# Vegetation Management on Snake Island in Winthrop, Massachusetts

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# Presentation outline:

- Overview of Snake Island
- Nesting patterns and challenges
- Project proposal
- Work in spring and fall of 2022
  - 2022 Season Results
- Next Steps

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# Snake Island, Winthrop


- 3 acres; lagoon; extensive mudflats
- Eastern side is forested; *Phragmites*
- Vegetated berm with bush honeysuckle, goldenrod, mugwort, multiflora rose, rugosa rose, sea rocket, sumac, and sweet clover.
- Monitored by Mass Audubon, owned by the Town of WInthrop

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# Snake Island, Winthrop


- Northernmost island in the Boston Harbor Islands National Recreation Area
- Historic Common Tern colony; now 1-2 pairs
- 8-9 AMOY pairs each season over the last six years
- Critical nesting, foraging, staging grounds for many species

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# Nesting Patterns

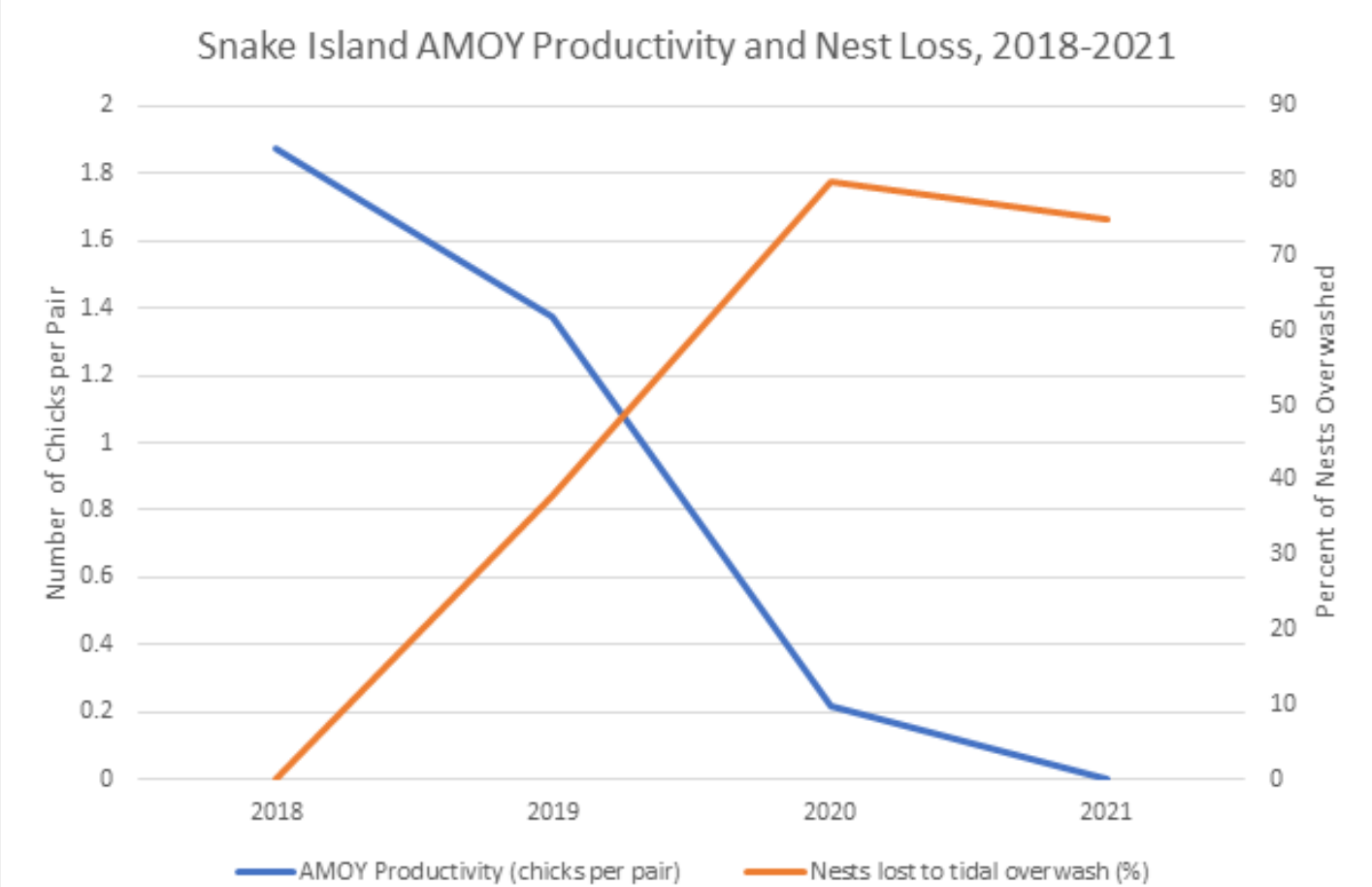


**Figure 2**: American Oystercatcher productivity and nest loss due to tidal overwash on Snake Island from 2018-2021.

- Overwash
- Substantial decrease in American Oystercatcher reproductive success since 2018
- Increase in vegetative encroachment into historic nesting areas for both species

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# Nesting Patterns


**Figure 3**: Snake Island AMOY nests on the northwest side of the island (ocean side to left o image, lagoon side to right). Nests from 2018 (orange) are located on top of the berm. Nests begin to spread downslope in 2019 (dark green) and are located below visible wrack lines on both the ocean and lagoon sides in 2020 (dark blue) and 2021 (purple).


**Figure 4**: AMOY nests on the lower west side of the island show a similar pattern, with the successful 2018 nests (orange) on high ground, the less-successful 2019 nests (dark green) located closer to the tide line, and the unsuccessful 2021 nests (purple) located at or below visible wrack lines on both the ocean and lagoon sides.

# Nesting Patterns


**gure 5**: The AMOY nest on the east side of the island was located on high ground at the the dge of the *Phragmites* in 2018 (orange), and the nest attempt was successful. The reeds hav read down towards the tide line in subsequent years, and nest attempts in 2020 (dark blue nd 2021 (purple) were both lost to tidal overwash.

urrently, there is virtually no available nesting habitat on the eastern side of the island, due *ragmites* encroachment. On the west side, mugwort and other mixed species have reduce vailable nesting habitat by at least 50%, and have influenced site selection to favor more dally-impacted and storm-impacted areas lower on the slope of the beach. Nest site selecti nd nest loss patterns suggest vegetation is having a strong negative impact on reproductive ccess of both American Oystercatcher and Common Tern populations on Snake Island.

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# Proposed Work for 2022

- Town of Winthrop (Susannah Corona) Boston NPS (Marc Albert, Rachel Vincent) Mass Audubon presented to Winthrop Conservation Commission
- Small-scale selective vegetation removal in specific windows for two years
- Objectives: increase reproductive success of both species and develop long term management approach for the island
- Target invasive species: mugwort, sweet clover, *Phragmites*, multiflora Rose, rugosa Rose

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# Proposed work


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# March 2022

Before: Southwestern-most section (Photo: Marc Albert, NPS)

Before: Eastern section (Photo: Rachel Vincent, NPS)

- Removed by hand and hand-held machinery
- Vegetative debris relocated to the forested part of the island.
- Incidental plastic trash and other anthropogenic marine debris were bagged and removed from the island.
- Managed sections total approximately 1415 square meters over 3 trips with 4-6 people/trip, and create four discrete nesting areas
- Woody species present in March

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# Results of 2022 Nesting Season


**Figure 1**: AMOY scrapes (green circles) on Snake Island in Spring 2022, showing preferential selection of areas managed to reduce vegetative crowding.

- Majority of scrapes within areas cleared of vegetation
- Dramatic increase in AMOY productivity; 0 nests hatched in 2021, 11 chicks fledged in 2022.
- COTE failed in 2022, but appeared to be GHOW predation.
- 40% of eggs lost to overwash in 2022 compared to an average of 72% of eggs lost to overwash between 2020 and 2021.
- American Oystercatchers had a reproductive success rate of 1.375 chicks per pair in 2022

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# September 2022

Appendix A (Before and After Photos)

Before: Northwestern-most section (Photo: Lyra Brennan, Mass Audubon)

After: Northwestern-most section (Photo: Lyra Brennan, Mass Audubon)

Before: Eastern section (Photo: Rachel Vincent, NPS)

After: Eastern section (Photo: Rachel Vincent, NPS)

- 1550 square meters managed
- Focused on woody and herbaceous vegetation not emergent in March 2022

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# September 2022

Before: Additional southwestern section (Photo: Lyra Brenr

After: Additional southwestern section (Photo: Lyra Brennan,

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Snake Island, Winthrop, 2022
Monitors: Beth Howard, Stephanie Schmidt, Madelyn Kaplin, Emma Fellenbaum, Hannah Orton
Legend
AMOY A Nests
AMOY B Nests
COTE Colony
Symbolic Fence
Town of Winthrop sign
AMOY 1B
AMOY 7A
AMOY 2A
AMOY 8A
AMOY 7B
AMOY 3A
AMOY 4A
AMOY 05A
Snake Island
AMOY 6A
N
500 ft
Google Earth

# Next Steps

- Two more windows of vegetation management; adaptive
- Continued vegetation transect data collection
- Develop a long term management plan with the town

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# Thank you:

- Susannah Corona, Town of Winthrop
- Winthrop Conservation Commission
- Beth Howard, Jamie Infanti, Tyler Tomassone, Rose Caplan (Mass Audubon)
- Rachel Vincent, Marc Albert, volunteers (NPS)
- Photos: Beth Howard, Rachel Vincent, Jamie Infanti, Lyra Brennan

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