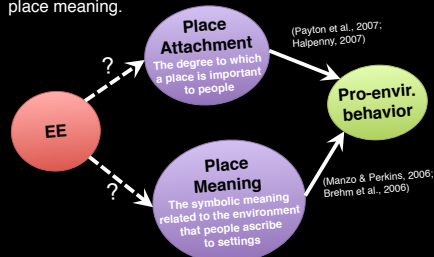


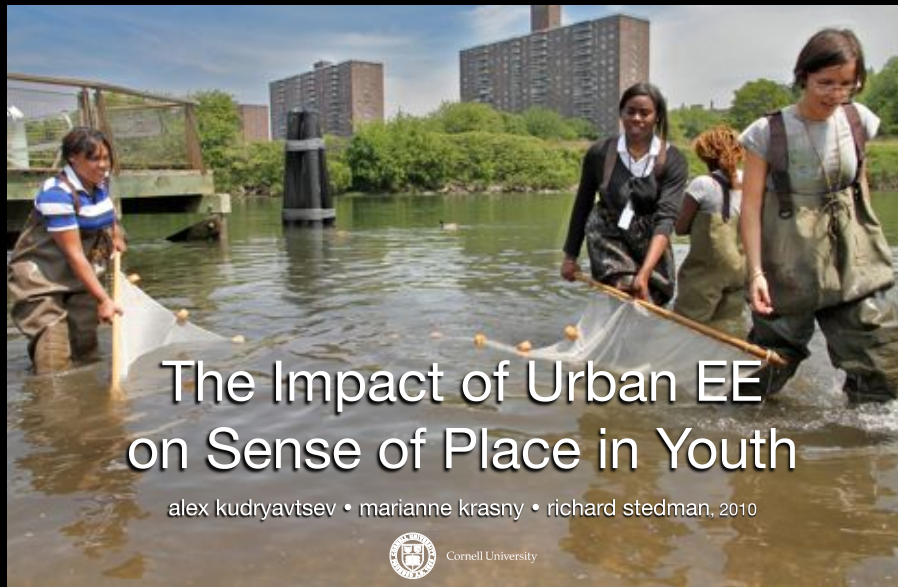
Research Framework

Sense of place – including place attachment and nature-related place meaning – is important because it contributes to pro-environmental behavior. Yet researchers have never used quantitative studies to evaluate the impact of EE on place attachment and place meaning.



Research Goal

Evaluate the impact of short-term urban environmental education (UEE) programs in the Bronx, New York City on place attachment and nature-related place meaning in high-school students.



The Impact of Urban EE on Sense of Place in Youth

alex kudryavtsev • marianne krasny • richard stedman, 2010



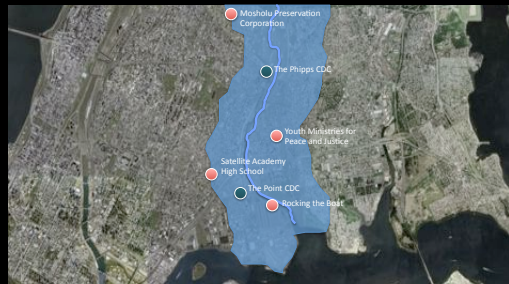
Survey Development

- **Place attachment** scale includes 11 items adapted from existing surveys (Vaske & Kobrin 2001; Stedman 2002; Moore & Scott 2003).
- **Place meaning** scale with 17 items was developed de novo. Items reflect the natural elements of the urban environment such as community gardens, river, parks, animals, birds and natural areas.

Sense of Place & Social Capital Survey

Please read carefully each statement about your attitude towards the Bronx. Indicate your level of agreement or disagreement with each statement by drawing an X. It is important that you answer thoughtfully.

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
1. The Bronx is the best place for what this city has to offer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I would like to live in the Bronx when I am grown up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I feel like the Bronx is part of me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I feel happy when I am in the Bronx.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Everything about the Bronx reflects who I am.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I am more satisfied in the Bronx than in other places.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The Bronx is my favorite place in the city.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I identify myself strongly with the Bronx.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. The Bronx is NOT a good place for what I like to do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. There are better places to be than the Bronx.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. The Bronx reflects the type of person I am.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let us know what you think about the environment in the Bronx.					
12. The Bronx is a place to connect with nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. The Bronx is a community of people and nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. The Bronx is a place with NO nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. The Bronx is a place to watch animals and birds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The Bronx is a place where people can find nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. The Bronx is a place where trees are an important part of the environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. The Bronx is a place where people have access to trees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. The Bronx is a place where people come to connect with nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. The Bronx is a place with NO natural areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. The Bronx is a place where people have access to parks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. The Bronx is a mix of developed and natural areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. The Bronx is a place to connect with nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. The Bronx is a place to have fun in nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. The Bronx is a place to learn about nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. The Bronx is a place to enjoy nature's beauty.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. The Bronx is a place for a spiritual connection with nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. The Bronx is a place to grow food.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Research Site

The survey was conducted pre/post-program in summer 2010:

- **Treatment:** High-school students in 5-6 week UEE programs in 4 organizations in the Bronx River watershed, NYC. Students in each program:
 - ◆ visited natural places in the Bronx to conduct inquiry and observations (in parks, botanical gardens, community gardens);
 - ◆ learned about environmental science from professionals and researchers;
 - ◆ participated in recreation activities on the Bronx River (canoeing, kayaking, boating); and
 - ◆ took part in environmental stewardship activities (planting trees, restoring oyster reefs, working in community gardens, maintaining green roofs).
- **Control:** Students in two summer youth employment programs. Demographics and length of programs similar to treatment. Students participated in non-environmental activities such as literacy programs, office work, dance, sports, and mixed media.

Results

- Treatment n=64 (return rate=80%), control n=23 (return rate=60%). Mean age=16, SD=1.8. ♂56%, ♀44%.
- There is no significant difference between the treatment and control groups in terms of age, gender, and levels of their place attachment and nature-related place meaning before programs.
- We used paired t-test with equal variances to compare the average pre/post-program scores for place attachment and place meaning scales in treatment and control groups.
- Short-term UEE programs in the Bronx have not changed place attachment in students:

	Place Attachment		
	Pre	Post	Paired t-test
Treatment	Mean=2.91 SD=0.80	Mean=3.03 SD=0.85	t(62)=1.47 p=0.15
Control	Mean=2.84 SD=0.99	Mean=2.74 SD=1.00	t(23)=0.74 p=0.47

- Short-term UEE programs in the Bronx significantly improved nature-related place meaning in students:

	Place Meaning		
	Pre	Post	Paired t-test
Treatment	Mean=3.25 SD=0.85	Mean=3.62 SD=0.80	t(62)=4.79 p=0.00**
Control	Mean=3.13 SD=0.79	Mean=3.18 SD=0.91	t(23)=0.42 p=0.68

Discussion and Conclusion

- This is the first quantitative study we are aware of to evaluate the impact of EE programs on sense of place. The survey has been tested and can be used by other UEE programs.
- Whereas we are not able to generalize beyond our NYC UEE programs, the results suggest that UEE has the potential to improve nature-related place meaning in urban high-school students, and thus may influence environmental behaviors.
- We currently are analyzing narrative and interview data to help elucidate what elements of the UEE programs impacted participants' sense of place.