

ADIRONDACK CHAPTER

North American Rock Garden Society

Green Dragon Tales

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September 2016

SEPTEMBER 17: TERI DUNN CHACE

Nari Mistry, Program Chair

Our Speaker for Saturday September 17, 2016 is **Teri Dunn Chace**. She will present a talk titled: *Seeing Flowers: Discover the Hidden Life of Flowers*.



Teri Chace is a writer and editor with over 35 titles in publication, including the **2016 American Horticultural Society book award-winner** co-authored with Robert Llewellyn, *Seeing Seeds: A Journey into the World of Seedheads, Pods, and Fruit*. Her books have been published by Timber Press, Cool Springs Press, and Collector's Press. She has also written, edited, and blogged extensively for four gardening or outdoor-living publications (*Horticulture*, *North American Gardener*, *Backyard Living*, and *Birds and Blooms*). She is the gardening expert for the award-winning "Bottom Line Personal" newsletter.

She brings complex scientific and environmental topics to general audiences in articles for various regional magazines, including Massachusetts Audubon Society publications and the Appalachian Mountain Club's member magazine. She has also worked as a consultant and copywriter for horticultural catalogs and websites, including Jackson & Perkins, Dutch Gardens, Gardener's Eden, and Breck's Bulbs.

Raised in California and educated at Bard College in New York, she now divides her time between Little Falls, New York and Freeport, Nova Scotia.

Teri will sign and offer her *Seeing Flowers* book as well as other recent titles for sale at a 10% discount after the talk. Please note she can accept only cash and personal checks, no credit cards please.

Our meeting will be held in the renovated Whetzel Room Room 404, on Tower Road, Cornell University. Bag lunch and socializing at noon. Program begins at 1:00 pm. Map at the end of this newsletter.

FROM THE CHAIR

John Gilrein, ACNARGS Chair

We're heading to the end of summer, and I am looking forward both to less heat and no more drought! Most everything here in the south Onondaga area survived the drought pretty well, with help from sporadic rainfall that kept things from turning crispy.

But driving through the Watertown area earlier this month I saw that many trees and shrubs, mostly those on the edges of copses (patches of trees or brush), were covered with dead, brown leaves (these were not newly planted). My suspicion is that these trees were actually killed by the drought (stressed by both the heat and the dryness) and may have been growing in an area with shallow soil. The extra stress of being on the edge was enough to put these woody plants "over the edge". Near Watertown there are areas of calcareous (limestone) pavement barrens that do not support our normal forest ecosystem due to the shallow soil. The bits of rain that fell during the summer drought seem to have been unpredictable and spotty. I am happy to report that mostly everything in my rock garden survived the summer, except for two dwarf conifers that were just planted in autumn 2015.

One positive surprise of the year was that I had an *Abutilon* (flowering maple, named for its maple like foliage, though it's related to hibiscus) that's hardy (in theory) to Zone 7 or 8 (0 to 10 degrees F.) that made it alive through the winter. I planted it last year thinking it was an annual. It's an herbaceous plant with pretty pink hibiscus-like flowers and can be grown as a houseplant. This did not emerge out of the ground until July (it lived but apparently still resented the winter) and is now blooming. This just serves as another big clue that hardiness is complicated, and more than just the black and white zone numbers.

Hope to see you in September, when we'll have a dynamic speaker, some great Plant-of-the-Month plants, and good company to share the day!

John

PLANT OF THE MONTH: HEUCHERAS

John Gilrein

Our September 2016 POM is *Heuchera* hybrids. The fuzzier leaves of *H. 'Autumn Leaves'* are a clue to one of its parents being *H. villosa*. *Heuchera* has common names of coral bells and alum root. The genus name comes from Johann Heinrich von Heucher, an 18th century German physician. Wikipedia reports there are approximately 37 species of *Heuchera*, but as we know taxonomists keep adjusting plant classification, so that is

probably in a state of flux. Heucheras are native to North America, including the eastern US, western US, and Mexico. Heucheras prefer well-drained normal to rich soil in full sun to partial shade in Hardiness Zones 4-9. All Heucheras flower, but some are grown primarily for their showy, colored foliage rather than the floral display.

We'll have a selection of dwarf and standard Heucheras of different foliage colors. The supplier suggests trying these as container plants, which would be much more complicated in Zone 5, as the container would need to be either buried in the ground, protected with mulch, or moved to a more protected location like a greenhouse or garage. Apologies for not including photos here. There will be color prints of these plants at the meeting to help with your selection.

CULTIVAR	FOLIAGE COLOR	FLOWER COLOR	HEIGHT	WIDTH
Little Cutie Coco	deep purple	pink	5-8"	7-10"
Little Cutie Blondie	caramel	yellow	5-8"	7-10'
Autumn Leaves	Red to taupe	white	8-10"	10-15"
Stainless Steel	Silver	white	8-12"	18-24"
Black Taffeta	purple-black	white	12-15"	15"
Cherry Cola best color in sun	orange red	red	16-18"``	12-16"

Supplier: Roots & Rhizomes, Randolph, WI.

50 YEARS WITH NARGS – A MEMOIR

Bill Plummer

As far as I can determine I joined the American Rock Garden Society [later renamed North American Rock Garden Society, somewhat a misnomer today with its international membership roster] in the spring of 1966, which makes me a 50-year member. I joined because I was in an isolated location (and still am) and I wanted to connect with other gardeners that I could learn from and consequently become a better gardener.

As a new member I remember getting a packet of literature and my first "Bulletin." In that "Bulletin," there was an article on "Double Pink Rue Anemone" by H. Lincoln Foster and one by a C. R. Worth on "The Blue of Lithospermum." The packet contained a wealth of information and from the ads in the bulletin I learned that there was a nursery, Mayfair Nurseries, just down the road from me in Nichols, NY. Walter Kalaga, the owner, had just published a book, *All About Rock Gardens and Plants*. I still have that dog-eared autographed copy. Two years later Linc Foster published his tome, *Rock Gardening*.

Remaining an isolated member devouring articles in the “Bulletin,” I did not attend any Annual or Winter Study Meetings until 1972. Bernard Harkness was president that year and the Annual Meeting, hosted by Bernard and Mabel Harkness and the Ithaca Group, began Friday evening in Canandaigua where my wife and I first met some fellow rock gardeners. Saturday the meeting moved to the Harkness’ home above Seneca Lake where I met more members. I remember that the plant sale was a riotous event.

Sunday was scheduled for garden visits in Ithaca. It was a rainy, overcast day and my wife declined to go. But, not me! I visited half a dozen gardens, including that of Nina Lambert and Bill Hamilton among others. Shortly thereafter my wife and I were invited to join the Ithaca Group. We started going to Annual Meetings and Winter Study Weekends totaling more than two dozen over the years. I went on fabulous field trips at the annual meetings, saw many, many fabulous gardens, met dozens and dozens of fellow gardeners, and heard many great presentations. If I drove to meetings, I would always offer other attendees to join me for garden visits.

For some reason I missed the Albany meeting in 1977 organized by Betty Corning. The Adirondack Chapter was formed soon thereafter with members centered in Albany and Ithaca and the meetings held in alternating locations. I served several terms as Treasurer and Chair. In 1983 our Chapter hosted the Annual Meeting in Ithaca and the 2000 Winter Study Meeting in Syracuse. Somewhere along the way I became a Life Member of NARGS.

In 1988 I took over the Slide Library and was the Manager for 10 years. In 1989 I had the privilege of driving Mabel Harkness and Audrey O’Connor to the Delaware Meeting where Mabel was awarded the Carleton R. Worth Award. I am no longer able to attend NARGS meetings, but I cherish memories of meetings and the friends I have made along the way. I have gained a lot through my NARGS membership – garden knowledge, great plants, close friendships.

I urge chapter members to support NARGS by becoming a member, and if you are able, to make an additional charitable gift. I strongly believe both are important ways to secure the future of NARGS for the next 50 years and a way we have to give back.

Editor’s Note: Congratulations Bill on 50 years as a member of our parent, NARGS and a founding member of our Chapter. We have all benefited from you: for keeping our Chapter alive and active into the present day, for growing your own gardening knowledge, for being our unofficial archivist, and for your generosity in sharing both knowledge and plants.

NEWS FROM NATIONAL: WANTED! YOUR LIST OF BEST ROCK GARDEN PLANTS

John Gilrein, Chapter Chair

NARGS is appealing to all Chapters to name the 20 best rock garden plants for their respective areas. After they receive these lists, they are planning to share this information back to us presumably through the website, <http://www.nargs.org>.

What rock garden plants are you most pleased with growing? Which plants have you been most successful with? Most reliable? Most trouble free? Think about what characteristics you especially like – factors like time of bloom, profusion of flowers, flower color, growth habit, etc.

I am coordinating our Chapter's version of the 20 best (and hardy) rock garden plants. Everyone in the chapter has the opportunity to contribute your favorites. I will need the plant name (botanical and variety, if a named variety and common name if known), and its habitat and soil condition. For example, *Aethionema grandiflorum* 'Warley Rose,' full sun in rock garden soil. You can submit 1 plant or 20 or anything in between and I will pare down the final list to 20 plants. Submit your plant list by Oct. 1st to me, John Gilrein, basecamp@alum.syracuse.edu.



Aethionema grandiflorum 'Warley Rose'
Photo by Rebecca Lance from NARGS website

I will compile one list from our members' contributions. This will be good regional information for gardeners, as the plants that will thrive in Denver may not thrive in Ithaca, and those that thrive in Seattle will surely not thrive in Savannah. We'll make sure to publish our list in the "Green Dragon" as well.

PLANT SALES UPDATE: PLANTS FINDING NEW HOMES



Images from the spring plant sale

Our two plant sales – the May sale, which is our main fundraiser, supporting program speakers, and our member only sale, which just occurred August 27 – have been very successful. Each year we seem to be getting more and more rock garden plants among the selections. Hopefully that means more and more of you are trying your hand at

growing them with some success. Surprisingly, even with this summer's drought there was a nice selection of perennials in August. Many plants have been struggling for lack of rain, exacerbated by high temperatures as well. If you attended one or both of these sales, then you certainly had the opportunity to purchase some quality plants at bargain prices. If you missed these sales, be sure to plan your schedule next year to attend.



Perusing the rock garden plant selection at our August sale

JUNE ROCHESTER GARDEN TOUR

John Gilrein

We had another fine, successful garden tour this year in June in the Rochester area. The 4 gardens we toured included the gardens of Roz Bliss, Betsy Knapp, Jerry Kral, and Matt Szostak and each were very different, which helped to keep the day interesting. We appreciate the generosity of those who shared their gardens with us.

Roz's suburban garden included the whole front yard turned into a garden mulched with gravel. The plants in the front garden demonstrated their fondness for the gravel mulch by reseeding themselves in it. The back yard was low, sometimes damp, so Roz planted moisture loving perennials and shrubs to take advantage of these conditions. Of course there were several troughs as well.

Betsy had a narrow backyard garden on a city lot. There was a real eye catcher in the back of the garden, a red British-type phone booth. A fence covered with climbing

hydrangea vine, *Hydrangea anomala petiolaris*, created a nice enclosure. Betsy, being the creator of very finished-looking troughs, had several planted ones in the garden. She was generous with some of her plants' progeny, and gave out seedlings of a slatey purple Hellborus x (there was a debate about whether the Hellebore flowers could be considered blue) and divisions of London Pride, *Saxifraga x urbium*. (Photo right, hosta with tufa "stone")



Jerry Kral has a garden on 2 city lots. The front garden was a fairly "normal" garden with some lawn and



a small rose garden, and did not provide a clue to what was to be found in the back. The back garden was a maze of paths and raised beds with exotic trees, numerous dwarf conifers, boxwood, even a variegated

Japanese knotweed (*Fallopia japonica*), which is (luckily) not very vigorous. It was obvious that Jerry is a pathological gardener (he makes me look like I'm just "tinkering" at gardening!). There were many sculptures in the garden. The highlight of this garden for me was a shady, round, sunken garden (see photo above left) enclosed by a well-constructed stone wall. Jerry's garden is the most visited garden in Rochester, which is clearly justified.

Matt has a newer suburban garden with a nursery area on the side. A garden pond next to the patio was one of the highlights, and even included frogs. There were many interesting perennials, shrubs, and trees in the back garden.

Photos by John Gilrein

UPCOMING 2016 ACNARGS PROGRAMS

Mark your calendars! Unless otherwise specified, all local events start with a brown bag lunch at noon with the program following at 1 pm, and take place at the renovated Whetzel Room, 404 Plant Science Building, Cornell University, Ithaca, NY.

September 17: Teri Dunn Chace, "Seeing Flowers," based on her best-selling, award-winning book of the same title

Oct. 15: Jill M. Nicolaus, critterologist, author, and writer-contributor to Dave's Garden website. Topic to be announced

Nov. 12: Elizabeth Lawson, Primroses. Also annual meeting with dish-to-pass luncheon starting at noon.

As we learn more details of our meetings they will be included in future newsletters, our blog, acnargs.blogspot.com, and our Facebook page, <http://www.facebook.com/acnargs>. Programs for 2017 are shaping up nicely and promise to deliver another exciting, informative year of speakers.

CALENDAR OF SELECT GARDEN EVENTS

To have a garden event in your area listed send all pertinent information to Carol Eichler at carolithaca@gmail.com

Sept. 10: Gathering of Gardeners, Rochester. **Gathering of Gardeners**

Sept. 10: Tomato Fest! 11am – 2 pm. CCE Tompkins, 615 Willow Av., Ithaca. Sample many varieties of heirloom tomatoes. No registration required. Suggested \$5 donation

Sept. 14: Amber Meadow Adams presents The Woman Who Seeded the Earth: A Haudenosaunee Ecology. Cornell Plantations Lecture Series, 7:30pm Statler Auditorium, Cornell campus

Sept. 21: Seed Saving 101. 6:30-8:30pm, CCE Tompkins. \$5-\$10 sliding scale. Pre-registration required

Sept. 21: Anne Johnson presents Flora of the St. Lawrence Region. 7pm, Unitarian Church annex (corner of Buffalo & Aurora Sts)

Sept. 25: Fall Creek Plant Exchange. 12-3pm, Thompson Park on N. Cayuga St. at Cascadilla Creek.

Sept. 28: Claudia West presents Planting in a Post-Wild World. Cornell Plantations Lecture Series, 7:30pm Statler Auditorium, Cornell campus

Oct. 5: Fall Propagation of Fruit and Nut Trees. 6:30-8:30pm, CCE Tompkins. \$5-\$10 sliding scale. Pre-registration required

Oct. 14: Wade Davis presents The Wayfinders: Why Ancient Wisdom Matters in a Modern World. Cornell Plantations Lecture Series, 7:30pm Statler Auditorium, Cornell campus

Oct. 17: Spring Bulbs. 6:30-8:30pm, CCE Tompkins. \$5-\$10 sliding scale. Pre-registration required

Oct. 19: Introduction to Home Cidermaking. 6:30-8:30pm, CCE Tompkins. \$5-\$10 sliding scale. Pre-registration required

Oct. 19: Jesse Hoffman presents Albany Pine Bush. 7pm, Unitarian Church annex (corner of Buffalo & Aurora Sts)

Oct. 26: Simran Sethi presents Bread, Wine, Chocolate: Saving and Savoring Our Favorite Endangered Foods. Cornell Plantations Lecture Series, 7:30pm Statler Auditorium, Cornell campus

Oct. 27: Getting your Landscape Ready for Winter. 6:30-8:30pm, CCE Tompkins. \$5-\$10 sliding scale. Pre-registration required

Nov. 2: Rainwater Harvesting. 6:30-8:30pm, CCE Tompkins. \$5-\$10 sliding scale. Pre-registration required

Nov. 2: Doug Tallamy presents It's for the Birds. Cornell Plantations Lecture Series, 7:30pm Statler Auditorium, Cornell campus

Nov. 7: Deer Resistant Ornamental Plants for your Garden, 6:30-8:30pm, CCE Tompkins. \$5-\$10 sliding scale. Pre-registration required

Nov. 7-19: 5th Annual Leaf Swap & Compost Giveaway. 10am – 1pm each day, CCE Tompkins. Bring leaves (CLEAN, no branches or other yard waste) or Take leaves. Also free screened compost (up to 5 gal. in your own container)

Nov. 16: Tim Tolen presents Native Green Roof at SUNY ESF building. 7pm, Unitarian Church annex (corner of Buffalo & Aurora Sts)

May 10-15, 2017: 3rd Czech International Rock Garden conference, Prague, Czech Republic; info at [Czech Rock Garden Conference on Facebook](#).

ABOUT US – ACNARGS

We are an all-volunteer organization and one of thirty-eight NARGS affiliated chapters active in North America. Our annual Chapter activities include 6 program-speaker meetings, the Green Dragon newsletter, web and Facebook pages, garden visits, overnight garden trips, hands-on workshops, and 3 plant sales a year. Our meetings are informal, friendly gatherings that provide a wealth of information and offer a source for unusual plants, plus the opportunity to be inspired by other gardeners. The public is always welcome.

Chapter membership starts at \$10 a year based on the calendar year. Membership includes these benefits: newsletter sent to you electronically (or option by mail for an extra fee), opportunity to travel on our planned overnight garden trips, and plant sale discounts and member only sales, including Plant-of-the-Month sales. Download a membership form here: <http://www.acnargs.org/join.pdf>.

ABOUT NARGS NATIONAL

NARGS National is our parent organization: We encourage you to join (online at www.nargs.org) for only \$40 a year. Benefits include a seed exchange, a quarterly publication, and an on-line web site featuring an archive of past publications, a chat forum and a horticultural encyclopedia. NARGS National also conducts winter study weekends and holds its Annual Meeting in interesting places where attendees have the opportunity to visit gardens,

and take field trips, often to alpine areas, as well as hear talks by outstanding plants people from around the world.

What can the Chapters do for National? Would local chapters exist without National? How do the Chapters benefit from National? Why do so few Chapter members become NARGS members? What would make National more appealing for Chapter members to join? How can National better support its Chapters?

RESPONSIBLE PEOPLE/2016 BOARD MEMBERS

If you want to volunteer, we'd love to hear from you!

Chair: John Gilrein, basecamp@alum.syracuse.edu

Program: Nari Mistry, nbm2@cornell.edu. **Seeking a new Chair for 2017. Help!**

Program Committee Members: **Could this be you?**

Secretary: Mary Stauble, mes2@cornell.edu

Treasurer: BZ Marranca, mmm10@cornell.edu

Plant Sales Chair: David Mitchell, dwm23@cornell.edu. **Seeking a Co-Chair for 2017 to work alongside David...Why not you?**

Plant Sales Committee Members: Michael Loos, BZ Marranca, Carol Eichler

Plant of the Month: John Gilrein, basecamp@alum.syracuse.edu

Membership: Mary Stauble, mes2@cornell.edu

New Member Hospitality: Terry Humphries, terryehumphries@gmail.com

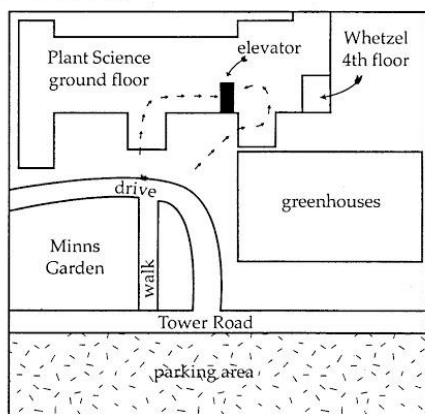
Newsletter Editor: Carol Eichler carolithaca@gmail.com

Newsletter Assistant: Pat Curran, pc21@cornell.edu

Webmaster, Program Tech: Craig Cramer, cdcramer@gmail.com

GREEN DRAGON TALES

Published eight times a year (Jan/Feb., March, April, May/June, July/Aug., Sept., Oct. Nov./Dec.). Submit articles by the fourth Friday of the month preceding publication to Carol Eichler, carolithaca@gmail.com. Note: The next issue of *The Green Dragon* will be our October 2016 issue. The newsletter is always posted and printable each month on our website: www.acnargs.org



Whetzel Room, 401 Plant Sciences Building,
Tower Road, Cornell Campus

PHOTOS OF THE MONTH: IRIS RETICULATAS

Reprinted by permission from The Plantsman, www.rhs.org.uk/plantsman

Editor's note: Here's a bonus – not one but many photos accompanied by an article about them. Where can you get bulbs of these beautiful iris? Odyssey Bulbs, White Flower Farms, or for the widest selection, Jacques Amand Intl. which ships to the U.S. They do a bulk shipment and then individual orders are sent on from within the U.S.

Contact: bulbs@JacquesAmand.co.uk for details though it may be too late to order this year.

Article starts on next page.

Canadian breeder ALAN MCMURTRIE is revolutionising early-flowering bulbous irises by expanding the range of yellows and introducing new patterns

Iris 'It's Magic' with good yellow colour and striking patterns. Note the wispy standards inherited from *Iris danfordiae*



Breeding new Reticulata irises

CULTIVARS DERIVED from *Iris reticulata*, conveniently known as Reticulata irises, have flowers that are mostly shades of blue or purple. Exceptions include near-white 'Natascha' from the 1970s and pale blue and yellow 'Katharine Hodgkin'. The last, along with the similar 'Frank Elder' and 'Sheila Ann Germaney', are sterile hybrids between *I. histrioides* and *I. winogradowii*.

Other recent developments include sports from 'Katharine Hodgkin' and 'Harmony', wild-collected bicolours, and a couple of sterile hybrids between 'Cantab' and *I. winogradowii*.

New Reticulata iris cultivars are mostly sports from existing cultivars selected by companies growing them at field-scale. They include sports of blue-flowered 'Harmony', such as 'Alida' (pale blue) and 'Pixie' (violet), and an as-yet unreleased purple and a near white. 'Harmony' is a reliable cultivar for forcing, so forcers favour others in its extended family. Purple-flowered 'George' is well known for sporting blue, and what was once known informally as 'Blue George' is now 'Palm Springs'.

However, I am improving the range of Reticulata irises by using material collected from the wild, including *I. danfordiae*, a yellow-

flowered species, that I collected in Turkey 30 years ago.

My aim is to produce cultivars with new colours and patterns that are robust, clump-forming and that come back year after year, while giving a modest number of blooms.

New breeding stock

Iris danfordiae has beautiful lemon-yellow flowers with a pleasant scent, but the plant does not reappear in the garden. Dig it up after its first year or two of flowering and all you tend to find is numerous bulblets. Growers speak of the original bulbs as having 'shattered' – they planted nice large bulbs, but all they find in



Parent species used in the breeding programme: *Iris danfordiae* collected from near Darboğaz in Turkey (left); an unidentified purple-flowered species collected from near Çat in Turkey (centre); and *Iris sopenensis* (right) obtained from a cultivated source

their place is numerous rice-grain-size bulbs. When bought from a bulb supplier they usually have sufficient energy to regenerate two bloom-size bulbs for the following year. But conditions in most gardens are not good enough to produce further bloom-size bulbs. More gardenworthy, yellow-flowered *Reticulata* irises are needed.

This poor performance is a characteristic of the sterile, triploid ($3n=27$), commercial form of *I. danfordiae*. It was presumably initially selected because of its larger flowers than diploid forms. However, in 1985 I was fortunate to collect *I. danfordiae* in Turkey, and

near Darboğaz I found what turned out to be a fertile, diploid ($2n=18$) form of the species. It also produces numerous bulblets but has been useful for breeding. Hybrids from this diploid *I. danfordiae* can be vigorous enough to rebloom every year.

Diploid *I. danfordiae* and its hybrids tend to bloom in the first half to two-thirds of the flowering season. Partly as a result of this, the flowers are typically up well before the leaves, which shows them off better. *Iris reticulata* hybrids bloom in the final two-thirds of the season and their leaves tend to be at the same level or higher than the flowers.

Iris histrioides and, to a degree, its hybrids, also produce bulblets, but they are less numerous and tend to be slightly larger.

Two other taxa have been important in my breeding work. One is an unidentified purple species I collected near Çat in Turkey. The other is *I. sopenensis* (syn. *I. histrioides* var. *sopenensis*), a blue-flowered species given to me by Frank Kalich in 1987.

Breeding basics

When you cross two species the first generation of hybrids (F_1) tends to be fairly uniform in appearance. Breeders will then cross these hybrids with each other, or back onto their parents, and it is in the second generation (F_2) and subsequent ones that recessive characteristics can express themselves.

When *I. danfordiae* is crossed with *I. sopenensis* the F_1 hybrids are blue, because the blue of the latter parent is dominant over the yellow of the former parent. Whites with blue accents start to appear in the F_2 progeny. This is the result of the blue and yellow genes being turned off, yielding white and revealing an underlying pattern of blue ribbing on the style arms and blue dotted or veined markings on the fall blade. Sometimes there is a yellow infusion around the fall ridge. Occasionally ➤



Iris 'Eye Catcher' is recently released and becoming available commercially

All photographs by Alan McMurtrie



It took ten years for the breeding programme to yield good whites such as *Iris* 'Starlight'

the accents are green, which is a combination of blue anthocyanins and yellow carotenes.

Iris danfordiae has a short bristle as a standard, in contrast to other species where it is 7–10mm in width. In F_1 hybrids with *I. sopherensis* this results in standards that are 1mm or less in width but of normal length. In subsequent generations they are somewhere in between, in both width and length.

Breeding limitations

Working with *Reticulata* iris is a very slow process as each generation is five years. For crosses that should work, hybridization success rates vary year by year from 25 to 65%. Germination rates are around 30 to 33%, with 5 to 8% losses during that period, giving a net of about 25%. I am now applying gibberellic acid to the seeds at various stages to try to improve this.



Iris 'White Caucasus' was an early selection from crosses using triploid parents available commercially

Now that I have new seedlings blooming every year, one priority is replanting the promising ones, so bulbs of the most interesting can be sent to the Netherlands for trial as soon as possible. At the same time I need to maintain enough bloom-size bulbs in Canada for use in hybridizing.

An even slower process is the building-up of stock by the grower to the point where sales can begin. It takes at least 12 years to get tens of thousands of bulbs, and after that it might need to increase to hundreds of thousands as, hopefully, demand picks up. For this to work optimally you need good bulblet production in the early years. With typical hybrids the overall increase each year is about 2.1 to 2.4 times. In the case of diploid $2n=18$ hybrids, which produce many small bulblets, that rate is more than 3 times.

For common cultivars propagated in large quantities, growers get 3–4 Euro cents per bulb and their costs are perhaps 2.5 cents per bulb. They face a significant risk if bulbs are unsold, as they have already spent money planting the bulbs out prior to orders coming in. Wholesalers and exporters wait as long as possible before placing orders with, so they are not left with unsold bulbs. For 200,000 bulbs a grower's costs are around €3,000, so they need to sell 100,000 bulbs just to break even.

Flower size

Bulb growers usually say that wholesalers and exporters want cultivars with large flowers – 70mm from fall tip to fall tip. Although *I. sopherensis* has flowers of 70mm, the other parents in the $2n=18$ group are smaller. For instance, the species from Çat is 38mm, and diploid *I. danfordiae* is 33mm compared to 45mm for the triploid form. I may be happy with the cultivars I have raised, but my primary goal is for



Iris 'Spot On' (above left) and *Iris* 'Scent Sational' (above right) were introduced in 2014. A hybrid derived from 'White Caucasus', 03-AN-3 (below), produces up to five flowers per bulb, so could be particularly useful in further breeding.



others to grow and enjoy them. This is one of the reasons why I am having a lab create tetraploid versions of some of my hybrids.

One of my cultivars, 'Eye Catcher', is a good size (55mm tip to tip) and should do well commercially. 'Orange Glow' is attractive but at 40mm it is seen as a bit small. A tetraploid variant, which bloomed for the first time in 2015, is 50mm, so should sell better. I therefore have to take a gamble on this as it takes 10 years to build stock to the point where sales can begin, and then two more years to gauge public reaction. With these long timelines you need multiple strategies.

Early cultivars

Crossing existing commercial triploid cultivars essentially gives more of the same. In the early days I tried to break this pattern by introducing fresh wild genetic material into the crosses. Three of those original cultivars are now sold commercially: 'White Caucasus', from the Lake Sevan area of the Caucasus mountains in Armenia, and purple-flowered 'Spot On' and 'Scent Sational'.

Another exciting seedling from triploid crosses is 03-AN-3, because it can produce up to five full size flowers per bulb. Occasionally, 'Scent Sational' will give three flowers per bulb.

My more successful breeding is with $2n=18$ parents. It took 10 years to get my first white-flowered F_2 cultivar, 'Starlight', and several more years to see further F_2 hybrids.

When the F_1 first bloomed from diploid *I. danfordiae* crossed with *I. sopbenensis* the next question was what to cross them with. The pollen looked good under a microscope, so crossing them with each other was most likely to work, which is what I did. This is in contrast to existing cultivars, such as 'Harmony', which seemingly produce good fluffy pollen, but under a microscope you can see the pollen grains are misshapen.

Three of the F_1 plants showed a bit of yellow influence, which made their blue look a touch dark. I thought the F_2 plants might turn out muddy and would need cleaning up in subsequent generations. I was therefore overjoyed when the first F_2 bloomed and turned out to be a lovely creamy white. I suspected that the blue F_1 plants might hold something valuable, so I started keeping records and statistics of crosses made with them.

As well as blues (pale blue to dark blue and violet), whites (typically with blue or green accents) and yellows, the F_2 hybrids also included yellow-and-blues (yellow with blue spots, yellow with blue veins, and greens through to browns). Back-crosses to *I. danfordiae* ➤



Examples of more unusual colours with shades of green and brown include *Iris* 'Sea Green' (left) and *Iris* 'Down to Earth' (above).

occasionally produced spotted, pale blue-green hybrids.

The problem with some of these hybrids from a commercial point of view is that the flowers are on the small side, due to diploid *I. danfordiae* having smaller flowers than the sterile, triploid commercial form. Also, at least one Dutch commercial bulb grower thought buyers would not accept them if they did not have 'normal' standards. Although *I. danfordiae* and some of its hybrids only have bristles as standards, its falls are held quite upright and it has wide fall blades and style lobes, so the flowers still look full.

These early hybrids are limited to the colour categories mentioned above. It was when I started using the unidentified purple species from

Çat that things started to open up. It became apparent that even orange was possible!

***Iris danfordiae* hybrids**

New cultivars that I have raised using diploid *I. danfordiae* have revealed a broad range of colour possibilities. These include whites such as 'Starlight' and other unnamed ones, and white and blue ones.

Yellow-flowered cultivars include some with full-size standards which could supersede the triploid clone of *I. danfordiae* currently offered commercially. Others combine yellow and green, yellow and black or brown, and yellow and wine-red.

Seedling 08-FW-2 may be purple, but its ground colour is orange, and that colour is the best orange



so

Iris 'Sunshine' (above) is a good yellow without standards, and wispy standards are evident in 06-EJ-2 (left). *Iris* 'Orange Glow' (below) shows promise.





Seedling 06-CC-3 (above) is pale blue and *Iris* 'Plum Cuddles' (right) is a good purple. Extra flower parts sometimes appear in *Iris* 'Eye Catcher' (below).



Iris 'Sea Green' (above) fades to blue and *Iris* 10-BL-1 (below) has unusual dark shades with yellow



far. Also, the colour lasts for two days, not the usual half-day. The breeding challenge here is to turn off the purple.

Although I am told there are enough blue-flowered cultivars in existence, I have raised some notable selections in this colour. Seedling 06-CC-3, for example, is a lovely pale blue with excellent form.

Additionally, 'Sea Breeze' is a lovely blue with white style lobes and a large white patch infused with a bit of yellow. From a distance clumps seem white. When purple colours arise they tend to be combined with blue.

Other colours include various shades of green, brown and black (actually intensely dark blues or purples). Some of the more unusual ones include 'It's Magic' (photograph, p20) and 10-BL-1 and those with unusual marginal patterns.

The fading of flower colour in *Reticulata* iris is not normally favoured. It is best if colours are bright and sun-fast. However, in some cases it can be an attractive feature. For example, my 'Sea Green' holds its green colour until close to the end, then changes to an attractive pale blue. Others also fade in appealing ways. Streaks in the flowers are another colour variation that arises in some hybrids.

In addition to colour fading, selections can vary quite surprisingly

depending on the location where they are grown. For example, 'Pristine' looks very different when grown in the Netherlands, where it has thin flower parts, to what it looks like in my garden in Canada, where it is more substantial.

Other variations include extra flower parts, such as an additional style arm, or a fall in place of a standard. In 'Eye Catcher' this behaviour is now quite common, although it was not when I first raised it.

Future hybridizing goals

My long-term aims are to continue creating new, unusual colours and patterns. An early goal was to create a pale yellow, effectively to break the lemon-yellow mould of *I. danfordiae*. I did that a few years ago, in particular with the lovely 01-FS-2, and 03-CC-3. The former was exhibited at a RHS show in February 2016 and the latter may be exhibited next year.

In the short term I would like to produce a bright, non-fading orange. In 2003, when 'Orange Glow' and similar colours bloomed for the first time, it was clear that one day this will be achievable. However, I need a stronger, more intense orange, and it needs to be sun-fast. In 2015 seedling 08-FW-2 showed a big step in that direction but now I need to get that orange ground into a ➤

large flower with nice form, and improve the sun-fastness.

I am also aiming for white with dark cherry-red accents, and an elusive goal is to create a pink, just as we now have with tall bearded iris.

Ploidy possibilities

I hope that Reticulata iris breeding can be enhanced by developing polyploids; essentially tetraploids (4n), and possibly octaploids (8n). This can lead to flowers being 20–30% larger, and having more substance. They can then tolerate poor weather better and last longer. For instance, diploid ‘Orange Glow’ has flowers 40mm across, but they are 50mm in the tetraploid version.

Another benefit of polyploidy is intertype hybrids. This means being able to cross 2n=20 plants with 2n=18 plants and having the progeny remain fertile, thus being able to go further with breeding. First, the parents would need to be made polyploid, giving respectively 4n=40 and 4n=36, and then their progeny would be 4n=9, 9, 10, 10. Since the two n=9 chromosomes pair up and the two n=10 chromosomes pair up, the plants should be fertile.

The full benefits of this have not been determined, but it could have lots of potential. For example, you could take one parent with very large flowers, another with significantly more flowers per bulb, and mix them in with a couple of parents that have interesting colours or patterns.

To develop wider ranges of colours and patterns I need to pull out recessive genetic characteristics. Unfortunately, this is harder when working with polyploids, so there is an incentive to continue breeding at the diploid level and have a laboratory convert the most interesting to polyploid for breeding or commercial purposes. This is an expensive proposition, and I do not



Iris ‘Mars Landing’ is an unusual combination of reddish brown and yellow.

foresee sufficient income to support it. There will be advances from polyploid breeding, but overall there may be more advances from the existing momentum at the diploid level. Time will tell.

My first polyploid bloomed in the Netherlands in 2015, and it will take longer to get more tetraploids to seriously breed with. I will get bulbs of these first few into Canada in 2016 and hopefully have hybrid tetraploid seed in 2017, which will potentially bloom in 2022. Assuming something worthwhile is produced it will take at least 10 years to bulk up the bulbs for early sales, which takes me to 2032.

The process could possibly be speeded up by micropropagation, but I think it is more worthwhile spending my profits on creating the polyploids in the first place.

Cultivation and propagation

These hybrids have been raised under reasonably harsh conditions in Toronto, Canada, so they are fairly robust.

For long term plantings, resist the urge to initially plant large bulbs close together to get an instant clumping effect. Give the bulbs

a reasonable amount of space. I recommend replanting Reticulatas every two or three years, especially if bulbs are planted close together. It is actually a good idea to plant some in another part of the garden. And if you plant some in a sunny location and some in a shady location, you can extend the growing season. It is also a good idea to plant some early varieties and some later ones.

If you plant seeds or bulblets, be sure to cover them each winter with a mulch of leaves, or better yet, straw to keep the soil surface frozen and prevent premature germination or growth. Once the snow has melted you can remove most of the straw.



Iris ‘Velvet Smile’ received a Certificate of Preliminary Commendation from the RHS in 2016



Seedling 05-GQ-3 dates from 2012 and is one of the best yellow and reddish purple selections

By the time the leaves die down in late June they have grown to 45–60cm in length. A bulb forms at the base of each leaf, so if you damage the leaves you are directly damaging next year's bloom.

If you need to store the bulbs out of the soil then dig them up just as the leaves are dying down. Store them over summer in mesh bags hanging in a cool, dry location. If you dig up bulbs at the end of summer or early autumn, and leave them unplanted for a couple of weeks, they can go soft. If you do this, make sure you replant them within two days. Bulbs dug up in early summer and properly dried are fine in storage.



Iris 'Storm' will hopefully be made available commercially by UK nurseries

Gardeners can benefit from the production of numerous bulblets. You can use them to multiply a cultivar faster than it would otherwise. Simply replant them closer to the soil surface, like first-year bulbs from seed, at 1–1.5cm depth. If they are left at the base of the bulb, as they would be when in a clump, not all of them will have sufficient energy to get a leaf up. For instance, in my garden mature bulbs typically place themselves at 7cm depth. They will form clumps. For fun, try planting a few individual bulbs or bulblets around the garden and what happens after a few years.

If you have problems with bulbs rotting or not reappearing, make a mound of soil and plant them in that. If you have problems growing them in a trough then change the compost to improve drainage.

Conclusion

I have come a long way from plant collecting in Turkey 30 years ago, which gave me the foundation for the work I am doing today.

Every year it is amazing to see new *Reticulatas* blooming for the first time. I look around the garden each spring day to see buds coming

through the ground, then I watch as the first colour appears. Some buds that look interesting, like they are going to produce something amazing, turn out to give just something ordinary. Then every so often you do get something amazing, such as the first yellow and reddish purple combination in 2011, followed in 2012 by the even more exquisite 05-GQ-3.

I am fortunate that several of my cultivars have been recognized with RHS awards. In 2015, 'Sea Green' received an Award of Merit and 'Eye Catcher', 'Spot On', 'Storm' and 'Sunshine' received Certificates of Preliminary Commendation. In 2016, 'Spot On' received an Award of Merit and 'Pristine', 'Scent Sational' and 'Velvet Smile' received Certificates of Preliminary Commendation.

I hope I can successfully get more of these into the market so that gardeners enjoy them. Stocks of many are being built up in the Netherlands. Three large-scale Dutch growers have rejected both 'Storm' and 'Sea Green' but I am working with Jacques Amand International to introduce them in the UK. I have also managed to regain control of 'Orange Glow' and intend to introduce that as well. In the meantime, several of my other cultivars are available from UK nurseries such as Avon Bulbs, Jacques Amand International, Pottertons Nursery and Rare Plants.

I hope gardeners will like what I have raised and will want to try a few more cultivars every year. What we are seeing at the moment is only the tip of the iceberg. The future looks extremely exciting.

ALAN MCMURTRIE is an amateur plant breeder based in Toronto, Canada
www.reticulatas.com