

Agro-forestry at Maple Plains, PEI

Planting Trees and Shrubs on Berms



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Our Mission:



To provide opportunities for the citizens of the Bedeque Bay watershed to conserve and enhance their watershed through planning, education, projects and partnerships.



Bedeque Bay Environmental Management Association's Vision



To achieve sustainable development so that the environment is conserved, the culture of the area is preserved and economic growth is indigenous to the community

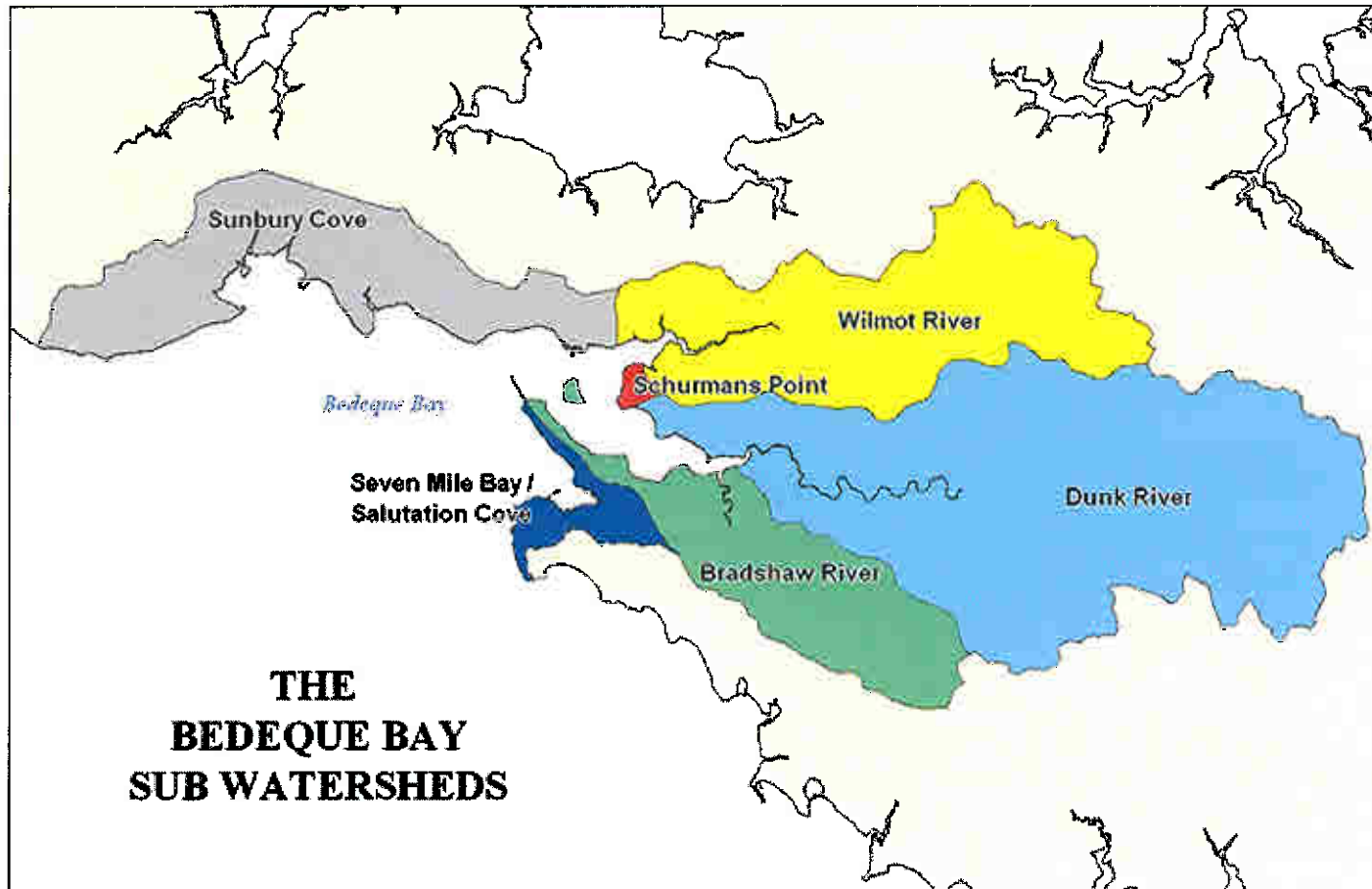


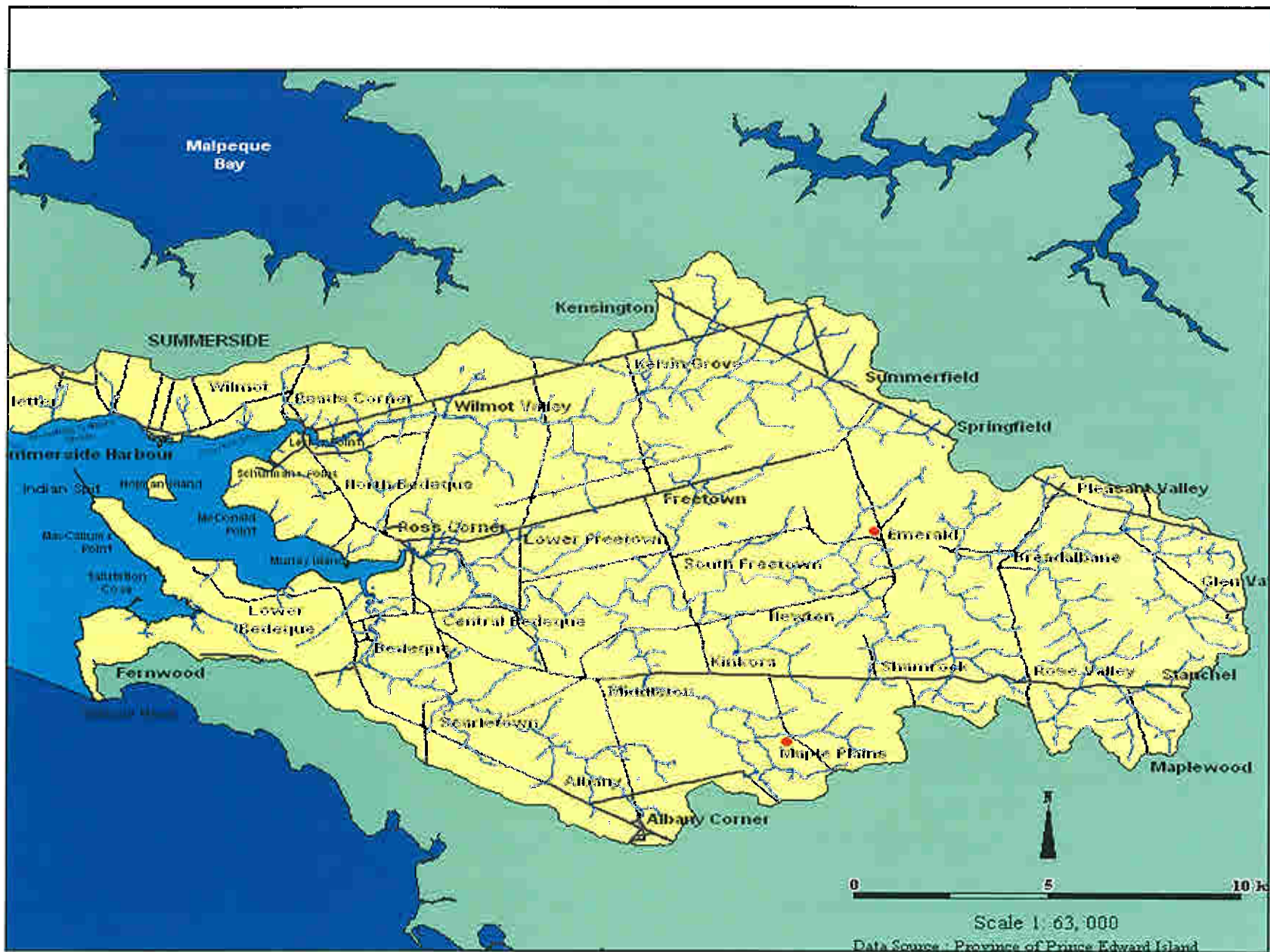
BBEMA Priority Areas

- Water Quality (surface and groundwater)
- Soil Erosion
- Habitat
- Education & Awareness
- Capacity Building
- Climate Change



Bedeque Bay Subwatersheds





Maple Plains

Agro-Environmental Demonstration Site



**A 15 year stewardship agreement between
George Webster and BBEMA.**



Maple Plains Demonstration site

Focus on sustainable agriculture and environment

Provides opportunity for increased communications between the farming and non-farming community on key issues including water resources

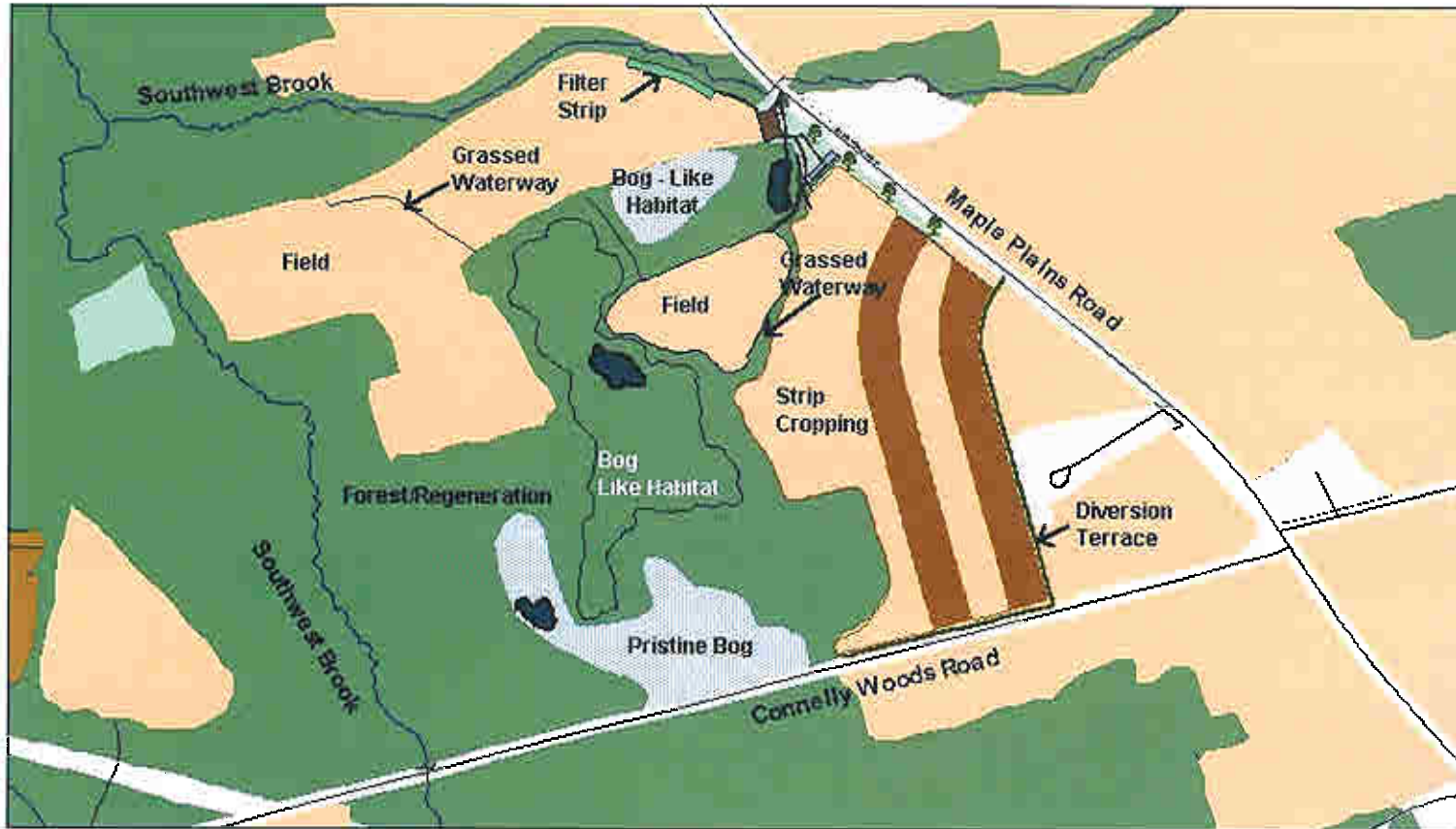
Interactive learning area for producers & consumers

Cooperative research and monitoring

Hub for agri-tourism



Maple Plains Demo Site Map



Maple Plains



Berms



- Soil conservation practices on PEI potato farms utilize diversion terraces to reduce erosion by decreasing length of a slope
- Diversion terrace consists of a grassed waterway and a raised mound or **berm** on the downward slope of the waterway

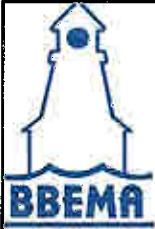


Putting Yourself in the Farmers Shoes...



Why plant on a berm anyways?

- Potential new crops
- Supplementary revenue \$
- Utilizing under-used area of the farm
- Creating habitat for beneficial insects
- Increasing diversity
- Sector innovation



A Farmers Thoughts

- Interference with farming operations?
- Cost to plant and maintain?
- Species selection-what to plant?
- Introduction of disease or pests
- Space and growth of trees
- Possible tree and shrub mortality
- Product market
- Time required to realize benefits



Species Selection

- Exposed environment requires hardy species; native trees and shrubs
- Species that have none-minimal impact on potato crop (consult your friendly entomologist!)
- Good diversity or mix with variety of uses
- Species with short term & long term benefits (\$economically and environmentally)





Species Selected for the Berm

3 natives trees:

White Birch



Elm



Red Oak



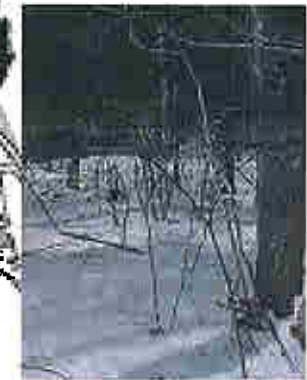


Species Selected for the Berm

3 Natives Shrubs: Red Osier Dogwood



**Highbush
Cranberry**



Beaked Hazelnut



Potential Future Benefits & Products on the Berm

Shorter-term

-floral industry: red-osier dogwood

-beneficial insects-



Longer-term

-edible products: hazelnuts, cranberry

-wood products: birch, elm and oak, flooring
furniture





Objectives



- Monitor affect on the adjacent agricultural crop (potatoes)
- Determine carbon sequestration

Berm Planting Dates

Trees- April and Shrubs- June 2005





Planting Plan

- 13 treatments 3 native trees (White Birch, Elm and Red Oak) in combination with or without native shrubs (highbush cranberry, beaked hazelnut and red osier dogwood)
- Control consisted of no trees or shrubs
- Treatments are replicated 3 times

Maintenance

Apply:

- a mulch to reduce weed competition
- tree guards to reduce rodent damage



Monitoring

- Sweep netting- to collect wide range of insects (flying and terrestrial)
- Pitfall traps- to collect terrestrial insects





Insect Sampling on the Berm 2006

Approximately every 2 weeks in July and August

BEMA PITFALL TRAPS - CARABID SPECIES - 2006						
GENUS	SPECIES	July 10	July 24	August 7	August 21	Known foods
Carabus	nemoralis	1	1	0	0	carnivore - insects; slugs; snails
Harpalus	rufipes	5	10	12	11	omnivore - strawberries; seeds; insects; insect eggs
Amara	lg dark	0	0	1	1	omnivore - worms; grain; insect eggs; seeds
Amara	familiaris	3	0	0	0	omnivore - insects; spores; seeds
Bembidion	quadrimac.	0	0	0	1	omnivore - insects; insect eggs; plants
Harpalus	brown	1	2	0	0	omnivore - insects; insect eggs; seeds
Poecilus	lucubland.	4	0	1	1	carnivore - insects
Pterostichus	melanarius	15	10	4	1	omnivore - insects; strawberries; seeds

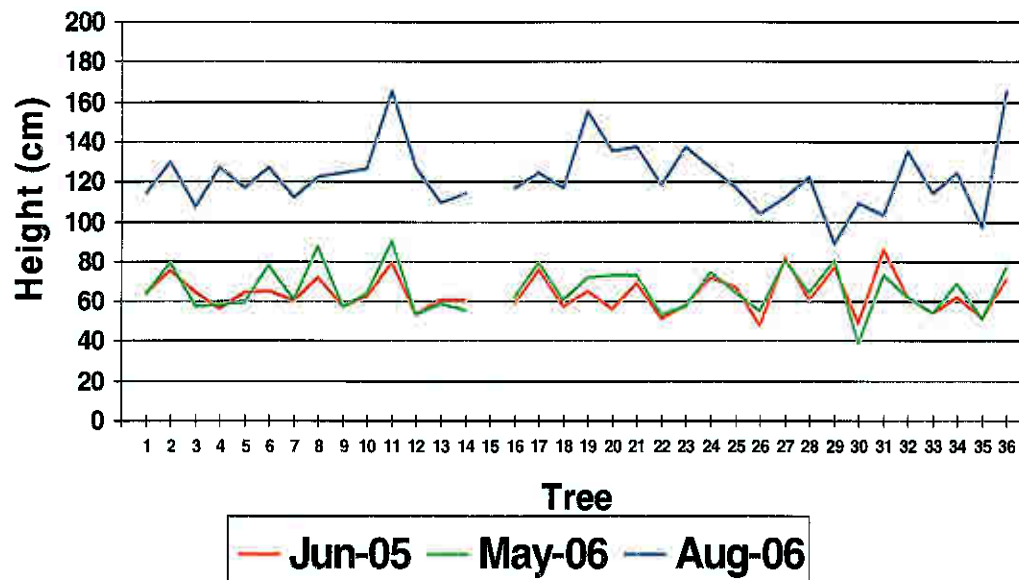
Checking Survival of Plantings



Challenge → **Shrubs girdled by rodents**

Growth of Plantings

White Birch



Preliminary Results

Soil Analysis

Organic Matter (%)	pH	Phosphate (ppm)	Potash (ppm)
3.3	5.9	541	262

Future Ideas for the Berm from the Producer



**Seed berm with Rudbeckia
to increase beneficial
insects to potentially
control pests in potato
field**



Other BBEMA Agro-forestry Initiatives

- Riparian zone enhancement
- Riparian zone mulching demo
- Hedgerow development & enhancement
- Education and Activity Days

Future:

- Agro-forestry plan for the watershed
- Alley-cropping Demo
- Dogwood Demo plot
- Experimental vine demo



Special Acknowledgement to Our Partners:



**PEI Soil and Crop Improvement Association
Agriculture and Agri-food Canada
PEI Dept. of Agriculture, Fisheries and Aquaculture
PEI Dept. of Environment, Energy and Forestry,
Environment Canada, Summerside Air Cadets, and
George Webster**

