Control of Investve Phragmities Increases marsh birds but not rogs by Dug Toter Marse Liter Rel Texe means Marse Liter Rel Texe means M	Title slide.
Outline:         • Background         • Background <t< th=""><th>Here's where we're headed. The typical setup: [read slide].</th></t<>	Here's where we're headed. The typical setup: [read slide].
<text></text>	First, some background. Most folks in this audience will already be aware of the non-native invasive form of Phragmites that has invaded North American from Eurasia. Most of you will also be aware of why it's a big and very important issue. Indeed, as we see here, invasive Phragmites has been dubbed "Canada's worst invasive plant."
	Where does this bad reputation come from? One of the main reasons is that the plant grows in incredibly tall and dense patches that are much thicker than native vegetation, as illustrated so nicely by this well-known picture taken by Janice Gilbert. This dense growth prevents most sunlight from penetrating down to the surface, which makes native plants unhappy for a number of reasons. It also eliminates the pools and canals that various native wildlife prefer for feeding, which are present in other wetland vegetation types, so things like breeding marsh birds are also unhappy too.
And all all all all all all all all all al	There are further negative effects that invasive Phragmites has on native flora and fauna. For instance, it releases chemicals that further suppress growth of native plants, and as shown here on the left, it traps large amounts of sediment that raises the bottom and in effect lowers water levels to the detriment of marsh nesting birds that prefer standing water of certain depth, and so on.





error de la construcción de la c	Things worked much better for 4 common breeding marsh bird species. Much tighter confidence intervals. No significant changes in relation to control of Phragmites for three of them; but occurrence of Marsh Wren increased where control of Phragmites occurred relative to where it did not.
Image: second	Things also worked fairly well for analysing change for individual frog species, as you can see here by the tighter confidence intervals, although not so much for wood frog. No statistically significant changes for any of these frog species in relation to control of Phragmites however.
Image: second	And of course, as one would expect, one gets the same type of results when one looks at species richness of all of the frog species together or also a crude index of abundance based on calling frequency. So based on occurrence, we found no effect of control of Phragmites on frogs.
Image: A set of the set	It's possible that if we looked at abundance of frogs we might have seen subtle changes that we were unable to detect with occurrence data. These subtle changes in numbers, if they exist, might include an initial reduction in numbers due to exposure to glyphosate-based herbicides, which are known to have negative effects on frogs, but then subsequent increases in numbers as individuals disperse back into the area from surrounding untreated locations.
	So in conclusion, we've seen based on BSC's MMP data that control of invasive Phragmites works well for increasing breeding marsh birds, to the tune of attracting at least 1 extra species and 2 extra individuals of breeding marsh bird species of conservation concern. As for breeding marsh frogs, there doesn't appear to be much influence of control of Phragmites that is detectable based on occurrence information. Abundance data for frogs might tell a different story.

	At a higher level, the results of our study suggest that continued effort to restore high quality habitat for breeding marsh birds by controlling Phragmties is warranted, especially in areas known to historically support high abundance and diversity of these species and therefore presumably has higher potential for bigger return on investment with further control of invasive Phragmites.
CANDIAN WILDLIFF BIOLOGY & MANAGEMENT CANDIAN WILDLIFF BIOLOGY & MANAGEMENT CANDIAN WILDLIFF BIOLOGY & MANAGEMENT CANDIAN CONTRACT OF CON	If you would like more information on the study, Stu and I are glad to report that just last week we had our paper describing this project accepted for publication in the peer-reviewed journal Canadian Wildlife Biology and Management. It's entirely open access so anyone can read the entire paper at the journal's website shown at the bottom here.
	Thank you very much for your attention.