

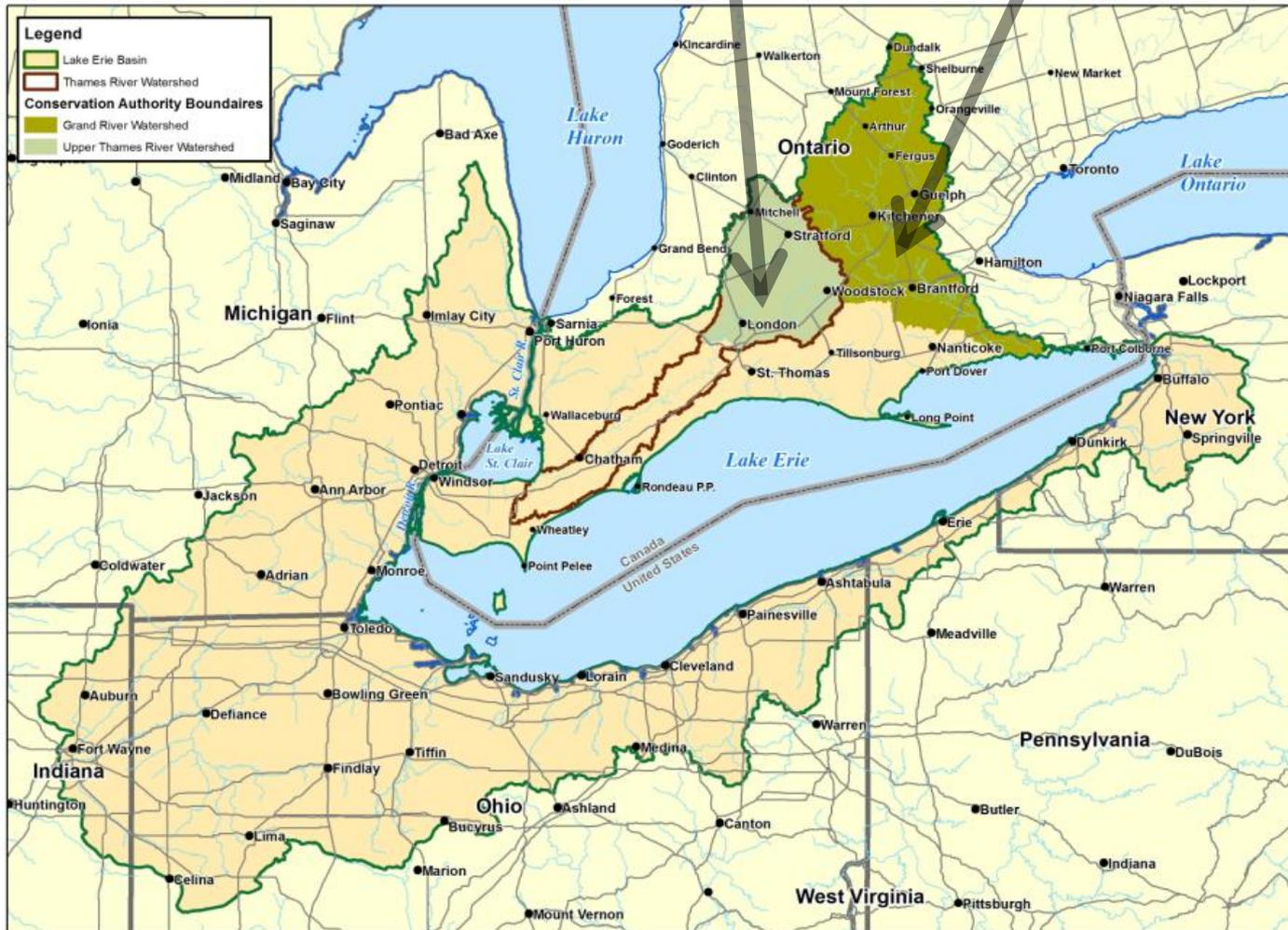
What determines environmental behaviour of rural landowners in southwestern Ontario?

Silke Nebel & Jeff Brick



We wanted to understand conservation behaviour and attitudes of rural landowners in the Upper Thames and Grand River watersheds.

Study Area in Lake Erie Basin



Why do some people cut down trees while others spend money to plant them?



Survey design

Surveys mailed in April 2013 to all rural route addresses in the Upper Thames, 80 % coverage in the Grand Watershed

18 % response rate = 3,227 usable surveys

Survey methodology was developed by a research team at UNB & SFU



Two approaches to understand conservation-oriented behaviour

- 1) We tested the effect of 10 independent variables on two types of conservation-oriented behavior.
- 2) And we ranked 7 factors that could motivate landowners to participate in a wetland enhancement program.

1) Effect of 10 variables on two types of conservation-oriented behavior

Dependent Variables: conservation-oriented behavior

(1) Change in the area of land set aside for conservation

We used reported change (positive or negative) since 2006 in the area of land that was set aside for conservation at a property.

(2) Participation of farmers in environmental stewardship programs

The Upper Thames and Grand River Conservation Authorities offer Stewardship Programs, which provide financial assistance with environmental projects, such as developing a nutrient management plan or improving existing septic systems.

Independent Variables:

conservation-oriented attitude + 9 external and demographic factors

Table 8: Information Used to Construct Conservation Ethic Index

		Value Applied				
Q #	Content of Question	Response				
		1	2	3	4	5
7	People own land for many different reasons. How important are each of the following reasons to you?					
7- ⁵	For recreation (hunting, fishing, walking etc.)	4	3	2	1	0
7- ⁷	For the sake of our future generations	4	3	2	1	0
7- ⁸	To preserve ecosystems	8	6	4	2	0
13	As a landowner, I have the responsibility to:					
13- ¹	Be a good steward of my land and to maintain it in good condition for future generations	4	3	2	1	0
13- ²	Leave the land in a better condition than when I acquired it	4	3	2	1	0
13- ³	Take into account the values of society at large when making decisions about my land	4	3	2	1	0
Responses for Question 7 1. Very Important 2. Important 3. Neither Important or Unimportant 4. Of Little Important 5. Un-important		Responses for Question 13 1. Strongly agree 2. Agree 3. Neither agree or disagree 4. Disagree 5. Strongly Disagree				

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All cases with any blank or 'I don't know' entries were excluded. 'To preserve ecosystems' received double weight. The sum of the numeric responses is the Ethics Index for each respondent.

9 external and demographic variables

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(2) property size (continuous)

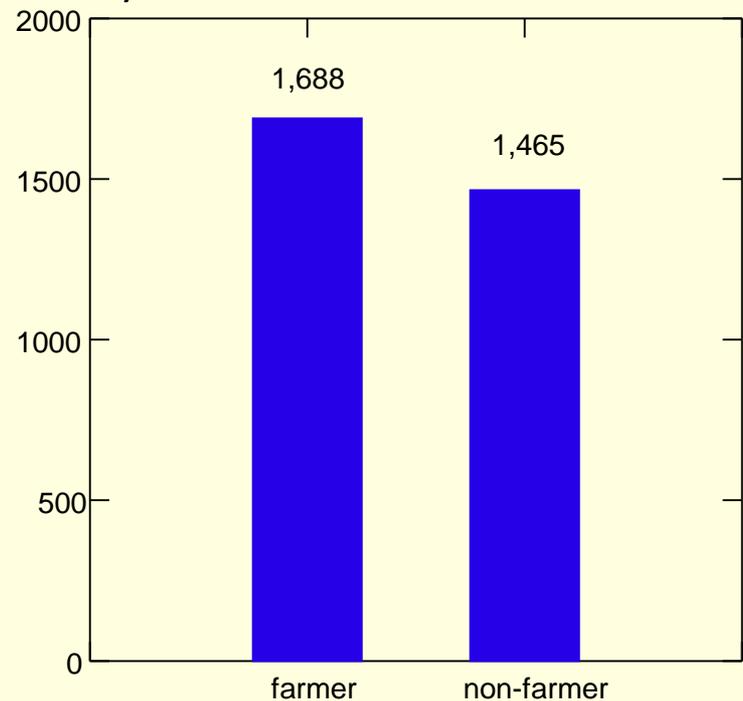
9 external and demographic variables

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(2) property size (continuous)

(3) landowner type (categorical: farmer or non-farmer)

Landowners were considered 'farmers' if they declared farming as their main source of land use (as opposed to 'forestry', 'residential' or 'other').



What is the primary use of the land you own? *Please check one box only.*

1 Agriculture

3 Residence

2 Forestry

4 Other: _____

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- (9) length of ownership (ordinal: 'before 1970' = 1 to '2007-2013' = 6)

Statistical analysis

We used binary logistic regression to assess the likelihood that the change in land area (binary) and previous enrollment in a stewardship program (binary) varied with our independent variables.

What variables affect change in conservation land area?

The **likelihood of positive change** in area of land set aside for conservation **increased with Ethics Index, decreased with reliance on farm income and varied significantly with land type.**

Watershed, property size, length of ownership, landowner type, debt load and age did not significantly affect change in land area.

The **likelihood of positive change among land types was largest in Windbreak and smallest in Ditch.** The odds of positive change were, in fact, 99% lower for Ditch than for Windbreak.

What variables affect enrollment of farmers in a conservation stewardship program?

The likelihood of enrollment in a conservation stewardship program (yes = 227, no = 1,154) varied significantly with reliance on farm income and it increased with property size and Ethics Index.

Watershed, length of ownership, debt load and age did not significantly affect change in land area.

Interestingly, the odds of enrollment were highest in farmers who relied to 50-74% on farm income.

Conclusions

In our study of landowners in southwestern Ontario, we found that an **environmental attitude and economic factors are the strongest predictors of environmental behavior.**

We suggest that enrollment in voluntary land stewardship programs might be increased by providing information about the effects of ecosystem loss, and by providing financial incentives for participation.

In a larger social context, outreach programs by government agencies could focus on improving pro-environmental attitudes, which in turn is likely to result in more pro-environmental behavior of landowners.

Thanks

to SSHRC and the Canada-Ontario
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you for your attention!

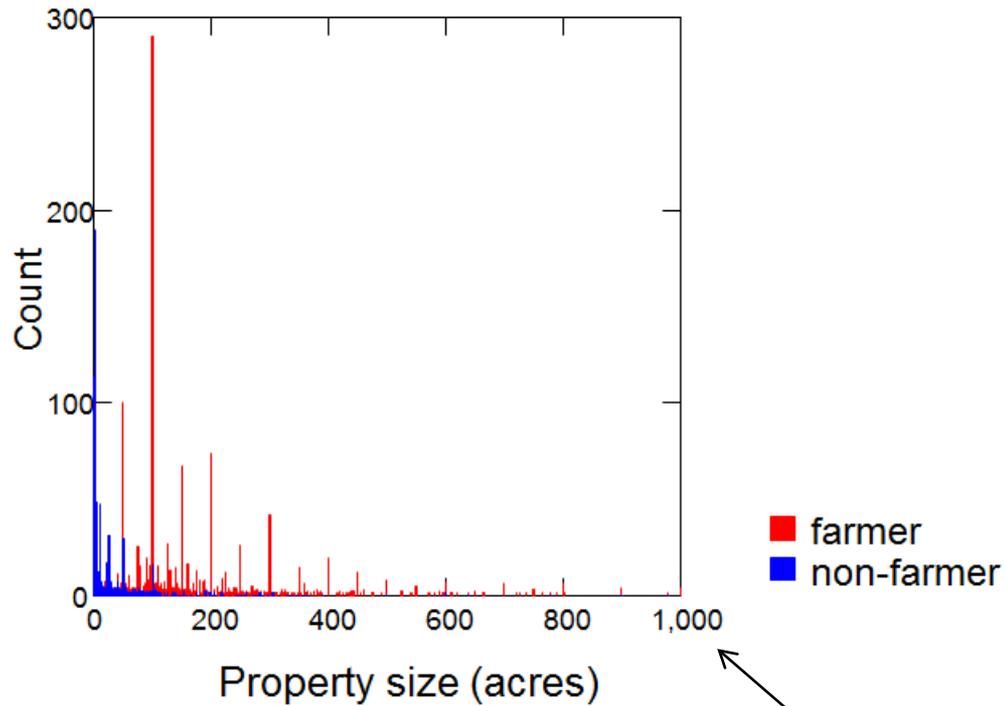


Parameter	Estimate	Standard Error	Z	p-Value	95% Confidence Interval		Odds Ratio	Standard Error	95% Confidence Interval	
					Lower	Upper			Lower	Upper
					Constant	0.969			1.155	0.839
Type: Ditch	-4.607	1.166	-3.950	0.000	-6.893	-2.321	0.010	0.012	0.001	0.098
Type: Fenced	-4.461	1.045	-4.269	0.000	-6.510	-2.413	0.012	0.012	0.001	0.090
Type: Untilled	-3.998	1.031	-3.879	0.000	-6.018	-1.978	0.018	0.019	0.002	0.138
Type: Shrub	-4.121	1.076	-3.830	0.000	-6.230	-2.012	0.016	0.017	0.002	0.134
Type: Tree	-2.797	1.044	-2.680	0.007	-4.843	-0.752	0.061	0.064	0.008	0.471
Type: Wet	-3.220	1.080	-2.981	0.003	-5.337	-1.103	0.040	0.043	0.005	0.332
Farm income: 1	1.507	0.398	3.789	0.000	0.727	2.286	4.511	1.794	2.069	9.835
Farm income: 2	0.970	0.342	2.840	0.005	0.301	1.640	2.639	0.902	1.351	5.155
Farm income: 3	0.430	0.427	1.007	0.314	-0.406	1.266	1.537	0.656	0.666	3.546
Farm income: 4	0.324	0.449	0.721	0.471	-0.556	1.204	1.382	0.621	0.573	3.333
Farm income: 5	0.185	0.410	0.450	0.652	-0.620	0.989	1.203	0.494	0.538	2.690
Ethics Index	0.138	0.026	5.323	0.000	0.087	0.189	1.148	0.030	1.091	1.208

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(1) watershed (categorical: Thames River or Grand River)

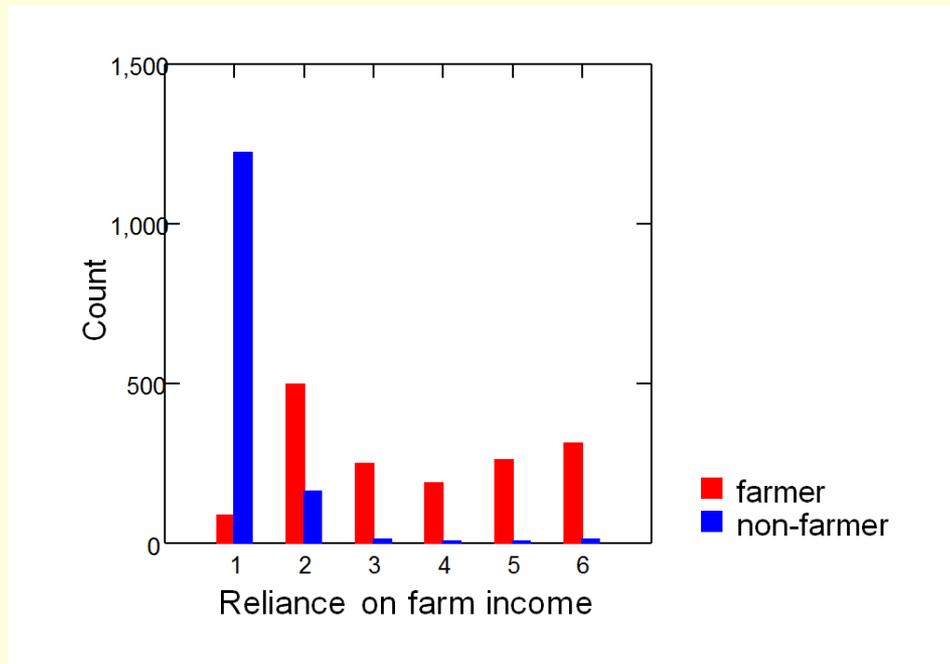
(2) property size (continuous)



Graph capped at 1,000 acres

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- (1) watershed (categorical: Thames River or Grand River)
- (2) property size (continuous)
- (3) landowner type (categorical: farmer or non-farmer; landowners were considered 'farmers' if they declared farming as their main source of land use)
- (4) reliance on farm income (ordinal: '0%' = 1 to '100%' = 6)



- 1 - Elementary school
- 2 - High school
- 3 - Post-secondary
- 4 - Graduate degree

