ASSESSING THE ECOSYSTEM SERVICES OF FLORIDA-FRIENDLY LANDSCAPING – USING FLIP MY FLORIDA YARDS™ AS LABORATORIES

LUO, YI
University of Florida, yi.luo@ufl.edu

GIBSON, SHANNON MAE
University of Florida, sbly@ufl.edu

BEAN, EBAN
University of Florida, ezbean@ufl.edu

ABSTRACT
Landscape architecture is evolving into an evidence-based discipline, utilizing scientific research to inform decisions. Over the past decades, frameworks like Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND), Sustainable Site Initiative (SITES), and Landscape Performance Series (LPS) have emerged to evaluate ecosystem service benefits, highlighting the value of sustainable landscape practices. However, many case studies of these evaluation systems focus on large and complex projects. Their ecosystem service benefits are challenging to translate to individual residential properties. Amid ongoing urbanization and climate change, home landscaping is critical in adapting to extreme weather and enhancing sustainability.

In collaboration with the TV program Flip My Florida Yard (FMFY), which transforms home landscapes into eco-friendly yards, we measured ecosystem services at the residential level. The purpose of this study is to use appropriate metrics to compare pre- and post-site conditions, determining the impact of Florida-friendly landscaping practices such as lawn reduction, diverse plants, efficient watering, and wildlife attractions.

We conducted a survey with 30 homeowners from three FMFY seasons, covering site usage, nature knowledge, operation & maintenance, and satisfaction. Additionally, nine properties (three per season) were selected for detailed studies on microclimate and wildlife. Microclimate data were collected from the project sites and neighborhood control groups, while wildlife observations were recorded through homeowner feedback. The sample sizes of this study are relatively small due to the limited number of participants in the FMFY program.

Results indicate that after the flip, most properties saw an increase in bird and butterfly species. Microclimate conditions in the flipped yards improved when shading trees were introduced. People's knowledge about nature increased, and they enjoyed more yard activities and spent more time in their yards. However, maintenance demands also increased.

Keywords
Landscape Performance, Home Landscaping, Microclimate, Water Conservation, Wildlife Habitat

1 INTRODUCTION

Landscape architecture is evolving into an evidence-based discipline that advocates using scientific evidence from scholarly research to guide decision-making (Brown & Corry, 2010). Evidence-based design first emerged in the late 1990s within the health industry and then extended to other related fields (Sailer et al., 2008; Luo, 2014). Over the past decades, various efforts have been made to quantify and evaluate ecosystem services through initiatives like Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND), Sustainable Site Initiative (SITES), and Landscape Performance Series (LPS). LEED-ND and SITES are scoring systems that provide voluntary guidelines for planning and designing development projects (Luo, 2014). Landscape Performance, supported by the Landscape Architecture Foundation (LAF), assesses the performance of built landscape projects, which determines whether the landscape strategies used in these projects have effectively achieved design goals and contributed to sustainability.

Currently, more than 400 projects are certified by SITES (GBCI, n.d.), and LAF has published over 200 case studies as part of the Landscape Performance Series (LAF, n.d.). These case studies demonstrate sustainable landscape strategies and showcase the ecosystem service benefits of such practices in the built environment. However, most case studies associated with SITES and the Landscape Performance Series involve large and complex projects, such as campuses, natural preserves, arboretums, parks, and public plazas. The design strategies applied in these projects can differ significantly from those used on smaller sites, and their ecosystem service benefits are challenging to scale down directly to individual residential properties, leaving a gap in ecosystem service benefits for these smaller residential sites.

As urbanization continues, 83% of the U.S. population now lives in urban areas, an increase from 64% in 1950, and it is predicted to reach 89% by 2050. Urbanization results in significant changes in land use. Between 2000 and 2020, urban land area in the U.S. increased by 14%, while housing units increased by 13.6% from 2000 to 2010 and by 6.7% from 2010 to 2020. Urban sprawl rapidly converts permeable forest and agricultural lands into urban or suburban settings, leading to habitat loss for wildlife, increased carbon emissions, and contributing to the urban heat island effect and more frequent and severe flooding events (Center for Sustainable Systems, 2022). Climate change is further compounding this situation. There has been a notable increase in the frequency and intensity of extreme weather events such as storms, heat waves, and hurricanes in the U.S. (Center for Climate and Energy Solutions, n.d.). In this context, home landscaping plays a critical role in adapting to extreme weather conditions and improving environmental sustainability.

Flip My Florida Yard (FMFY) is a TV show that focuses on transforming home landscapes into environmentally friendly yards. The project involves changing various aspects of a property's outdoor features, such as plants, pavement, irrigation systems, and waste disposal methods. Each transformation is tailored to the specific site, with support from experts in multiple fields, including horticulture, landscape architecture, and urban water resource engineering, aiming to create beautiful, sustainable landscapes that are functional and eco-friendly (Flip My Florida Yard, n.d.).

Most yards selected were a mix of weeds and grass, full of overgrown shrubs and invasive plants, with some also experiencing flooding issues on driveways or yards. The team transformed these yards using various methods tailored to individual site conditions. However, for many yards, the team removed the existing landscape, planted hundreds of different native trees and plants, divided them into different watering zones, installed new irrigation systems, added mulch to reduce water loss, replaced driveways and added patios using permeable pavement, utilized rain barrels, and added compost bins.

Studies have shown that increased urban biodiversity offers many benefits. Dearborn and Kark (2010) suggest that conserving urban biodiversity can create wildlife habitat, provide ecosystem services, and facilitate adaptation to environmental changes. Similarly, Kowarik et al. (2025) found that biological richness can help mitigate the impact of climate change and benefit human health and well-being. Green infrastructure techniques, such as rain gardens, bioswales, and permeable pavements, also provide numerous environmental and social benefits, including reducing flooding, improving water quality, and enhancing habitat connectivity (Kim, 2018; EPA, 2025). Therefore, we anticipated that the strategies applied to the FMFY home properties would increase biodiversity, attract pollinators, retain and treat runoff, and reduce water usage and maintenance needs.

In this project, we partnered with the FMFY team to evaluate the performance of these landscape transformations. Our role involves identifying appropriate metrics and methods to compare the pre- and post-site conditions and determining the ecosystem service benefits attributable to Florida-Friendly Landscaping. By systematically assessing these benefits, we aim to demonstrate the tangible positive impacts of sustainable landscaping practices, such as imp/roved water conservation, enhanced biodiversity, and improved quality of life.

This evaluation not only helps to validate and refine the approaches used in FMFY, but also helps landscape architects understand the benefits and challenges of these approaches on small-scale sites within the design, implementation, and management phases. As a result, this study contributes to the broader goal of creating a more sustainable and resilient environment and promoting evidence-based landscaping practices. In addition, this study provides a framework for assessing home landscapes, helping practitioners and homeowners to better integrate ecosystem services into residential design and management.

2 METHODS

Our original plan was to study season 4 of Flip My Florida Yard, which was at the recruitment stage, with the intention of measuring both baseline and post-condition data. However, due to difficulties in aligning the TV production timeline with the grant timeline, we decided to select properties from the previous three seasons for our study and ask homeowners to compare various aspects of their yards before and after the landscape transformations. After meeting with the TV team, we identified several aspects to measure: microclimate, stormwater runoff, wildlife, operation and maintenance, and overall satisfaction. For metrics that require on-site measurement, we selected three properties from each season. To evaluate operation, maintenance, and satisfaction, we surveyed all 30 homeowners from the first three seasons. Next, we will introduce each method in detail.

2.1 Microclimate

We visited selected properties in July 2024 during three trips. July is one of the hottest months of the year, making it ideal for studying microclimate conditions. For each property, we took five measurements. The first measurement location was on a nearby street that was open, with no shaded trees or overhead structures, and paved with concrete or asphalt, serving as a control group. Next, we measured at three typical on-site locations that represent the site's condition, such as lawn, planting beds with or without shaded trees, and patio. After completing these measurements, we returned to the very first point, the nearby street, for a final measurement, considering that microclimate conditions could change during the measuring period. Having two sets of data at both the beginning and the end helps us interpolate the results more accurately.

The instruments used for these measurements included the ATMOS 41W weather station and an infrared thermometer laser temperature gun. The weather station collects multiple weather variables and uploads data to the cloud every five minutes. The data we used included solar radiation, air temperature, wind speed, and relative humidity. In addition, we identified solar elevation using the Global Monitoring Laboratory's Solar Calculator (NOAA, n.d.) for each measuring location. This information was then input into the COMFA-DS model (Brown, n.d.) to estimate the energy budget, an indicator for thermal comfort for each measuring location.

Based on the principle that energy cannot be created or destroyed, the COMFA model is an energy budget model that explains the flow of heat that a person can gain or lose to the surrounding environment. The main inputs to the model include microclimate conditions such as solar radiation, humidity, wind speed, and sky, tree, and building view factors, as well as clothing, activity, gender, age, etc. The output of the model is the energy budget, which represents the amount of heat a person gains or loses to the environment (Brown, n.d.).

2.2 Wildlife

One of the goals of Flip My Florida Yard is to design landscapes that support biodiversity and attract wildlife. To determine whether the transformed yards are achieving this goal, we created a wildlife booklet featuring pictures and descriptions of common wildlife species found in Florida. We sent this booklet to nine selected homeowners—three from each season—and asked them to indicate whether they had seen these species before and after the yard transformation and how frequently they observed them.

The booklet included 18 bird species, 18 butterfly species, six mammal species, 24 reptile and amphibian species, and 14 nighttime wildlife species. This approach helps us assess the effectiveness of the flipped yards in enhancing local biodiversity and attracting a variety of wildlife.

2.3 Survey

We created a questionnaire comprising 25 questions that compared conditions before and after the yard transformation across four aspects: Knowledge about nature, usage of yards, maintenance, and satisfaction. We received an exemption from the Institutional Research Board from the University of Florida and shared the Qualtrics link with 30 homeowners via email in September 2024. Three months later, we sent a follow-up email to encourage more responses. each measuring location.

We acknowledge that the methods used in this study have several limitations. Firstly, the sample size is relatively small, as only 30 yards had been transformed at the time this study was conducted. Additionally, residents' recall of the pre-condition may have changed over time, potentially undermining the reliability of the results. Moreover, homeowners' unfamiliarity with certain wildlife can also influence their responses. Nevertheless, this study helps stimulate research and discussion on home landscape performance and provides an overall understanding of the FMFY program's process, informing future yard transformation.

3 RESULTS

For microclimate measurement, we visited seven out of nine selected properties due to limited time and availability of weather station: two from the first season, three from the second season, and two from the third season. Regarding the wildlife booklet, we received five completed submissions. Since it was anonymous, we could not identify which seasons they were from. As for the survey, we received 22 responses, although not all homeowners answered every question. We used all valid answers for each question in our analysis.

3.1 Microclimate

We compared weather data collected on-site with the weather station, including air temperature, wind speed, and relative humidity, to understand to what extent the weather station can capture the condition of the local community. The result is illustrated in Figure 1, indicating that the on-site records were not very different from the weather station data, especially for air temperature and wind speed.

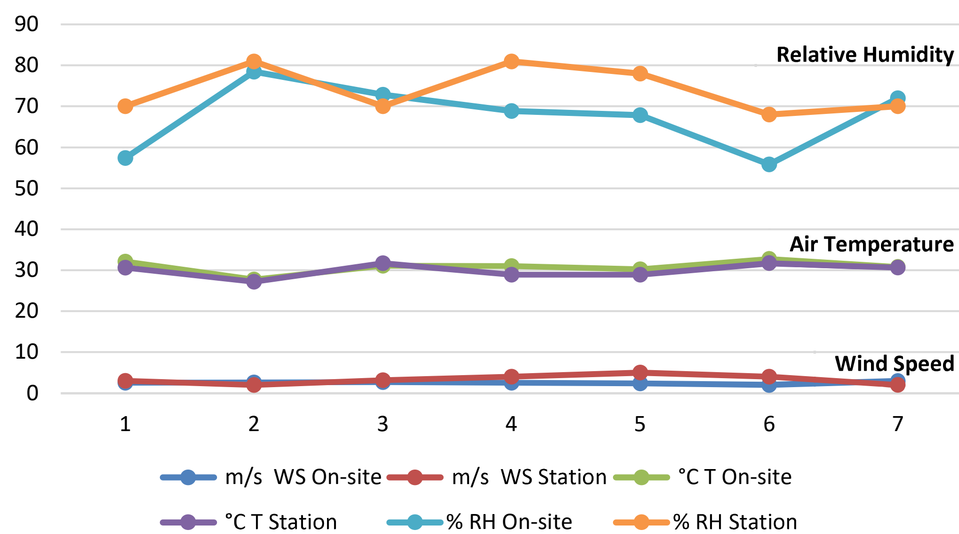

Figure 1. Data Comparison Between On-Site and Weather Station. Diagram by the authors.

For each property, we calculated the energy budget for each measuring location using COMFA-DS and averaged the three on-site locations to represent the yard's microclimate condition. For the control point (nearby street), we averaged the two measurements from the beginning and end of each measuring period. Then, we used the standards provided by the COMFA model to determine each property's thermal comfort and heat health. The result is summarized in Table 1.

Table 1. Thermal comfort and heat health comparison between control points and yards.

Season	Property	Energy Budget		Thermal Comfort		Heat Health	
		Control Point	Yard	Control Point	Yard	Control Point	Yard
1	1	235.5	214.3	Would prefer to be much cooler	Would prefer to be much cooler	Dangerous	Dangerous
	2	92.0	72.0	Would prefer to be cooler	Would prefer to be cooler	Caution	Caution
2	3	141.0	110.0	Would prefer to be cooler	Would prefer to be cooler	Extreme Caution	Caution
	4	226.0	231.0	Would prefer to be much cooler	Would prefer to be much cooler	Dangerous	Dangerous
	5	184.5	113.7	Would prefer to be much cooler	Would prefer to be cooler	Extreme Caution	Caution
3	6	172.0	114.7	Would prefer to be much cooler	Would prefer to be cooler	Extreme Caution	Caution
	7	254.5	237.0	Would prefer to be much cooler	Would prefer to be much cooler	Dangerous	Dangerous

Would prefer to be cooler
Would prefer to be much cooler

Caution
Extreme Caution
Dangerous

Overall, July in Florida tends to be hot in outdoor environments. As shown in Table 1, people at every measuring location would prefer to be cooler or much cooler. However, we observed that for all seven properties, the energy budgets were lower than the control point, suggesting that on-site landscapes have somewhat improved people's thermal comfort. Despite this, five of the seven properties (1, 2, 3, 4, 7) had thermal comfort levels in the same category as their control points. The exceptions were properties 5 and 6, where the energy budgets were in different categories than the control points, indicating that these yards were substantially more thermally comfortable than the control points.

We reviewed the episodes about these two properties to understand what design strategies were applied and how they potentially contributed to this thermal comfort improvement. For Property 5, the existing yard was full of weeds, unhealthy grass, invasive plants, and some existing trees. The team kept the existing trees and some shrubs, added more than 200 trees and plants, and installed a rain garden and rain barrel system. For Property 6, the existing site consisted of weeds, dirt, and some existing trees. The team added more than 700 trees and plants, organic mulch, and a buffer to a nearby waterbody. Since our measurements aimed to represent the overall condition of the site, they did not focus on newly planted areas. Therefore, the measurements reflect the post-condition without definitively attributing the more thermally comfortable environment solely to the landscape transformations. Moreover, it is important to note that the standards associated with the COMFA model were developed based on populations from northern regions, who might not have the same level of heat tolerance as people in southern regions.

Regarding heat health, the energy budget values indicated that all measuring locations, including the control points and yards, were too hot for people to enjoy comfortably, with three properties considered dangerous. Additionally, four of the seven properties fell in the same heat health categories as their relative control points, while properties 3, 5, and 6 were notably cooler than their control points. Similarly, we watched the episode about property 3 and found that the pre-condition of the site featured a lot of tall trees, which were kept during the transformation, and likely contributed to the cooler microclimate.

While collecting microclimate data, we also recorded the sky, tree, and building view factors, which quantify the visibility of sky, trees, and buildings from a given point (Liang et al., 2020). The three factors add up to 100%. On all seven properties, no buildings were visible from the measuring points, so we focused on sky and tree view factors. Table 2 summarizes the sky and view factors of each property. We can see properties 3 (33.3%), 6 (28.3%), and 5 (16.7%) had the highest tree view factors, explaining their substantially cooler conditions compared to their control points. This finding confirms a link between shade and thermal comfort in Florida residential properties, but since we did not merely collect data at locations that only had newly planted landscapes, this thermal comfort improvement cannot be attributed solely to the FMFY program.

Table 2. Sky view factor and tree view factor of the seven properties.

	1	2	3	4	5	6	7
Sky	100%	100%	66.7%	96.7%	83.3%	71.7%	83.3%
Tree	0	0	33.3%	3.3%	16.7%	28.3%	6.7%

It should be noted that we did not observe a seasonal pattern, as properties 3 and 5 were from season 2, while property 6 belonged to season 3. Our initial hypothesis was that season 1 landscapes had more time to mature and, therefore, were likely to provide better microclimate mitigation. However, each property's design was unique and influenced by various factors, which prevented us from observing any discernible trend.

3.2 Wildlife

We received five completed booklets from nine selected homeowners and used the following criteria for our analysis. If more than three homeowners reported seeing a species more often, we considered it a significant increase. If only one or two homeowners reported seeing a species more often, we considered it a moderate increase. If a species was seen both before and after the flip with no change in frequency, we categorized it as no change observed. Lastly, if a species was not seen either before or after the flip, we categorized it as not observed before and after. The result is summarized in Figure 2.

Overall, bird and butterfly species showed higher increases among all wildlife types studied. For birds, one species (5%), Northern Mockingbird, showed a significant increase, 11 species (61%) showed a moderate increase, three species (17%) showed no change, and three species (17%) were not observed either before or after the flip. For butterflies, three species (17%), Gulf Fritillary, Monarch, and Cloudless Sulphur, showed a significant increase, 10 species (56%) showed a moderate increase, two species (11%) showed no change, and three species (17%) were not observed either before or after the flip. For mammals, reptiles & amphibians, and nighttime wildlife, no species showed a significant increase. Two mammal species (33%), the Eastern Gray Squirrel and White-tailed Deer, showed a moderate increase; one species (17%), the Eastern Cottontail, remained the same before and after the flip, and three species (50%), the Red Fox, Fox Squirrel, and Pocket Gopher, were not observed before and after the flip. For reptiles and amphibians, three species (13%), Green Anole, North American Racer, and Common Box Turtle, showed a moderate increase, seven species remained the same, and 14 species (58%) were not observed before and after the flip. Lastly, for nighttime wildlife, three species (19%), Coyote, Florida Mouse, and Marsh Rabbit, showed a moderate increase, four species (25%) remained the same before and after the flip, and nine species (56%) were not observed.

Due to the small sample size, significant differences were noticed between each property. In the open-ended section of the survey, one homeowner particularly expressed love for their yard, noting that they saw many more bees, butterflies, and birds and felt like they lived in a nature preserve. Another homeowner commented that because they live in a new community, the overall biodiversity is low, underscoring the importance of each property putting effort into their yards to make a positive change. Additionally, one other homeowner mentioned that they hear some species more often than they see them, such as the Whip-poor-will and Burrowing Owl.

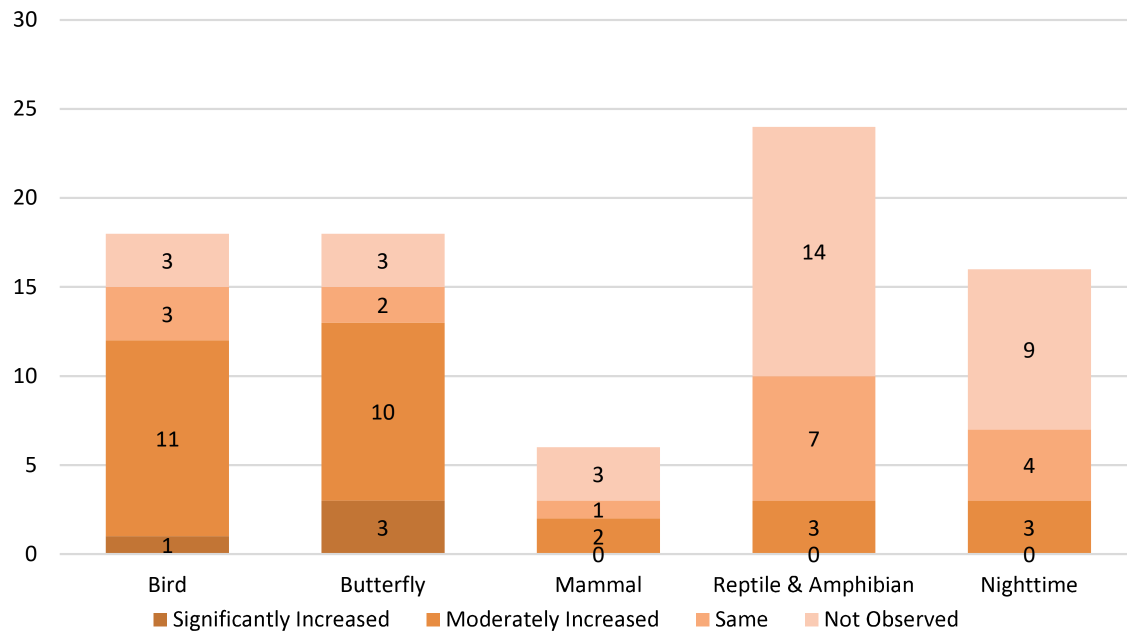

Figure 2. Observed Wildlife Change after the Flip by Wildlife Types. Diagram by the authors.

3.3 Knowledge about Nature

To assess the educational value of the yard transformation initiative, we asked participants to self-assess their knowledge in three key areas: ecosystems, wildlife, and water conservation, before and after the yard flip. The survey was sent to all 30 homeowners from the first three seasons, and we received 22 responses. Out of these, 16 homeowners answered the self-assessment questions. Participants used a scale where 0=poor and 5=excellent to rate their knowledge.

The results showed a notable increase in homeowners' knowledge across all three assessed areas. Specifically, the average score for ecosystem knowledge increased from 2.74 to 3.88, representing a 42% improvement. Similarly, the score for wildlife knowledge rose from 3.28 to 4.01, reflecting a 22% increase. Water conservation knowledge saw a rise from 3.14 to 4.22, indicating a 34% enhancement.

These findings suggest that the yard transformation not only positively impacted the physical environment but also provided substantial educational benefits to the participants. By learning more about ecosystems, wildlife, and water conservation, homeowners are better equipped to manage and sustain their yards in an environmentally conscious way, highlighting the FMFY program's effectiveness as a tool for environmental education.

3.4 Usage of Yards

To understand how people use their yards, we listed 10 common yard activities and the time period and length of stay before and after the flip, aiming to figure out whether and how landscape transformation changes the way people enjoy their yards. The result of yard activities is shown in Figure 3. Among the 10 popular activities, the frequency of eight increased. The largest increase was in reading (700%); before the flip, only one person read in the yard; after the flip, eight people read in the yard. Following reading are bird watching (133%), relaxing (117%), sports (100%), bonfires (100%), playing (75%), yard games (67%), and gardening (27%). The most popular activities before and after the flip remained the same, including gardening, bird watching, and relaxing. Notably, two activities, hosting and grilling, showed no change, indicating that these activities might be based more on need than on environmental quality.

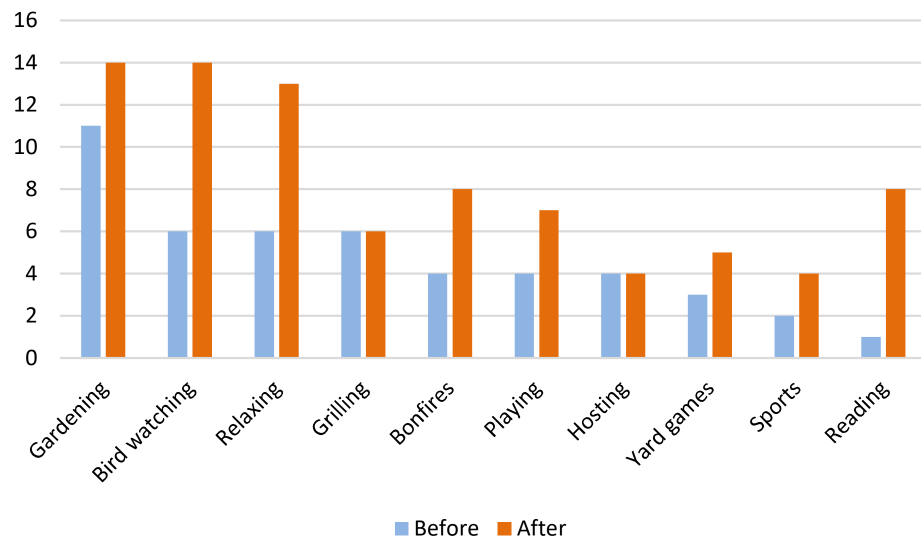

Figure 3. Comparison of Yard Activities Before and After the Flip. Diagram by the authors.

As for when homeowners used their yards, we used a scale where 1=least likely and 4=most likely. The results show that yard usage increased during all time periods from morning to night. The most popular time to use the yard was the evening, both before and after the flip. However, the morning saw the most significant increase in usage, with a 79% rise (Figure 4). The smallest increase was in the afternoon, at 41%, which was also substantial. As for the time spent in the yard, we observed an increase from an average of 1.7 hours to 4.14 hours per week.

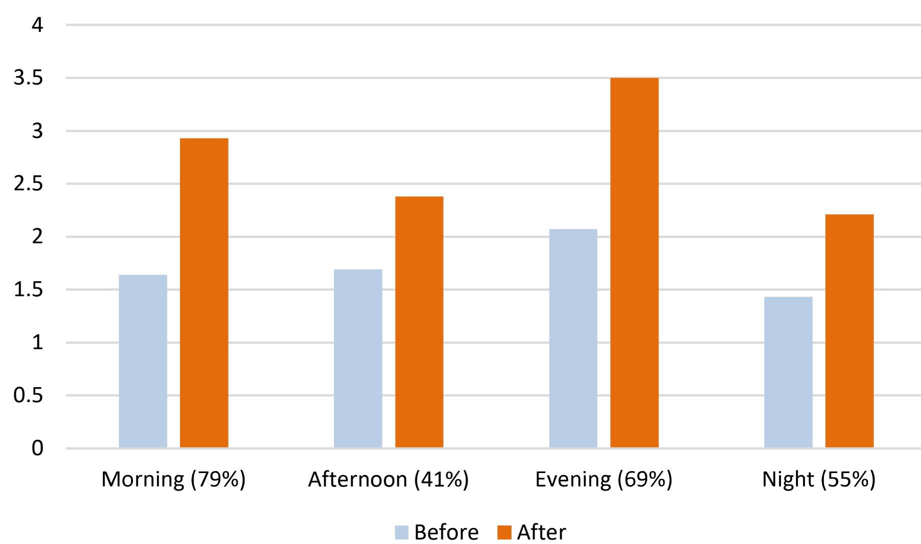

Figure 4. Comparison of Yard Usage Throughout a Day Before and After the Flip. Diagram by the authors.

3.5 Maintenance

A significant change occurred in maintenance activities. We listed seven common maintenance tasks and asked homeowners to indicate the frequency with which they conduct these activities. The results, shown in Figure 5, indicate that the frequency of all maintenance activities increased after the yard flip. The largest increase was in mulching (225%), followed by weeding (75%), edging (56%), Roundup application

(33%), and fertilizer use (33%). The smallest increase was in mowing (8%), which was the most common maintenance activity before the yard transformation.

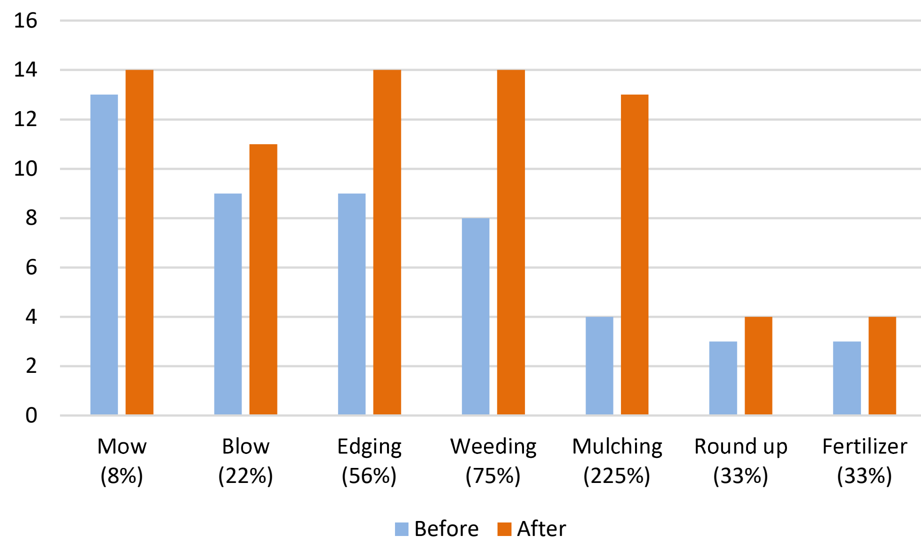

Figure 5. Comparison of Maintenance Activities Before and After the Flip. Diagram by the authors.

In terms of maintenance costs, most homeowners performed maintenance tasks themselves, with only two hiring contractors. The average monthly maintenance expense was $200 during summer and $95 during winter for these two homeowners. These findings suggest that the transformation might have increased the amount of maintenance required, at least during the period when plants establish. Further investigation may provide deeper insights into people's perceptions of the increased maintenance demands and costs.

3.6 Satisfaction

We asked three questions to gauge homeowners' satisfaction with the yard transformation, and the results are summarized in Table 3. For the first question, "How did your yard make you feel right after the flip?", ten respondents (59%) reported feeling happy, three (18%) felt relieved, one (6%) felt neutral, and three (18%) selected "other". These initial reactions suggest that the majority of homeowners experienced positive emotions following the yard transformation.

The second question, "How often does your flipped yard make you feel that way currently?" revealed sustained satisfaction among homeowners: 11 respondents (65%) said they felt this way every day, and 4 (23%) said they felt it 2-3 times per week. This indicates that the initial positive sentiments have largely persisted over time, suggesting lasting benefits from the yard transformation.

Table 3. Satisfaction and Quality of Life.

Right after the flip, how did your yard make you feel?		How often does your flipped yard make you feel that way currently?		Did the flip improve your quality of life?	
Happy	10 (58.8%)	Everyday	11 (65%)	Yes	12 (63%)
Relieved	3 (17.6%)	2-3 times per week	4 (23%)	Kind of	3 (16%)
Neutral	1 (6%)	A few times per year	1 (6%)	Not really	1 (5%)
Other	3 (17.6%)	Not at all	1 (6%)	Not at all	3 (16%)

Finally, for the third question, "Did the flip improve your quality of life?" 15 respondents (79%) answered "yes" or "kind of," reflecting an overall positive impact on their quality of life. However, four respondents (21%) felt negatively about the flip. One individual who selected "not at all" explained that the reason was increased maintenance required and the lack of shade in their yard. The remaining three respondents who selected “not at all” or “not really” did not provide specific reasons for their negative feelings.

These findings highlight that while most homeowners are happy with their transformed yards and feel that their quality of life has improved, there are some concerns regarding maintenance and yard conditions. Addressing these issues could further enhance homeowner satisfaction and optimize the benefits of yard transformations in future projects.

4 DISCUSSION

Home landscapes may be relatively small in size, but they can offer many types of ecosystem service benefits like those larger and more complex projects. A brief review of Landscape Architecture Foundation’s Landscape Performance Series framework reveals that home landscapes can contribute to most of the seven categories of benefits, including Land, Water, Habitat and Biodiversity, Materials and Waste, Social, and Economic. Among the transformed yards evaluated, benefits related to Land seem more challenging to determine. However, home landscapes have the potential to contribute to stormwater management, water conservation, water quality, flood protection, habitat creation, air quality, urban heat island effect, energy use, waste reduction, health and well-being, social value, educational value, food production, operational savings, and property value enhancement (Des Rosiers et al., 2002; Gerodetti & Foster, 2016; McPherson & Rowntree, 2016; Kim, 2018).

Given budget constraints, we selected a few metrics closely related to the strategies applied at the sites for measurement. The results indicated that in Florida’s hot summers, landscapes could, to some extent, mitigate the heat, particularly when shade trees are introduced. Solar radiation is the primary source of heat (Brown, 2010), so providing shade is the most effective method to enhance thermal comfort for residents. However, at the property scale, implementing such strategies often faces several challenges. Mature trees, while providing substantial benefits, come with higher costs and maintenance requirements. These maintenance tasks include leaf clean-up, trimming, pruning, root damage management, and addressing the risk of falling branches. This risk is especially concerning during Florida’s hurricane season, which can pose significant threats to the safety and stability of mature trees. Consequently, potentially hindering the widespread application of mature shade trees in home landscapes.

Creating wildlife habitats in home landscapes appears to be more achievable, particularly for attracting birds and butterflies. Despite the small sample size and varied experiences in our study, most respondents reported an increase in sightings of butterflies and birds. This result suggests that even small-scale landscape projects can contribute positively to local biodiversity. However, without a benchmark for comparison, we cannot conclusively determine if the observed increase in wildlife species is exemplary. Future studies could consider incorporating standardized indices with established benchmarks, such as the Shannon Index or Simpson's Diversity Index, for a more rigorous result.

Another unquantified benefit brought about by the diverse plants and wildlife is the pleasure and mental health benefits. Numerous studies have shown that pleasure and well-being are positively associated with the diversity of plants, birds, butterflies, and knowledge of species (Dallimer et al., 2012; Cox & Gaston, 2015; Aerts et al., 2018). Many homeowners reported improved satisfaction following the completion of landscaping projects, which can partly be attributed to the psychological benefits provided by the increased biodiversity.

The reported increased yard usage, time spent in the yard, and overall satisfaction suggest that people derive more enjoyment from their transformed yards. This increased interaction with nature can provide additional social and psychological benefits, as well as enhanced neighborly interactions and a quality of life.

One potential drawback of the flip could be the increased maintenance demands, especially during the plant establishment period. In the FMFY episodes, when analyzing existing site conditions, we frequently heard comments that the wrong plants were placed in the wrong locations, resulting in overgrown, unhealthy, and unappealing landscapes. Accurately selecting the right plant species is crucial (Haynes et al., 2001). The FMFY program, associated with Florida-Friendly Landscaping™, involves many experts in horticulture, engineering, wildlife, and more, ensuring careful plant selection. Consequently, the selected plants are likely to be low-maintenance in the long term. Additionally, strategies like using mulch can help control weeds and reduce water loss, thereby lowering watering demands.

However, during the establishment period, maintenance can still be burdensome for some homeowners. This burden primarily stems from a lack of knowledge about maintenance. Based on the episodes we watched, many properties were introduced with hundreds of new plants. Although the University of Florida's Institute of Food and Agricultural Sciences (IFAS) provides abundant resources on native species and wildlife care, people new to gardening may find plant care overwhelming, especially given Florida's subtropical and tropical climates where plants grow rapidly, leading to higher maintenance frequency.

Additionally, upkeeping this many plants can be costly when hiring contractors. According to Grupa (2023), landscape maintenance costs range from \$100 to \$200, with our survey indicating \$200 during the summer in Florida, which is at the higher end. Moreover, maintaining Florida yards can also be time-consuming and difficult due to the high temperatures outside most of the time in summer. Therefore, we suggest that more information sessions or workshops by universities or local organizations on native species maintenance and wildlife habitats might be necessary for local communities to encourage the broad application of environmentally friendly landscapes.

This study is subject to the limitation of not including stormwater management studies. With the purpose of understanding how landscape transformations provide ecosystem services for home properties, one aspect that should be addressed is stormwater management, as reducing flooding and improving water quality in nearby waterbodies was a major goal of the FMFY program. In our original plan, we intended to combine modeling and sensor monitoring to evaluate the impact of the flip on stormwater runoff and nutrient levels. However, we were unable to do so due to various reasons. Nonetheless, we acknowledge the importance of this aspect and look forward to studying it in the future.

5 CONCLUSION

In this study, we collaborated with the FMFY TV program to assess ecosystem services at the residential property level. The results indicate several positive outcomes. First, wildlife presence has increased for most respondents, suggesting that residential properties can effectively create a network of wildlife habitats. Additionally, people are utilizing their transformed yards more frequently, and their knowledge about nature has significantly improved. Microclimate conditions have also shown some improvement, particularly with the introduction of shade trees. However, this has led to increased maintenance needs, which have elicited mixed feelings from residents. Nevertheless, the majority of participants report feeling happy about the yard transformations and believe that these changes have enhanced their quality of life.

Another major goal of the FMFY program is stormwater management. Various methods have been incorporated into different yards to address this issue. Unfortunately, we were unable to install sensors as planned to evaluate the performance of these solutions. Future research should prioritize this aspect to provide more comprehensive insights into the efficacy of stormwater management practices in residential landscapes.

Overall, the findings suggest that residential landscaping projects can significantly contribute to creating wildlife habitats, improving microclimate conditions, and enhancing homeowners' quality of life. Moving forward, employing more robust methods, including sensor installations and continuous monitoring, will be essential to fully understand and document the range and magnitude of ecosystem services provided by residential landscapes.

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