

Chapter 7

When a Titan Arum Blooms During Quarantine



Nicholas Gershberg

7.1 The Arthur Ross Greenhouse at Barnard

The Arthur Ross Greenhouse has been an architecturally striking presence at Barnard College, atop Milbank Hall for nearly 25 years. It appears in almost any view of campus, from the ground, other buildings, or the air. For more than nine decades, research-active greenhouses have occupied Milbank's roof, with two previous facilities preceding today's. Having a campus greenhouse is emblematic of a commitment to botany and science, operationally and symbolically supporting the education of women and STEM research projects by women. Today's facility enables a variety of research projects while also housing fantastic biodiversity, with more than a thousand plants from nearly 500 species, representing plant biodiversity from almost every continent and biome on the planet. This living collection supports core STEM disciplines like biology, chemistry, and environmental science, plus anthropology and ethnobotany, political science and biogeography, economic botany, education, the arts, literature, and history.

Being so intent on the greenhouse as central to Barnard's identity and mission raises questions about the practicality of any such facility. Extensive labor and energy resources are required for greenhouse maintenance and operations. In turn, living collections and other resources must therefore align, at least partially, with the curricula in many courses about science or sustainability. Instructors and students should be able to devise and complete class activities, projects and other

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research with the support of the Ross Greenhouse. And, our greenhouse is a visible and effective locus for STEM outreach to the college's alumni, area schools and many other neighbors in northern Manhattan.

These myriad purposes are conveyed in this essay by full-time Greenhouse Administrator, Nicholas Gershberg. A skilled botanical horticulturist, he has long prioritized the sustainability of horticultural practices, aiming to minimize or mitigate negative impacts of greenhouse practice while also optimizing the care of the hundreds of plant species living inside. Gershberg also focuses on the well-being of the workers who provide that care and shares his sustainability and outreach mindset through an extensive network of plant-loving humans throughout New York City and beyond. A perennial part of Gershberg's job is spotlighting and documenting the "added value" of the Ross Greenhouse to campus life. Beyond achieving specific research objectives and educational outcomes, why is it worthwhile? As his narrative explains, sustainable practice and caregiving can add to its routine support of research and teaching by delivering intangible rewards, truly "green" and beautiful gifts to inspire and uplift the entire campus community.

7.2 Of All the Times ...

In April through June of 2020, during the early COVID-19 quarantines and the height of the virus outbreak in New York City, our collection's *Amorphophallus titanum* (aka, Titan Arum, Corpse Plant) decided it was going to send up its first-ever bloom (Fig. 7.1). Following in the footsteps of the Brooklyn Botanic Garden's



Fig. 7.1 'Berani' (Indonesian for "Bold"), appx 10–12 years old, blooming for the first time, May/June 2020

(BBG) *Amorphophallus titanum* specimen “Baby”, which sent up the first recorded bloom in NYC in nearly 70 years, we had cultivated ours with great anticipation. That 2006 event was met with great public celebration and media coverage throughout the city and brought a widespread fascination with the plant into public consciousness. A number of years later, BBG decided to develop a new crop of *titanums*. Ours came from that crop, as an inter-conservatory gift of goodwill. Upon arrival at our greenhouse, it was a humble, young, 3-inch corm weighing about a pound. For nearly a decade, we have been cultivating it, with great affection, patience, and aspirations. Only a lucky few ever get to see these plants bloom in the native wilds of central Sumatra; the rest of us botanists and plant lovers must bring about a bloom *ex-situ* if we are ever to bear witness to its singular presence. For an institutional greenhouse, blooming events such as these are prime opportunities to engage a wide public audience and bring attention to a host of relevant issues. We hoped that we could hold our own festive on-site event to inspire others, as the BBG event had inspired us. We were looking forward to the opportunity to enthrall both our campus and the local community in the wonder of the Titan’s bloom.

As some readers are likely to already know, the blooming of *A. titanum* in a conservatory setting is no longer the uncommon event it once was. Today, it is not as momentous an occasion as when Britain’s Kew Gardens bloomed the first in cultivation in 1889, or when The New York Botanical Garden bloomed their first in 1937. As seed availability and horticultural knowledge have proliferated, mature specimens and their inflorescences have become staples in conservatories. Nonetheless, it is still a superlative event in the botanical world, and the blooming at Barnard was still an important and long-anticipated event for our community.

Any team that has successfully brought an *A. titanum* to bloom, or achieved a similarly rare botanical event, understands this sentiment. Beyond the sheer excitement of the occasion, a corpse plant blooming is evidence that a greenhouse is doing a solid job of providing care 365 days of the year. Beyond being a point of pride (clearly), it also comes with a certain sense of relief, which may feel familiar to growers reading along. On the long road to a bloom, any number of things can happen (e.g., one cold night, a few days of too much or too little moisture, a random hapless accident) and years of cultivation can be voided before one has even realized it has happened. So for many of us, being able to enjoy the tangible product of a capable team of horticulturists is a welcome occasion.

Each time one of these plants blooms, it is an opportunity for a greenhouse to put its best foot forward, and make the most of the outreach potential of these “megaflora” events. At the very center of any conservatory’s mission lies the message of stewardship. While the plant effortlessly does the work of drawing public interest (among the beetles and flies), the story of its lengthy cultivation inherently reinforces the notion that stewardship takes more than just good intentions and wholesome aspirations. It demands hard work, dedication, knowledge, and patience.

But, nature is on its own timeline. Despite our best-intended interventions as growers, it more often than not shows little concern for our ends. And, famously, these titans tend to keep a particularly unpredictable schedule. It was only on the final day of our quarantine preparation, just before the “stay at home” orders were

issued in New York State, that our plant began to emerge from a long dormancy period. As much as we had hoped for a bloom for so many years, we would have been content with just another majestic non-reproductive leaf this time around. Weeks later, when there was no doubt that our plant had begun to produce not a leaf but a bloom in the midst of the nationwide quarantine, it was frustrating, and a bit of a disappointment. There was no way we could safely receive visitors at our facility. Not even our student workers, who had been instrumental in the plant's daily cultivation, were allowed on campus at that stage.

As it happens, all was not lost. It turns out folks are quite fond of the internet. And despite the setback, we were intent on sharing the bloom with as much of our community and beyond as we possibly could.

First, in a matter of a few days, we prepared a livestream of the plant, which was posted on YouTube. Often just a supplement to the in-person experience, for this bloom a live stream feed would be our community's primary window into the greenhouse. Initially, I was surprised at how much technical know-how was involved in setting up the various elements of the stream. But, largely thanks to the help of an impromptu, remote collaboration of our college's informational technology (IT) and digital media staff, we were soon able to broadcast 24/7. In addition, using the greenhouse's existing Instagram account (@barnardgreenhouse), we staged a public naming contest (as is the custom), culminating in the decision to name our bloom Berani, a word meaning "bold" in Indonesian. We updated and informed our audience with regular posts, and used "Instagram Live" as an impromptu platform for interacting directly with the public. Finally, a few days after the inflorescence waned, we created a beautiful time-lapse of the 48 h of opening and closing, which has proven a cherished memento. In retrospect, thanks to the staggering connectivity of the internet, it is possible that we reached a much larger, more diverse audience than if we only had an on-site event. Without a doubt, it was an object lesson in the potential that digital and social media offer for science and education outreach.

7.3 Making the Best, of the Best

As a conservatory, fostering science literacy and educational outreach is a large part of our mission. When visitors come to the greenhouse, it is our job to elicit the "spark" of interest in the plants we house and to create the momentum that will generate further interest and desire for more knowledge. We try our best to provide our guests with clear, factual, thoughtfully contextualized, and relevant information. Greenhouse curators routinely rely on an array of charismatic plants to facilitate conversations with visitors. It is important to remember that we are speaking to audiences with a diversity of interests. Some of our guests are of course already very interested in plants, and connoisseurs in their own right. Others are less so, and some are not initially interested at all. When young children come to the

Fig. 7.2 Detail within the spathe



greenhouse, after an initial introduction, we usually begin by asking whether they like ice cream. Even if they are not particularly interested in the plants, they are definitely interested in chocolate and vanilla! So we show them our vanilla orchid vine and our cacao trees. When burgeoning scientists come, we point out the fascinating potential for biotechnology that plants such as cacao possess, and discuss how our particular plants were grown from tissue culture for potential commercial use. And if a plant eats insects, moves rapidly—or both—it is sure to engage a crowd.

It has long been known that the use of charismatic flora and fauna is a highly effective tool in science outreach about biodiversity (e.g., Lindemann-Matthies, 2011; Shah & Parsons, 2014), and provides great opportunities to cleverly introduce more sophistication into the scientific vernacular. For example, a key point we emphasized from the start of our coverage is that what people were witnessing was not *the world's largest flower*, but instead *the world's largest unbranched inflorescence*, or single structure containing many dozens or hundreds of individual flowers (Figs. 7.2, 7.3 and 7.4). Throughout the 2 to 3 weeks of the ongoing event, we were able to introduce many more concepts, of greater nuance and sophistication, from topics including tropical biogeography, systematics and taxonomy, ethnobotany, morphology, pollination and reproductive ecology, and conservation biology. We were also able to bring attention to the history of often exploitive colonialist aspects of “discovering” any tropical plant taxa and to affirm the importance of local guides and Indigenous knowledge, both historical, and current (Adams et al. 2014; Yudaputra et al. 2021). [HC4] Over the years, we have come to appreciate that there are myriad cultural connections with almost all of our taxa, making them interesting subjects for classes in sociology, history, literature, etc. In that sense, we have promoted the greenhouse collection as a resource for most, if not all of the other departments at the college, on some level. Here is an example of one of the interdisciplinary connections we made during the corpse plant blooming (Fig. 7.5).

Fig. 7.3 From the ground up



Fig. 7.4 Overhead view





Fig. 7.5 Interdisciplinary connections: “Who wore it best?”

7.4 Improvise, Adapt, Overcome

In this digital age, online media is now the mainstream, and certainly the norm among our student body. The Titan Arum blooming event affirmed that as educators, we need to embrace this online trend. Moreover, that means not just using the preferred platforms of our student audience, but also adapting to the pace they set. That is not necessarily an easy proposition, as education and advocacy have to keep up and maintain relevancy in the midst of nearly constant stimulation. We must continually strive to provide high-quality content, in an eloquent manner, often in a way that is interdisciplinary, and cross cultural. Given the urgency to start an engaged awareness of the natural world early, it is our goal to reach as wide an audience as possible. By establishing these connections using modern platforms, we can fulfill this job of raising awareness, encouraging scholarship, fostering a committed sense of stewardship, and promoting informed action. Hopefully, if we can connect on common ground with broad appeal, we will help create a truly open and robust entry point for the STEM pipeline, available to the widest possible range of individuals.

There were some hurdles to clear in creating our online event. The main lesson we learned is that it is of vital importance to have a working familiarity with the setup and gear involved, and to practice to gain proficiency. To my surprise, no one person or department on our campus was familiar with the soup-to-nuts process of setting up a live stream video for public viewing. I had to enlist the help of about a dozen individuals, across several departments to make it work, and under quite unusual circumstances since almost nobody was actually on campus. It may have seemed like a fairly basic operation, given the ubiquity of live streaming lately. But

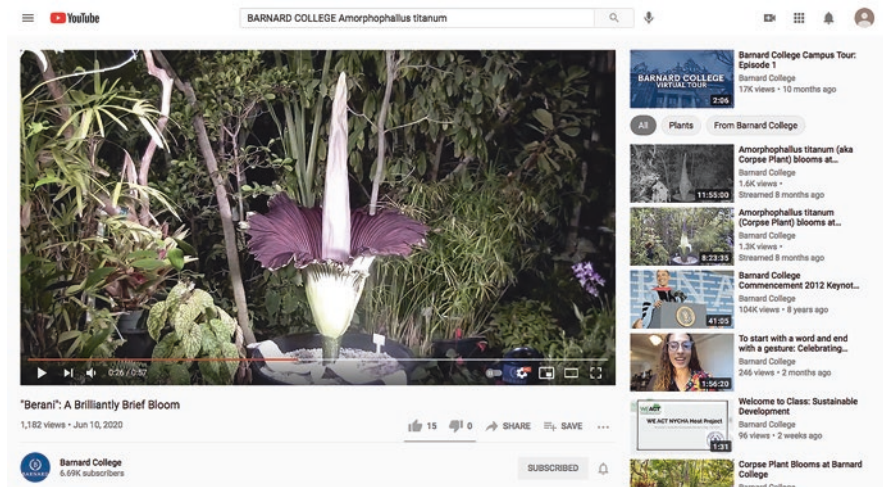


Fig. 7.6 Screenshot from YouTube

in actual fact, it was seldom needed, so the process took some effort to bring to bear. It is advisable to build these skills and interdepartmental relationships early, so that all of the components are effectively ready to go (Fig. 7.6).

Fortunately, the fact that we had already cultivated a social media follower base meant that, when we had exciting, ephemeral content, there was someone to share it with. While we did of course use the college's existing traditional media outlets, they were somewhat static by comparison, and lacked the innately interactive quality of social media. Just as with the live stream hardware setup though, online platforms take time to develop well. As a relative social media novice myself, learning to craft content that is at the standard of our in-person visitor experience, and that has a comparable “voice”, has taken time. A big thanks goes to a number of our greenhouse student worker staff, who put time in over the course of the last few years to help cultivate an engaging and worthwhile platform. Creating more immersive informational hubs like websites can be extremely time-consuming as well, and are subject to a host of technical issues. Our own site has been a long work in progress, and is a high priority as the management and purposeful utilization of data continues to pave new paths in science. So it makes sense to view not only developing content, but also the means to disseminate it, as an ongoing process.

In the last year, this concept of a hybrid model for outreach and institutional engagement has, by sheer necessity, taken a huge leap forward. If anything though, the process has just been accelerated by circumstance, as there has long been a need to close the gap between “real world” and online scholarly resources. In cultivating on-site and online content synergistically, ideally, each one serves as a follow-up resource for the other. Whether you are a small institutional greenhouse with a modest collection like ours at Barnard College, or a large, world-class institution, there exists great potential to enhance the user experience, and provide access to more diverse audiences, with nearly instant pathways for cultivating meaningful content.

7.5 Looking Back

I would like to take a moment to acknowledge that in addition to happening during the quarantine lockdowns, this bloom event converged with a time of unprecedented social upheaval. The nation, and the entire Barnard community, were outraged and heartbroken over the murder of George Floyd, Jr., and were activated in the ubiquitous decrying of systemic violence against Black Americans. As the protests and national dialogue emerged as the events of true importance at that moment, how we proceeded was intently focused on not overshadowing them. Furthermore, our own community was already in a state of coping with the recent devastating death of a student. So we must remember that whenever these celebrated institutional events occur, they occur necessarily in the human context of everything else going on at the time. We hope, at the very least, that our event was uplifting in some small way, in the face of these truly serious, important, and deeply personal matters.

Now that our plant has returned to dormancy, we hope that the traditionally mounted pressing of the full inflorescence we have successfully made will be a tangible memento that students can marvel at in person upon their return. But we look forward to pursuing our outreach role online as well, as best we can, with all the latest tools at our disposal. Looking back at 2020, a year of highs and lows, I am ever more grateful our plant provided us an opportunity to focus on something positive, that brought our community together for a short while in mutual admiration. If the study of plants teaches us anything, it is that nature persists, and finds ways to adapt even in the most unlikely of environments. Hopefully, we can continue to reflect on this lesson, into 2021, and beyond.

References

- Adams, M. S., Carpenter, J., et al. (2014). Toward increased engagement between academic and indigenous community partners in ecological research. *Ecology and Society*, 19(3), 5. <https://doi.org/10.5751/ES-06569-190305>
- Gershberg, N. (2021). When a Titan Arum blooms during quarantine: (aka, making a stink online). *Plant Science Bulletin*, 67(1), 34–37. https://issuu.com/botanicalsocietyofamerica/docs/psb67_1_2021
- Lindemann-Matthies, P. (2011). ‘Lovable’ mammals and ‘lifeless’ plants: How children’s interest in common local organisms can be enhanced through observation in nature. *International Journal of Science Education*, 27(6), 655–677. <https://doi.org/10.1080/09500690500038116>
- On the importance of local guides and indigenous knowledge. On the roles of charismatic flora and fauna in science outreach about biodiversity.
- Shah, A., & Parsons, E. C. M. (2014). Lower public concern for biodiversity than for wilderness, natural places, charismatic megafauna and/or habitats. *Applied Environmental Education & Communication*, 18(1), 79–90. <https://doi.org/10.1080/1533015X.2018.1434025>
- Yudaputra, A., Fijridiyanto, I. A., Witoni, J. R., & Astuti, I. P. (2021). The plant expedition of an endangered giant flower *Amorphophallus titanum* in Sumatra. *Warta Kebun Raya* 19(1), 23–29. <https://publikasikr.lipi.go.id/index.php/warta/article/view/735/603>. Accessed 18 Dec 2021.



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