

Impact of introduced Red  
Squirrels (*Tamiasciurus hudsonicus*) on Balsam  
fir (*Abies balsamea*) stands in Newfoundland  
by Kofi Boa-Antwi

Presentation Outline:

- Background.
- Research Approach and Results.
- Implications of Research.

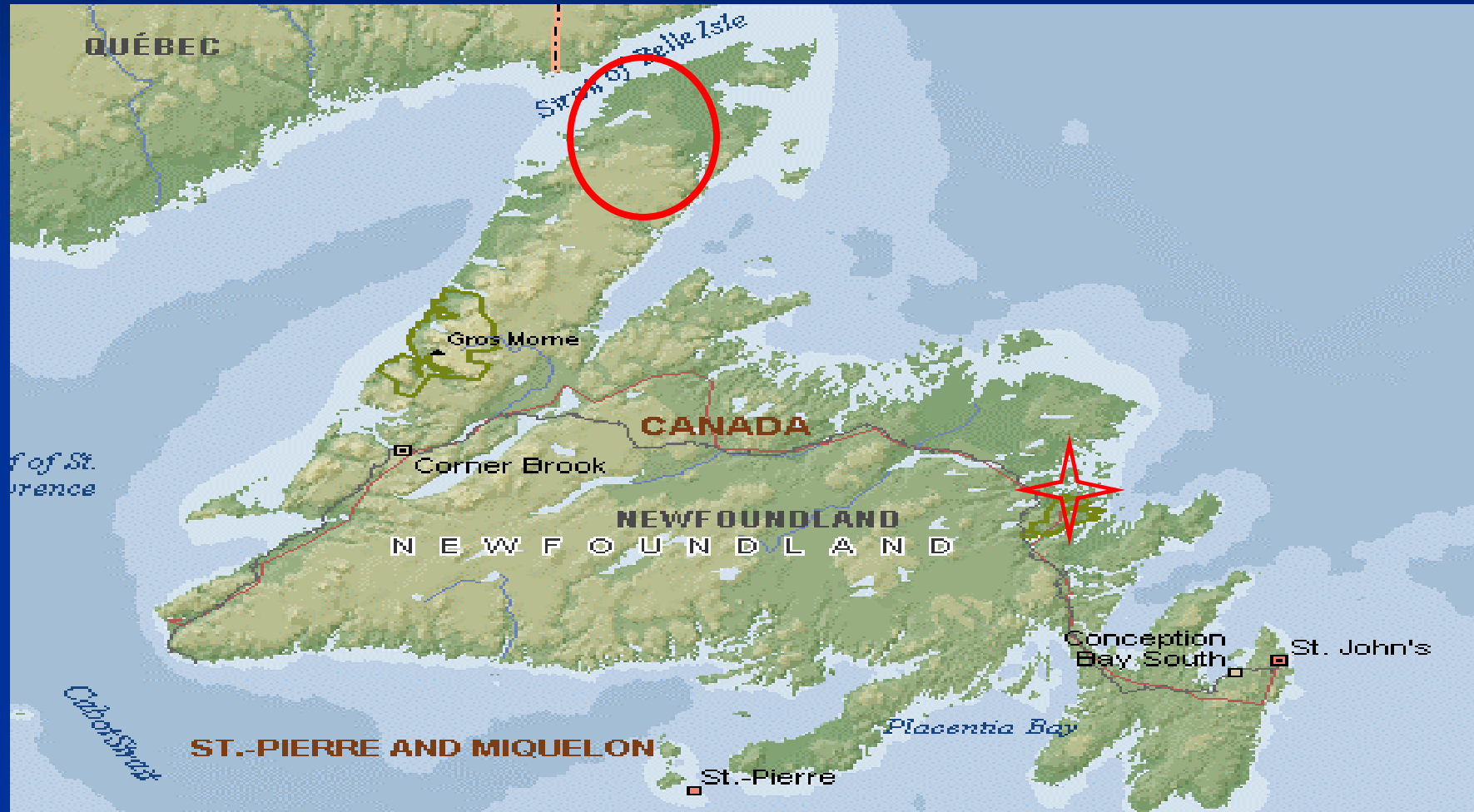
# Background

- Red squirrel a recent introduction to Newfoundland.
- Red squirrel population density over twice that of mainland.
- Potential negative impacts of red squirrels on vegetation.

# Red Squirrel



# Red Squirrel Introduction to Newfoundland



## Study Area

- Terra Nova National Park backdrop for study.
- Preserves representative sample of boreal maritime forest.



# Balsam fir stand in Terra Nova National Park



# Research Questions

- What is impact of red squirrels on balsam fir male and female cones?
- Whether or not red squirrel herbivory of balsam fir cones influences regeneration.

# Research Approach

- Sample stations comprising natural stands of balsam fir of varying densities.
- Assessment of male and female cone removal by red squirrels.



# Cone Study Sites





# Male/Pollen Cones



# Male/Pollen Cones





# Developing female cones



# Pollination Stage: Female cones





Red Squirrel (*Tamiasciurus*  
*hudsonicus*)



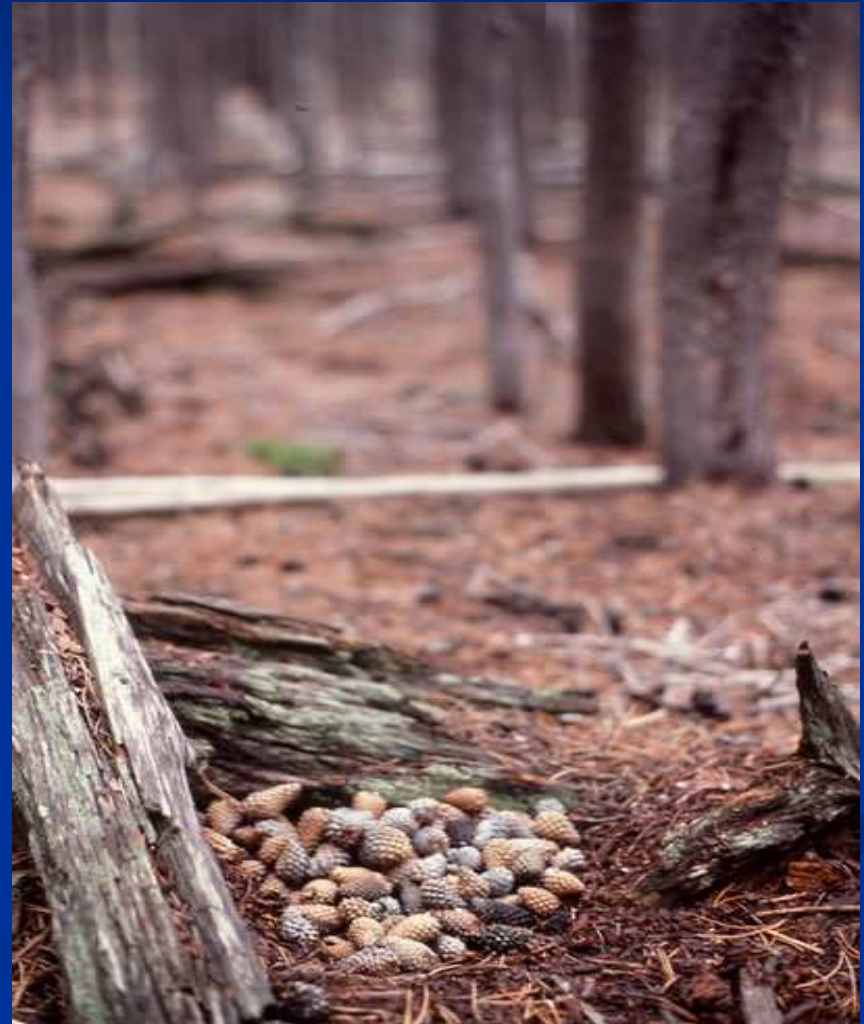


# Female Cone Predation



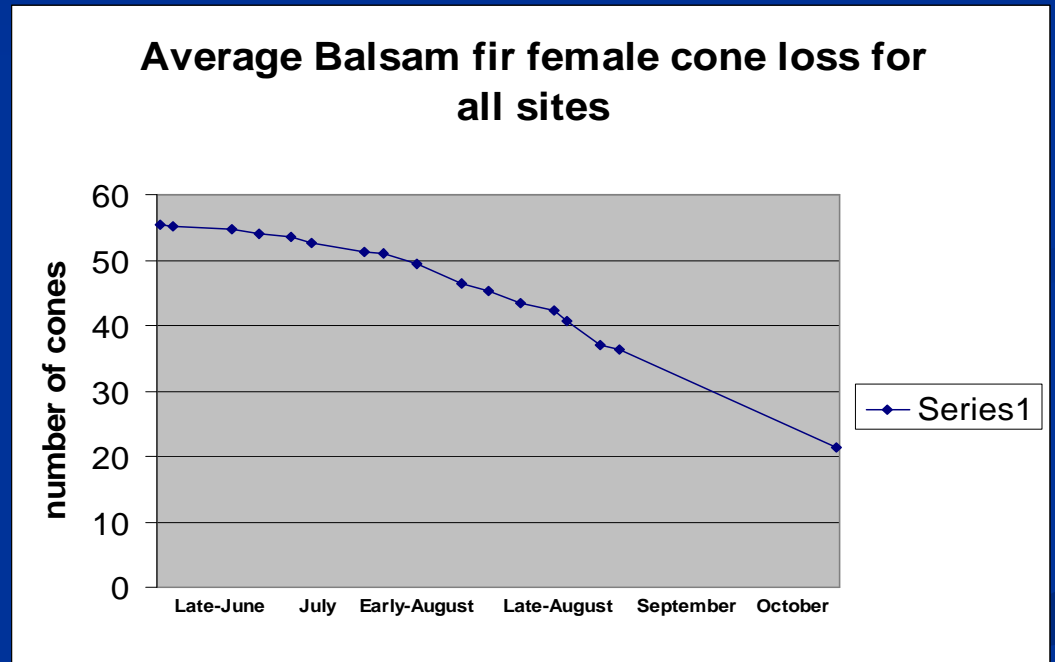


# Cone Caching



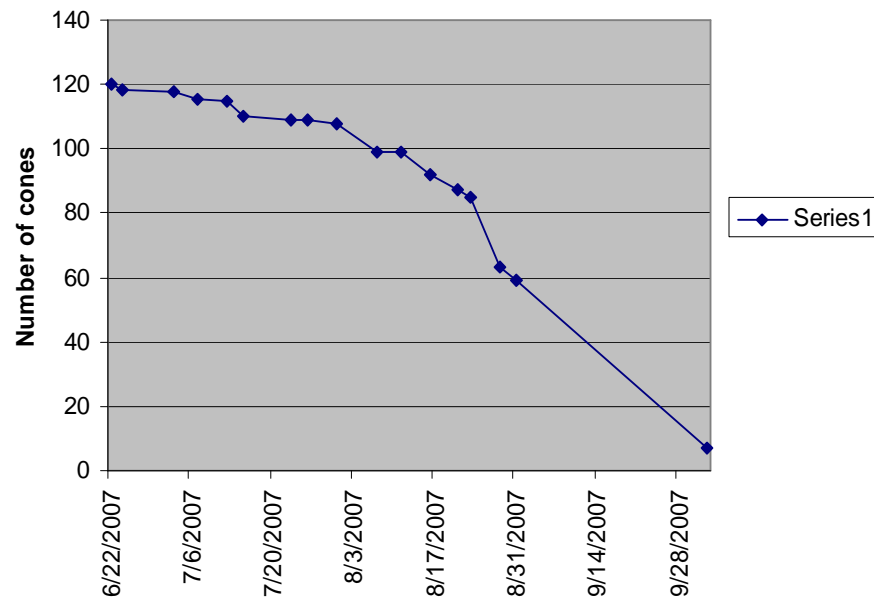
# Results

- Overall decrease in male cone counts by 53%.
- Overall decrease in female cone counts by 59%.

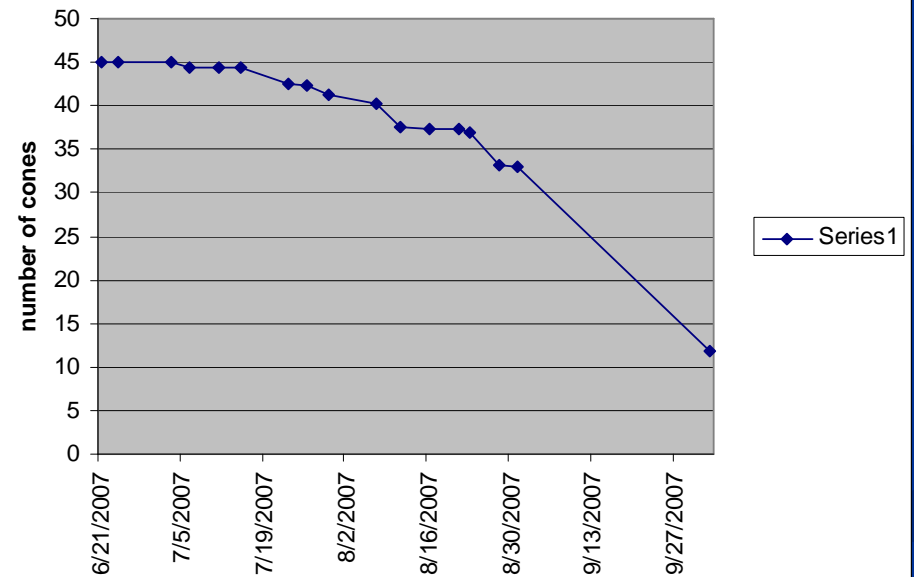


# Red squirrel female cone removal curves

Outport Trail Site: Balsam fir Female cone removal curve

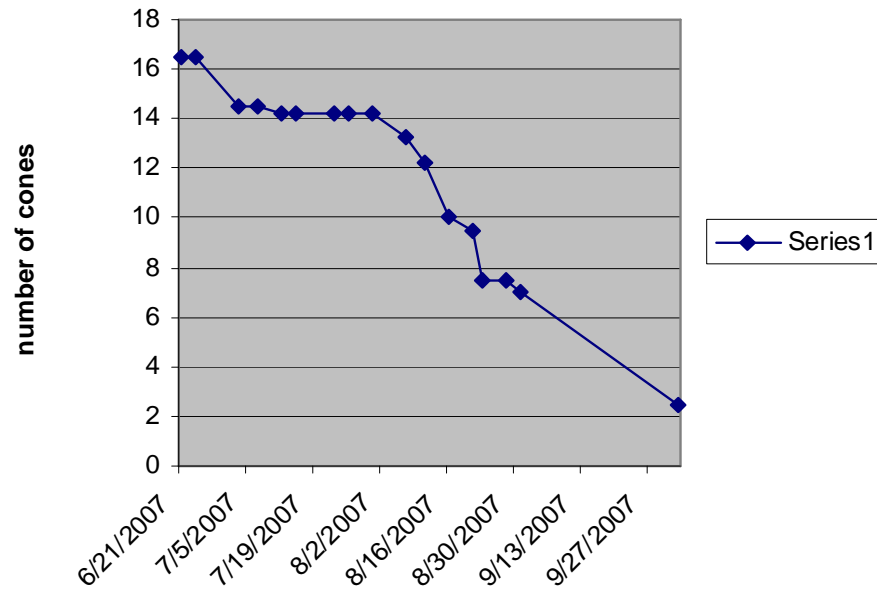


Terra Nova Town Rd. Intact Site: Balsam fir female cone removal curve

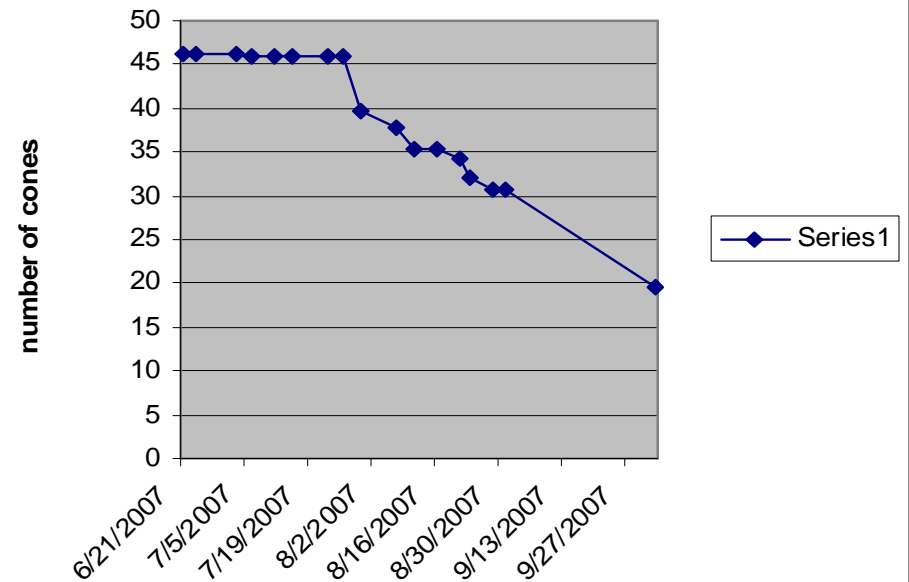


# Red squirrel female cone removal curves

Bread Cove Insect Kill Site: Balsam fir female cone removal curve



Sandy Pond Intact Site: Balsam fir female cone removal curve



# Implications of Research

- Impact on balsam fir Life cycle.
- Impact on overall health of forest ecosystem.
- Challenges to Natural Resource Managers.



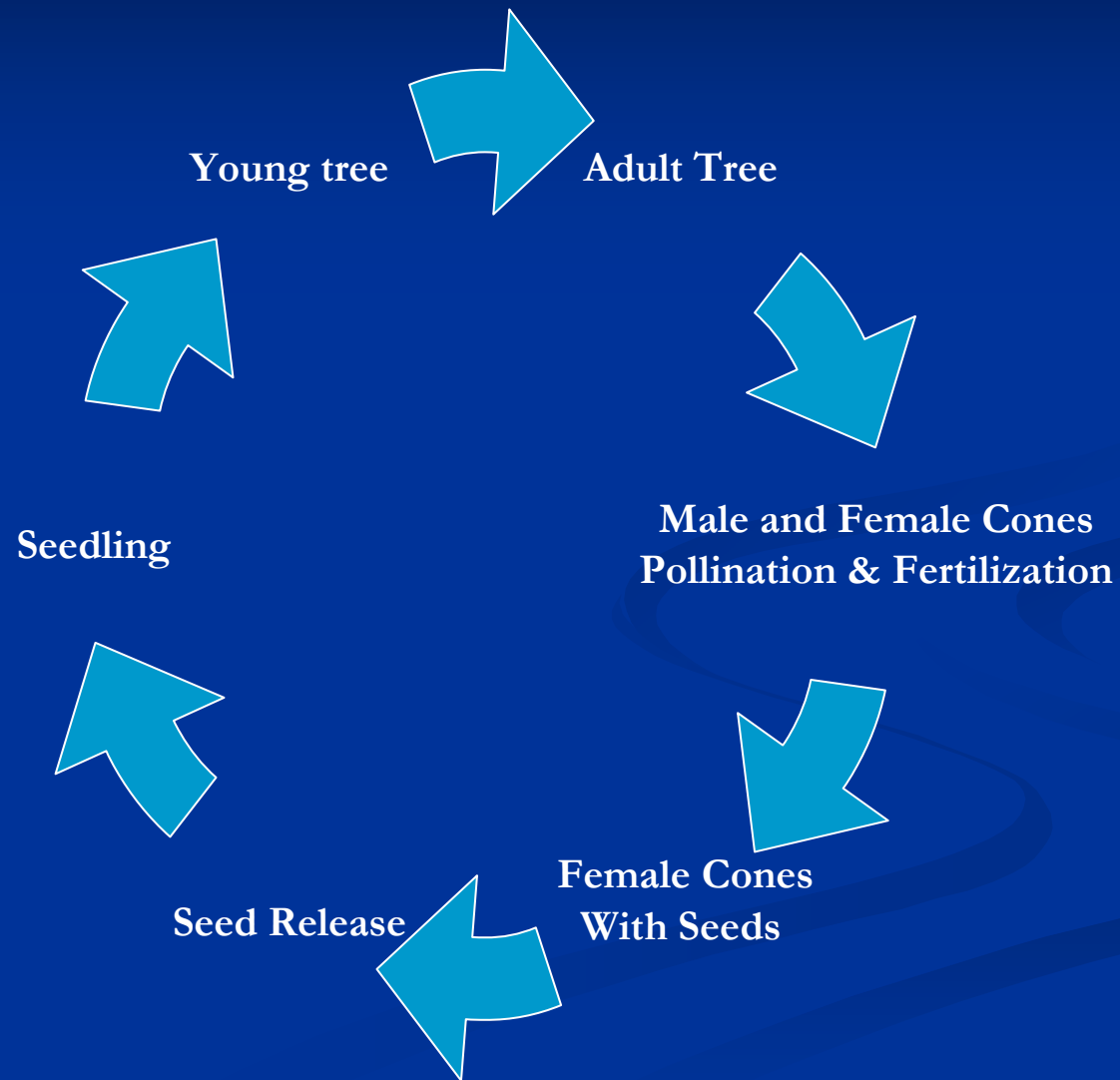








# Balsam fir life cycle



Thank you.

Questions.