EXPERIMENTING WITH “CLIMATE ADAPTATION PLANTING” AT PROVIDENCE’S SCITUATE RESERVOIR: CHALLENGES AND OPPORTUNITIES

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PROVIDENCE WATER AND THE SCITUATE RESERVOIR WATERSHED

- Public utility developed and operated by City of Providence
- Current system established c. 1920
- Now provides water to 600,000 people or 2/3 of all Rhode Islanders
- Main Scituate Reservoir and several smaller tributary reservoirs
- 93 square mile watershed, mostly private land
- Water Resources Division manages 13,000 acres of City-owned forest surrounding reservoir system
HISTORIC MANAGEMENT CONTEXT

- Active management for nearly 100 years
- Planting species from elsewhere is nothing new
- 7 million seedlings planted
- Foresters used best info available at the time
- Species selection driven by forest heath, markets, etc.
- Looking back, sound overall but some plans have worked out better than others
HOW DID WE COME TO PURSUE THIS PROJECT?

POTENTIAL VULNERABILITIES

• Climate change not explicitly addressed in current stewardship plan
• Forest health and regeneration
• Invasives
• Internal road system (severe storm effects)
HOW DID WE COME TO PURSUE THIS PROJECT?

- Poor upland oak growing site with some young pine
- Land acquired recently; not historic ownership
- Death of remaining trees and regeneration failure following shelterwood timber harvest
- Drought, defoliation, deer
- “Nightmare” of what a significant acreage could come to resemble following a severe windstorm
- What to do with this site?
- Opportunity to experiment with “transition” strategy
Winter “Bird’s Eye” view from more than a decade ago (Bing Maps)
2015 PLANTING: MIX OF SPECIES DIVIDED DIVIDED EQUALLY BETWEEN TWO SITES

CONIFERS (250 each)
- Eastern red cedar
- Loblolly pine
- Pitch pine
- Shortleaf pine

Native species
Non-native with limited presence
Not currently present

HARDWOODS (100 each)
- Black locust
- Black oak
- Persimmon
- Pin oak
- Sassafras
- Sweetgum
- White oak
Planting: May 5-7, 2015

Watering: May 8
MONITORING AND INITIAL RESULTS

- Irregular but varied species distribution by planting crew
- Significant mortality resulting from drought immediately following planting
- Survivors are doing OK
- Monitoring height growth of 10 individuals of each species in both areas
- Annual height measurements planned for at least 5 years
- Results indicate deer browse is having a large impact
CHALLENGES & OPPORTUNITIES

- In SNE, deer take a toll on seedling survival
- Important variables:
  - seedling availability
  - planting crew experience
  - planting season weather
- Untested and not yet viable from a purely economic perspective
- Some skepticism from traditionalists

- Relatively modest cost
- Benefits from participating in community of practice and updating education
- Example of a tangible on-the-ground local action
- Opportunity to engage others on climate change
- Significant external interest in projects