GROWING CONFORMITY

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ABSTRACT
This paper presents a critical study of the plant species listed by the American Society of Landscape Architects (ASLA) award-winning student projects in the general design category from 2005 until 2020. Primary data analysis generated a cumulative plant palette of 965 species by recording each written or annotated incidence of a species across all 103 award-winning projects. While recognizing that individual projects proposed plant material to meet specific aims, this research studied the summative plant list to reveal trends and overlaps in plant species selection. In addition to evaluating the most common plants listed across multiple projects, this research reaches conclusions by directing attention to the types of plants that were not selected. In the first instance, the results show that students favor plants that conform to a savannah-type landscape, defined as scattered trees among grassland and near water. Secondly, the overwhelming majority of students who have achieved design excellence, according to the ASLA, show little concern for promoting endangered species. Ultimately, the evidence shows that award-winning student projects express a limited aesthetic and ecological diversity.

Keywords
Plant Selection, Savannah, Pleasure, Species diversity, Extinction.

1 BACKGROUND

In 1984, the Landscape Research Group organized a symposium entitled *Landscape Meanings and Values* to take stock of the range of research explored in the group's first fifteen years and to direct future work (Lowenthal, 1986). A publication of the talks confirms landscape aesthetics as a distinct area of research and, furthermore, one of contention, especially between those academics citing either evolution or lived experience as the primary factor in establishing landscape preferences.

On one side, we find Jay Appleton and Gordon H. Orians, a geographer and an ecologist, respectively, who are early proponents of an evolutionary explanation for landscape aesthetic judgment, meaning that we inherit our preferences and dislikes for certain landscape qualities from our ancestors. Orians' "savannah hypothesis" is an extension of Appleton's earlier "habitat theory" and "prospect-refuge theory." The habitat theory postulates that aesthetic pleasure in the landscape derives from satisfying biological needs, while the prospect-refuge theory argues that a landscape that allows one to see without being seen most strongly meets core biological requirements (Appleton, 1975, p. 3). Orians (1986) builds upon these theories, noting that the savannahs of East Africa supported the early evolution of the human species precisely because this landscape type afforded biological advantage, offering, for example, consistent prospects and refuge. Together, these three concepts claim that humans lived in landscapes that aided our survival and reproductive success throughout our long evolutionary history. Therefore, we have developed an aesthetic preference for the visual features of these landscapes. In other words, because the savannah-type environment, characterized as scattered trees among grassland and near water, has been advantageous from an evolutionary standpoint, these theories argue that humans have positive emotional responses to general savannah features and will opt to construct and live in environments with such characteristics (Orians, p.11). In short, the savannah hypothesis argues that all humans find the aesthetic of a savannah-type landscape pleasing from birth.

Given Orians' claim that humans preferentially construct pleasing savannah-type environments, we may then wonder how consistently landscape architects have designed pleasing environments with general savannah features. Appleton's contribution to this line of inquiry has been to argue that there is indeed limited aesthetic diversity in the practice of landscape architecture:

> Twentieth-century urban parks, children's playgrounds, motorways, public cemeteries, and industrial estates may strike us chiefly by the novelty of their appearance, but in so far as they are landscaped to make them conform to current aesthetic taste, I believe they can be fitted into a framework of prospect-refuge symbolism as logically and convincingly as the parks and pleasure grounds of earlier days. (1975, p. 226)

By arguing that prospect and refuge are base aesthetic principles underlying a long tradition of practice in landscape architecture, Appleton traces a shared aesthetic foundation between works from André le Nôtre to Lancelot Brown, Uvedale Price, and onward to contemporary practitioners (1975, p. 244). Of course, it should not be surprising that Appleton could cite exemplars of the most pleasing landscapes within a uniform aesthetic framework if he developed the framework based on truly universal and innately held preferences. If we are all inherently predisposed to prefer a particular landscape aesthetic, then we can expect a set of canonical works to share the same preferred characteristics.

For the same reason, we can expect a range of landscape practices across geography and time to express Orians' savannah hypothesis. Observe the circularity of Orians' (1986) contentions, for example, first, that "parks and gardens are generally designed purely for the pleasure they give" (p. 10), and second, that "environments manipulated strictly or primarily for the pleasure they evoke are generally savanna types" (p. 11). From these two passages, we conclude that landscape architects design parks to conform to the savannah type. Given the totalizing quality of the previous statement, this paper evaluates the savannah type's pervasiveness in a segment of landscape practice. If Orians' hypothesis is true, designing a landscape that does not emulate the savannah type requires a mode of practice operating at odds with innately held human preferences.

Not surprisingly, describing an innate and universal biological foundation of landscape aesthetic preferences elicits passionate opposition, especially from those who believe cultural influences play a more substantial role in aesthetic responses. In this area, Denis Cosgrove, also a geographer, argued at the same symposium that learned cultural patterns are more significant than genetics in determining an aesthetic reaction to the landscape. Indeed, Cosgrove's support for cultural influences over evolutionary explanations was made clear by his response to Orians' paper, claiming that the work "abounds in unfounded and unscientific assumptions" (Orians, p. 23). Nevertheless, despite arguments by Cosgrove (1998) and others (Nassauer, 1988, see also Adevi & Grahn, 2012) that culture and experience supersede genetics in determining landscape aesthetic preferences, the savannah hypothesis is still broadly accepted (Joye, 2007).

Instead of contributing to the spirited debate between those who believe the primary source of landscape aesthetic preferences is innate versus learned, this paper approaches the subject from another research direction: that of outcomes. That is to say, perfectly resolving the mechanisms of aesthetic judgment offers no critical insights into the values and consequences of applying such findings to practice. Nor does it provide tools to analyze how consistently landscape architects have realized a uniform aesthetic agenda. In other words, while geographers Orians and Cosgrove have disputed why we find a particular landscape pleasurable, it remains relevant for landscape architects to understand the consistency with which our preferences shape design outcomes towards uniformity. If, for example, very few landscape architects designed landscapes with savannah features, then Orians' hypothesis would have limited relevance in this field. However, this paper will demonstrate the opposite, that landscape architects preferentially design savannah-type landscapes to the detriment of alternative landscape aesthetic types.

2 RESEARCH OBJECTIVES

This paper has two research objectives. The first is to develop a measure for how consistently a subgroup of landscape architects design aesthetically pleasing savannah-type landscapes. The result of this measure confirms a preference, which alone is an interesting conclusion, yet it lacks critical analysis; thus, the second objective is to add significance to the findings of the first. Accordingly, this paper demonstrates that aesthetic uniformity in the landscape has adverse outcomes as it corresponds to limited diversity among plant species and, ultimately, human experience.

Measuring aesthetic uniformity in design outcomes, indexed for this paper by a prevalence of savannah-type features, is a complex multivariable challenge. Theoretically, we can ask how aesthetically similar the works of a single design office are, how similar they are to other offices, and finally, how much conformity there is in practice overall. The Scottish garden designer John Claudius Loudon provided a qualitative answer to this last question in 1840, writing that the practice of landscape architecture had limited aesthetic diversity and that educating young designers was the key to promoting variability (1840, p. x). Loudon conceptually distributed projects among a hierarchical organizational scheme, categorized at the highest level by styles, then schools, and finally systems. For Loudon, "Art and Nature would thus be more harmoniously combined" when projects displayed a "distinctive and interesting character" rather than sameness and artificiality (p. xi). Thus, Loudon established a foundation for recognizing an interplay between aesthetic and ecological design outcomes and valuing their diversity.

Following Loudon, this paper quantitatively assesses the general planting aesthetic employed by future leaders of the profession who have achieved excellence in design to understand the degree to which landscape architects turn to the aesthetic of the savannah-type. This assessment was accomplished by critically analyzing the plant lists of award-winning student projects selected by a jury representing the American Society of Landscape Architects (ASLA). As the ASLA (2021) articulated, "Student Awards give us a glimpse into the future of the profession" (para. 1). It follows that the collection of species that awardees have selected gives a glimpse into the aesthetic preferences of future practitioners. While individual projects used plant material to meet various aims, studying the plant list in its entirety reveals the overall impact these designers collectively support. Additionally, since student design projects are not constrained by the same limitations as practice, such as budgets, access to nursery stock, and client expectations, the overall plant list represents an idealized planting palette.

Furthermore, recording incidences of grassland and water-tolerant species alongside shade trees is a valid method to measure general occurrences of savannah-type landscapes. Orians (1986) himself resolved the critical aspect of this landscape aesthetic to the presence and form of "scattered trees and copses in a matrix of grasslands" (p.11), not to qualities of, as examples, specific species, site topography, environmental conditions, or geographic location.

Ultimately, understanding how frequently designers conform to the savannah hypothesis and prioritize pleasing landscapes provides a measure of aesthetic diversity or lack thereof. Moreover, aesthetic consistency is inevitably tied to ecological uniformity, as the formal structure and species diversity constituting a savannah-type landscape are limited. For example, canonical conifers are aesthetically incompatible with the savannah type and are, therefore, absent. In other words, if applied uncritically to practice, the savannah hypothesis describes a hegemonic design approach that prioritizes a uniform aesthetic linked to a recognizable and limited ecological structure.

In the absence of research focused on understanding the range of possible and realized aesthetic experiences in the built environment, there is a tacit assumption that designers will satisfy landscape preferences by proposing and building experiences that prioritize pleasure above all else. Serap Yılmaz, Halil Özgüner, and Sema Mumcu (2018), for example, have recently made an “attempt to answer how plants silhouettes can be organised in the landscape… to provide aesthetic pleasure for viewers” (p. 966). The conclusion of their study “provides clues for designers to produce ideal planting design silhouettes in terms of formal aesthetics” (p. 981). Such landscape aesthetics research seems biased toward studying dominant public preferences with the implicit goal of redeploying these findings to maximize pleasure. In this case, an “ideal” is more accurately a description of the majority’s preference and reflects a dominant group’s aesthetic judgment.

It is important to remember that when studies like Russ Parsons and Terry C. Daniel (2002) conclude that “there has been broad agreement among the studied populations favoring savanna-like environments” (p.47), this conversely means that a minority of participants make alternative aesthetic judgments. As David Carrier and Joachim Pissarro, a philosopher of art and an art historian, remind us, “Pluralistic values have often been acknowledged in sociology and the social sciences, but the full significance of these findings has largely been ignored in visual art and aesthetics” (2019, p. 185). Acknowledging a pluralism of aesthetic judgments in landscape design and celebrating a full suite of emotive responses, including but not limited to pleasure, experienced by individuals in these environments requires actively supporting projects rejecting pleasure as a singular ideal.

Accepting the savannah hypothesis does not mean designers should uncritically apply its findings to practice, irrespective of the potential for pleasing outcomes. Indeed, this paper argues the opposite, that designers should actively reject designing savannah-type landscapes and critique pleasure as the best expression of good design.

3 METHODS

The ASLA is a global professional association for landscape architects based in the United States with over 15,000 members. Since its founding in 1899, the ASLA has bestowed awards to members with regularity. The student awards program is open to all members of the ASLA enrolled in an accredited full-time landscape architecture program, both within the United States and globally. Submitted projects are eligible for consideration if they pay an entry fee and meet the required specifications. A ‘blind’ jury then determines the winners, which range in number depending on the quality and quantity of the submissions received. For example, 2014 had the fewest winners, with only two projects recognized with an award, while 2011 had the greatest number of winning projects, at 11. Judging and granting of awards takes place once a year. From 2005 until 2020, the ASLA recognized 103 student projects in the General Design category for achieving overall excellence (ASLA, n.d.).

Over the past years, the submission requirements have shifted, yet the ASLA has continuously emphasized visual evaluation, at no time requiring fewer than five images and no more than 16. Furthermore, since 2007, the ALSA has required that one of the submitted images be a site plan. While the ASLA does not prescribe the plan’s scale, there is a suggestion that the site plan helps provide context for the design proposal (ASLA, 2007).

While the image requirements have remained relatively consistent across the years, a text component has expanded, first asking for a project narrative as part of a descriptive data summary in two pages or less (ASLA, 2007) and, more recently, allowing students to submit a 1,300-word project description. However, despite the text component’s expansion, the text’s recommended substance has remained consistent. The 2020 guideline, for example, calls for a project narrative that will address “the criteria for the General Design category” by describing “in 1300 words or less the project location, scope and size, site and context investigation, design program, design intent, materials and installation methods, environmental impact and concerns, collaboration with the client and other designers, and other significant issues” (ASLA, 2020a). While material choices and environmental concerns may welcome a discussion of planting, there are no current criteria to evaluate a planting plan independently, and this has been the situation since 2015. 2014 was the last year when a “simple” list of plants was a submission requirement for all entries (ASLA, 2014).

Furthermore, the ASLA has not archived plant lists from 2014 and earlier on their website. As such, this research limits the cataloging of species to those included in the submission’s image and project text components. The consistency of these requirements and their public accessibility on the ASLA's website suggest that their significance rises above other submission components, including, as an example, the plant list.

Primary data analysis generated a cumulative plant palette of 965 species by recording each written or annotated incidence of a species across all 103 award-winning projects (Figure 1). Of the 965 total species named, there are 674 unique species, meaning 291 incidences of overlap between projects at the species classification level. This complete plant list was assembled by reviewing each image and all texts archived by the ASLA on their Student Awards webspace. These archived images and text are the same materials submitted for juried evaluation. In turn, each written and annotated incidence of a species contained within a winning submission, excluding those from the animal kingdom, was recorded. An image of a plant alone did not merit recording to avoid identification errors and the introduction of generic vegetation. However, it is the case that students commonly followed conventional graphic standards to annotate plant names over rendered images or in supporting drawings when the species specified were selected purposely.

There is inconsistency in labelling species between projects, with some students choosing to follow standard taxonomic classification and others providing only common names. However, to bring consistency to the data, species listed only at a higher taxonomic classification – genus, family, or order, for example – were left at the provided resolution. In addition, common names needed conversion to the most appropriate taxonomic classification. For instance, "Water lily" is categorized as "*Nymphaeaceae Gen. spp.*" "Willow," on the other hand, is cited as "*Salix spp.*" Despite these efforts to avoid introducing subjective bias into the data, two sources of error remain. First, four of the 103 projects include imagery of plant species at an illegible resolution; therefore, these plants remain unrecorded. Second, in one instance, a project refers to a species in the project text not because it is a proposed addition but because it is an existing species to be removed. By extension, the summative plant list does not index this species for this project. However, it remains possible that some of the 965 species may not be proposed to be planted but may be part of an existing condition. Verifying the plant list with the winning team for each project would eliminate this source of potential error. However, any minor changes in the overall dataset are unlikely to influence the results of this research.

Evaluation of the plant list involved measuring the incidence of overlap in species between projects. This required tabulating the summative representation of unique entries at different taxonomic levels and was used to identify overall trends between projects. In addition to an internal analysis of the plant list, an external evaluation was conducted by comparing the plant list to two other significant listings. First, the comprehensive plant list was measured against the International Union for Conservation of Nature (IUCN) Red List, as the IUCN is a trusted source of information on the conservation status of plants worldwide, and the Red List is the most comprehensive global inventory of threatened species (ICUN, n.d.). The Red List includes 62,666 plantae species, 625 fungi, and 15 chromista. We can surmise from the comprehensiveness of the Red List that most species not listed are indeed not threatened. Complimenting the globally focused IUCN Red List, the ASLA student award-winning plant list was also compared to the United States Fish and Wildlife Service (FWS) Environmental Conservation Online System (ECOS), a listing of 918 plant species from 402 genera threatened or endangered in the United States (ECOS, n.d.). The FWS, furthermore, is the American federal agency charged with protecting endangered plants and their habitats.

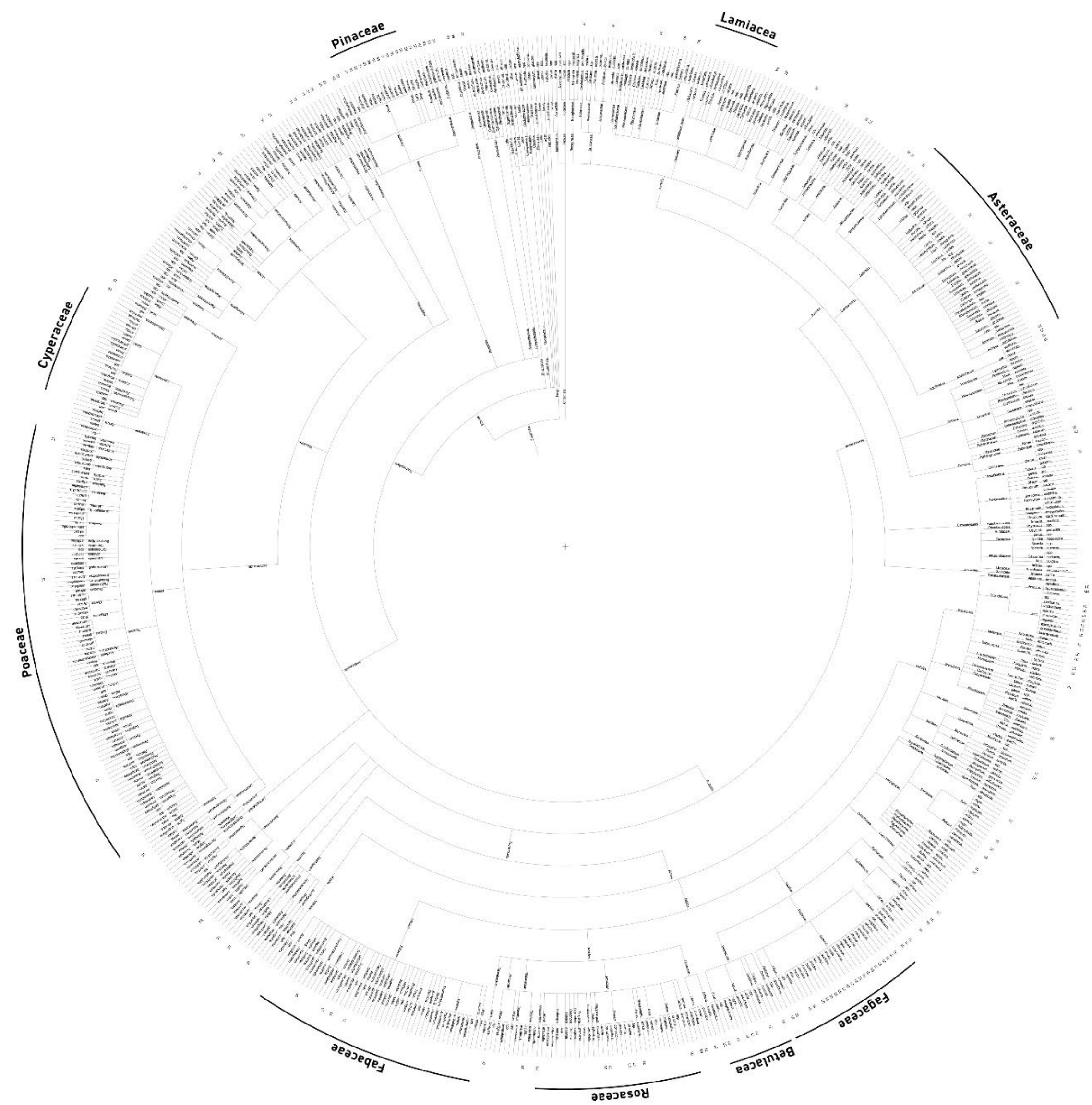

Figure 1. The phylogenetic distribution of all 647 Chromista, Fungi, and Plantae species cited by ASLA Student Award projects in the General Design category, 2005 and 2020, with dominant family groups highlighted (2023). Drawing by Fionn Byrne. Supporting data is available from figshare at 10.6084/m9.figshare.16892104. These data were derived from resources available in the public domain.

4 RESULTS

It is clear from the comprehensive plant list that students chose species purposefully yet within a narrow range. For instance, it is noteworthy that 30 of the 103 projects list no species. While the inclusion of plant material is not an eligibility requirement for this awards program, an evaluation of the winning projects shows that in nearly a third of all award-winning projects, attention to plant selection has not been necessary to achieve design excellence in the study of landscape architecture as evaluated by a respected jury representing the ASLA. Often, yet not exclusively, these were large-scale projects in urban settings. Additionally, in some cases where no plants were listed, vegetation was still visible in the project's imagery, yet plants appeared as an indiscriminate background element without emphasizing any specific features attributable to a recognizable species. The lack of annotation or specificity suggests that these species were not listed because the plants were not considered fundamental to the design's success. As a corollary, we can infer that student projects listing species did so because those species consequentially impacted the design outcome.

Additionally, the reoccurrence of a limited planting palette further indicates that when students chose species, they selected them with intent. Of the 73 projects that list species, 24, or 33%, include four or fewer, whereas more than half of all works, 44 of 73, or 60%, have 10 or fewer species. That said, several outlying projects include extremely high species counts. For example, Eric Arneson's *Bendway Park* lists 71 (ASLA, 2016). This project is second only to Ben Magee, Jacob Costello, and Max Frank's *The Foodway*, which lists 100 unique species (ASLA, 2020b).

The summative plant list shows increased commonality in taxonomic rank at higher classification levels, while students are more selective at lower classification levels. In other words, overlaps become more numerous at higher classification levels, and similarities between projects appear more clearly. For example, of the 965 total species named, only 30%, or 291, appear in multiple proposals. At a classification level higher, approximately 40% of genera, 174 of the 428, were in more than one scheme. Indeed, the most common genus, *Quercus*, appeared 41 times across the 73 projects with plants. Finally, at a higher classification level, 64% of families listed, 94 of the 148, appeared in multiple projects. The most common family, *Poaceae*, was present 143 times through the 73 projects (Table 1). In the case of *Poaceae*, the high level of agreement is attributable to two factors. First, approximately half of all projects listing species, 36 of 73 (49%), included the *Poaceae* family. Secondly, several projects that selected species in the *Poaceae* family did so numerous times. For example, Cyrus Sohrab Khan's *Wetness Behind the SC/EEN: Re-wetting the Oran* includes 15 different *Poaceae* species (ASLA, 2018). This situation is generally consistent across all levels of classification. The data suggests that students work with a limited palette at higher taxonomic levels but are highly selective within this narrow range. Since students have low overall agreement on species, we can surmise that it is significant when selections overlap between projects.

Despite being open to students attending any internationally accredited full-time landscape architecture program, the ASLA granted the majority of awards to students attending American schools. It is unclear if this bias reflects a regional expression of design excellence or if limited international awardees are a product of a limited international applicant pool. Irrespective of the cause, most projects were completed in the United States and proposed to transform American sites (Table 2, Table 3). On the one hand, this geographic consistency could be used to perform further data analysis, studying the habitat range of selected species and comparing levels of native to non-native and invasive species; however, this level of analysis remains outside the scope of this paper. On the other hand, as professor of landscape architecture Richard Weller, along with Zuzanna Drozdz and Sara Padgett Kjaersgaard, have recently advocated, there is a pressing need for designers to direct their attention to expanding urban territories located in the world's most significant biodiversity hotspots (2019). In these locations, designers will have the most substantial impact in mitigating further species loss. For the most part, however, these sites are outside the United States and are absent from the sites of intervention proposed by award-winning projects.

Table 1. Top five most common genera, families, and orders listed among ASLA Student Award winners in the General Design category, 2005 – 2020.

Classification	Incidence (n = 965)	Rank	Percent of total (100.0%)
Genus			100.0
Quercus	41	1	4.2
Acer	19	2	2.0
Carex	18	3 (tied)	1.9
Pinus	18	3	1.9
Betula	12	5 (tied)	1.2
Salix	12	5	1.2
Family			100.0
Poaceae	143	1	14.8
Asteraceae	62	2	6.4
Fabaceae	60	3	6.2
Fagaceae	53	4	5.5
Rosaceae	41	5	4.2
Order			100.0
Poales	194	1	20.1
Fagales	89	2	9.2
Asterales	68	3	7.0
Rosales	62	4	6.4
Fabales	60	5	6.2

Table 2. Geographic origin of ASLA Student Award projects in the General Design category, 2005-2020.

Continental origin of award-winning student work by location of the affiliated academic institution	Total number of projects per continent	National origin and total number of award-winning student work by location of the affiliated academic institution
North America	93	United States (88), Canada (5)
Asia	8	China (5), South Korea (2), Taiwan (1)
Europe	2	Scotland (1), Spain (1)

Table 3. Geographic destination of proposed interventions of ASLA Student Award projects in the General Design category, 2005-2020.

Continental destination of the design proposals	Total number of projects per continent	Total number of design proposals by national destination
North America	70	United States (66), Canada (3), Panama (1)
Asia	14	India (3), South Korea (3), China (1), Iran (1), Israel (1), Japan (1), Malaysia (1), Russia (1), Taiwan (1), Thailand (1)
Europe	11	Italy (3), Spain (3), Germany (2), Czech Republic (1), France (1), Poland (1)
South America	5	Mexico (3), Trinidad and Tobago (1), Venezuela (1)
Africa	2	Egypt (1), Zimbabwe (1)
Australia	1	Australia (1)

5 DISCUSSION

Several key findings emerge when evaluating the most common plants listed across multiple student projects and directing attention to the types of plants absent from the work. First, this research finds that despite changes in cultural attitudes and growing environmental awareness, the collective plant list shows that students favor plants that conform to a savannah-type landscape.

Evidence comes from comparing the most common plants listed across multiple projects to a typical definition of the savannah type. Parsons and Daniel (2002) have recently characterized the savannah type to resemble "fairly open areas with low ground cover, a water source directly (pond, stream) or indirectly (e.g., flowering plants, green vegetation) indicated," and "occasional clumps of trees and shrubs" (pp. 46-47). Similarities with the ASLA plant list emerge clearly. Between projects, the top 10 most common species include *Acer rubrum* and *Typha latifolia* (tied for first), *Panicum virgatum*, *Quercus alba*, and *Schizachyrium scoparium* (tied for third), *Andropogon gerardi*, *Robinia pseudoacacia*, and *Sporobolus alterniflorus* (tied for sixth), and *Bouteloua gracilis*, *Echinacea purpurea*, *Ginkgo biloba*, *Phragmites australis*, *Rhizophora spp.*, and *Salix spp.* (all tied for ninth) (Table 4). Without exception, these herbaceous plants thrive in either prairie or wetland conditions (Figure 2). Regarding the trees, the *Robinia* matches most closely to the general savannah-type, while *Ginkgo*, *Rhizophora*, and *Salix* suggest the presence of water. Only the *Acer rubrum* and *Quercus alba* require any explanation for their selection beyond the savannah hypothesis, although both are clear candidates for trees that afford prospect and refuge. A preference for grasses, flowering grassland perennials, and specimen trees is also apparent at higher taxonomic levels. Perhaps this finding should come as no surprise, given the belief that the landscape aesthetic of the savannah type is innately preferred.

Second, a consequence of this limited phylogenetic diversity is a tendency to select common species, with most students in this study showing little concern for promoting endangered species. Only 15 of the 674 selected species, or 2%, meet the International Union for Conservation of Nature (IUCN) Red List qualification of threatened and even "near threatened." Furthermore, only 2 of these 15 threatened species rank in the top risk group of "critically endangered;" *Fraxinus Americana* and *Fraxinus pennsylvanica*. The remaining 660 species are categorized as "least concern" or are "not rated." Compared to the American-specific list of threatened species maintained by the United States Fish and Wildlife Service (FWS) Environmental Conservation Online System (ECOS), the conclusion is no different. ECOS lists 402 genera, and 76 of those overlap with the student-selected plant list. Unfortunately, despite having genera in common, ASLA award-winning student projects selected only 4 FWS endangered species: *Alopecurus aequalis*, *Lasthenia burkei*, *Limnanthes vinculans*, and *Navarretia leucocephala*. Students resolved the other 72 genera to non-threatened species. These results show that ASLA award-winning students are not motivated to propose planting threatened species.

It is important to remember that each student project which selected species had motivations unknown to this study. Additionally, this paper does not question these designers' values and beliefs. However, the results show that instead of promoting species at risk, this cohort of designers is more inclined to apply the theories of Appleton and Orians by selecting species that conform to the savannah hypothesis, thereby satisfying a human demand for an aesthetically pleasing landscape. All the while, we are witnessing an ongoing and severe loss of species biodiversity and habitat variety. This paper's review of the summative plant list proposed by the ASLA award-winning student projects indicates that protecting threatened species is not a criterion for achieving landscape design excellence. This finding contradicts public statements of the ASLA, such as CEO Torey Carter-Conneen's call for "all landscape architecture projects to restore ecosystems and protect biodiversity on a global scale" (ASLA, 2022, para. 3),

Notably, among the award-winning projects, several address species at risk and divergent aesthetic criteria. Four projects stand out. First, John Whitaker's project, *Dark Matter*, advised by faculty member Jacqueline Margetts at Washington University in Saint Louis, is notable as one of only four award-winning projects that include species from the fungi kingdom and, at the same time, is also only one of four projects to cite an IUCN critically endangered plant. Of these four, Whitaker's work is the only one to cite both IUCN critically endangered plant species. In his project, he references *Fraxinus americana* and *pennsylvanica*. Tellingly, the project acknowledges working in a context of mass extinction and explores design as "a means of promoting biological and cultural diversity in urban cemeteries" (ASLA, 2020c, para. 1).

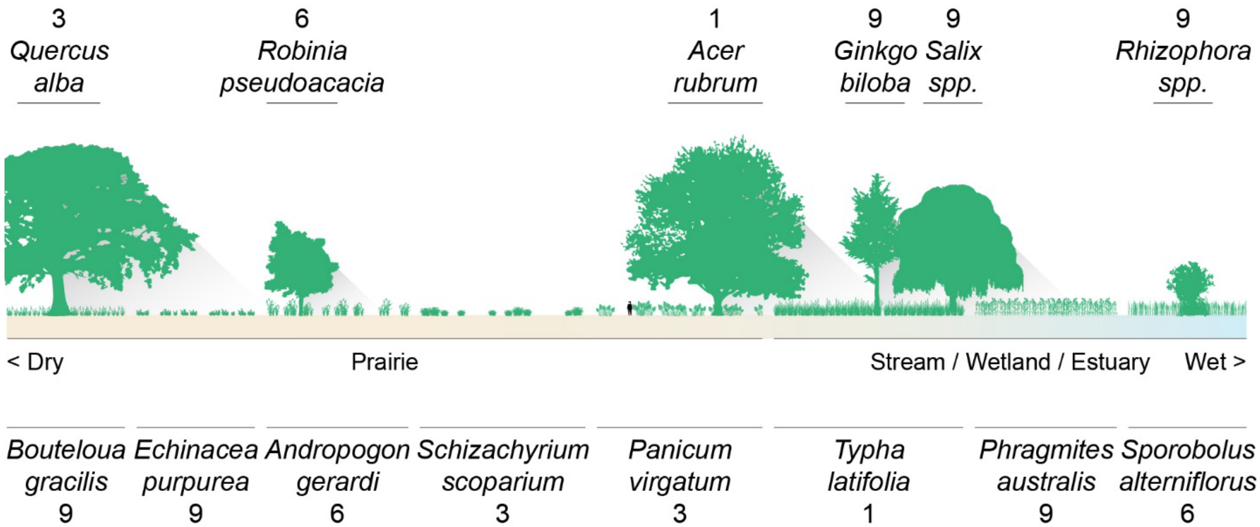

Figure 2. Graphic representation of the top ten most common species listed among ASLA Student Award winners in the General Design category, 2005 – 2020 (2023). Drawing by Fionn Byrne.

Table 4. Top ten most common species listed among ASLA Student Award winners in the General Design category, 2005 – 2020.

Species name	Incidence (n = 965)	Rank	Plant Type	General habitat character
Acer rubrum	8	1 (tied)	Tree	Disturbed
Typha latifolia	8	1	Herbaceous	Wetland
Panicum virgatum	7	3 (tied)	Bunchgrass	Tallgrass prairie
Quercus alba	7	3	Tree	Oak-heath forest
Schizachyrium scoparium	7	3	Bunchgrass	Tallgrass prairie
Andropogon gerardi	6	6 (tied)	Bunchgrass	Tallgrass prairie
Robinia pseudoacacia	6	6	Tree	Pioneer species
Sporobolus alterniflorus	6	6	Grass	Intertidal wetland
Bouteloua gracilis	5	9 (tied)	Grass	Shortgrass prairie
Echinacea purpurea	5	9	Herbaceous	Tallgrass prairie
Ginkgo biloba	5	9	Tree	Disturbed, stream
Phragmites australis	5	9	Grass	Wetland
Rhizophora spp.	5	9	Tree, mangrove	Intertidal zone
Salix spp.	5	9	Tree	Stream, swamp

While one project does not constitute a trend, anecdotally, we are witnessing increased interest in fungi. Several touchstone publications include the anthropologist Anna Tsing's *The mushroom at the end of the world: On the possibility of life in capitalist ruins*, published in 2015; the journalist Michael Pollan's 2018 book, *How to change your mind: What the new science of psychedelics teaches us about consciousness, dying, addiction, depression, and transcendence*; and ecologist Suzanne Simard's *Finding the mother tree: Discovering the wisdom of the forest* from 2021. Just as landscape architects think about the contribution of individual plant species to an overall design scheme, understanding the unique impact of fungi at the species level is a valuable contribution. Additionally, fungi advance alternative aesthetic regimes, given their association with decaying and non-pleasurable environments, such as cemeteries.

Second, Sarah Moos from the University of California, Berkeley, advised by Judith Stilgenbauer, won an award for their project, *50,000 Trees* (ASLA, 2013). While the project's title refers to the total number of trees proposed, this planting plan includes eight individual plant species. Three of these eight are endangered, including *Metasequoia glyptostroboides* and *Sequoia sempervirens*, the dawn and coast redwoods, and *Pinus radiata,* commonly known as the Monterey pine. While the project focuses on calculating, measuring, and ultimately sequestering carbon dioxide, it does not simplify plants to an engineered solution. Indeed, the designer could have chosen one species that maximizes speed or overall carbon dioxide intake, but instead, the proposal calls for a diversity of plant life projected to thrive while improving our atmosphere and, in this case, including several endangered species.

Eric Arneson's 2016 project *Bendway Park*, completed at the Academy of Art University and advised by Heather Clendenin, Toni Bava, and Mary Scott, was previously noted for including the second-highest number of species. It is also the only project to include threatened species recognized by the United States Fish and Wildlife Service (FWS). All four endangered species are listed in this project, where they contribute to the environmental restoration of a postindustrial riverfront site. Knowing that all four FWS threatened species are found in Arneson's project conversely means that the remaining 102 ASLA award-winning student projects do not include any of the 918 threatened species that the United States Fish and Wildlife Service is working to protect.

Finally, Lingyi Xu, Yi Yang, and Songyi Zheng, from Cornell University and advised by Maria Goula and Jamie Vanucchi, won an award for their 2019 project *Remix: Imagine the Resilient Future for Peddocks Island in 100 Years*. This project stands out not for its inclusion of threatened species but for its atypical species selection, including several *Chromista*, such as rockweed, seaweed, and kelp, and uncommon *Rhodophyta* plants, such as Irish moss and red algae. Working in the context of anticipated habitat destruction due to sea level rise, these designers sought to do more than defend against loss. Instead, the work promotes "enhancing" and "amplifying" threatened site conditions (ASLA, 2019). This project evidences landscape architects' interest in mitigating the impacts of sea level rise and suggests an approach to planting design that stretches underwater and beyond the plant kingdom to *Chromista* and other macroalgae.

Considering professor of landscape architecture Catherine Seavitt Nordenson's contribution to the 2014 issue of the Harvard Design Magazine, *Wet Matter*, it is clear that the profession's robust knowledge of terrestrial species is limited when designing in littoral zones and that species knowledge decreases beyond the intertidal into greater depths of water. For example, when students like Xu, Yang, and Zheng selected organisms beyond the plant kingdom, they almost exclusively listed common names instead of using binomial nomenclature to cite specific species. Nevertheless, this territory of contemporary relevance presents an opportunity for designers to explore aesthetic regimes beyond the familiar, pleasing park landscapes.

6 CONCLUSIONS

To plant in conformity with the savannah hypothesis is understood to satisfy landscape architects' underlying aesthetic desires and appeals to the majority's unconscious wants, thus providing personal pleasure and making good business sense. Conversely, deviating from the savannah type generally requires acting against one's innate evolutionary impulses and the aesthetic preferences of the population. However, this paper argues that actively designing at odds with the savannah type is worthwhile for ecological and aesthetic reasons.

At issue is the level of uniformity in landscape architectural practice. While the savannah type itself does not correspond to a specific East African habitat, it does place formal (for example, tree shape) and environmental (amount of water, for instance) limits on suitable species. Thus, conforming to the savannah type limits a landscape's potential ecological range. This paper shows that landscape architecture students who have achieved design excellence, as determined by a jury representing the ASLA, select plants within a relatively narrow range and agree most commonly on species that reflect the savannah type. Consequently, the ecological variety expressed in the award-winning student projects does not extend to include species at risk. If designers wish to directly contribute to advocating for and promoting the preservation of endangered species, then having them in planting schemes would be worthwhile.

Simultaneously, the savannah hypothesis is an aesthetic theory related to a personal experience of pleasure. Research advances that more narrowly define an aesthetic ideal and instruct designers on how to achieve these ideals will increase landscape uniformity. This cycle acts as a positive feedback loop. Thus, modes of practice designing in conformity with the savannah hypothesis and seeking to realize savannah-type landscapes limit the range of aesthetic and ecological diversity. It is also not beyond contention that the public freely defines aesthetic ideals. For example, John Kasson (1978), the cultural historian, notably reminds us that Frederick Law Olmsted's Central Park in New York was "designed not simply to amuse but to instruct their users in lessons of aesthetic taste" (p. 11). Thus, a dominant group's aesthetic judgment may be shaped by the influence of a small minority of landscape architects. Careful not to raise a mechanistic argument for learned aesthetic preferences; the point here is to note the leadership role of landscape architects in operating beyond the bounds of conventional aesthetic tastes.

Moreover, while experiencing the savannah-type landscape may meet a single need of the majority by eliciting pleasure, it is restrictive in other ways. Notably, it fails to stimulate alternative aesthetic experiences beyond the pleasurable, to acknowledge the aesthetic desires of disparate groups, or to protect and promote ecological diversity. Landscape architects wishing to respond to these challenges would do well to reassert the centrality of planting as an integral component of design excellence and promote a framework that celebrates species diversity while acknowledging the corresponding rich emotional responses we each feel in their presence. For Rosemary-Claire Collard, Jessica Dempsey, and Juanita Sundberg (2015), a path forward along these lines finds expression in a vocabulary of abundance, calling for us to strive for a "world literally filled to the brim with different creatures" (p. 323).

This research also makes clear that irrespective of the validity of the savannah hypothesis, it has influenced landscape practice. However, as this study is limited to award-winning student projects, further research is necessary to understand better the range of landscape types built beyond academia. As ongoing scientific studies refine our understanding of aesthetic preferences and categorize responses, studying the diversity of past practices and exploring opportunities to shift future aesthetic preferences is worthwhile. Far from avoiding aesthetic critique in academia and practice, a concerted effort to advance design expressions beyond those that please the majority and are reducible to a limited aesthetic category is necessary to ensure species richness, habitat diversity, and aesthetic variability.

While some scholars have endeavored to reject the Savannah hypothesis on the grounds that cultural factors are more significant in determining aesthetic preferences, this research shows that it is also pertinent to counteract homogenizing explanations for aesthetic preferences by promoting a wide range of landscape types that recognize diverse aesthetic tastes and elicit divergent responses. While the ASLA could revisit the definition of what constitutes an award-winning design project, more immediately, bringing attention to projects that reject savannah-type plantings and pleasurable prospects in favor of alternative aesthetics and threatened ecologies seems a worthy pursuit. Instead of seeking conformity to aesthetic norms, it is worthwhile to celebrate aesthetic and consequent ecological diversity in landscape architecture.

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