



Impacts of the invasive *Phragmites australis* on birds of freshwater marshes in eastern Canada



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INTRODUCTION

- A Eurasian genotype of common reed is rapidly invading freshwater marshes in North America and changing plant communities.
- Taller and denser than native vegetation, this invader is reducing marsh plant diversity and water levels and increasing litter accumulation.
- Vegetation structure, height, density and diversity have been shown to strongly influence marsh birds during the breeding period.

OBJECTIVE

To evaluate the impact of the common reed on the composition, abundance and diversity of bird assemblages.

METHODOLOGY

Study area

- Fresh water interior marshes (28 to 86 ha): 5 with 10-35% common reed cover and 3 others not invaded.

Surveys

- Up to 5 visits per year were conducted during the bird breeding period (May to July) 2009 and 2010.
- 36 fixed-distance point counts distributed in 3 types of vegetation (*Phragmites australis*, short grass, *Typha* spp.) for the song bird inventory.
- Visual counts of waterbirds at a whole marsh scale (invaded versus non-invaded marshes).
- Mean water depth at each point count was measured
- Linear mixed models (marshes and point counts as random effects).

RESULTS

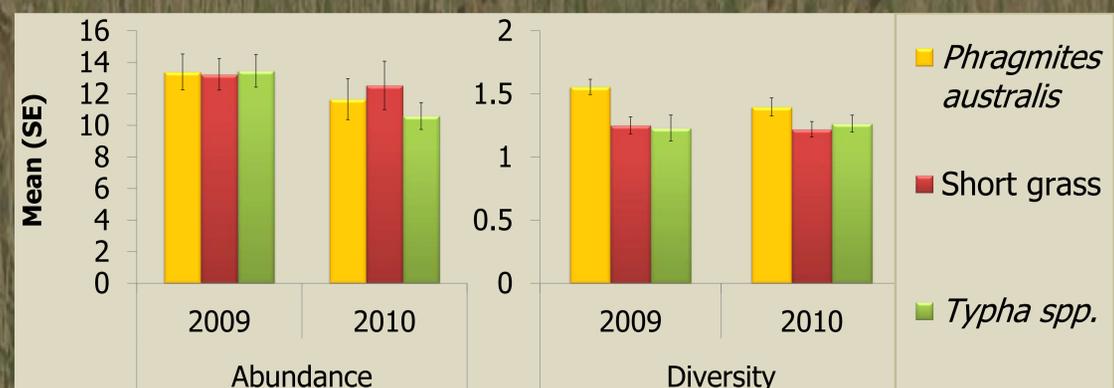
Song birds

Impact of *Phragmites* on Point Count Occupancy

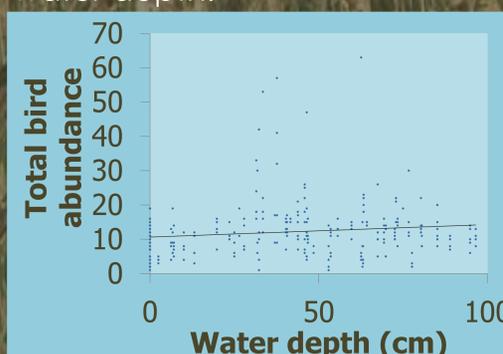
Species	Marsh generalist passerine	Marsh specialist passerine	Rallidae
<i>Phragmites australis</i>	+	=	=
Short grass	=	=	=
<i>Typha</i> spp.	=	=	=

Overall Marsh specialist passerine and Rallidae occupancy is similar between the 3 types of vegetation. Marsh generalist occupancy is increased in reed stands compared to the other vegetation.

Abundance and diversity



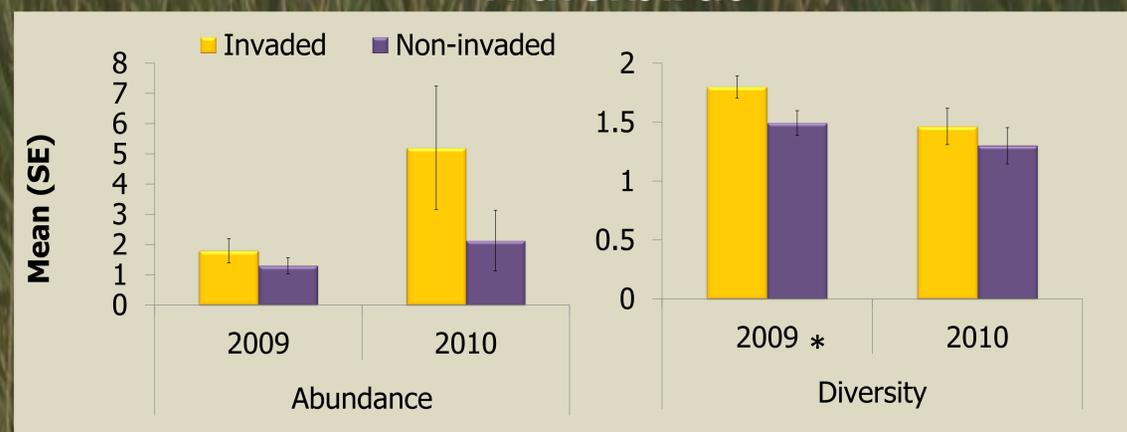
Surprisingly, we didn't find any negative effects of common reed on bird abundance and diversity. However, bird abundance increased with water depth.



Most of the passerine species aren't affected by the invader. In fact some marsh generalists such as the Yellow Warbler (*Setophaga petechia*) and Common Grackle (*Quiscalus quiscula*) are favored by the invader. On the other hand, the Marsh Wren (*Cistothorus palustris*), a marsh specialist, seems to prefer *Typha* spp for nesting sites.



Waterbirds



Waterbird abundance (mostly waterfowl and wading birds) was similar between the invaded and non-invaded marshes. In fact, diversity in invaded marshes was higher in 2009.

CONCLUSION

We found little, if any, evidence that common reed has direct negative effects on birds. However, it may have indirect effects by changing the water regime: the abundance of the bird species decreased with decreasing water depth. It is also possible that the level of invasion was not high enough to negatively affect bird communities (i.e. threshold effect).

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