Integrating invasive species management in forest and landscape conservation

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- Invasive species need to become a necessary component of landscape planning and biodiversity conservation.

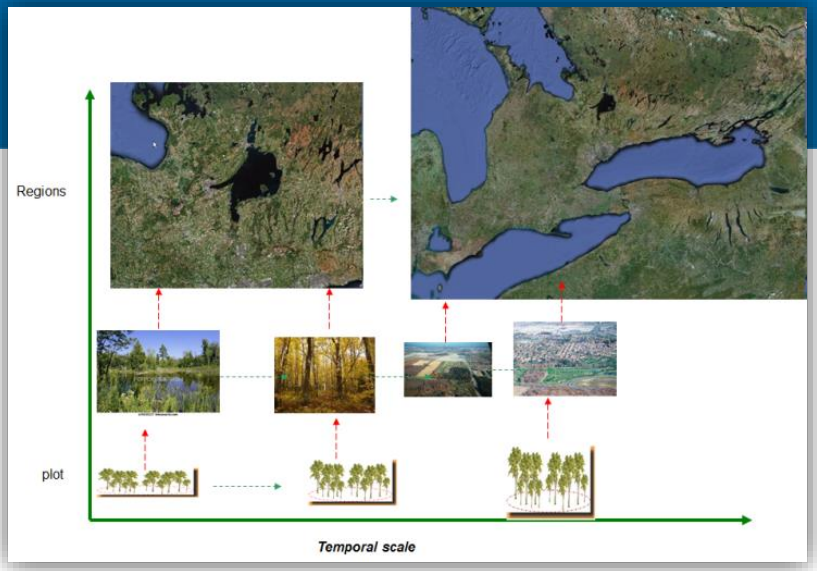
VSP* inventory and monitoring

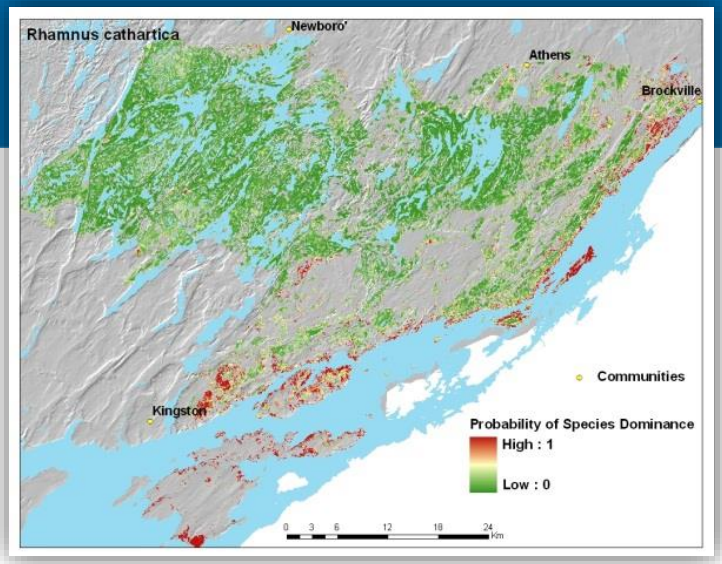
- Integrate invasive species sampling.
  - Presensce, Abundance, and Absence
- Capture standard, cost-efficient information on invasive species
- VSP can also be used to support specific needs of invasive species inventory and monitoring.
  - E.g.. to compare invaded sites to the rest of the landscape; define reference sites and conditions

**VSP-Vegetation Sampling Protocol*

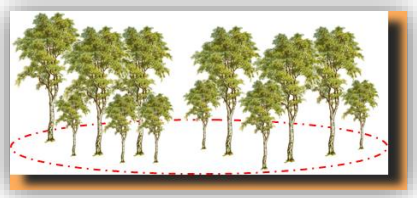
VSP Modules:

- Geographic Location
- Soil, Topography & Surface
- Plant Adundance
- Tree Measurements
- Tree Health
- Regeneration
- Lying Dead-Wood
- Standing Dead Trees

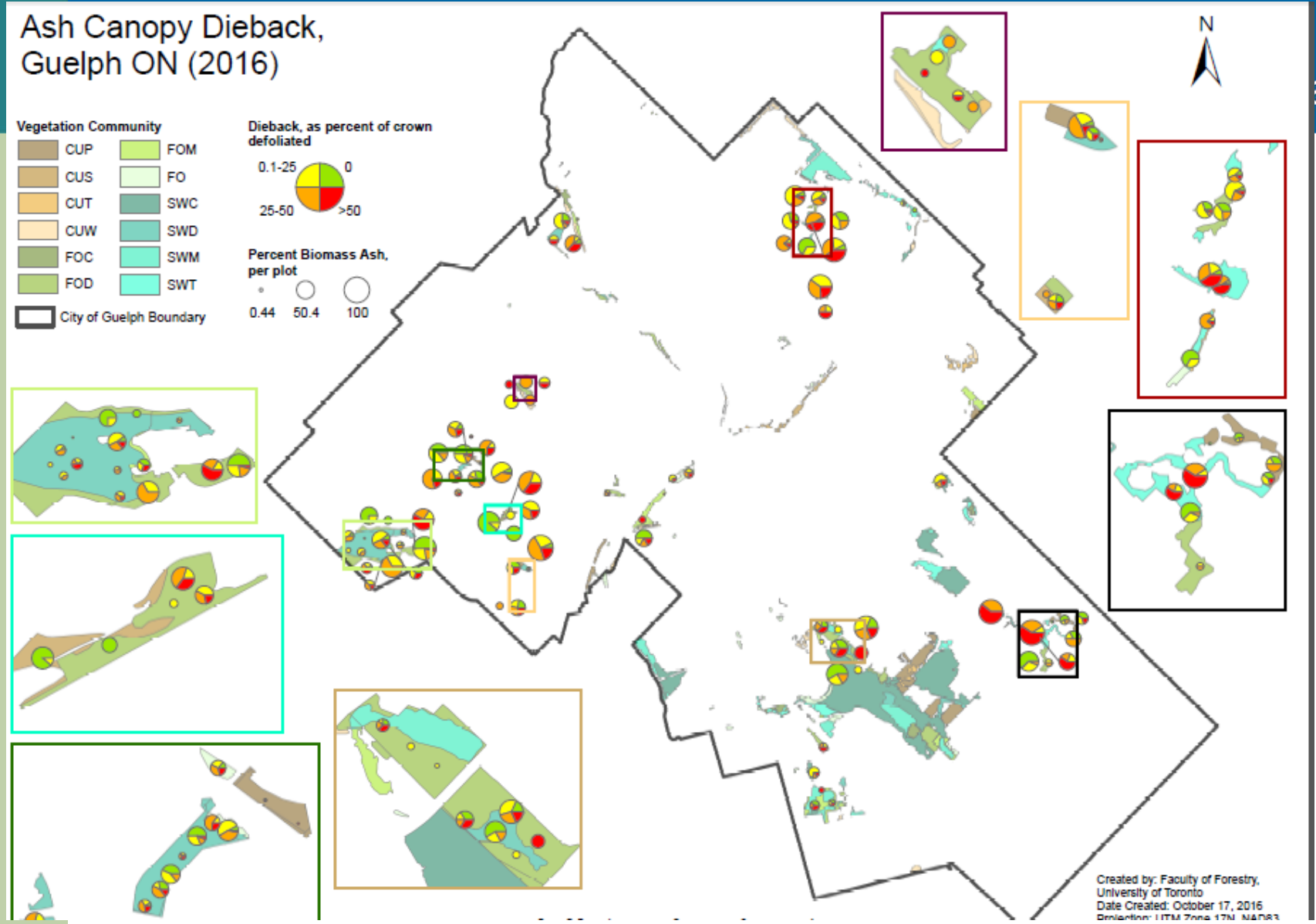




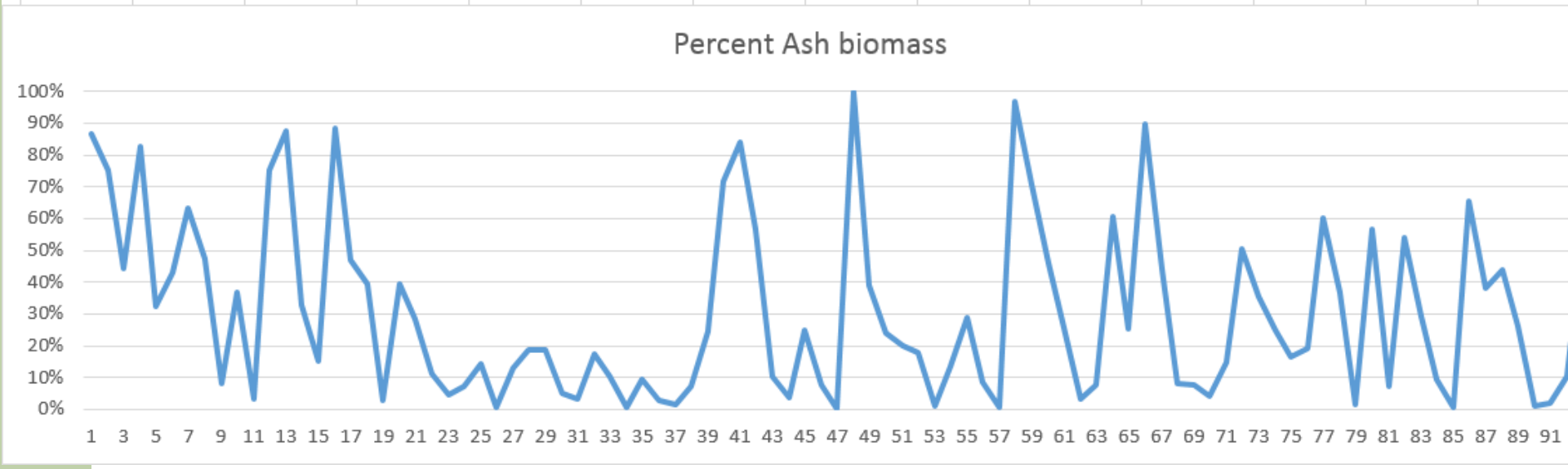
- Applicable to
  - Landscape/ regional needs
  - Stand / property / parcel sampling
  - Plot level sampling



Loss of Ash due EAB impact



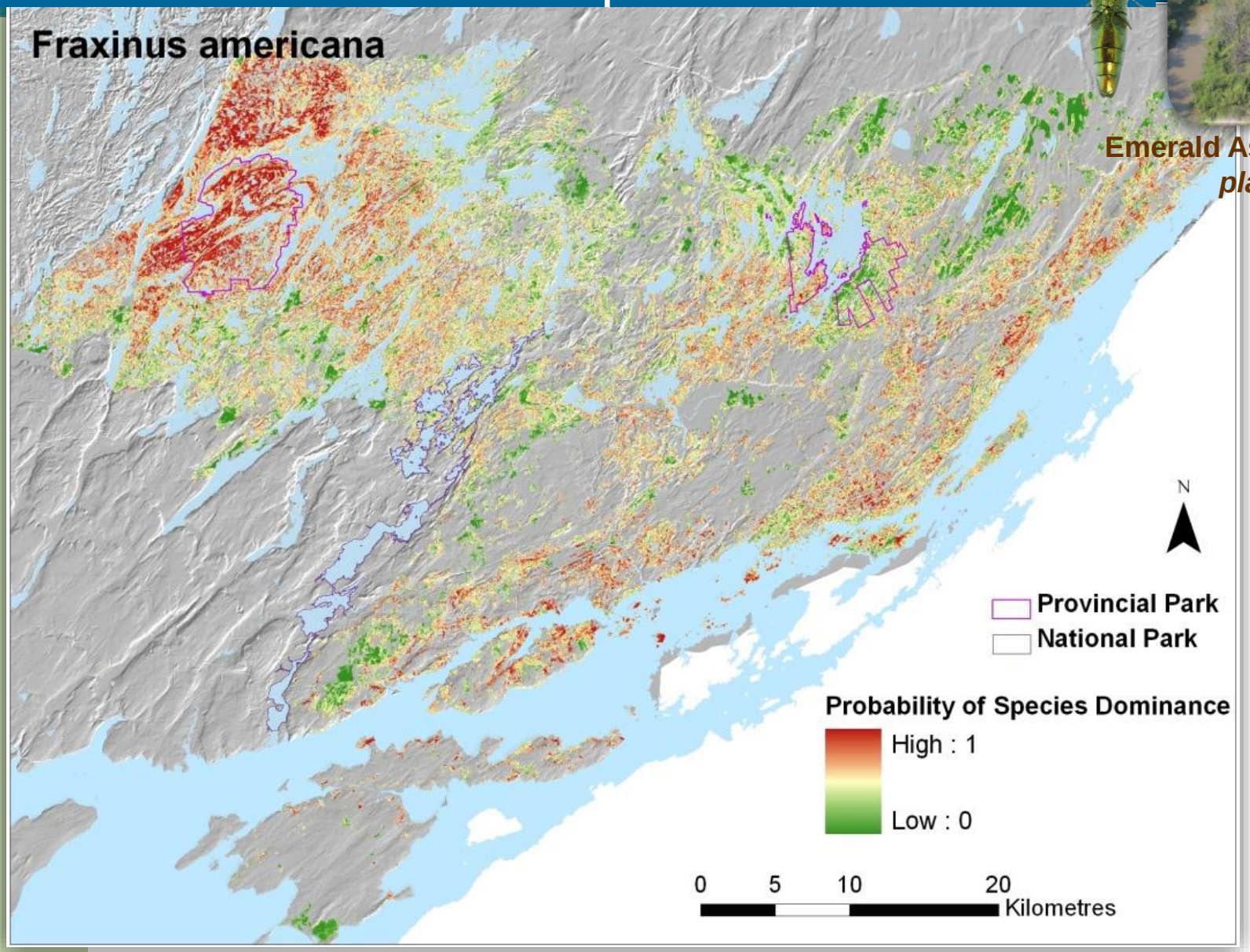
In some areas Ash makes on average 30% of total biomass



Ash biomass is often more than 40%

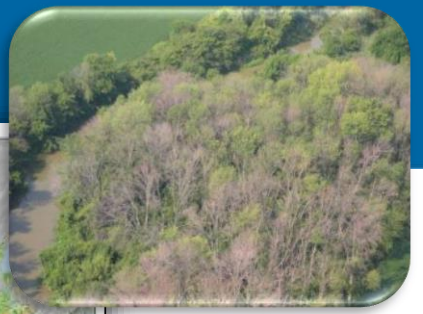
What is the extent of Ash across landscapes ?

Emerald Ash Borer - ***Agrilus planipennis***

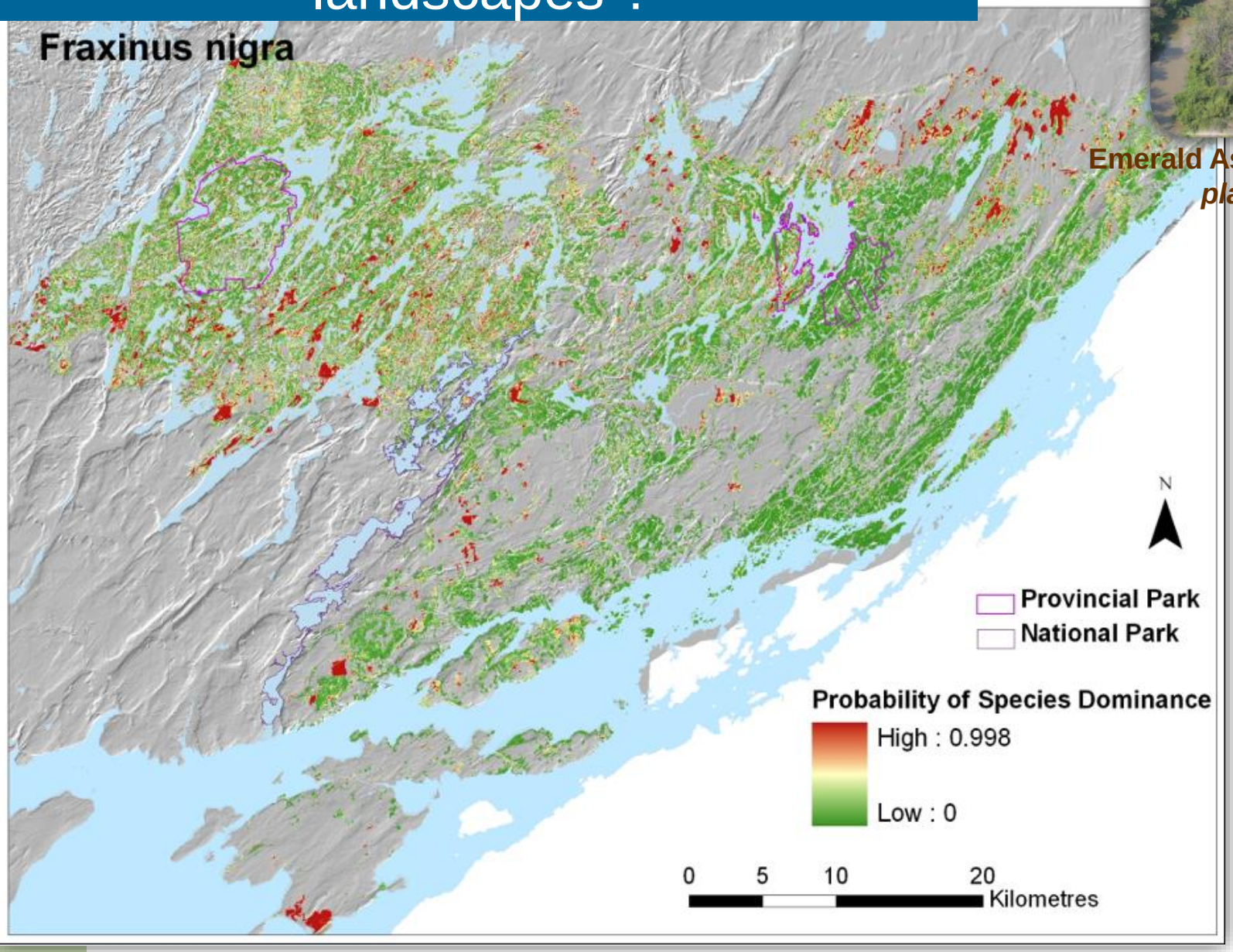


Modeled distribution of White Ash based on VSP plots

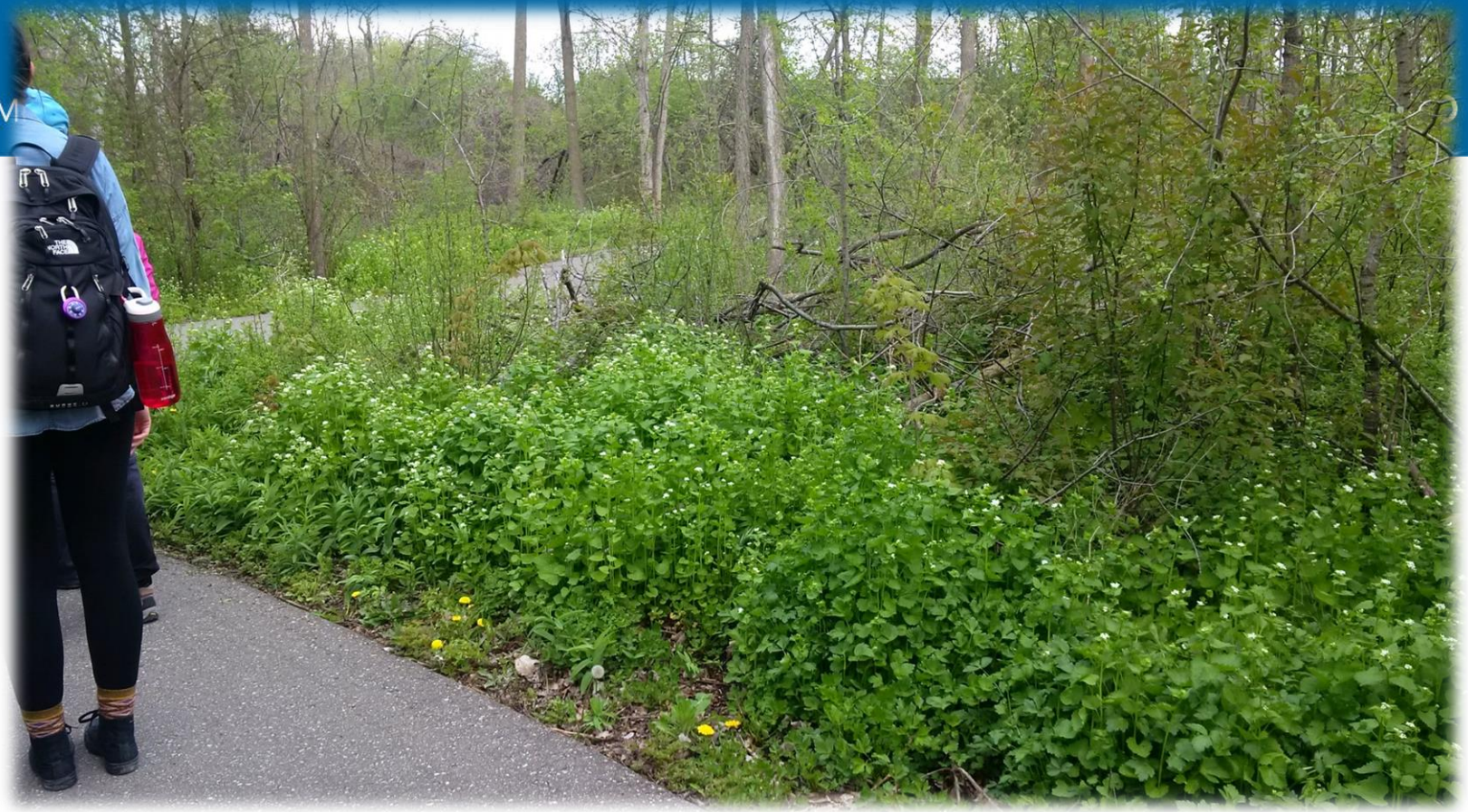
What is the extent of Ash across landscapes ?



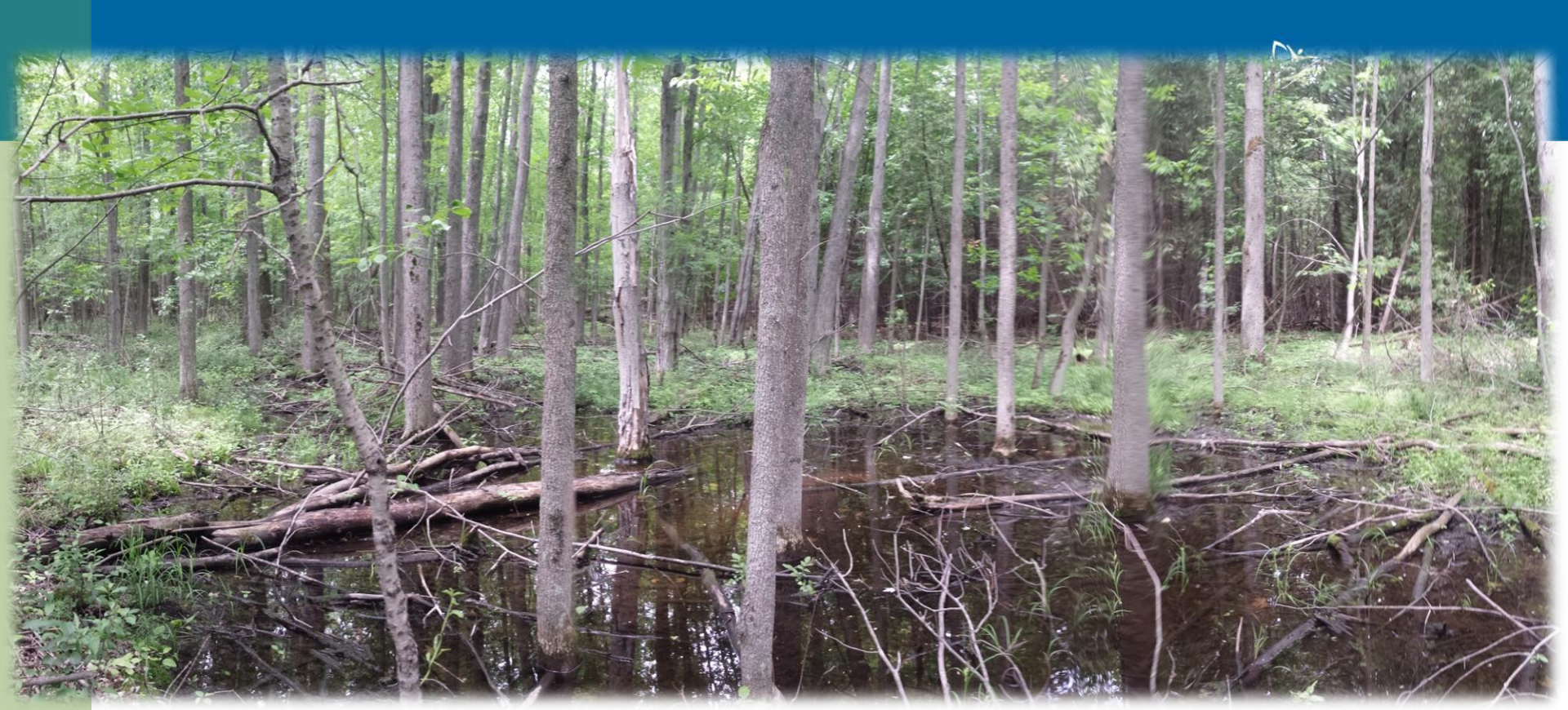
Emerald Ash Borer - *Agrilus planipennis*



Modeled distribution of Black Ash

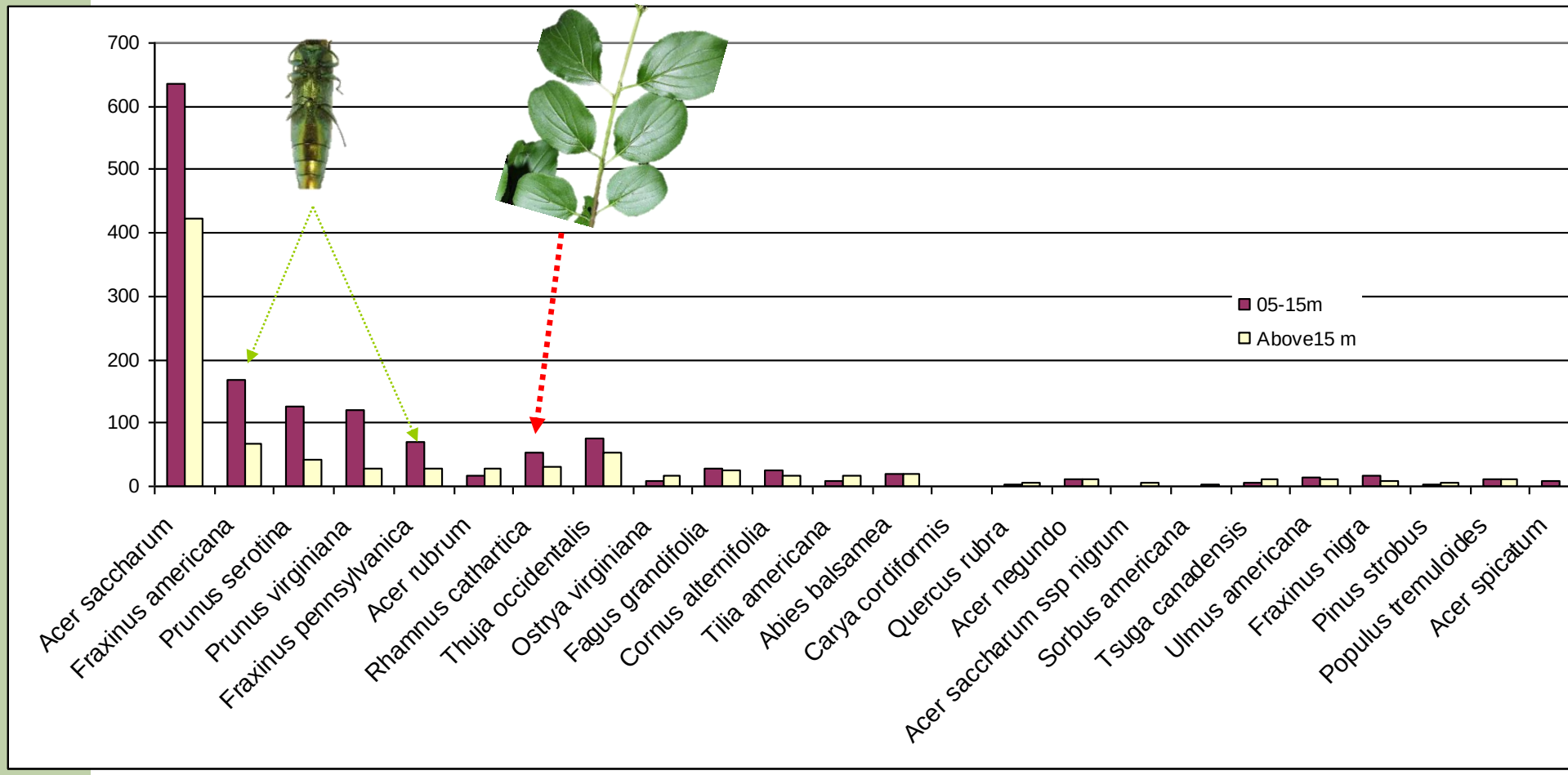


What is coming after Ash?

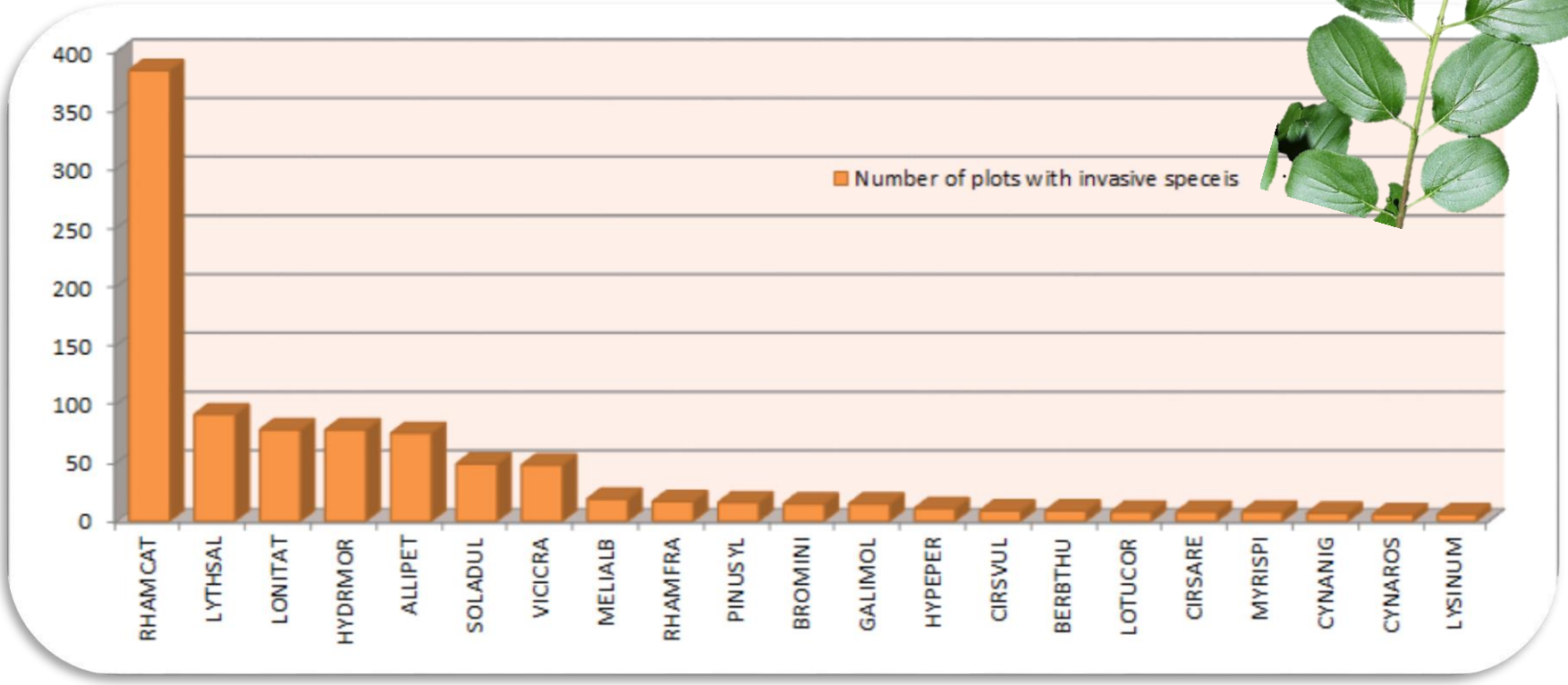


Swamps:
What is going to come after Black and Green Ash (and Elm) ?

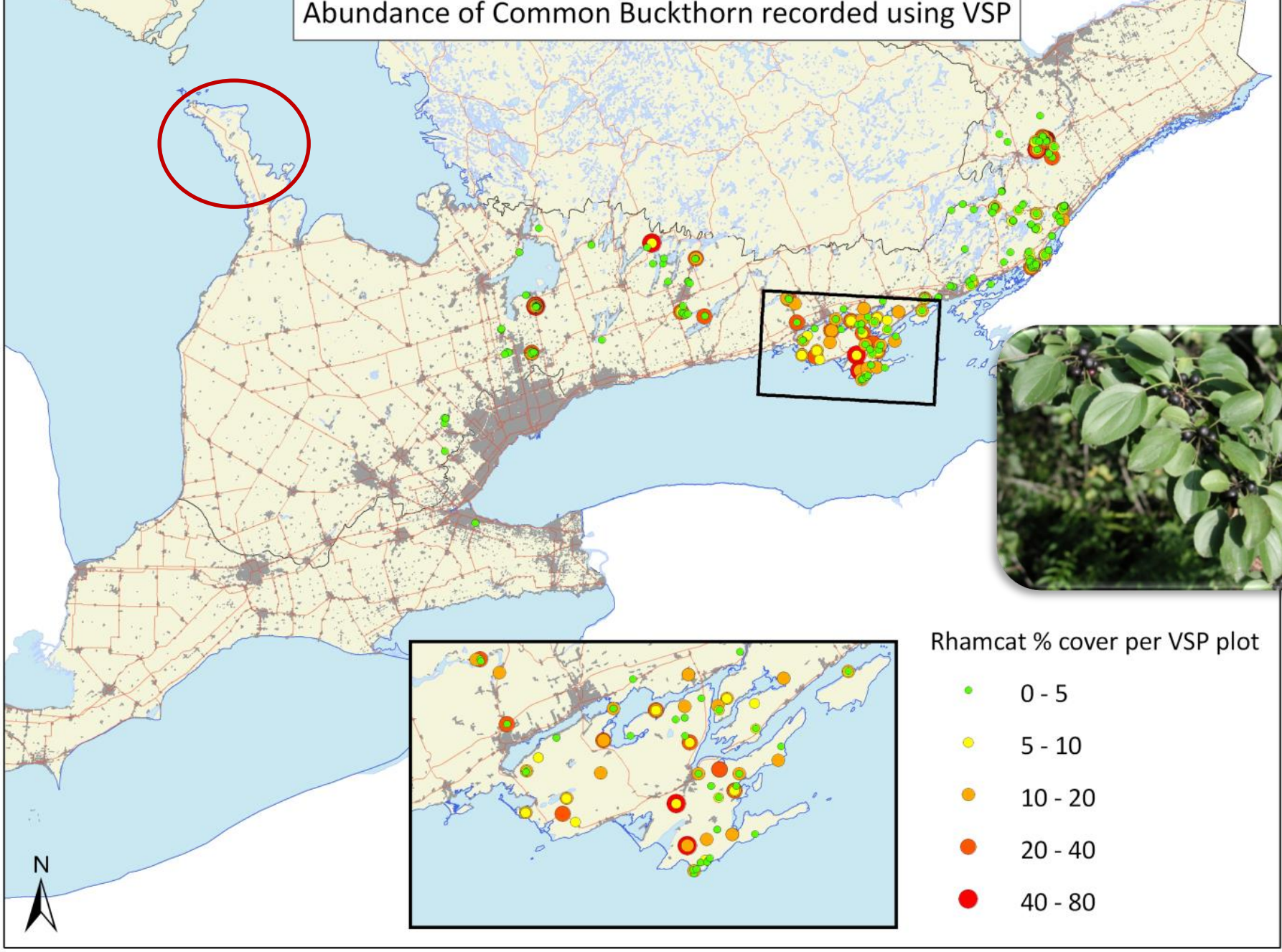
Forest regeneration

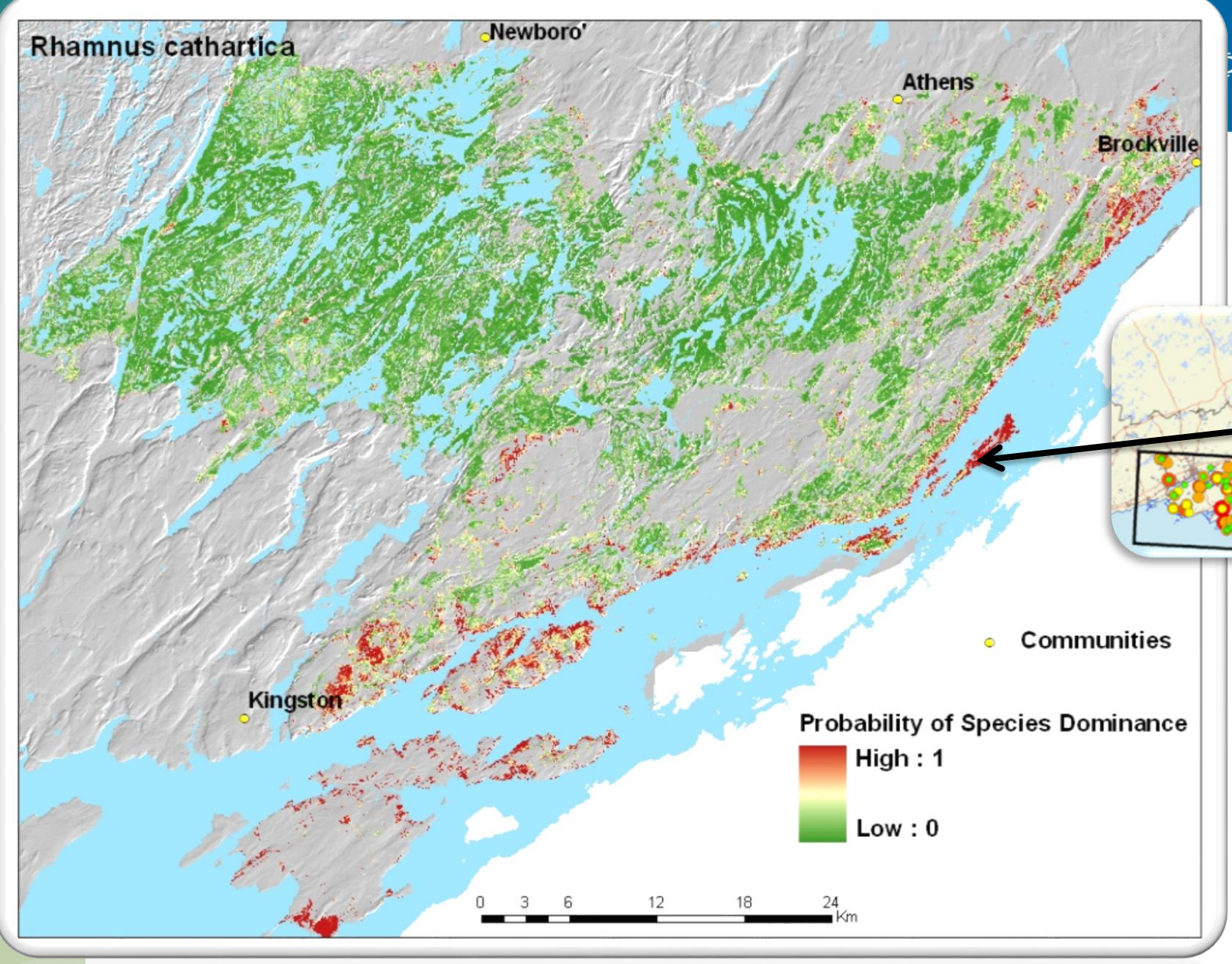


Buckthorn is the most frequent invasive plant

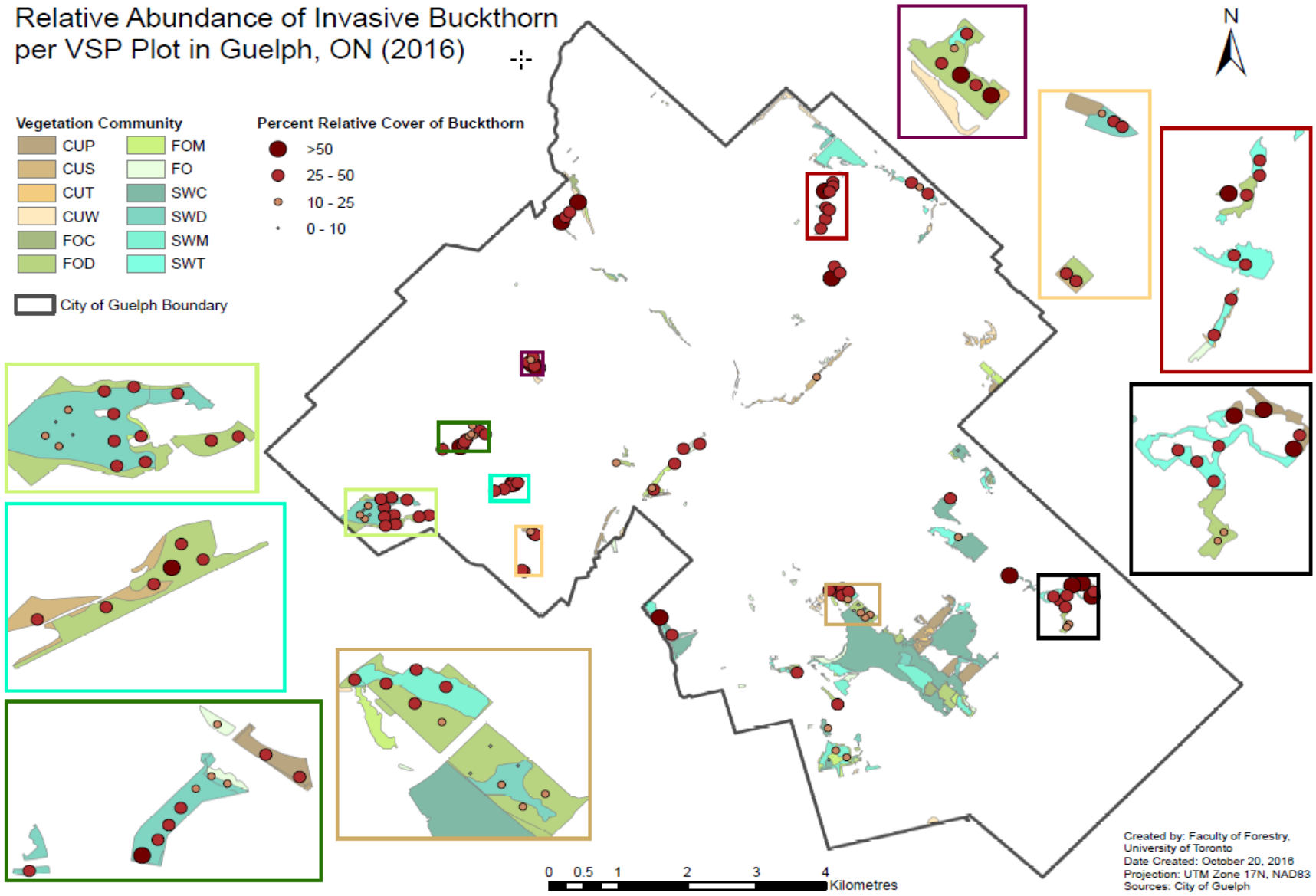


EXPRESSED AS NUMBER OF PLOTS IN WHICH A SPECIES WAS SAMPLED.
SPECIES NAMES ARE COMPOSED BY THE FIRST FOUR LETTERS OF THE GENUS NAME AND THE FIRST THREE LETTERS OF THE SPECIES NAME. FOR EXAMPLE, GARLIC MUSTARD IS “ALLIPET”.


Abundance of Common Buckthorn recorded using VSP
Rhamcat % cover per VSP plot
0 - 5
5 - 10
10 - 20
20 - 40
40 - 80
N



MODELED DISTRIBUTION OF EUROPEAN BUCKTHORN (*RHAMNUS CATHARTICA*) FOR ECODISTRICT 6E10. THE MODEL WAS DEVELOPED USING VSP PLOT DATA. RED INDICATES AREAS WITH A HIGH PROBABILITY THAT EUROPEAN BUCKTHORN IS A DOMINANT SPECIES, AND ARE MOSTLY CONFINED TO AREAS ADJACENT TO THE ST. LAWRENCE RIVER CORRIDOR.



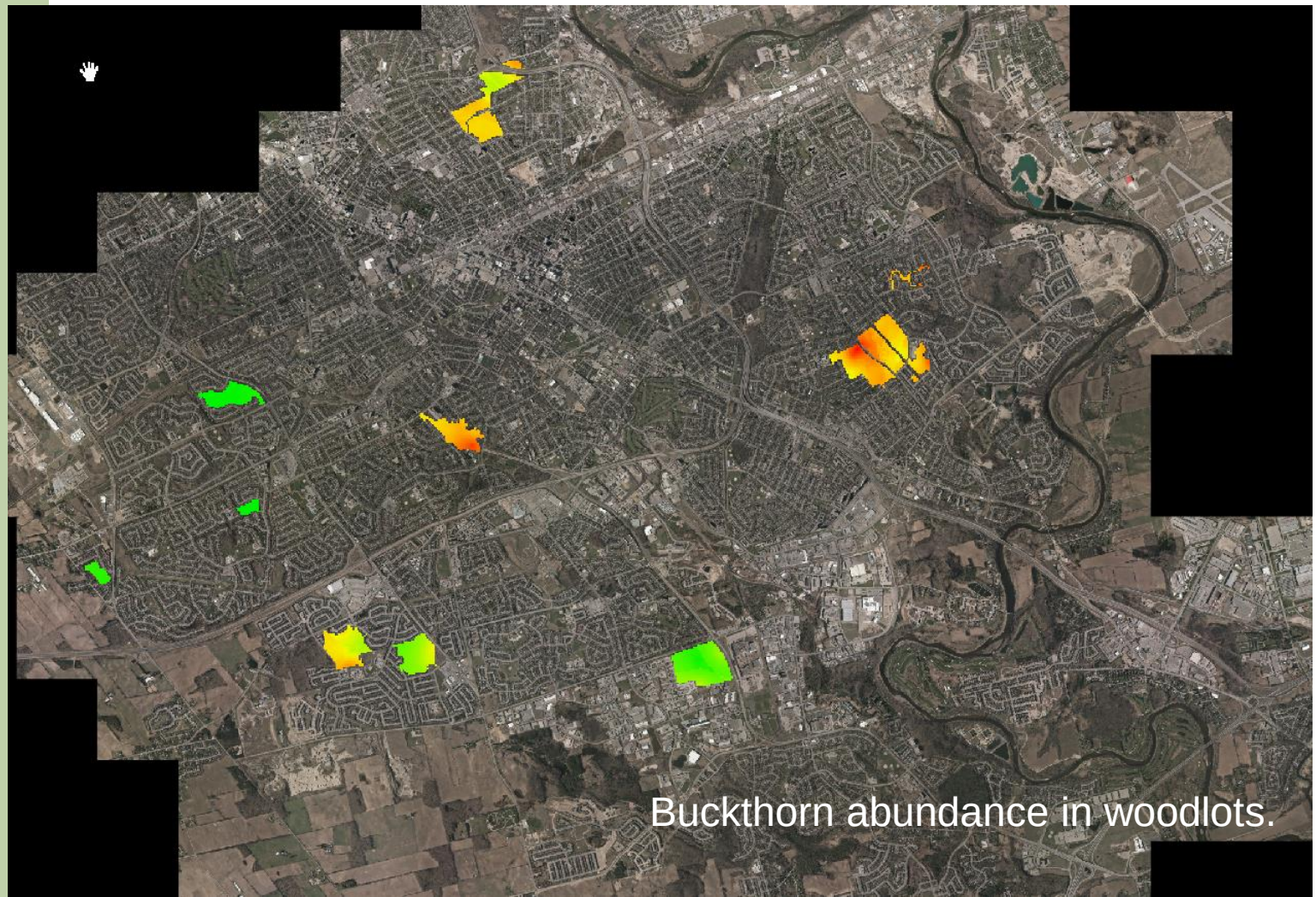
Buckthorn in Ash woodlots.

Adaptive management across landscapes

- need to be prioritized using sound inventory and monitoring information.

Inventory and monitoring information

- Is necessary to prioritize conservation and management actions to ensure efficient allocation of resources

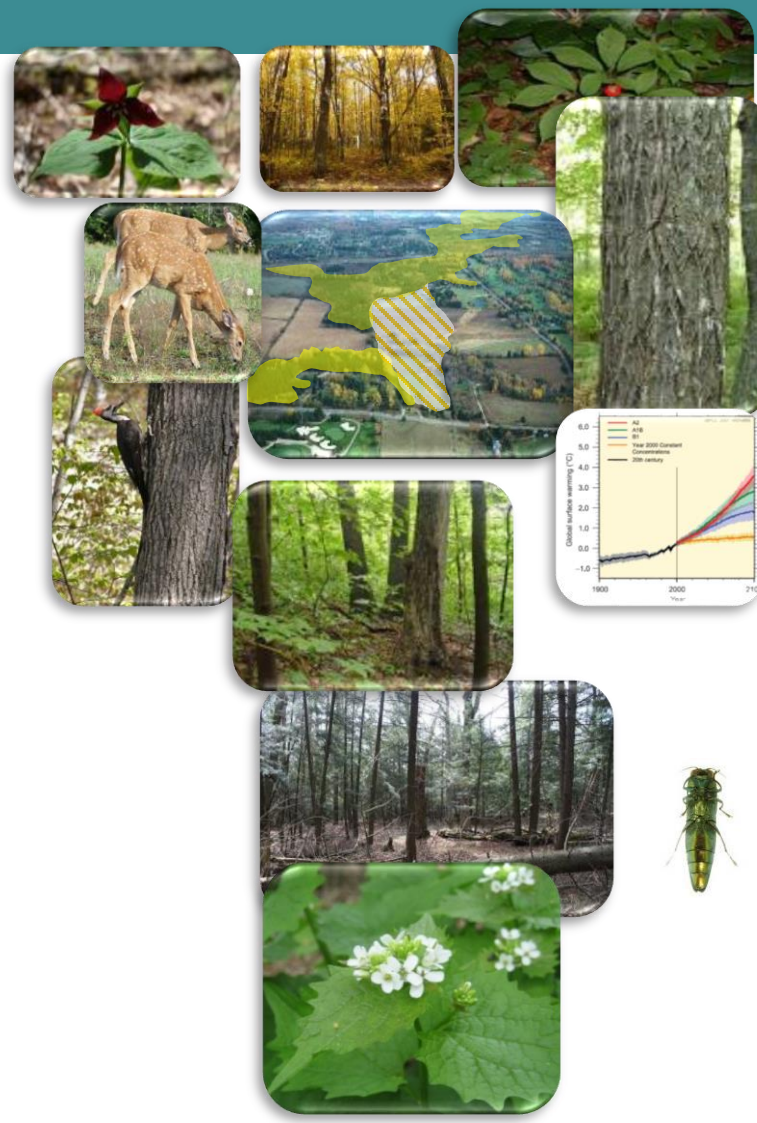


Buckthorn abundance in woodlots.

Buckthorn abundance in woodlots.

Integrated inventory and monitoring as part of:

- Land use and landscape planning
- Natural Heritage System planning
- Species at Risk recovery planning
- Biodiversity conservation
- Climate change adaptation
- Forest management
- Estimates of ecological goods and services
- Carbon offsets
- Invasive species management
- And new and unforeseen needs



Satisfying these needs requires a strategic, multiple scales and diverse applications perspective!

Thank you

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