Public Perception of a Sustainable Landscape Demonstration

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Introduction:

Degradation of water quality in urbanizing watersheds due to increased impervious surfaces and removal of natural vegetation and wetlands is well recognized. What is under-appreciated, however, is the conflict between ornamental landscaping practices in urban/suburban ecosystems and water quality management. This project was designed to demonstrate the ecosystem services attained by a change from our current lawn-based landscaping paradigm to one that encourages less-intensive management and allows for a greater abundance and diversity of native flora and fauna. This poster focuses on the public perception of the demonstration landscape.

Materials and Methods:

A suburban landscape was designed and installed in a Delaware residential development that demonstrated sustainable landscape principles i.e. reduced lawn space, strategies for water management, a 6000 square foot meadow, a forested buffer and a predominantly native plant palette. The landscape was managed for 3 years, tracking installation ($31,932) and management costs ($6,921). As most labor following installation was devoted to weeding, these costs are anticipated to decline as the landscape matures.

Landscape prior to installation – 98% lawn   Meadow   Forest edge   Landscape bed   Rain garden

Design goals:

Landscape design

- Reduce the size of the 44,000 square foot lawn by half.
- Add trees, shrubs and perennials to attract wildlife.
- Use predominately native plants.
- Solve drainage problems, specifically water puddling in front yard by corner of garage
- Add a meadow and forest habitat.
- Increase the opportunity for homeowners to engage and participate in the landscape.
- Reduce maintenance (long term).

Measurement of public perception:

- An intercept interview was conducted from July 8-15, 2013, at the two Departments of Motor Vehicles (DMV) in New Castle County, DE.
- Tours for industry professionals and homeowners were conducted during years 2 and 3.
- An online survey was conducted in November, 2015 of tour participants whose emails were captured.

Results:

A qualtrics survey was sent to all tour participants in November 2014. Most respondents said they chose to attend a tour because they wanted to see what a sustainable landscape looked like or they wanted to get ideas for their home landscape. Most respondents said the demonstration landscape looked different or very different from their home landscape (78%) and almost all (94%) indicated the landscape was different or very different from other landscapes in their development. The three most positive attributes were greater diversity of wildlife, better water quality and better flood control. The least desirable attributes were greater initial establishment costs and initial maintenance required (represented by "takes time to establish" and "more initial weeding required").

Table 1: Ecosystem services and other impacts of the intervention (with hypothesized sign) from intercept survey.

Type of Impact	Impact as Described in Survey Instrument	Abbreviated Impact Name	Hypothesized Impact on Public	Mode Result
Ecosystem Service	1. Better flood control	Flood control	+	+
	2. Better water quality	Water quality	+	+
	3. More plant diversity for wildlife	Plant diversity	+	+
	4. Lower air temperatures providing cleaner air	Lower temperatures	+	+
	5. Less time spent mowing	Less mowing	+	+
	6. Less energy used due to shaded buildings	Less energy	+	+
	7. Moves indoor activities outside	Indoor activities outside	+ or 0	+
Indirect Ecosystem Service	8. Undesirable wildlife might be present (ticks, deer, snakes, etc.)	Undesirable wildlife	-	-
Installation	9. Greater initial cost of establishment	Establishment cost	0	0
	10. Takes time to become established	Establishment time	-	0
Management	11. More weeding initially until plants cover the ground	More weeding	-	0
	12. Leaves must be managed and may blow out of beds	Leaf management	-	0
	13. No hardwood mulch needed because on-site leaves used as mulch	No mulch	0	+
	14. No sheering of plants required, just minimal pruning	No sheering	- or 0	+
	15. Education required for proper management	Education	- or 0	+
	16. Long term tree care required (disaster and disease removal)	Tree care	0	+
Aesthetics	17. Fewer clean lines and order in the landscape	Fewer clean lines	-	+
	18. Less lawn for sports	Less lawn for sports	-	0
	19. Higher curb appeal and increased property value	Curb appeal	+	+
	20. Looks different from neighbor's lawn	Looks different	-	+

Note: These terms are exactly as they appeared on the public preference survey. These impacts are abbreviated in the remainder of the paper. A series of focus groups and pretests were used to revise these terms so that they would be understandable to the general public. For mode hypotheses, "+" is "good", "0" is "neither", and "-" is "bad". ES indicates "Environmental Service".

Table 2: Tour respondents' opinions on attractiveness and likelihood of installation of landscape components.

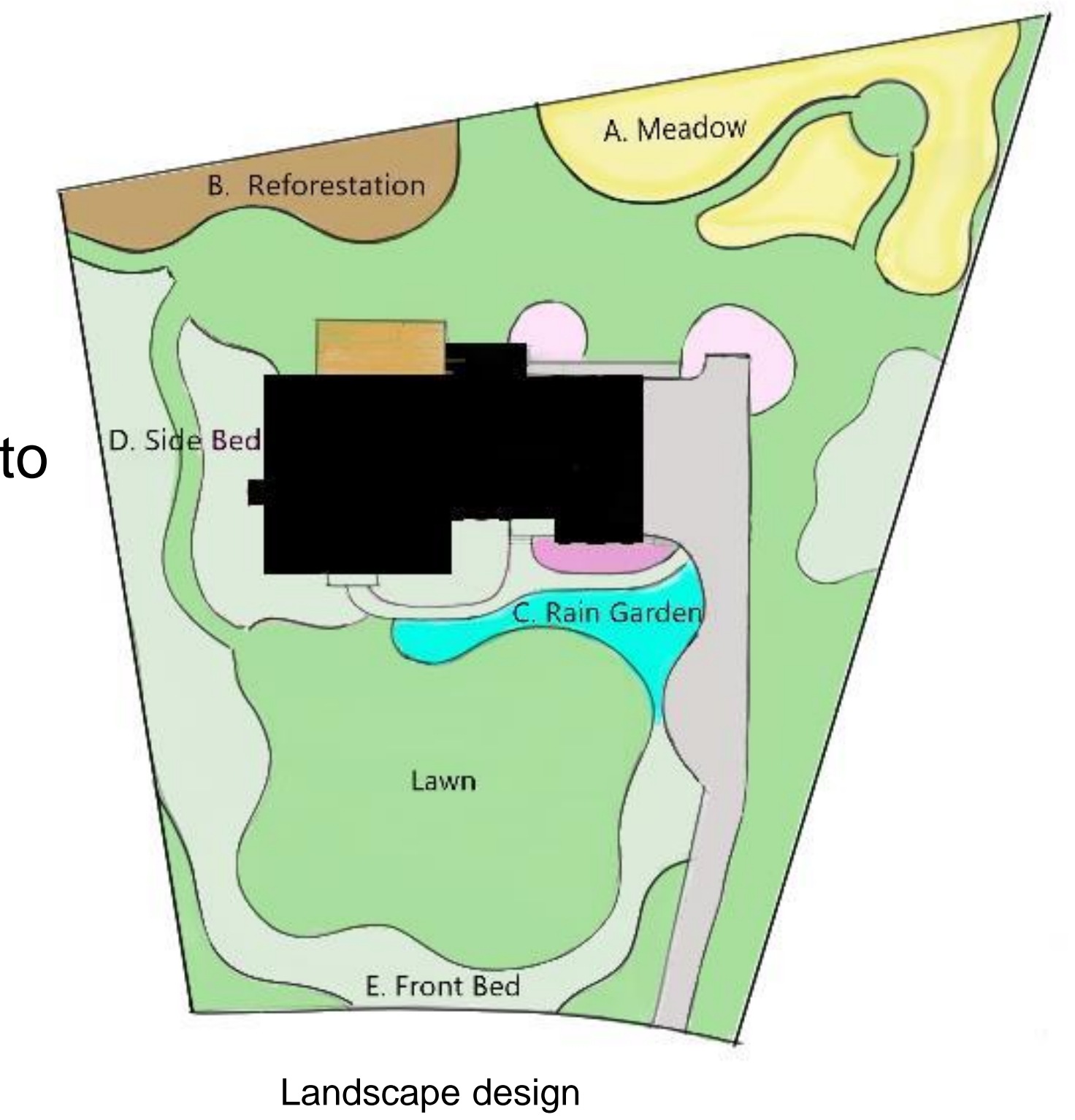| Landscape component	Listed as very attractive or attractive	Listed as very likely or likely to be installed by respondent
Meadow	87%	54%
Reforestation corridor	98%	54%
Rain garden	97%	49%
Landscape bed	97%	62%

Figure 1: Respondents' opinions of various impacts of the sustainable landscape management on their household from intercept survey.
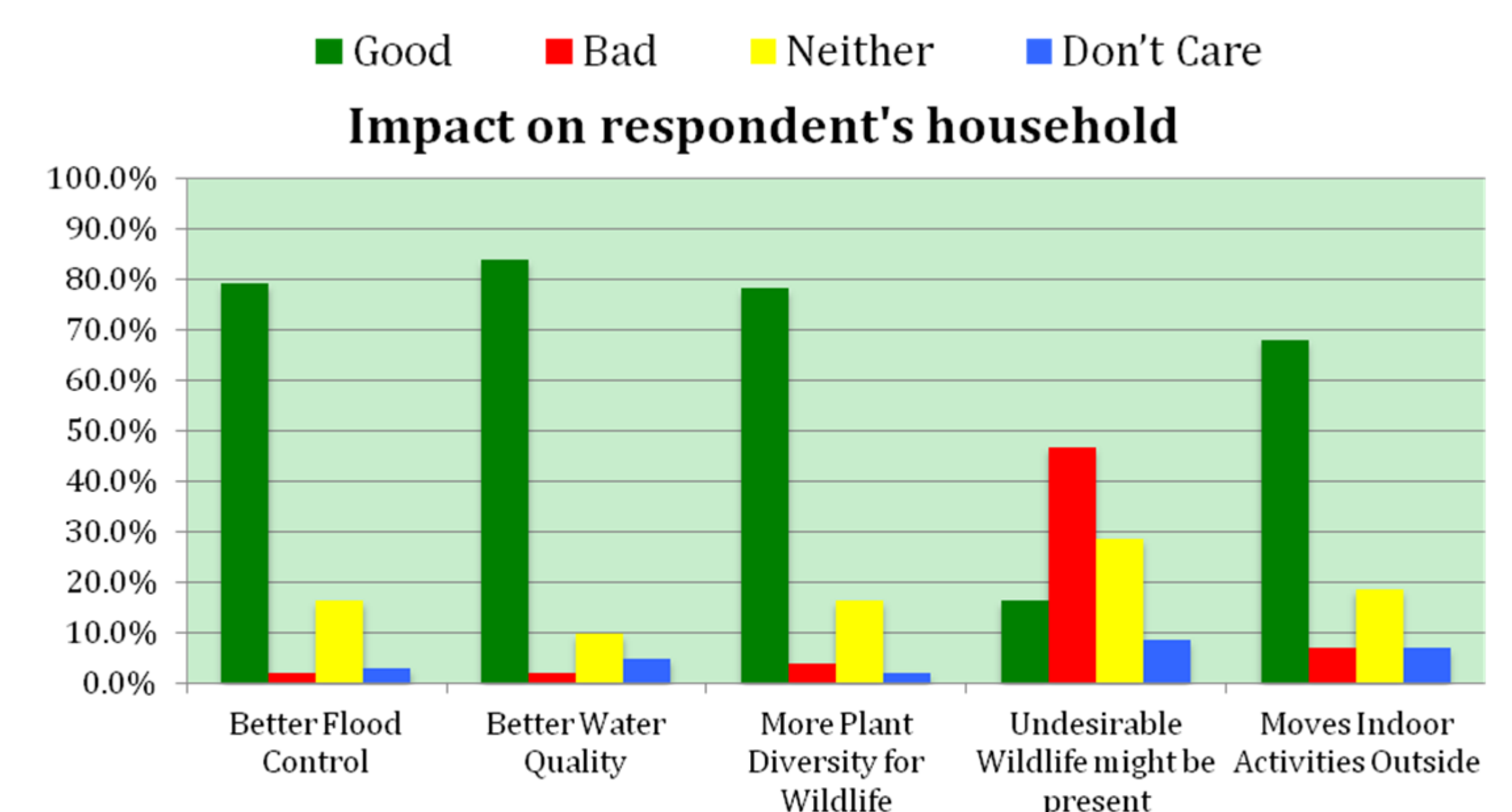

Figure 2: Histogram of how respondents rated the effect of each impact on their quality of life from intercept survey.
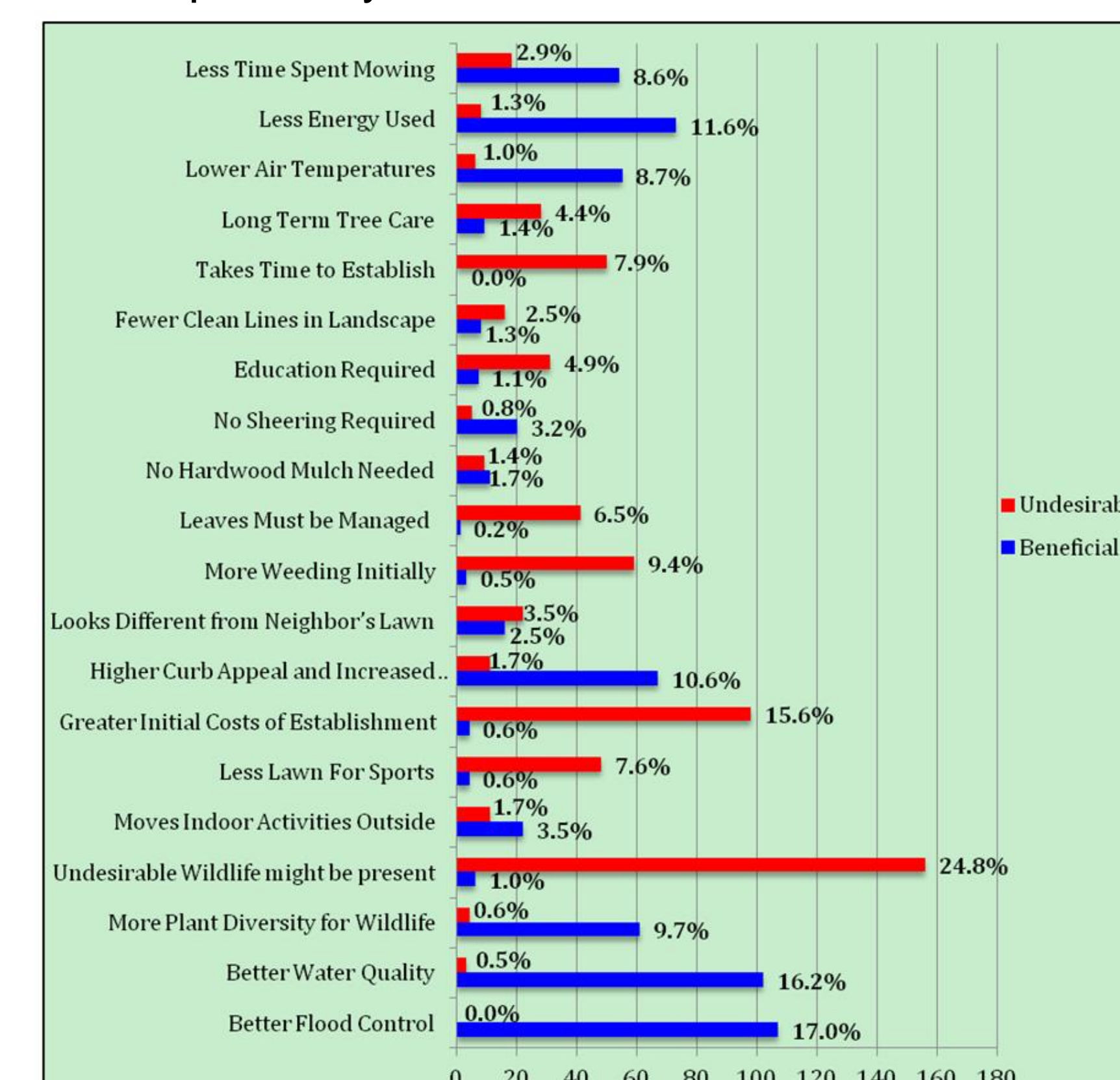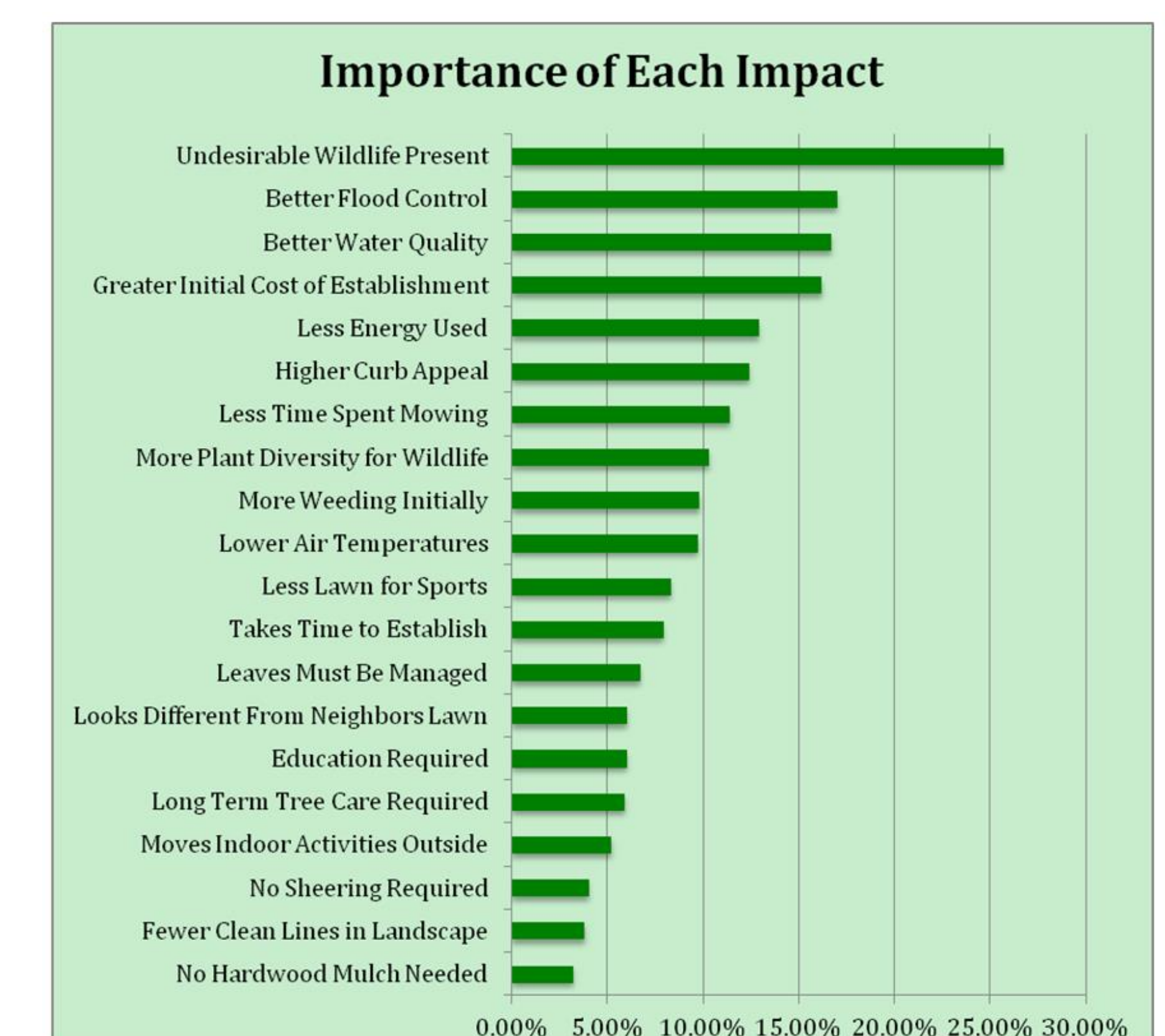

Figure 3: The importance of each variable as an impact on participants' quality of life from intercept survey.

Conclusions:

This poster describes research on a sustainable landscape intervention in Delaware that altered a residential landscape in order to enhance ecosystem services (ES). The survey data show the ES changes were perceived to have a positive impact on people's quality of life, though some other impacts had a negative, a positive, or no effect. The most important impacts were found to be: undesirable wildlife (negative); flood control (positive); and water quality (positive).

Respondents who toured the garden rated water quality and flood control as highly positive and more diversity of wildlife as the most desirable aspect. While respondents felt the landscape components were attractive, they were less likely to be willing to install the component in their own landscape. For those who toured the site, undesirable wildlife was not an important concern.

Protocol for establishing a meadow:

Step 1 – Kill existing vegetation and core aerate.   Step 2 – Mix meadow seed with sawdust.   Step 3 – Spread seed and sawdust mixture to a depth of one inch.   Meadow establishes quickly due to moist germination medium and light exclusion preventing crabgrass and foxtail from germinating and competing with meadow species.

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