



Champignons mycorrhiziens et alliaire officinale

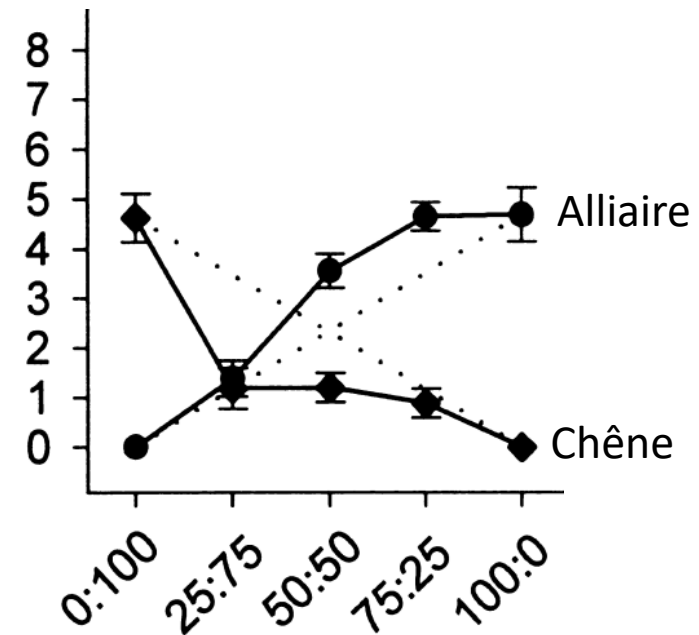
Les pièces manquantes du puzzle dans
cette histoire de chats et chiens

Pierre-Luc Chagnon

Université de Montréal, IRBV

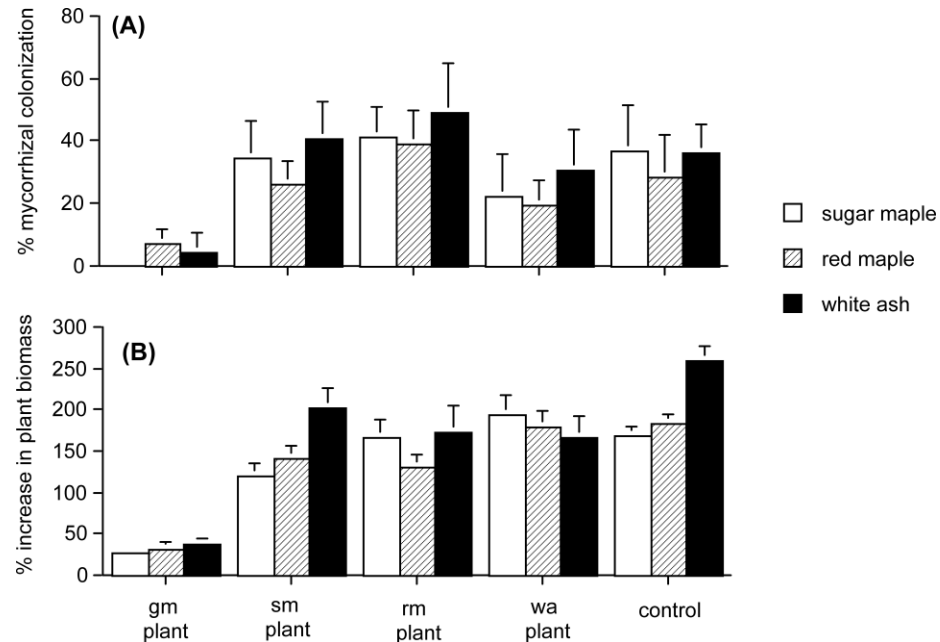
Woodland invasion by *Alliaria petiolata*

- Reduces understory richness
- Hampers hardwood seedling regeneration



Alliaria and mycorrhizal fungi

- *Alliaria* produces sulfur-based compounds acting as fungicides in the soil
- *Alliaria* extracts shown to harm mycorrhizal fungi



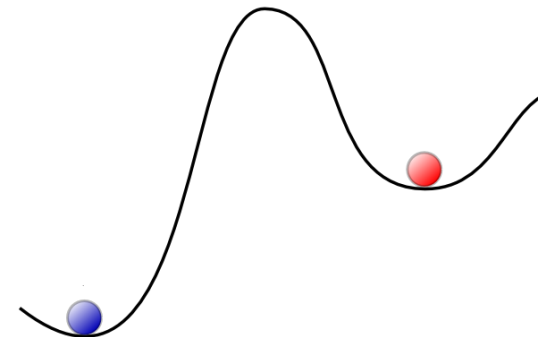
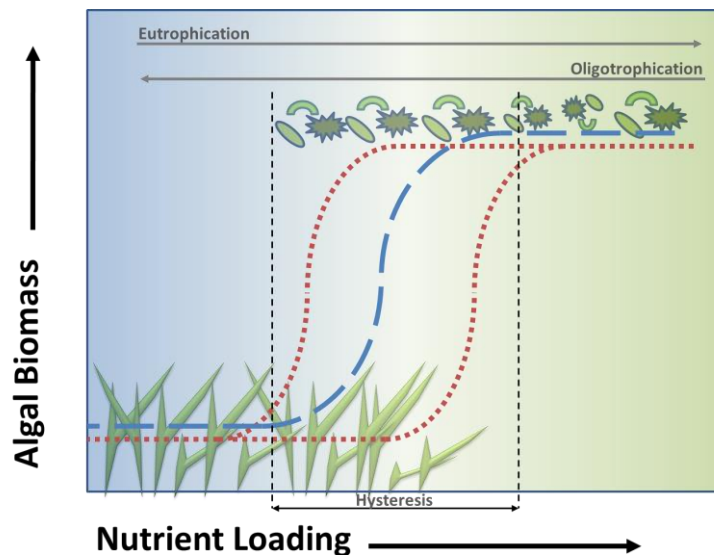
Woodlands are thus « under pressure »



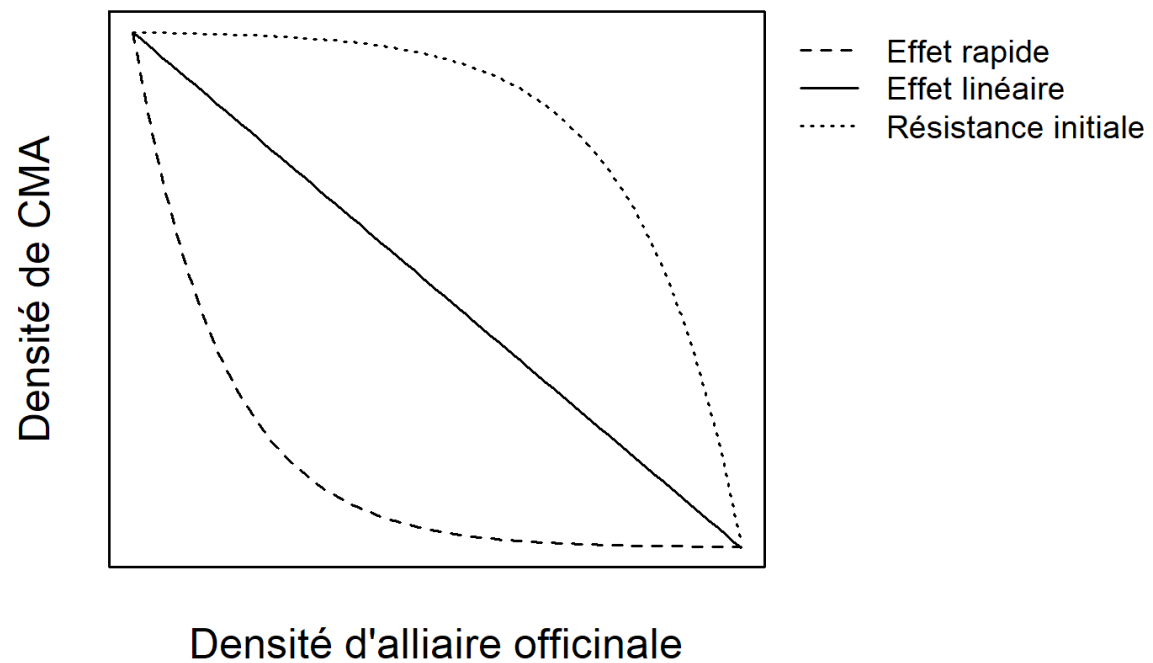
But we often see *Alliaria* invasion as a result rather than an ongoing process, with black and white conclusions!

Non linear responses of ecosystems to external pressures

- Ecosystems rarely show linear responses to external pressures
- Hysteresis is frequent in ecosystems, which often have alternative stable states



What is the response of woodlands to Alliaria like?

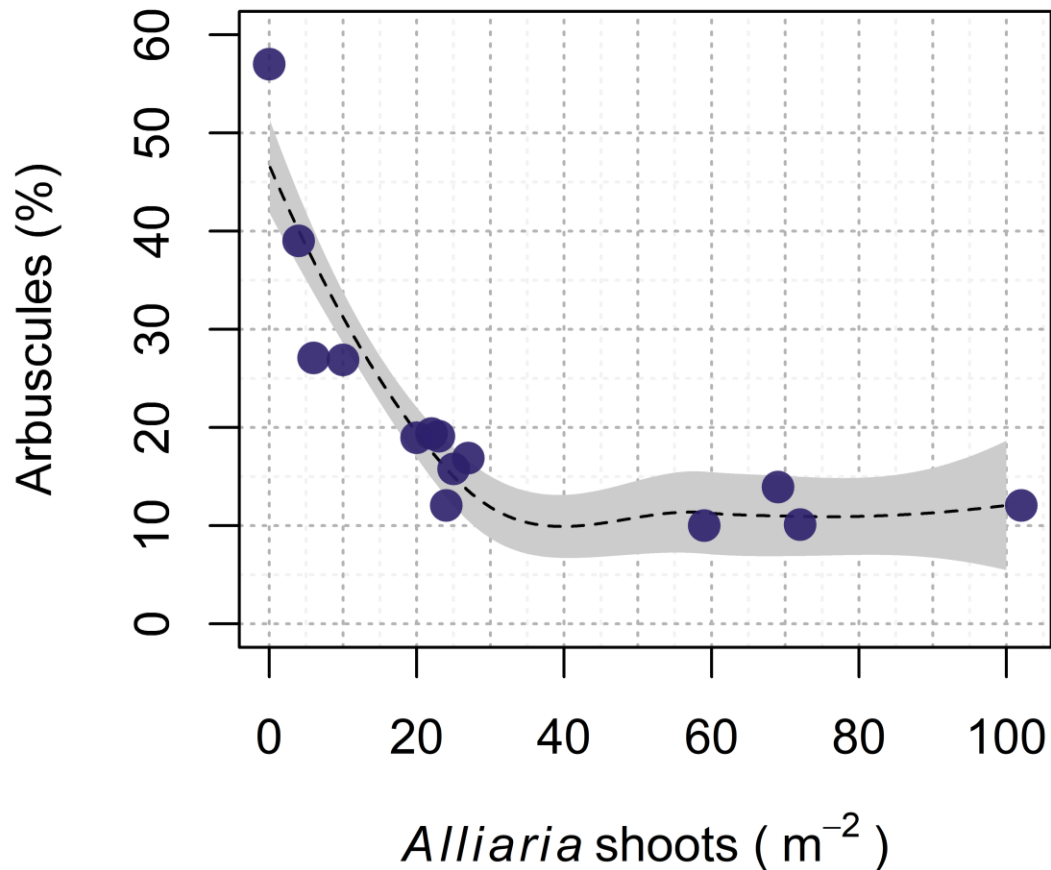


An experimental test

- Identified plots along an invasion gradient
- Sampled soil cores and measured Mycorrhizal Inoculum Potential (MIP) using maize



No early warnings for *Alliaria* impacts on AMF!



Bring further these results

- Correlation is not causation!
 - What if *Alliaria* selected invasion sites with a priori low AM fungal density?
- How to prime revegetation after *Alliaria* removal?
 - Restore native AM fungal populations?



Another rising invader: *Lonicera maackii* L.



Starting project in Indiana

- Collaboration with Mike Jenkins

- Emerging questions:



PURDUE
UNIVERSITY

 **HTIRC**
HARDWOOD TREE IMPROVEMENT
& REGENERATION CENTER

- What soil biota drive plant-soil feedbacks between *Lonicera* and native hardwoods?
- How does *Lonicera* integrate in the microbe-sharing network? Pathogens, mycorrhizas, endophytes?
- Where is living soil goodness maximal for *Lonicera*? Could we map site susceptibility to invasion?

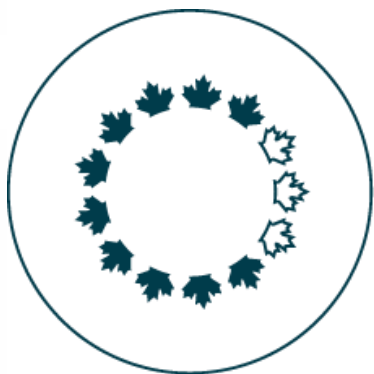
I am recruiting!!!

- Looking for a PhD??

LABO CHAGNON



Acknowledgements



CCN
NCC

*Fonds de recherche
Nature et
technologies*

Québec 



**CRSNG
NSERC**