





MEETING REVIEWS

Plant Love Stories: Share Your Story and Grow a Movement

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Introduction

Plant Love Stories celebrates the emotional connection between people and plants. We center the importance of narrative storytelling in science communication, both within the scientific community

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and within broader audiences. Stories have power: They bring people together, they connect people with nature, and they help us bridge our research and our communities. The Plant Love Stories (PLS) team organized an Inspire Session at ESA 2019 in Louisville, Kentucky, to grow the movement, emphasize the power of storytelling in science communication (Bayer and Hettinger 2019), and elevate autotrophs.

The Plant Love Stories Inspire Session (INS 8) featured an incredible line-up of speakers to (briefly!) discuss the plants they love to study, and the plants they simply love (Fig. 1). Our inspire session featured scientists who told stories highlighting plants in many ways: as a narrative device, as a study species, as a cultural (and pop-cultural) touchstone, as a connection to the past, and as a metaphor for deep emotions. We had over 150 meeting attendees in the audience to hear this diversity of plant love stories. For those who were unable to attend, we provide excerpts from each of the presentations, as well as reflections from the discussion session that followed. We hope that these stories encourage readers to consider the role of plants in their own work and life, and to share their own Plant Love Stories.¹



Fig. 1. The speakers (sitting) and moderator Rebecca Barak (standing) during the discussion period. Photo credit: Caitlin McDonough MacKenzie.

The origin story of plant love stories (Rebecca Tonietto, PLS co-founder)

Our first talk outlined the mission of PLS to bring plants out of the background and into the foreground of our lives; celebrating the ways plants connect us to each other, our cultures and families, land, and nature. While we don't use the term "plant blindness" (McDonough MacKenzie et al. 2019), we recognize that even ecologists can let the vegetation "blend into the background" while we work and play outdoors. Plants don't just go unnoticed, and they are also underrepresented in conservation: Less than 4% of conservation funding goes toward plants, even though they make up 57% of listed federal endangered species (Havens et al. 2014). Plant Love Stories germinated on Valentine's Day 2018; in the past 21 months, we have published more than 80 stories. People from all walks of life contribute stories, and there are no set "rules" beyond plants and love. For some, their Plant Love Story is a picture, as Andrew Hipp describes in "Plants and Places," a series of beautiful vignettes of plant-centered memories connecting him to that place and time (Hipp 2018). For others, plants help connect us to a family member, such as Megan Cate in "The Dandelion Sisters." Megan explains how the beautiful dandelion tattoos she and her sister share are celebrations of their childhood, where they grew like the weeds they loved to pick for their mother, even in the face of family hardships (Cate 2018). While we love sharing these stories on our Web site and through social media, organizing an Inspire Session of live storytelling embedded in the scientific community where many of us have "grown-up" as early-career ecologists was a special opportunity. We were honored to look out over a packed conference room at ESA, and so excited to see how our work had created a space to talk about love in the middle of an academic conference.

Highlighting the STORY in Plant Love Stories (Skylar Bayer)

Plant Love Stories is an incredibly powerful platform for sharing one's affection for the kingdom of plants with the world. Why use stories at all in science, though? In short, humans are hardwired for listening and absorbing information in the format of stories (Pickering and Garrod 2004, Stephens et al. 2010). Stories improve our understanding of material and are more interesting, engaging, relatable, and are generally very, very persuasive (Dahlstrom and Ho 2012). So, what exactly is a story, anyway? A story, or narrative, is usually an account of a series of events through time. Effective stories have common characteristics: (1) a clear reason why the story is being told (usually this means the stakes are important to the teller); (2) a personal/emotional connection to the story; (3) detailed characters and imagery; (4) a climax with relatable conflict, vulnerability, or achievement; and (5) a clear beginning, middle, and end (Downs 2014, Green et al. 2018). The climax of any effective story is compelling because it is a state in which something has to change, much like a butterfly chrysalis.

There are many examples of plants in both popular culture and classic fables (and of course you know that because if you're reading this, you love plants). The fields and copses are the setting of *Watership Down*, the Hundred Acre Woods is the setting of *Winnie the Pooh*, and the woods are the titular setting of *Into the Woods*. Plants also appear as literal characters: In the legend of *Princess Peony*, the peony spirit appears as a young man, and in Shel Silverstein's *The Giving Tree*, the tree is a character that literally gives everything she has away to a human man. Plants can also represent metaphorical challenges. In Taylor Swift's music video, *Out of the Woods*, she overcomes strangling trees and vines; in the book *Wildwood*, the magical English Ivy tries to consume the novel's protagonists. Plants may be critical plot devices that ground the narrative: the apple in *Snow White*, the rose in *Beauty and the Beast*. The spirits of plants give voice to forests; the fairies in *FernGully: The Last Rainforest* and the Forest

Spirit in *Princess Monoke* embody human relationships to the natural world. In *The Land Before Time*, the five-pointed tree star leaf represents both the guiding voice of Littlefoot's mother and survival in a time of drought. All of these stories reflect the ways that plants are embedded in our cultural values. In telling these stories, we connect and share these values, and through Plant Love Stories, we can add to the canon and share our passion for plants with the world.

Engineering nature love stories through equitable access to nature (April Harris)

Do you remember playing outside in the woods as a child? Would you be where you are today if you had lacked that opportunity? This is the reality faced by many urban youth, especially those living at or near-poverty level in West Louisville, Kentucky. At Jefferson Memorial Forest (JMF), we are striving to change that narrative and provide equitable access to nature to decrease the barriers preventing urban youth from having meaningful connections to nature. This starts with our ECHO (Engaging Children Outdoors) Mobile which takes nature play items, such as sticks and leaves, to urban community centers, local daycares, and parks throughout West Louisville. There, 3- to 11-year-olds are encouraged to develop imaginative play by using items to build forts and other creations. As these children grow up and enter elementary school, they can participate in our school-based ECHO programming, which organizes field trips focused on nature-based learning throughout the year. ECHO program activities include planting trees, performing macroinvertebrate pond studies, and canoeing.

While having these opportunities as a child is important, young adults also need nature-based experiences. That is why JMF has partnered with the Summer Works program in Louisville, which gives young adults summer jobs with local businesses. We focus on young adults within West Louisville neighborhoods and those who previously participated in our school-based ECHO program. These young adults gain experience teaching environmental education programs to younger children and hands-on experience in land management techniques, such as trail building and invasive species removal. These opportunities create a pipeline of nature-based experiences for the children of West Louisville from cradle to career. We hope that facilitating nature-based experiences for urban youth sets them up for success in nature-based careers and generates an interest and compassion for the natural world around them.

Resurrecting my happiness while working with sedges (Megan Vahsen)

I started my Ph.D. program excited to study the eco-evolutionary dynamics of coastal marshes, where primarily plants regulate ecosystem dynamics. In coastal marshes, plants capture layers of sediment, build the elevation of the marsh, and allow it to keep pace with sea-level rise (Kirwan and Megonigal 2013). However, during that process, seeds are buried under these layers of sediment. Much like a seed in a marsh, I felt layers upon layers of new pressures as I moved through the first year of my Ph.D. Soon I found myself in a place of darkness, buried deep under the surface. However, what our research group has learned from the marsh is that these seeds can be “resurrected” out of darkness and these ancient plants are essential to understanding evolution (Summers et al. 2018). Through the support of my own team, I found I could resurrect my happiness as well (Fig. 2). And what I realized through this process is that I was not alone. There are tons of “seeds” stuck in a dark place, all very different, but essential members of their population. Just as we can learn about marsh ecosystem dynamics by understanding the evolution of populations of marsh plants, we can also better understand our academic institutions by learning from the people that characterize them.

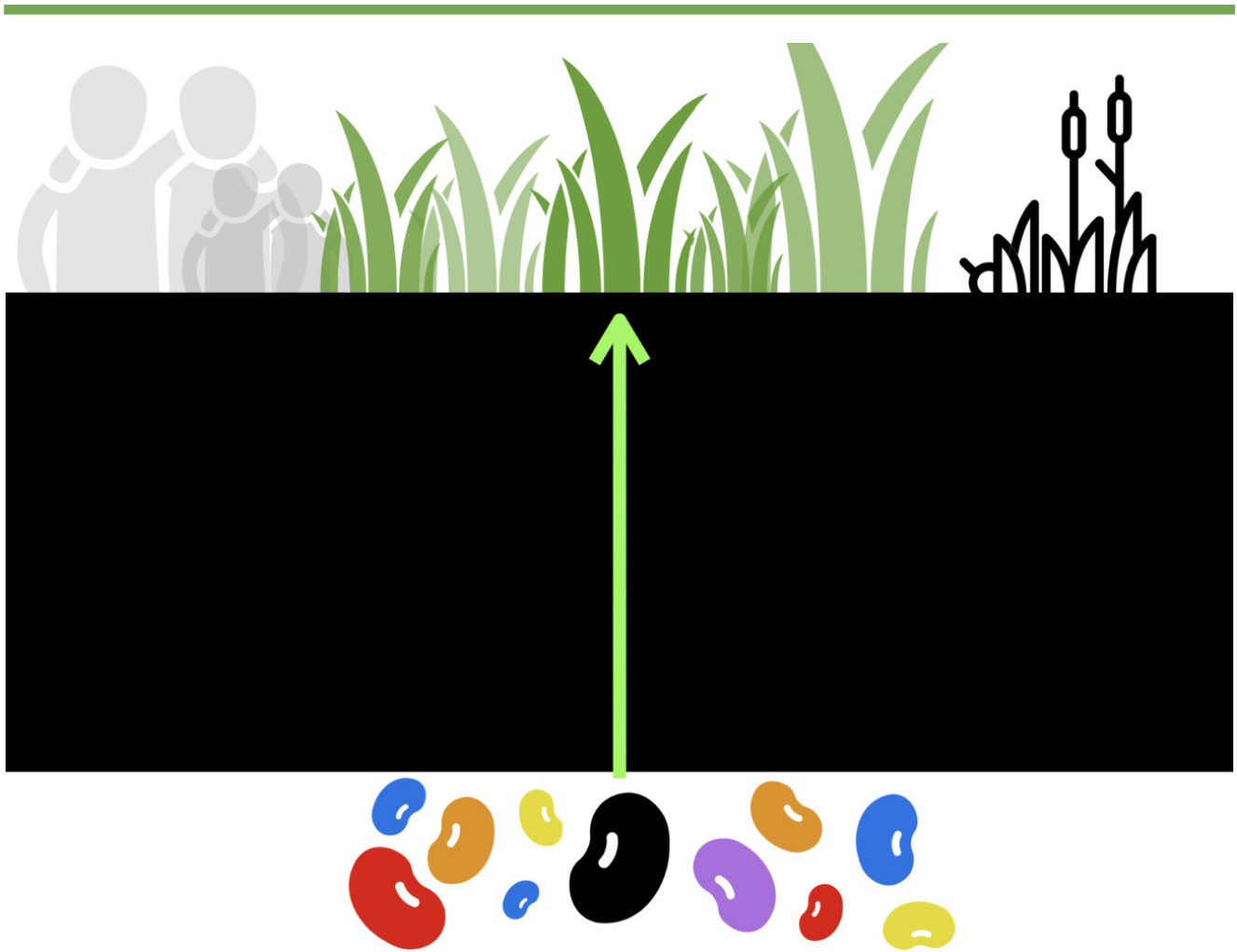


Fig. 2. Seeds of community from Megan Vahsen's Inspire talk.

The movies that made me a botanist (Elizabeth Waring)

I wasn't always a botanist. I started out as a child who had no idea what they wanted to be when they grew up. When I was a kid, and all the way through graduate school, my fellow nature junkies would tell me about how much they loved nature documentaries, especially those narrated by that guy, Sir David Attenborough. I have tried to love the nature documentary genre, but they were never my cup of tea. No, I am a pop culture junkie and have been since I was in grade school. But that doesn't mean movies haven't influenced my career. In fact, there are a number of movies that I can positively say made me the botanist I am today. First and foremost, *Jurassic Park*! To this day, this movie is one of my all-time favorites, and this is in no small part due to Laura Dern's character, Ellie Sattler. Dr. Ellie Sattler was the first time I was aware that you could study plants as a JOB. Like an honest-to-God job. She was invited to Jurassic Park as a paleobotanist, and she used her botanical knowledge to figure out why the *Triceratops* was sick! She knew about the toxic effects of the West Indian Lilac (*Tetrazygia bicolor*). She inserted feminism into Jeff Goldblum's Dr. Ian Malcolm's chaos theory, then saved him from a charging T-Rex. The lesson I learned from Jurassic Park: Botanists are amazing and are constantly saving other scientists in one way or another.

Other influential plant films in my life included *FernGully*, *Attack of the Killer Tomatoes*, *Little Shop of Horrors*, and *Adaptation*. Recently, I saw *The Martian*; more than 20 years after I was first enamored with the idea of studying plants as a job thanks to Laura Dern as Dr Ellie Sattler, I found myself (now a professional botanist!) getting excited in the movie theater all over again about a cool, hero botanist.

One final note about botany on the big screen. There isn't a whole lot of diversity in these botanist characters. Part of the mission of Plant Love Stories is to inspire plant appreciation in all people. We all have a plant love story to tell and representation matters.

To read more of Lizz's reflections about movies and botany, check out her full-length plant love story online.²

From Africa to Honolulu and back: Demography of African Mahogany, the money tree (Orou Gaoue)

Understanding socio-ecological dynamics is central to developing sustainable management strategies for resources that Indigenous people rely upon for their livelihood. Pursuing this goal, studying the interactions between African Mahogany and the Fulani has sustained my career as an ecologist and opened the door for multiple decades of collaboration across continents. My first experience with African Mahogany, however, was scary.

African Mahogany, *Khaya senegalensis* (Meliaceae), is an important but threatened medicinal and fodder tree species for local people in West Africa. It is one of the most emblematic and venerated trees in West Africa. I grew up scared of African Mahogany because these trees, which are planted along roadsides, are giant and create dark and scary alleys at night. Legend has it that at midnight, witches have their meeting at the top of the biggest African Mahogany in town and some people said they found bones underneath some of these trees. I was born and raised in Benin. During my youth, I often walked to school in the early morning through a dark alley of African Mahogany. Even the thought of my walk scared me to death, but I had no choice and would soldier on. I often walked through this alley in fast, military steps, giving myself courage and not looking back.

I still remember these moments now that I have spent 17 years studying the ecology of African Mahogany. I started studying the tree during my Ph.D. dissertation while at the University of Hawaii at Manoa. Interested in how ecological systems respond to anthropogenic disturbance, and particularly to non-timber forest product (NTFP) harvest by local people, this species was an ideal model system. At the time, it was still debated if NTFP harvesting can negatively impact the dynamics of harvested species. This debate parallels that on the impacts of herbivory or frugivory on plant population dynamics. African Mahogany is an important timber species. However, remnant populations that escaped logging are pruned by the Fulani people to feed their cattle. This is a tall tree that can reach up to 35 m in height. Climbing such a tall tree is difficult and poses risk of death. Yet, Fulani men would climb the tree, walk on branches as narrow as our forearm, and use a machete to chop the branches that fall down to the cows waiting patiently below. I was interested in studying how these non-lethal harvests affect the demography and dynamics of African mahogany.

As I embarked on this journey, I met Eric Menges who offered me a research internship to come to Archbold Biological Station and learn how to conduct population viability analysis (Menges et al. 2006). He later

introduced me to my future Ph.D. advisor, Tamara Ticktin (University of Hawaii at Manoa), and my life and career became intertwined with *Khaya senegalensis*. I focused my dissertation on matrix projection models to investigate the synergistic influence of non-timber forest product harvest and climatic variation on the long-term dynamics of African mahogany (Gaoue and Ticktin 2007, 2008, 2010). This also enabled me to learn how the Fulani make decisions about tree harvesting (Gaoue and Ticktin 2009).

After ten years studying the demography of *Khaya senegalensis*, I observed how the tree is defended by weaver ant (*Oecophylla longinoda*) against shoot borers (*Hypsipyla robusta*). I continue to work on the population ecology of African Mahogany (Bufford and Gaoue 2015, Gaoue 2016), and my students focus on the responses of multi-trophic communities around the species to chronic anthropogenic disturbance. Turning my early fear of African Mahogany into a lifetime study on the consequences of chronic anthropogenic disturbance on plant population dynamics facilitated not just my immigration into the United States, but also my career in ecology.

Using the infinitesimal to see the invisible: A pollen love story (Jacquelyn Gill)

For a century, paleoecologists have extracted tiny pollen grains from mud, soil, and peat. Paleoecologists describe community ecology like this: “Today’s distribution of species and communities represents one frame from a movie whose previous frames record continuously changing distributions and associations of taxa” (Hunter et al. 1988). When we look at pollen, we can piece together those previous frames and begin to remake the movie. When we look at pollen, we can peek into the past and attempt to time travel. These trips to the past contextualize extinction risk and help conservation practitioners predict the impact of anthropogenic climate change (Gill et al. 2015).

Dr. Tom Webb was speaking metaphorically when he wrote “pollen analysis is an exercise in seeing,” but there is a literal aspect to the exercise in seeing (Webb 1993). We look at a lot of pollen! From Mickey Mouse ears to spiky balls, these “endless forms most beautiful” are a powerful forensic tool to reconstruct ancient ecosystems. Incredibly resilient pollen grains have been extracted from rocks as old as land plants themselves. Diverse, strong, maddening, and even cute, pollen has a rich life beyond allergies or reproduction. All you need is a decent microscope (and some good podcasts), and the invisible comes alive. This is my love story about the plants I’ve known through the microgametophytes that never found an ovule.

Irrigation, ranching, and the mysterious resilience of a threatened orchid (Mark Brunson)

A chance encounter in the Australian outback introduced me to the amazing variety and strange beauty of orchids. For a time, I became obsessively fascinated. But it wasn’t until years later that I could act on that fascination when the local land trust acquired a 30-acre pasture supporting a population of the threatened orchid, Ute Ladies’-Tresses (*Spiranthes diluvialis*). While not a botanist (I’m an ecologist who studies plant–human interactions), I volunteered to lead a citizen science project to monitor the local orchid population. What began as a simple bloom-counting exercise has expanded in scope, as we puzzle over surprising annual fluctuations in flowering. These plants are inscrutable. Why, when the books say the species is threatened by livestock grazing, does our population thrive in a place where hay is cut and cows graze? What’s more important to flowering: winter and spring precipitation or pasture irrigation? Every time I think I’m closer to an answer, something happens to thwart my hypothesis. I don’t know if I’ll ever understand these plants, but I look forward to spending many more years trying.

Reflections and Conclusion

We heard eight completely different takes on a Plant Love Story in this Inspire Session; there is no one true way to interact with, love, or love-to-hate a plant. The stories shared during this session highlighted emotional connections with plants, touching on topics from equitable access to nature, to anxiety and depression, to finding humility. We talked about the plants that have inspired our careers, challenged our research, and shifted our perspective. Our plants appear on movie screens and in wild places, in city parks and homes, in our laboratories, and our field sites. Our session highlighted people falling in love with orchids, mahogany, marsh sedges, pollen, seeds, leaves, and trunks.

The discussion that followed the inspire talks was incredibly moving, complete with laughter and tears. Many science teachers in the audience shared how they used Plant Love Stories in their classrooms. One participant told us how she used Plant Love Stories to connect with her family; she recalled that sharing personal plant love stories with her father was the first connection they'd had in some time. When an audience member asked whether we, as scientists, should anthropomorphize plants, another audience member noted that anthropomorphizing plants is not a new approach to connecting with the natural world, and that many cultures consider plants to be a part of our world and our families. Our moderator, Rebecca Barak, added that sharing Plant Love Stories, including the ones that are scientist origin stories, allows our humanity to shine through, bursting the misconception that scientists cannot have emotions. Finally, session attendee Sam (@PlantRoleModels) reported on Twitter: "We can share plants with people we love, and across generations. I don't think I've ever been in a room with so many other people crying about plants. This is magical."

If this session has inspired you, we would love to hear and share more Plant Love Stories representing the depth and breadth of the experience of all ESA members. Share your story, grow the movement, and visit us online at www.plantlovestories.com.

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Thanks to ESA for awarding April Harris the ESA Annual Meeting Diversity and Inclusion Scholarship that allowed her to participate in our session and share how she uses the plants at Jefferson Memorial Forest to improve access and opportunity to nature for children and young adults in Louisville.

Notes

¹ plantlovestories.com

² <https://www.plantlovestories.com/post/movies-that-made-me-a-botanist-an-inspirational-story>

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