Release phosphorus and nitrogen into the water through burrowing, feeding from the sediment and their excreta. Elevated nutrients can cause dissolved oxygen depletion or increased algal growth.

Asian Clams

- Lake George researchers have observed that winter ice contact with sediments killed Asian Clams.
- Lowest lake levels during a cold snaps:
  - Owasco Lake was at 709.7 feet (asl) with low temperature of -1 degrees F on February 12, 2021.
  - Rest of the adjacent days were in teens and twenties.
- Lake level the day of the survey was 712.7 feet (asl).
  - Anything in less than 3.0 feet would have been under ice.

February 2011
Lower 3 clams killed by freezing in shallow water

Asian Clam Survey 2021

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0 125 250 500 Meters

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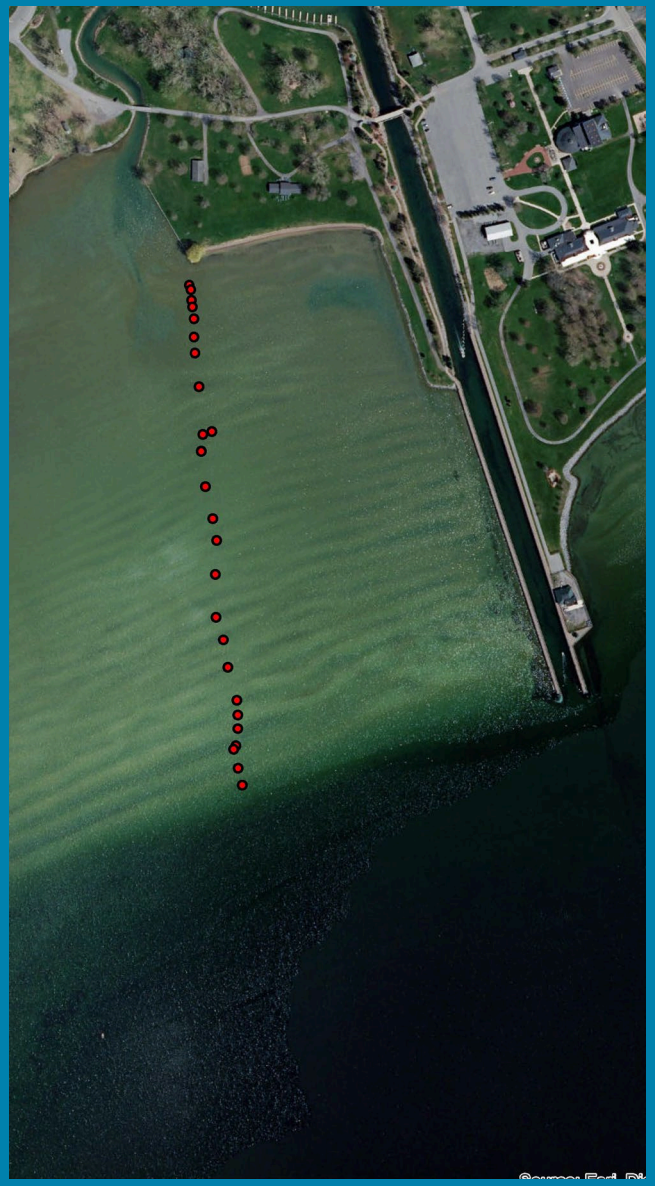
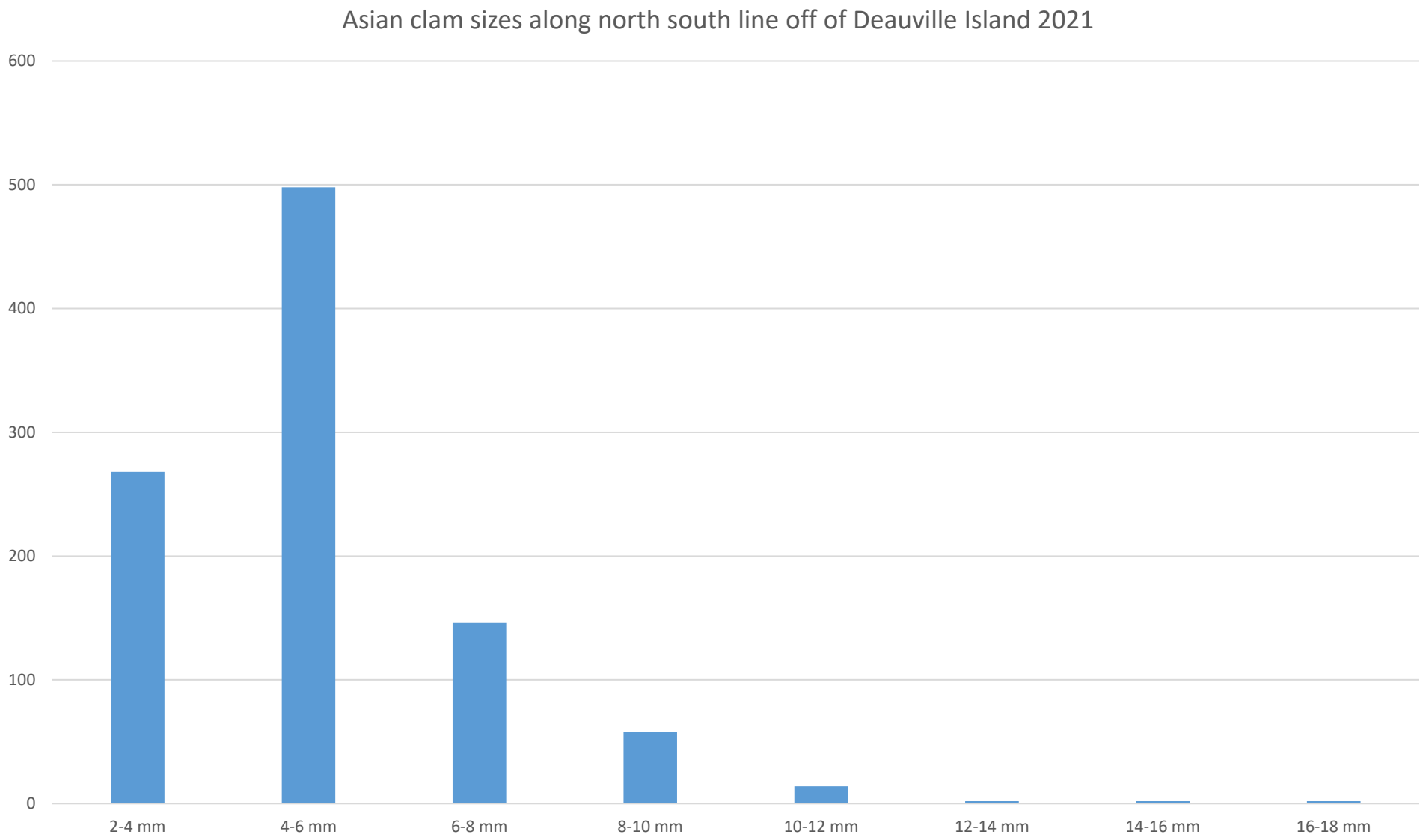
West Side off of Deauville Island, 2021

- Transect from shore toward buoy.
- 970 out of the 990 clams found were smaller than 10 mm (98%).
- Six were of reproductive size (0.006% of clams found) and were found in 3 feet or deeper of water. This was below the ice level in the winter.
- In 2021, 60% of samples had 20 or more clams. In 2020, it was 81% , in 2018 it was 30%, in 2016 it was 40% and in 2017 it was 11%.
  - In 2019, all samples had three clams or less.
  - All samples in 2015 had less than 7 clams and 90% of samples in 2014 had less than 10 clams.
- 2021 had high numbers of 2-4 mm, 4-6 mm and 6-8 mm clams; similiar to 2016, 2017 and 2020. Most likely young of the year.





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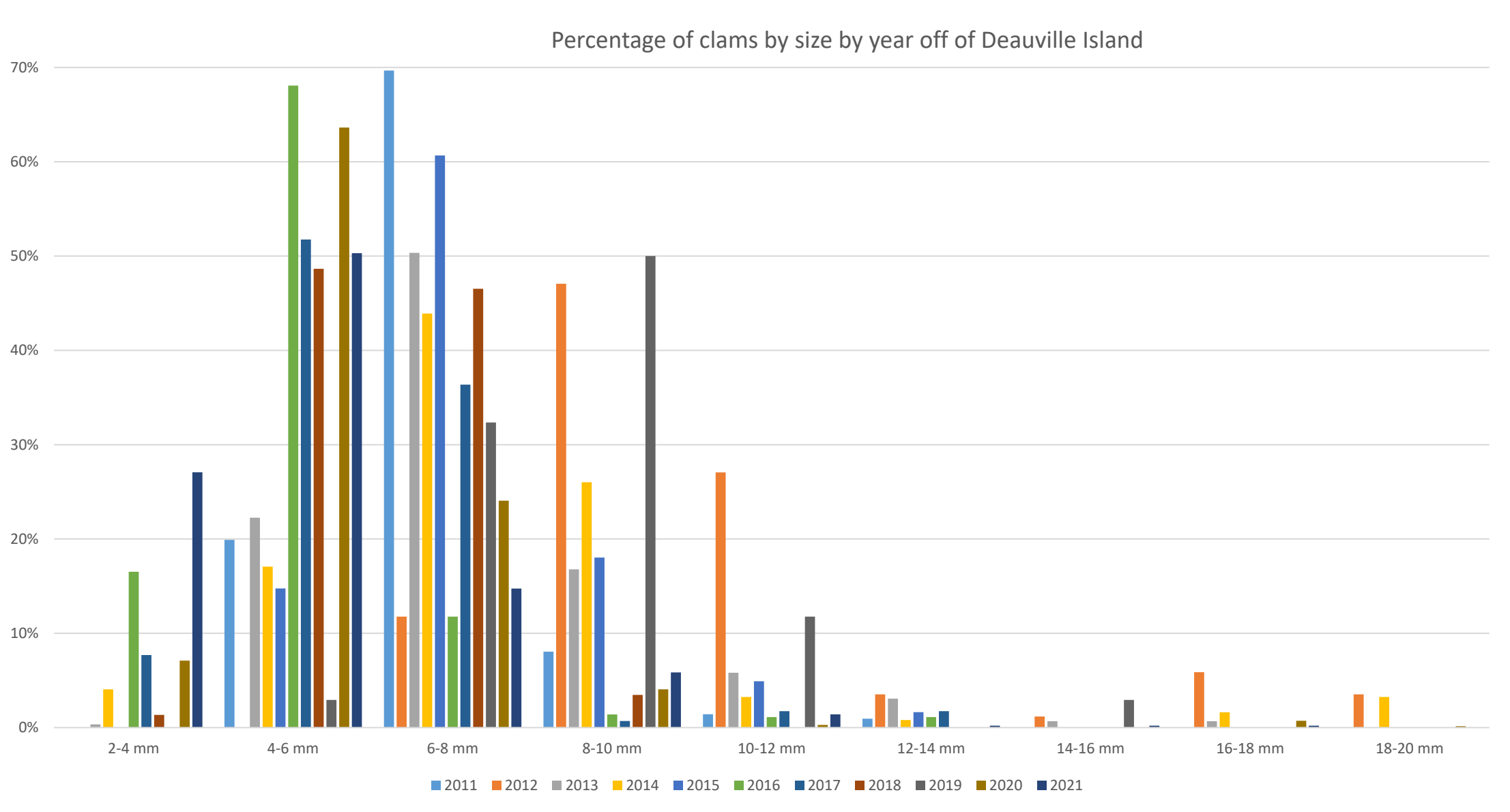

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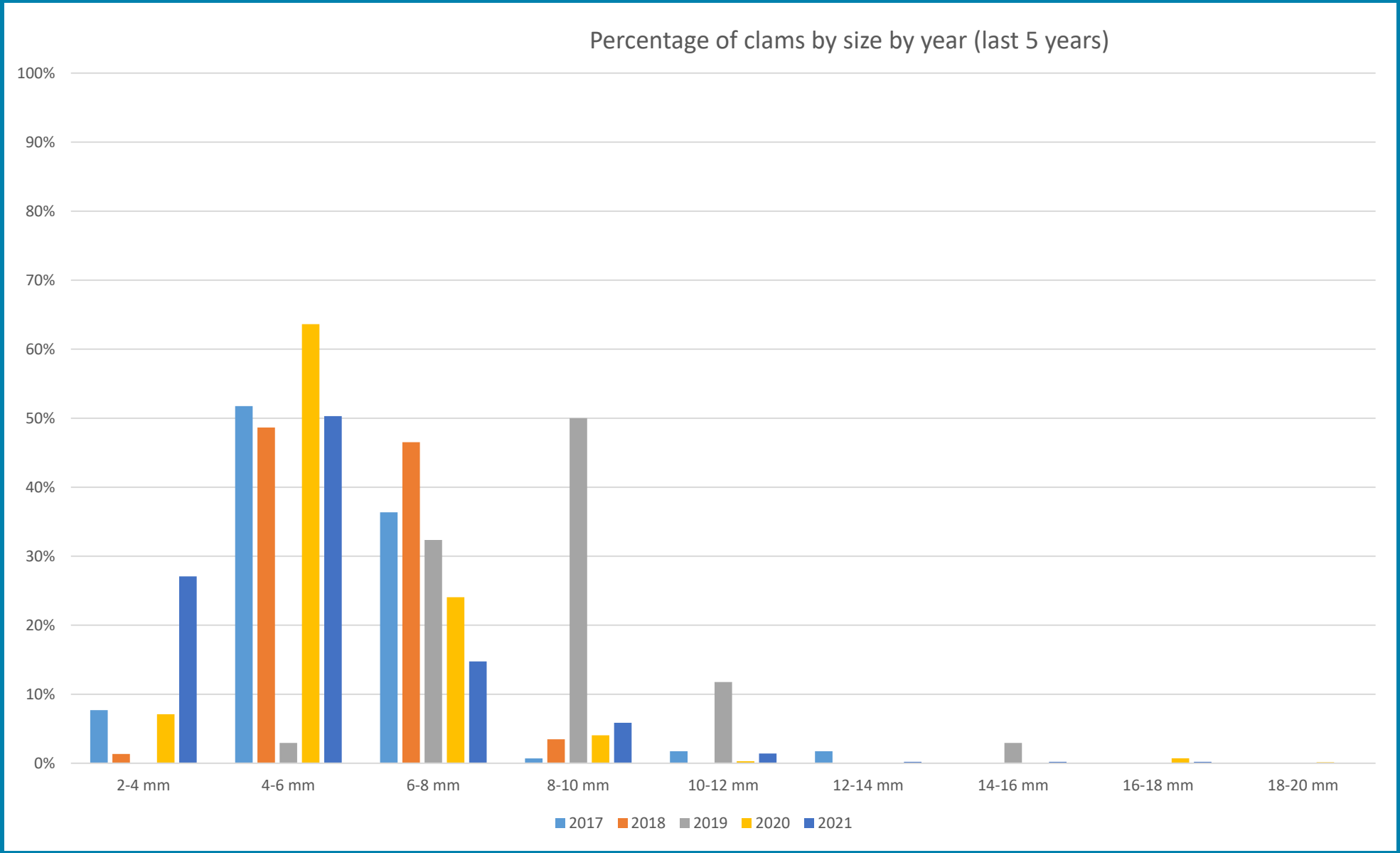
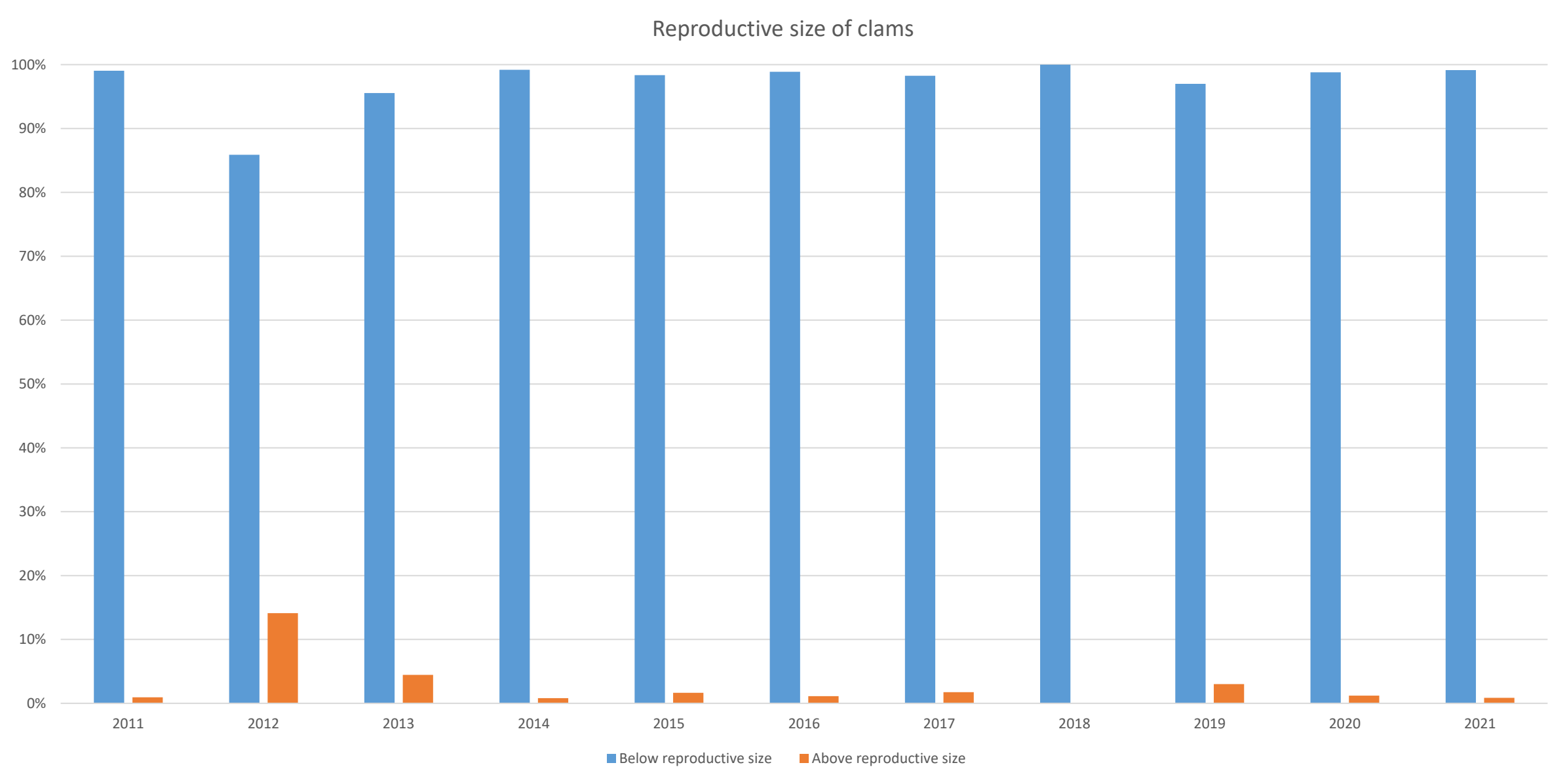

Percentage of clams by size by year (last 5 years)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2-4 mm
4-6 mm
6-8 mm
8-10 mm
10-12 mm
12-14 mm
14-16 mm
16-18 mm
18-20 mm
2017
2018
2019
2020
2021

East Side off of Pavilion Beach, 2021:

- 60% of samples had one clam or more.
- Found 23 clams under 10 mm in size and 8 clams 10 to 12 mm in size. All young of the year.
- Found 3 clams larger than 12 mm and of reproductive size.
- No reproductive size clams in 2015, 2016, 2018 and 2020.
- Survival is poor on this side of Emerson Park even though the substate is below the ice during the winter.



*based on Lake George research

Observations:

- The clams found off Deauville Island Beach and the Pavilion Beach were likely young of the year.
- Both sides had clams that were of reproductive size in areas below the winter ice.
- Populations were similar to 2020 but with more 2-4 mm clams.

Observations:

- Past surveys have shown that drawdown appears to cause 100% mortality of clams in areas where the substrate was exposed during the winter. This seems to be the case this year.
- However, there was no long cold snap when lake levels were down and ice was on the lake. It looks like some of the older clams survived.

Questions?