



Urbanite Outfitters: Two Years Addicted to Crevice Gardening

By Jeremy Schmidt, JLBG Research and Grounds Supervisor

All Photos from Juniper Level Botanic Garden

Starting with an idea and a pile of broken concrete, the Urbanite Outfitters Crevice Garden project now snakes its way prominently through Juniper Level Botanic Garden in Raleigh, where it continues to grow and thrive. Tony Avent, (owner of Plant Delights Nursery, Inc. @Juniper Level Botanic Gardens), first conceptualized a crevice garden based on the success of a 2014 Kenton Seth installation at the JC Raulston Arboretum. Consequently, a 2015 JLBG demolition project produced 70cu yds of broken concrete slabs—a cost-effective and repurposed material for building crevices. Crevice construction began in January 2017 and has grown to include more than 100 tons of hand-stacked, locally-quarried, “urbanite” slabs. JLBG has spent the last two years addicted to crevice gardening and there’s no turning back now! Here’s what we’ve learned, what we’ve grown, what we’ve killed, and what’s next.

Our botanical goal is primarily to establish new benchmarks of success in growing plants from xerophytic climates including South America, the Middle East, and southern Europe in our hot, humid, rainy climate. We expected a coarse, stone-based soil would reduce the foliar disease pressure on pubescent-leaved plants, and provide the ultra-sharp drainage necessary to accomplish our goal. As the size of the crevice garden increased, the project scope and plant selections have diversified to include crevices for calciphiles and wetland plants. Thus, we amended some sections to accommodate a broader array of plant types. On the dry side, we’ve added organic matter to some crevices to include plants needing fertile soil while retaining sharp drainage. On the wet side, we have installed several dripping seeps that create exciting planting opportunities across a wet-to-dry crevice gradient. And on the wild side, we filled some crevices solely with straight-off-the-shelf bags of dolomitic lime.

Now let’s talk plants! In just over one year, we’ve planted more than 1,200 taxa into the urbanite crevices. As of October 2018, we are watching more than 870 living taxa...340 of those taxa have now survived over one year. Here are some of our favorite surprises thriving today across JLBG’s diverse and expansive crevices:

Dry Crevices:

Structurally coarse and deficient in organic matter, traditional dry crevice garden “soil” provides a unique opportunity to trial and display thousands of plant taxa that will not survive in JLBG’s nutritious, humus-rich, irrigated garden soil.

Our original dry crevice garden soil mix is as follows:

- 8 parts PermaTill[®] (sterile/inert, 8.0 pH, CEC>20)
- 1 part gravel (#57 stone)
- 1/8 part native coastal plain sand (3.5 pH, Phosphorous index >100)
- 1/8 part Raleigh red clay (5.0 pH, Potassium index >100)
- Trace part organic matter (<1%)



Two years after the first crevices were populated, we've been amazed at how rapid and deep plants have rooted in and grown in our dry, coarse mix.



Teucrium polium ssp. *aureum* 'Mrs. Milstead'

Most pubescent *teucrium* melt in Raleigh's wet summer heat. *Teucrium polium* ssp. *aureum* 'Mrs. Milstead' has thrived in our urbanite crevices. Its silvery foliage and bright yellow flowerheads are a delight. Its cousin *Teucrium cossonii*, survives in compost-based garden soil, but seems even more vigorous in dry gravel. We've enjoyed watching *T. cossonii* criss-cross its way over crevices.



Teucrium cossonii

Many European *silene* species dislike our sweltering Piedmont summers. *Silene uniflora* 'Compacta' has performed stunningly however; forming silvery green mounds with large white flowers with inflated calyces. It is self-sowing gracefully into nearby crevices



Silene uniflora 'Compacta'



Penstemon baccharifolius

Penstemon baccharifolius from NARGS seed exchange has performed extremely well for us. The specimens are topped in summer with groups of tubular red flowers above a mostly shrubby evergreen clump. We have killed it with compost to the point of despair several times, so we are thrilled to see

it thriving in the crevices.



Oxalis squamata

We are pleasantly surprised to have had success with a mid-high altitude Chilean Andes native. We did not expect *Oxalis squamata*, from Denver Botanic Gardens, to power through a hot, wet Piedmont summer.

A Dan Hinkley collection of *Globularia trichosantha* has proven to be a Turkish delight, forming green cushions in the crevices.



Daphne x napolitana 'Meon'

Planted into the dry crevices from a tiny 2" pot in 2017, *Daphne x napolitana* 'Meon' has captivated us. It's now a 15" x 15" evergreen shrub! Most *Daphne* die rapidly in our climate in central NC and other *Daphne* taxa wish they had died sooner. We feel this vigorous, free-blooming success is a game changer.



Crambe maritima

Although the sea level native *Crambe maritima* is no stranger to heat and humidity, the corrugated silver leafed rosettes of this cabbage cousin languished and melted away again and again in compost based soil. After so many failed attempts to grow this plant, we did not set our hopes high. But crambe is just so darn pretty...why not re-re-re-re-try this plant? Urbanite crevices and PermaTill® based soil... success at last!

Dry Fertile Crevices:

Being careful to retain sharp drainage, we added organic matter and native soil to several crevices to grow xerophytes in the same crevices as plants suitable for compost-based garden soil.

The amended fertile dry crevice garden is as follows:

- 1 part PermaTill® (sterile/inert, 8.0 pH, CEC>20)
- 1 part organic matter
- 1 part native sand/clay mix

Recent cool nights have awakened the solanaceous summer sleeper, *Mandragora autumnalis*, from its crevice cove. It's just coming into bloom now in early October. Apparently our urbanite was suitable for sleeping through months of hot nights.

Acinos alpinus, from Jelitto Seeds, stood the test of summer heat and sailed through the relentless rains of Hurricane Florence. This tiny-leaved European mint now stylishly

cas-
cades
down
the
slope,
softening the edges of the crevice quite nicely.



Mandragora autumnalis



Acinos alpinus

A Texas selection of fern's first cousin, *Selaginella wrightii*, passed through summer unscathed, developing into a beautiful ever-green ground-cover on a steeply sloped, east-facing concrete slabs.



Selaginella wrightii

Wet Calcium Seeps:

To contrast the dry, non-irrigated crevices, we have installed seeps to mimic unique naturally wet areas home to diverse, rare, and highly specialized taxa. We used a PermaTill®/compost/soil mix that we estimate will remain on the alkaline side. In addition to an aesthetic benefit, our small alkaline seep has provided excitement and new perspectives.



At the base of a seep, *Trautvetteria nervata*, a 2017 rescue from near Augusta, GA, has exploded into a real show-stopper. “Chalk” this one up to “you never know unless you try.” This just-in-time collection looks far better growing in the crevice garden’s wet alkaline seeps than when we came upon it in a now clear-cut cypress/gum swamp. We had no idea this uncommon, uncultivated species would command such garden presence. From June to October, large corymbs of white powder-puff flowers rise prominently above the amazing dissected foliage.



Trautvetteria nervata

Here is what we found:

- pH: 7.3
- Ca:Mg: ~1:1
- S index: ~7000
- CEC: 34

We would never have guessed that the pH was so low! A sulfur content about 70 times what we find in our native JLBG soils would logically adjust the pH down. Although several accessions have died, others thrive when planted in this section.

A pleasantly plump *Echinocactus texensis* collection from Roosevelt Co, NM, has outperformed our expectations in the pure dolomitic limestone crevices. We are excited to see just how chubby this seed-grown collection grows.

Our 2'- wide *Clematis hexapetala* ‘Mongolian Snowflakes’ has excelled in limestone—outperforming itself in compost-based garden locations. We’ve enjoyed an all-summer flurry of starry white four-petaled flowers.



Clematis hexapetala ‘Mongolian Snowflakes’

Dolomitic Limestone Crevices:

In another demonstration of “you don’t know unless you try,” we’ve filled a crevice section with pulverized dolomitic lime right out of the bag and incorporated taxa native to dolomitic situations. We tested a sample of our store-bought dolomitic lime to see exactly what it was made of. Of course our general assumption was a very high pH...perhaps >9.0pH. Wrong!



Echinocactus texensis

Agave x gracilipes, a seed-grown Kenton Seth selection from Culberson Co, TX, is now established and steadily suckering through solid limestone. This naturally occurring hybrid between *Agave parryi* ssp. *neomexicana* and *A. lechuguilla* usually struggles in hot rainy summers and cold wet winters, but has proven successful in its urbanite location.



Agave x gracilipes

Other Plant Notes:

The Urbanite Outfitters project, like the rest of JLBG, froze solid during a January 2018 cold spell. Raleigh remained below freezing for an unprecedented 200 consecutive hours. Although the minimum temperature was on-par with an average winter low, the duration of the freeze was unprecedented. After the freeze...an abrupt thaw. We watched bewildered as dozens of agaves melted into succulent soup bowls. Cacti and other succulents sailed through for the most part, but what caused the antifreeze endowed genetics of *Agave ovatifolia*, *lophantha*, *flexispina*, etc., to fail at temps above 10F? We probed the soil with an 18"-long thermometer for answers. We assumed that 100 tons of concrete would provide a warm winter microclimate. Our measurements verified that we had created the opposite microclimate. In the top 6", our crevices were up to 5F colder than the top few inches of compost-based soil. We suspect the porosity of the crevice mix invited the cold to infiltrate into the crevices. Many marginal succulents acclimated to climates with short winter bursts simply were unable to tolerate frozen roots.

We hear gardeners regurgitate the narrative that native plants won't grow as well outside their native environment.

We fact-checked this theory with *Tephrosia spicata*, a delightful fabaceous Wake Co. native. *Tephrosia* collected from JLBG's *in-situ* population, occurring in soil with pH of 3.2, was planted a few hundred feet away into our PermaTill® -based crevice mix, a pH greater than 8.0. *Tephrosia spicata* 'Awakening' now thrives in soil 100,000 times more alkaline than its native environment. Myth busted.

Two years addicted to crevice gardening...it's been a wild ride. Every square inch of concrete crevice offers us some insight into the botanical world, and an opportunity to slow down and take a second look. Going forward, we plan to continue growing and diversifying the crevice garden.

The author would like to thank Zac Hill, JLBG Plant Records Specialist and Taxonomist, and Vince Schneider, JLBG Volunteer Curator of Cacti and Succulents, for their help in compiling the data and images for this article. ♡



Tephrosia spicata



Plant Profile: *Orostachys japonica* 'Ed Scrocki'

By Cyndy Cromwell

When Piedmont chapter members visit Plant Delights Nursery and Juniper Level Botanic Garden on Saturday, October 20, one of the showiest plants in the crevice garden will be *Orostachys japonica* 'Ed Scrocki'.

This cultivar, given to owner Tony Avent by Brent Horvath of Intrinsic Perennial Gardens in late 2016, came with the original moniker 'Crazy Eddie', after Mr. Scrocki. Tony had been selling a different plant of that name for years, so this plant was renamed 'Ed Scrocki'.

Size and coloration distinguish this cultivar from the commonly available *orostachys* varieties you may be familiar with.

The color of the enormous rosettes is a beautiful burnished mahogany, with silvery highlights. The inflorescent rosettes will die after flowering, but there are usually side shoots that survive.



The color of the enormous rosettes is a beautiful burnished mahogany, with silvery highlights. The inflorescent rosettes will die after flowering, but there are usually side shoots that survive.

Planted in February of 2017, 'Ed Scrocki' has proven a worthy rock garden plant for our area, having made it through two North Carolina summers, as well as the record-breaking cold winter of 2017-18.

Thanks to Zac Hill, Plant Records Specialist/Plant Taxonomist, PDN and JLBG, for the background information on this very showy plant for the autumn rock garden. ☞

Plant Profile: *Cyrtomium fortunei* 'Ulleung Island'

By Amelia Lane

Botanical name: *Cyrtomium fortunei* 'Ulleung Island'

Family: Dryopteridaceae

Category: Fern

Primary uses: in woodland areas or part shade mixed borders.

Dimensions: to 20" tall

Culture: hardy in zones 6a- 9b; part sun to shade; will tolerate drought conditions when established; deer resistant; evergreen.

Color: medium green

General attributes: This holly fern was found off the coast of Korea. It grows in a swirl pattern with arching fronds. It is a low maintenance and all year attractive fern. ☞



Photo taken from Plant Delights online catalog



Madagascar, the Eighth Continent: a Botanist's Delight

by Janice Swab

Travel with me to the world's 4th largest island, so different from other world land masses that it has been called the Eighth Continent. Located 400km from the east coast of Africa, lying 12-36°S latitude, this island with 0.4% of the world's land mass has a diversity greater than that of Brazil.

Slightly larger than California, this island with its 80+ million years of isolation has allowed evolution to proceed along a path that has led to the occurrence of numerous animal and plant



species found nowhere else. The staggering diversity that could be found until relatively recently has yet to be fully documented and the rate of ecosystem destruction, largely for unsustainable agriculture may mean that much of this diversity will not be studied before it disappears. Essentially the only intact forests are in protected areas which are under constant threat. We will see examples of forest habitats unique to this island but we will need to visit garden and arboretum collections to see some of these plants as they



have disappeared from the wild or are in the few intact areas where tourists are not allowed entry.

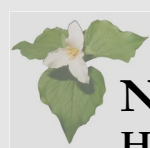
The first organisms that come to most people's minds at the mention of Madagascar are the lemurs, now said to number 111 species of which 95% are endangered. But it is the plant life on



which all the diversity of all animal life depends and this is what we will focus on in this presentation. The great baobab forests that once dotted the island are nearly gone and the spiny forest, unlike any forest in the world in aspect and species assemblages, has lost much of its original character. Some images from this forest included here show the nature of what still remains. ↪



Photos by Janice Swab



New Feature: Members' Share Tips

How I Chose to Label My Yard

By Ruth Little

I use metal cap-style plant labels from www.everlastlabel.com. They're at a price point I can bear with good durability and readability in my yard. They hold a printed label that I can write both common and botanical names upon, and even use italics - I know right? Fancy!

I can adjust the font size, and even add additional information when desired. The label maker I use is a Brother PT D600, because it can be connected to a computer, enabling me to cut and paste a list I continually build as I order and purchase yet more plants, as well as all that technical font jiggery-pokery.



The tape I choose to use is both waterproof and UV resistant; Brother TZe 3/4" (18mm) and I selected white text on black tape, because it is durable and doesn't have the glare of some labels. Until my beds fill in they're less obtrusive, but prevent me from overplanting those bulbs and ephemerals or things that simply sulk for a few years to try our patience.

In case you're wondering how expensive all these consumables are, I can tell you this machine does generate horrible waste with each unique label. However, if you preset your labels to 2.5" long, using the downloadable web-based software (which fit beautifully on the above tags), you'll get 96 printed from one tape cartridge. I've found evil megacorp Amazon to be the cheapest tape supplier so far. 🐍



Ruth's beautiful labels can be seen in the Chapel Hill Garden Club's tour gardens, as well as her own.

OCTOBER 20, 2018 MEETING!!!

A rock garden meeting at a local nursery!! Your Piedmont Chapter will add to your Fall gardening excitement at our **October 20th** meeting at **Juniper Level Botanic Garden and Tony Avent's Plant Delights Nursery**. We will meet at **9241 Sauls Rd. Raleigh, at 10am** for a guided tour of the new Crevice Garden. It is a beautifully constructed "urbanite" garden that will amaze you with it's sweeps and curves plus all the unique plants!! **Then we will have time to shop for plants!!** And you know how much fun that will be !!! Be sure to check out Plant Delight's website or their current catalog to help make your list!

Following a short business meeting we will have lunch together at Juniper Level. **Please bring a dish to share and a chair.** The chapter will provide drinks and paper goods.

If you have not visited Juniper Level Botanic Garden, it will be a great opportunity to see what a world class plant nursery we have in our "backyard" and to see the plants in the garden! Always a plus!!

So mark your calendars now and join us on Saturday, October 20, 2018, 10am, at Plant Delights Nursery for a tour and potluck lunch. 🐍 Amelia Lane, NARGS Chapter Chair



PACKAGING SEEDS FOR THE NARGS SEED EXCHANGE

Amelia Lane

The Piedmont Chapter of NARGS has been asked to give the NARGS Seed Exchange a hand this year. The request—to assist with the packaging of donated seeds—has been agreed to by the chapter board. The activity doesn't take a large commitment of time but it constitutes a major part of the Seed Exchange. Six to eight other NARGS chapters will also be assisting in the packaging.

The JC Raulston Arboretum has agreed to provide space for the seed packaging effort, according to Doug Ruhren, Gardens Manager.

The seeds are expected to arrive by the end of November and packaging will be scheduled during the first half of December. NARGS provides all the supplies such as glassine envelopes, labels, and rubber bands. The work needs to be completed by the end of December.

A schedule has not yet been developed, but will be provided at the November chapter meeting, by email, or upon request. Time shifts will be flexible. All members help is needed and appreciated. For further information or to volunteer to help, contact me at amelia.lane@gmail.com or 919-614-0109. 🍷

Lasting Impressions' Fall Open Garden and Garage Gallery Sale!!

Saturday, October 27, 2018 9am- 12 noon
4904 Hermitage Dr., Raleigh, NC 27612

All hand-sculpted leaf art and hypertufa troughs 20% off during the Open Garden.

Plenty of plants, wildflowers, perennials, shrubs, and natives to fill that special area in your garden.

Fall is the best time to plan and plant in NC.
Join us to celebrate the NC Fall season - cool nights and crisp air!!

Amelia Lane & Beth Jimenez, www.lastingimpressionsleaves.com

NARGS Piedmont Chapter Meetings Fall 2018/Spring 2019

Oct. 20, 2018

Tony Avent and Jeremy Schmidt,
'Urbanite Outfitters:
Two Years Addicted to Crevice Gardening'
With a Potluck Picnic and
Crevice Garden and Troughs Installation Tour
At Juniper Level Botanic Garden

Nov. 3, 2018

Janice Swab
Retired, Meredith College
Raleigh, N.C.
**"Madagascar, the "Eighth Continent":
a botanist's delight"**

Jan. 19, 2019

Doug Ruhren and Edith Eddleman
Durham, N.C.
JC Raulston Arboretum
**"Elizabeth Lawrence and Her Influence on
Southern Gardening"**

Feb. 9, 2019

Cyndy Cromwell and Nancy Doubrava
Raleigh, N.C.
"Botany and Horticulture of Yunnan, China"

Mar. 16, 2019

Jeremy Schmidt
Plant Delights Nursery
Raleigh, N.C.
"Trillium Hunting in the Southeast"

Apr. 27, 2019 (*note date change*)

Jane McGary
Past Editor, NARGS *Rock Garden Quarterly*
"Bulbs in Their Habitats"
Milwaukie, Ore.



NARGS Piedmont Chapter Meeting

JC Raulston Arboretum

Oct. 20, 2018

Tony Avent and Jeremy Schmidt

**'Urbanite Outfitters:
Two Years Addicted to Crevice Gardening'**

With a Potluck Picnic and
Crevice Garden and Troughs Installation Tour
At Juniper Level Botanic Garden

Message from the Chair

Amelia Lane

I thought it was fall. The calendar said it was and we had some cool nights! Then why is all this humidity still hanging around??!! Oh well, I'll just pretend it's fall and enjoy the cool early morning air!!

Do you have plants waiting to be planted? Perhaps some from our September plant sale or Tony Avent's auction? It's an exciting time to be in the garden, putting in new plants with expectations for spring growth!!

Goodies to Share



Oct	D—Fi	Feb	Mi—P
Nov	Fi—H	March	R—T
Jan	J—Me	April	W—Z

I have some of those same types of expectations for your Piedmont Chapter. It is wonderful to have visitors at our meetings. If you are sitting next to a visitor, please introduce yourself and welcome them. We recently added two new members, Chris Williamson and Deborah Minnis. Look for their profile in the *Trillium* newsletter and at our meeting. Each new member brings new ideas, gardening knowledge, and perhaps a new point of view on gardening, garden travel, and the purpose of plant societies.

It is our members that make our chapter the fun and exciting group to be a part of. Each one of you adds a needed piece to our puzzle. I thank you for your willingness, interest, time, and effort as a member of the Piedmont Chapter. Check out the upcoming events in this *Trillium* and I hope you will find a place you can participate and get to know better other members of the chapter.

Thanks again to Tom Harville, JoAnn Currier, and Elsa Liner for their service as At-large members of our Board. They have rotated off the Board and we have two new members. They are Cyndy Cromwell and Ralph Whisnant. And many thanks to Marlyn Miller for serving as Secretary of the Board for several years. In September we elected Elsa Liner as our new Secretary. Thanks and congratulations to all of you!!!

See you on Saturday, October 20, at 10am at Plant Delight's Nursery!!! ☺

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