

SIGNA



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Species Iris Group of North America

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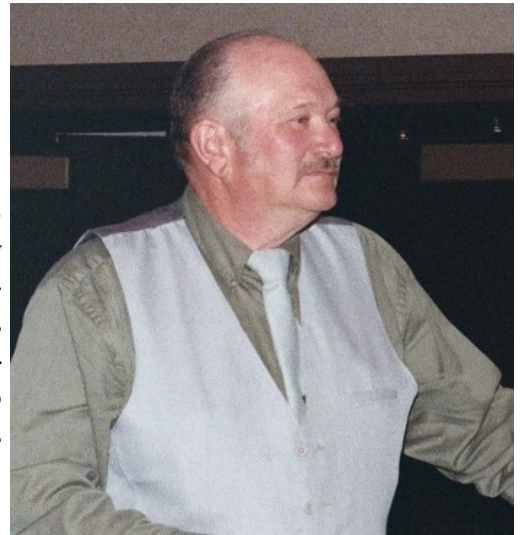
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From The President

Will Plotner

In this issue are some very interesting pieces including new installments of two series, one by Stephanie Boot and the other by Ken Walker as well as a look at some of the irises at Kew Gardens also by Ken Walker. There is also a description of the iris collection at the Pyatigorsk Ecological-Botanical Station in Russia by Nina Alexeeva, Gennaly Firsov, and Peter Zhurbenko with two maps showing the distribution of ten different species iris in Russia compiled by Peter Zhurbenko.



Membership must continue to be our primary focus. If we can grow in membership everything else will fall into place. To this end we have tried several things over the past year. We cannot do anything about the members that simply age out or have gone to a better place, but we do need to come up with some kind of recruitment to get more people interested in becoming members. Any suggestions in this area would be appreciated. I urge you to tell people about SIGNA and to ASK them to join. It is not hard to do, and I have found it to be a successful way to bring people into the organization. If we can sign them up and get them involved, they will become an important part of the organization. Any member can help with one of several projects within SIGNA.

Our search is still on to find a person who can obtain some articles for our publication. You do not have to edit them; the position involves only making contact with the people who will write these articles and keeping us informed as to their progress and when they will be ready for our editors.

Walter Pickett has been temporarily volunteering as our Seed Chair. He would now like someone to replace him.

If you can spare a little time volunteering with SIGNA, please contact me. I know that sometimes people like to be asked before they step up, so if you know of someone who might just need some encouragement to volunteer, do let me know. I check my email and Post Office box every day except when I am away from home.

We are very fortunate to be able to present Dr. Yuee Xiao as our speaker at the SIGNA meeting at the AIS National Convention in New Orleans. She has previously attended AIS Conventions with Dr. Zhao Yu-tang who, with our own Dr. Jim Waddick, wrote the book on "The Iris of China." I, for one, very much look forward to her talk.

All My Best

Will

Will Plotner, P.O. Box 250, Molalla, OR 97038-0250 gardens@molalla.net

Please enroll a friend or acquaintance as a member of the Species Iris Society of North America

U.S. memberships are \$12.00 for one year or \$32.00 for three years.

Foreign memberships are \$15.00 for one year or \$40.00 for three years.

Electronic memberships (email delivery of the newsletter) are \$6.00 for one year or \$16.00 for three years.

Life memberships are \$300 per individual.

All memberships are per household except for the Life membership

Iris parts, Diversity in the Genus, Flowers

Ken Walker

This is the third article in a series of four that are based on a program I gave for the Sidney B. Mitchell Iris Society. This article looks at the diversity of forms among iris flowers.

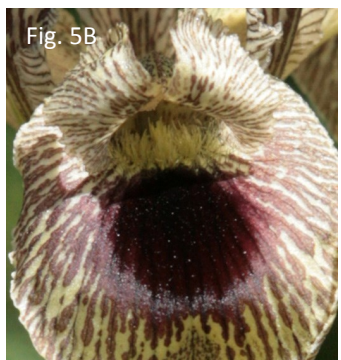
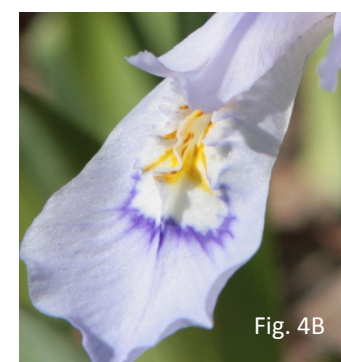
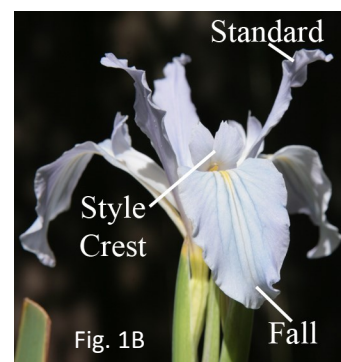
All Iris flowers naturally have three-fold symmetry. Each species produces something in the way of three outer petals, the falls, three inner petals, the standards, and three style arms with petal-like crests on the tips. In Figure 1, falls, standards, and style crests are labeled for two species. One species is *Iris koreana*, a small plant in the series Chinenses with relatively flat yellow blooms. The other is *Iris munzii*, a Pacific Coast Native Iris with more three dimensional blue flowers.

Figure 2 shows two blooms of *Iris brevicaulis*; this is a Louisiana Iris that grows along much of the Mississippi River. The first bloom is fully open and the second is a partly open bud. The second picture shows how the falls form the outer part of the bud with the standards and other flower parts inside.

Most iris are pollinated by insects that use the falls as landing sites. Some irises have special structures on their falls to attract these insects. Bearded irises, like *Iris trojana* in Figure 3, use a fuzzy patch near the base of their falls as a landing signal.

There are other irises that use crests as landing signals (different from the crests on the style arms). These crests consist of one or more raised ridges running lengthwise near the base of the falls. Crests are demonstrated in Figure 4 by *Iris cristata* 'Powder Blue Giant' (Sam Norris by Jan Sacks/Marty Schafer 1997). *I. cristata* is a small woodland iris that grows in Mid-Atlantic States in the US.

The *Oncocyclus* irises from arid regions of the Middle East and somewhat northward, have beards but also often have dark signal spots that are more prominent than the beards. An example



is *Iris sari* as shown in Figure 5. It is believed that these spots look, to male solitary bees, like safe holes to spend the night. As you can see, there is indeed a hole between the haft of the fall and the style arm above it.

Some irises have simple landing strips. Figure 6 shows the yellow stripe presented by *Iris musulmanica*, a Spuria species native to the Caucasus into the northern Middle East.

There are iris mutations that produce flowers violating the rule of three falls, three standards, and three style arms. Colchesterensis (R. Wallace & Co 1910) has six falls, no standards, and typically four or five style arms. This cultivar of *Iris laevigata* is shown in Figure 7A. Contrast it with Seiran (Clarence Mahan 1993) in Figure 7B, a variety of the species with a typical complement of flower parts.

Standards vary widely in size and form throughout the genus. Oncocylus irises frequently have tall broad standards. This is demonstrated in Figure 8A by *Iris damascena* and in Figure 8B by *Iris kirkwoodii*.

Iris flowers with narrow standards are shown in Figure 9. Figure 9A shows *Iris fulva*. It is a Louisiana Iris with a range similar to that of *Iris brevicaulis*. Other than its near relative, *Iris nelsonii*, it is the only true iris to naturally display a distinct orange-red color, making it particularly attractive to hummingbirds over insects. The photo shows the flower on the first day with the standards “standing up”. On subsequent days, the standards recurve to match the falls. Figure 9B shows the Sino-Siberian (also known as a 40-chromosome Siberian), *Iris bulleyana*. Its standards remain relatively upright.

Some irises have standards that show up only on close examination. One example is the water loving iris, *Iris pseudacorus* (the European Yellow Flag Iris), as shown in figure 10A. It has the distinction of being the only iris that is widely viewed as an invasive weed, frequently choking shallow water environments. Another iris with small standards is *Iris setosa*; its distinction is that of being the only iris that naturally grows in both the old world and the new: its range spans the Bering Sea. Figure 10B shows a white variety with particularly tiny, pointed standards.



Fig. 6A



Fig. 6B



Fig. 7A



Fig. 7B



Fig. 8A



Fig. 8B



Fig. 9A



Fig. 9B



Fig. 10A



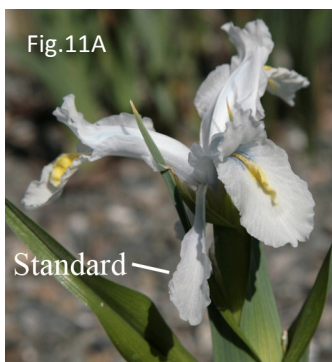
Fig. 10B

As it turns out, not all standards “stand”. Juno irises typically have small standards that point down below the falls. This is demonstrated by *Iris acheri* ‘Turkish Ice’ in Figure 11A and *Iris narbuti* in Figure 11B.

Irises with inconspicuous standards sometimes compensate with particularly showy style crests standing over the falls. This is demonstrated in Figure 12A by the Juno, *Iris bucharica* ‘Swan Wings’, with its crossing style crests. Figure 12B shows the frequently grown small spring bulb, *Iris danfordiae*; its standards entirely inconspicuous, but its style crests are very much like petals.

A few more flower parts will be explored in the next article on reproduction.

Reprinted from Irises, “The Bulletin of the American Iris Society” Vol. 96, No.3.



Wanted: Jean Witt Introductions

The University of Washington Botanic Gardens began in 1934 with the establishment of the Washington Park Arboretum. Over the ensuing decades the UW Botanic Gardens has grown to two sites and, with the creation of the Center for Urban Horticulture in 1980, now encompasses 310 acres on the shores of Lake Washington in Seattle. The Arboretum has one of the largest collections of temperate woody plants in North America. In some garden areas in the Arboretum, such as the Woodland Garden, Witt Winter Garden and Rhododendron Glen, perennials have long been a part of the display. In recent years, the UW Botanic Gardens has also included more perennials in its collections, both at the Arboretum and at the Center for Urban Horticulture.

In the Arboretum, the creation of the Pacific Connections Garden — a collection of five eco-geographic plant groupings from parts of the Pacific Rim with climates similar to the Pacific Northwest — has also resulted in a greater emphasis on perennials as part of a demonstration of the flora from each of those regions. One of those regions is Cascadia, which focuses on plants of the Pacific Northwest; this has resulted in the inclusion of more iris species and cultivated varieties. The Center for Urban Horticulture also features demonstration gardens including a perennial garden with several iris cultivars and more recently a growing collection of Pacific Coast hybrid irises.

Jean Witt had a long involvement with the UW Botanic Gardens, and her husband Joe Witt was the curator at the Arboretum for over 30 years. The Winter Garden was named in his honor after his untimely passing in 1984. Jean’s contribution to horticulture and especially iris breeding and promotion was long appreciated locally, nationally and internationally. A unit of the Lake Washington Garden Club, of which she was a member, continues to volunteer regularly in the Witt Winter Garden. It seems only fitting that we should feature some of her many iris hybrids at the Washington Park Arboretum. We would be delighted to receive donations of some of her hybrids. These will be planted in prominent locations in the Woodland Garden and Witt Winter Garden and in adjacent beds along Azalea Way. If you have some of her introductions and would like to donate plants for this effort, please contact me in one of the ways below so we can make satisfactory arrangements.

Thank you!

Raymond J. Larson, M.S.

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The World of Iridaceae (Part 2)

by Stephanie Boot

Reprinted from the Bulletin of the New Zealand Iris Soceiey.

Babiana

Babiana is a large genus, consisting of about 80 species. More than half are concentrated in the southwestern Cape of South Africa, with the rest mainly in Namaqualand and the northern Cape. They are often known as the Baboon Flower, because they pull their corms deep into the soil to avoid being eaten by baboons. If growing them in pots, choose large ones, 30cm deep or more.

All babianas are deciduous. Most are winter-growing and like most other winter-growing (or Mediterranean climate) irids, they start their growth cycle in autumn when the first rains fall and the leaves push through the soil. The plants grow through the winter, and as spring approaches, they produce flower buds. Some species flower early in spring and others late, almost into summer. Most species are in seed in early summer and, as the rains finish and the weather heats up, they go dormant again. To successfully grow them, one needs to remember this growth cycle. Start to water them in autumn, water through the winter and stop in late spring when the plants show signs of going dormant. They will do best in a sunny aspect with free air circulation. The plants are drought tolerant and they vary in hardiness, but probably will not like anything below 25°F (about -5°C).

Babianas do well in the garden and a number of species grew well in my former gardens in the north, enjoying well-drained soil and a sunny aspect. They don't seem to rot in wet weather, given good drainage. Most of the babianas that are commonly grown are hybrids, mainly of *Babiana stricta*, but many of the species are far more beautiful and rewarding. The flowers are long lasting and brightly coloured and many are scented as a bonus. Babianas can expand and bloom *en masse* in garden situations to their liking.

Belamcanda

Belamcanda chinensis (now reclassified as *Iris domestica*) grows 60–90cm tall in full sun and is often found blanketing hillsides. The flowers are typically orange spotted with red, some ranging from red to orange to yellow, or mixed and bloom in summer to early autumn. The leaves grow in a fan, like those of a *Gladiolus*. The seedpods open in the fall, showing clusters of black seeds whose fancied resemblance to a blackberry gives the plant its common name, "Blackberry Lily". The plant is hardy to Zone 5 and is propagated by seeds or division.

Calydorea

Calydorea is a small genus of perennial, herbaceous and bulbous plants in the iris family native to Mexico and South America. The plants in the genus are small with tunicate bulbs. The flowers are light blue, violet, white or yellow, depending on the species, of which there are around twenty. Taxonomists considered that the four other already known genera from Florida, Mexico, Brazil and Venezuela are not different enough from each other to justify their taxonomic segregation and, for this reason, all of them are now included in *Calydorea*. The genus name is derived from the Greek words 'caly', meaning "sheathed" and 'dorea', meaning "spear".



Babiana pygmaea



Babiana rubrocyanea



Belamcanda chinensis Variegata

Chasmanthe

Chasmanthe floribunda is known by the common name African flag. Endemic to Cape Province in South Africa, it has been introduced to other areas of similar climate and is considered to be naturalised in California, Algeria, Australia, Argentina and St. Helena. It is a perennial sprouting from a corm and producing clumps of long, narrow leaves. It erects one thin, tall stem which may approach a metre in height. At the top of the spike is an inflorescence holding 20 to 40 flowers in neat vertical rows. The flower is a curving tube with a long upper lobe curving down over smaller lobes. From the mouth of the flower protrude the stamens with their large, hanging anthers, and the style. The flower is usually bright orange-red or scarlet on the upper lobe and yellow to orange in the lower lobes. There is a variety known as *Chasmanthe floribunda* var. 'Duckettii' which is a soft yellow and another species *Chasmanthe aethiopica*, both of which I have grown. The corms are flat and wavy and can be up to as much as 8cm in diameter. *C. f.* var. *duckettii* is a popular garden plant, Calydorea and is effective planted in groups in mixed beds and borders or *en masse*. It is easy to cultivate and is useful in the garden in that it will grow equally well in full sun or semi-shade. It is also known not to be subject to any serious pests or diseases.

The corms should be planted 3-5cm deep and are best left undisturbed for several years. Corms that have been lifted and replanted will take at least a season to re-establish themselves and often will not flower the season after replanting. Chasmanthe require a well-drained, well-composted soil and will tolerate summer irrigation during the plant's dormant period, provided the soil is well-drained. The plants must be well-watered during autumn and winter which is their growing-season. *Chasmanthe floribunda* is tender to half-hardy and requires protection in very cold climates.

Crocsmia

Crocsmia is another small genus native to the grasslands of southern and eastern Africa, ranging from South Africa to Sudan. One species is endemic to Madagascar.

Crocsmias can be evergreen or deciduous growing from basal underground corms. The alternate leaves are sword shaped and parallel-veined. The corms are unusual in forming vertical chains with the youngest at the top and oldest and largest buried most deeply in the soil. The roots of the lowermost corm in a chain are contractile and drag the corm deeper into the ground where conditions allow. The chains of corms are fragile and easily separated, a quality that has enabled some species to become invasive and difficult to control in the garden.

They have colourful inflorescences of 4 to 20 vivid red and orange subopposite flowers on a horizontally branched stem flowering from early summer well into autumn on an arched spike. They are pollinated by insects, birds (hummingbirds) or by the wind. They are commonly known in the United States as coppertips or falling stars and in the United Kingdom as Montbretia. Other names, for hybrids and cultivars, include Antholyza and Curtonus. The genus name is derived from the Greek words 'krokos', meaning "saffron" and 'osme', meaning "odour" – from the dried leaves emitting a strong smell like that of saffron (a spice derived from *Crocus* – another genus belonging to the Iridaceae) – when immersed in hot water.

Crocsmias are grown worldwide and more than 400 cultivars have been produced, some of which have become invasive, especially *C. x crocosmiflora* hybrids, which are invasive in the UK, New Zealand, Australia, the American Pacific Northwest, and probably elsewhere. Winter-hardy in temperate regions, they can be propagated by removing offsets from the corm in spring.

The following cultivars have gained the Royal Horticultural Society's Award of Garden Merit: 'Lucifer', *C. masoniorum*, *C. masoniorum*, 'Severn Sunrise', *C. x crocosmiflora* 'Carmin Brilliant', *C. x crocosmiflora* 'Solfaterre', *C. crocosmiflora* 'Star of the East'.

Crocus

Crocuses are dwarf, deciduous perennials growing from a corm. There are spring flowering species and some species known as "autumn crocus" that flower in late summer and autumn, often before their leaves appear. The grass-like leaf generally shows a white central stripe along the leaf axis. The flowers typically have three stamens and the cup-shaped, solitary, flower tapers off into a narrow tube. Their colours vary enormously, although lilac, mauve, yellow and white are predominant. They should not be confused with a different genus of autumn-flowering plants, Colchicum.



Autumn crocus - Autumn-flowering species of crocus include:

- C. banaticus* (syn. *C. iridiflorus*)
- C. cancellatus*
- C. goulimyi*
- C. hadriaticus*
- C. kotschyanus* (syn. *C. zonatus*) *C. laevigatus*
- C. ligusticus* (syn. *C. medius*)
- C. niveus*
- C. nudiflorus*
- C. ochroleucus*
- C. pulchellus*
- C. sativus* (saffron crocus)
- C. serotinus*
- C. speciosus*
- C. tournefortii*

Crocus ochroleucus is cream-coloured and native to Syria, Lebanon, Israel, Palestine and Turkey. The origin of specific name 'ochroleucus' is derived from the Greek 'ôchro's, yellow, and 'leukos', white. The Latin name 'crocus', and the Greek name 'krokos' which gave it birth were used by ancients to designate the peculiar species with violet flowers. About 30 of the species are cultivated, including *Crocus sativus* whose large stigmas, highly fragrant and of a beautiful orange yellow tint, and produce the famous saffron used in colouration of certain food and liquors. Human cultivation of saffron crocus and use of saffron is known to have taken place for more than 3,500 years and spans different cultures, continents, and civilisations.

Spring Crocus - Many of the commonly found spring blooming crocus are hybrids of *Crocus vernus*, Dutch crocus, with large, single flowers, or *Crocus chrysanthus*, which blooms a couple of weeks earlier and has smaller, but more profuse blooms. They are hardy and easy to naturalise plants that pop up very, very early in spring. Crocuses don't come in a large variety of colours, but they are bright enough to put on a good show and are popular with gardeners. Hybrids tend to bloom a little later and mixing them with other species of crocus will give you a longer period of bloom.

The varieties cultivated for decoration mainly represent five species: *C. vernus*, *C. chrysanthus*, *C. flavus*, *C. sieberi* and *C. tommasinianus*. Among the first flowers to bloom in spring, their flowering time varies from the late winter *C. tommasinianus* to the later, large, hybridised and selected Giant "Dutch crocuses". Crocus flowers and leaves are protected from frost by a waxy cuticle and, in areas where snow and frost occasionally occur in the early spring, it is not uncommon to see early flowering crocuses blooming through a light late snowfall.

Grow in a gritty, poor to moderately fertile soil and propagate by seed sown in containers in a cold frame when ripe or remove cormlets when dormant. Crocuses are suitable anywhere - banks and slopes, flower borders and beds, garden edging, city & courtyard gardens, coastal, cottage & informal garden, gravel garden, patio & container plants, rock garden and wildflower meadow.

Cypella

Cypella coelestis (Syn. *Cypella plumbea*, *Phalocallis coelestis*) is an absolutely gorgeous and rare member of the iris family. This one is native to Argentina, Brazil and Uruguay. Vigorous and easy, it grows to three feet tall, making clumps of deeply pleated, pale green leaves. In summer, it bears curiously shaped beautiful flowers, with yellow markings, about 10cm across. Forms bulbs, is deciduous and can handle light frost.

Cypella herbertii has large, ornate, golden yellow blooms sitting atop wiry stems up to 50cm tall. Each flower opens only for a day but they keep coming and coming, from spring through mid-summer at least. Each year, this Cypella produces more and more stems until you get masses at a time.

Cypella peruviana Any Cypella is delicious but this one from Peru is stunning - the three petals a deep golden

yellow with red and purple markings in the centre. A summer-blooming bulb on stems 50–60cm tall, each flower lasts only one day, but by carefully trimming the seed pods the blooming period can be extended. Requiring regular water in summer, these like to be dry in their winter dormancy, so well-drained soil is must or pot culture in full to part sun. *Hesperoxiphion peruvianum* is becoming a widely accepted name for this plant, lovely by any name.

Cypella aquatilis is described as a new species of the Iridaceae, occurring in the Brazilian states of Rio Grande do Sul, Santa Catarina and Parana. The plant is remarkable by being submersed in streamlets and rivers and by the vegetative proliferation in the inflorescence.

Dierama

Dierama is an African genus of which there are 44 species, most being found in the eastern mountainous regions of Southern Africa. It is evergreen, mainly summer growing, with long, narrow, tough, fibrous foliage and pendulous bell-shaped flowers in shades of white, yellow, pink, magenta, mauve or maroon, also known by its common name Fairy or Angels' Fishing Rod. It is recognised by its wiry, usually drooping spikes and it can be quite dramatic in the garden. The rootstock is a corm that roots from below with past season corms not always re-absorbed. The flowers are pollinated by bees, and the plants are also very striking when in seed.

To grow from seeds, sow them in a well-drained mix and cover them with a thin layer of the medium. Some high-altitude species may need cold stratification. Generally, sowing during early spring will give the seedlings enough warmth to germinate. While in growth, the seedlings do not like to dry out. Fertilising occasionally with diluted fertiliser is beneficial. Seedlings benefit from a deep pot because they send their thickened fleshy roots deep into the soil. Most species do much better in the ground where they have room to spread.

Dietes

There are five main species, one of which, *D. grandiflora* is well known and much used in public plantings. A similar but smaller-growing species is *D. iridioides* which enjoys shady spots and spreads seeds around to make a good ground cover. The most beautiful, *Dietes robinsoniana*, known as the Lord Howe Island Wedding Iris, is the largest flowering species within the genus *Dietes* and endemic to steep cliffs in the north of Lord Howe Island, eastwards of Australia. It is an extremely showy perennial and makes a large clump of flax-like evergreen leaves with a central rib and branched stems of beautiful, large, (about 8cm in diameter) pure white flowers with central yellow spots opening in succession over several weeks. It will grow in most soil types preferring a sunny site and tolerating dry soils and only very light frost.

Dietes bicolor is an easy to grow perennial with erect, narrow, sword shaped green leaves and iris like flowers of pale yellow with pretty brownish blotches, growing to about 60cm x 40cm. It is great for mass planting, borders and fence lines and flowers abundantly throughout the warmer weather. Frost tolerant and hardy, it will grow in full sun to part shade.

Dietes butcheriana is a lesser-known species in the *Dietes* family and the foliage is more spectacular than the flowers, which are rather small in comparison and not very showy. They are white with golden yellow markings and are held on arching sprays. They set seed in quite large rounded pods about 2.5cm long. The seeds germinate quite readily in the north [of New Zealand]. The foliage is in beautiful glossy evergreen fans to about 50cm high.



Diplarrhena

Diplarrhena is a genus in the Iridaceae endemic to Australia. It has two species that are showy and excellent for cultivation. Both grow from a rhizome into clumps of fans of stiff, iris-like leaves that are up to 30cm tall but not noticeable amongst the long grass and bushland in which they grow, until they flower. The flowers are borne on a fine but strong

stem 30 to 45cm above the leaves and stand out like small white flags. The individual flowers are up to 5cm across and last a week or more with a succession of flowers making a display of 6 to 8 weeks.

Diplarrhena moraea from Victoria, Tasmania and New South Wales has white, white and yellow, or sometimes white with yellow and some purple markings, honey-scented flowers. It grows *en masse* at times but is often seen as single plants on the roadside in rural areas.

Diplarrena latifolia (syn. *Diplarrena moraea* var. *latifolia*) is endemic to Tasmania and has a more sub-Alpine habitat than the other species and has white flowers with purple and yellow markings.

Ferraria

The genus *Ferraria* is found in the dry parts of central and south-western Africa with the centre along the southern African western coast. There are around 14 species, most growing in winter rainfall, summer dry climates with the exception of one species, *Ferraria glutinosa* grows in southern tropical Africa with a hot, wet summer and a dry, cool winter. This is a genus with long-lived corms that accumulate from year to year in a chain with a usually branched flowering stem and flowers that are symmetric, either lasting for a couple of days or very short-lived. The flowers look like mutant starfish. They are generally dull in colour (cream, buff or brown) and often bizarrely marked with spots and blotches and sometimes crisped or fringed. Many of them have an unpleasant odour and are pollinated by flies, but a few species are pollinated by wasps. This genus is most closely related to *Moraea*.

Ferraria crispa (syn. *F. undulata*) is widespread but mostly coastal, found on sandstone or granite rocks from Namaqualand and the northwest Cape to the southwest Cape, the southern Cape and the Little Karoo. It has sword-shaped leaves with a prominent midrib and a much branched inflorescence with flowers that can be dark brown, maroon, almost black, cream or pale yellow, with a variety of stripes, blotches and speckles. A distinguishing characteristic is the brownish-green crisped margins. When grown in pots, some selections of *F. crispa* can multiply rapidly. The offsets remain attached to the parent corm. If left undisturbed for several years, the corms will form bizarre connected piles. These corms can all be separated to form new plants, but it can be very difficult to tell which side is up after the corms are separated. When in doubt, plant them sideways.

Ferraria crispa ssp. *nortieri* flowers earlier than *F. crispa* ssp. *crispa* (July to September) and is found on the northern border of the range in sandy soil usually amongst rocks. It has yellow flowers with dark brown margins, spots and blotches. It has been easy to flower from seed in Northern California.

Ferraria crispa ssp. *crispa* has larger flowers than the other subspecies and is found in the southern and eastern range of the species, flowering in September to October.

Ferraria ferrariola grows in deep sand on the western coast of South Africa. It has greenish-white or pale greenish-yellow to greenish-blue flowers with the outer segments finely striped with short dark lines. Other distinguishing characteristics are a stem not covered with leaf sheaths and red or purple spotted basal leaf sheaths.

Ferraria uncinata is found on sandstone slopes and rock outcrops in the northwest and southwest Cape. It has blue to violet flowers with brown markings and finely crisped and toothed greenish-yellow margins. It flowers August to September and is sweetly scented.

Freesia

Freesia is a genus of herbaceous flowering perennial plants in the family Iridaceae, first described in 1866 and named after German botanist and doctor Friedrich Freese (1794–1878). It is native to the eastern side of southern Africa, from Kenya south to South Africa, most species being found in Cape Provinces. The plants commonly known as "freesias", with fragrant funnel-shaped flowers, are cultivated hybrids of a number of *Freesia* species. *Freesia* flowers are "zygomorphic" which just means that they grow along one side of the stem, in a single plane. When you look at a flower stalk, however, you'll see that the blooms are facing upwards. How does this work? *Freesia* stems have the unusual habit of turning at right angles just below the bottom flower. This causes the upper portion of the stem to grow almost parallel with the ground. The flowers bloom along the top side of the stalk, facing upwards. This makes them lovely to look down into in a garden setting and ideal for arrangements.

Freesia alba, syn. *Freesia picta*, is a very fragrant mainly coastal species from the winter rainfall regions growing in sandy or stony soil. Growing from 20–50cm, this species has inclined leaves and white to cream coloured flowers with dull purple on the reverse. Usually the lower median tepal is marked with yellow or orange. It flowers late July to early October. This species is now considered by Manning and Goldblatt to be a subspecies of *Freesia leichtlinii*. The sport *Freesia alba* 'Burtonii' arose in New Zealand and is very widely grown here. The flowers are highly fragrant, creamy yellow and lack the purple flush in the top petal.

Hybridisation of *Freesia* began after *Freesia alba* became available in 1878 when it could be crossed with *Freesia leichtlinii*. However, significant progress required the introduction of rose pink and yellow forms of *Freesia corymbosa* at the start of the 20th century and we all know the huge variety of cultivars available these days.

Freesia elimensis is a South African Cape native growing to only 10cm. It has creamy white flowers with the lower sepals marked in yellow or orange and flowers early, May to June.

Geissorhiza

Geissorhiza is a large genus (84 spp.) of small to medium cormous plants found in the winter rainfall region of the south and west coasts of southern Africa. Many of them make very handsome container plants and benefit from extra water during growth. *Geissorhiza* is quite similar to *Hesperantha* and superficially very difficult to tell apart.

Geissorhiza splendidissima, grows around Nieuwoudtville in the Bokkeveld Plateau in the northwest Cape, in clay soils.



Gladiolus

Gladiolus is a genus of about 163 species (with new ones being discovered) of perennial cormous flowering plants. It is sometimes called the 'sword lily', but is usually referred to by its generic name. There are species of *Gladiolus* in the area south of the Tropic of Capricorn and including Botswana, Lesotho, Namibia, South Africa, Swaziland and Mozambique. Some are found in winter rainfall areas and some in summer rainfall areas.

Gladiolus cardinalis grows on wet cliffs and waterfalls in the south western Cape area of South Africa, blooms in summer and is pollinated by the mountain pride butterfly. This very beautiful species was one of the parents of modern-day hybrids.

Gladiolus carmineus is endemic to the (winter rainfall) south western Cape coast where it grows on rocky sandstone cliffs within sight of the sea. Flowers appear in the autumn (mid February to April) and are pale to deep pink. Each of the lower three tepals and sometimes the upper lateral tepals have a median whitish streak surrounded by a pale mauve halo. There are three to five reduced leaves on the flowering stem. Foliage leaves produced by plants that did not flower appear later and are long and trailing, 8–10mm wide, glaucous with a lightly thickened midrib. They grow during the wet winter and spring, drying off in late spring.

Many years ago, I acquired corms of a hybrid of the two, former species, *G. cardinalis* x *G. carmineus*, which has beautiful glaucous winter-growing foliage and large flowers showing similarities of both species.

Gladiolus carneus (syn. *G. blandus*) has a wide distribution in the winter rainfall area of southern Africa and is found in a variety of habitats. This one seeds set very easily and also increases by cormlets.

G. communis subsp. *byzantinus* from Southern Spain and Sicily grows to 90cm with erect sword-shaped leaves nearly as tall as the flowering stems. Deep red-purple, funnel-shaped flowers 5cm in width, are borne in erect spikes from late spring.

Gladiolus illyricus This winter hardy dwarf species, na-



tive to the Mediterranean, grows in the wild in rocky, sun-exposed sites. It produces short stems carrying showy, large, dark lilac or magenta flowers, with white streaks on the lower petals. It is easily grown in any rich, well-drained soil in full sun or even in pots.

Gladiolus tristis A native of South Africa, this winter-growing species has wonderful scent in the evenings that is absolutely heavenly when the greenish-white flowers open progressively up the long rush-like stems. It is quite unique amongst gladioli because, as it originates from a wet part of South Africa, it will do perfectly well in damp locations.

Gladiolus nanus (Miniature Gladioli), sometimes called Painted Ladies, has small orchid-like flowers that are beautifully blotched or ruffled. Each corm will produce 2–3 stems with at least five flowers per stem in late spring. They multiply quickly, like a sunny, sheltered area and make great cut flowers. There is a large number of named cultivars.

About our Authors

Ken Walker

For me, gardening provides a balance to my academic and professional interests in computer science and software engineering.

I come from a line of amateur gardeners. Both homesteads on the family farm in Vermont contained old bearded irises, Siberian irises and large, slightly intimidating clumps of *Iris pseudacorus* along with many other flowers. The pastures and woodlands were also filled with wildflowers. Only one native iris, *Iris versicolor*, grew in a single wet area.

Despite living in an apartment, I bought my first collection of iris around 1980 and planted them on my parents' farm. These were mostly recent bearded irises planted in a bed created below the vegetable garden with a few *Spuria Iris* and *Siberian Iris* in one of the flower gardens near the house.

After a long stint in graduate school in Arizona, spanning a significant portion of my 30's, I moved to California to continue a career in software development. In 1994, I bought my first house and started gardening in earnest. After a brief foray into species roses, I started filling the yard with increasingly more "interesting" iris – an obsession that continues to this day with species irises from across the Northern Hemisphere. My love of iris has also inspired an interest in flower photography. I have contributed many photos to the SIGNA Database and the AIS Encyclopedia. I am currently the recorder for the Pacific Coast Native Iris Society and have contributed to the SIGNA seed exchange for many years. Since retiring my focus has been on hand pollinating as many species as I can manage.



Photo of Ken Iris Hunting in Kazakhstan

Irises at Kew Gardens

Kenneth Walker

In early June of 2016 I had a two-night layover in London before connecting with a wildflower trek to Kazakhstan. I stayed the first night with a friend who is also a gardener. I have wanted to visit Kew Gardens for many years, so we spent the day exploring part of the Garden.

Kew Gardens is one of the world's premier botanical gardens with the most diverse collections of living plants of any botanical garden, along with millions of preserved plant specimens used in research. The garden covers 300 acres – too much to explore in a single day.

Early in the day we wandered through the southern part of the garden without looking for anything specific. We soon found many species roses in bloom; they were a past interest of mine. We also enjoyed the Mediterranean garden, views of the Pagoda and the Treetop Walkway. It was more than two hours before we saw our first iris: a European yellow flag, *Iris pseudacorus*. Curiously we found it in the Japanese Garden. Fifteen minutes later we found a couple clumps of Siberian irises in bloom near the Water Lily Pond. These had typical purple blooms. I didn't see labels, so I'm not sure if they were the East Asian *Iris sanguinea* or an early hybrid with *Iris siberica*, whose native habitat ranges from Eastern Europe into Western Siberia. These species both have 28 chromosomes and produce completely fertile hybrids, as evidenced by the many modern cultivars derived from them.

Twenty minutes or so later, after stopping to watch a lovely peacock strutting for a food handout from a garden tour vehicle, we came to the Rhododendron Dell. In this area we came upon a bloom of *Iris bulleyana* about 90% open. The flower is a rich violet-purple with a signal of yellow speckles. This species is one of the Sino-Siberian irises, native to China. These species have 40 chromosomes. While all 40-chromosome Siberians inter-breed readily, they are not fully compatible with the 28-chromosome Siberians. The Sino-Siberians are even less tolerant of dry conditions than their cousins and are less frequently found in gardens.

By this time, I was ready to embark on a search for a more serious concentration of irises. We found them near the Princess of Wales Conservatory, particularly in the Rock Garden, but we also found several in the adjacent Woodland Garden. In the latter garden, next to the Conservatory, we encountered the white form, 'Alba', of *Iris sanguinea*. Later in the afternoon we found a purple *Iris sanguinea*, labeled as such, at the other end of the Woodland Garden next to the Palm House Pond. The area near the pond had numerous other Siberian irises with no obvious labels; these included one with a nice lavender pink bloom. We saw a specimen of *Iris siberica*, itself, in the Rock Garden.

After spotting the *Iris sanguinea* 'Alba', we saw *Iris wilsonii*. This is a Sino-Siberian, one of the two yellow species. We found Sino-Siberian species in both the Rock Garden and the Woodland Garden. We located two more forms of *Iris bulleyana*, one in each garden. The iris in the Rock Garden has a more bluish color and a more linear pattern in the signal than the earlier plant. The iris in the Woodland Garden is also bluish but has a white bi-lobed signal patch.



I. siberica



I. bulleyana



I. bulleyana



I. sanguinea



I. wilsonii

Iris chrysographes is also a Sino-Siberian. Some forms are known as the Black Iris. “Chrysographes” refers to the yellow marks that make up the signal. The first form we found in the Rock Garden is quite a dark purple, and its signal is dominated by a thin central yellow line. Less prominent lines are to the sides. The next we saw was *Iris chrysographes* 'Rubella' which is a very reddish purple. The third form is somewhat lighter than the first and the yellow lines along the side of the signal are quite prominent while the central line is very pale.



I. chrysogra-



I. chrysographes 'Rubella'

The tallest of the Sino-Siberians is *Iris delavayi*, with flower stalks up to 5 feet. The Rock Garden contains a clump shown off by a background waterfall – a very lovely combination! The flowers on this clump are mid-lavender with drooping petals. A bluer form appeared in the edge of the Woodland Garden with a flower just opening.



I. delavayi

The Rock Garden also contains another Chinese iris: *Iris pseudacorus* var. *maackii*, a pale sibling to the European Yellow Flag we saw in the Japanese Garden. Other Asian species in the garden include *Iris milesii*, which is native to Northern India, Nepal and neighboring mountains. I have come to expect this species to have quite consistent flowers in a strong pink shade of lavender with very pronounced darker spots. The plant we encountered in the Rock Garden was surprisingly pale with pinkish blotching around the edge. Many of the blossoms were covered with mesh bags so I assume someone was hand pollinating them. Over the edge of the Rock Garden into the Plant Family Beds, we found a more typical *Iris milesii*.

Further north in Eastern Asia, *Iris ensata* and *Iris laevigata* are found. *Iris ensata* was developed into the Japanese iris over hundreds of years of selection. The typical wild form is rich reddish violet with a yellow blaze for a signal. The Rock Garden had a gorgeous clump of this moisture-loving iris in full bloom. The Rock Garden also contains *Iris laevigata* 'Alboviolacea', a variety of that species with flat, nearly pure white flowers. This species is well adapted to shallow water.



Var. maackii

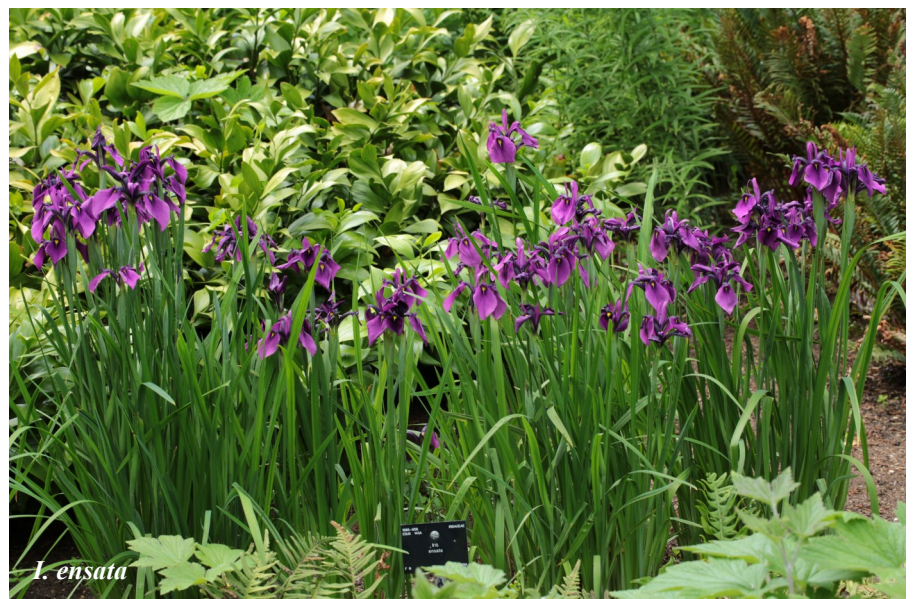


I. milesii

The only Western Asian iris we saw was the tall deep yellow Spuria, *Iris xanthospuria*, native to Turkey. It was just starting to bloom on a ridge in the Rock Garden.



I. xanthospuria



I. ensata

Iris setosa is the only member of the genus growing in both Asia and North America. Populations bridge the Bering Sea. Obviously this plant is very cold hardy. We found a specimen in the Rock Garden and one in the Woodland Garden near the Palm House Pond, but I don't know which continent either came from. Both had purple flowers. The one in the Woodland Garden was a bit bluer and had broader petals. As with all forms of *Iris setosa*, the standards were greatly reduced.

The Rock Garden contains a number of North American species. Soon after entering that garden, we encountered *Iris missouriensis*, a species that grows throughout much of the Rocky Mountains and northward into extreme southern Alberta. Its flower is pale lavender with attractive darker lavender veining.

From the west coast of America comes *Iris douglasiana*, which likes to grow in the fog belt near the ocean. The flower we saw was next to the Woodland Garden and had a very pale coloration with light lavender veining.

We saw two Louisiana species in bloom; both grow along much of the Mississippi River. *Iris fulva* is very unusual for an iris in that its flowers naturally have a dark orange-red coloration. This plant was well along at blooming. Its relative, *Iris brevicaulis*, was just starting to bloom and displayed a dark reddish violet flower. In my garden in California, these two species bloom weeks apart with no overlap.

We encountered two forms of *Iris versicolor*, both growing in large clumps. This species is native to wet areas in the North Eastern United States. One clump displayed the usual purple flowers. The other was *Iris versicolor* var. *kermesina*, known for its reddish violet flowers.

By the time we reached the Palm House Pond, we were both very tired, so I saved the rest of the Botanical Garden for another year; re-visiting the Rock Garden earlier in the season would certainly reveal a different set of iris species in bloom.



I. setosa



I. missouriensis



I. douglasiana



I. fulva



I. brevicaulis



I. versicolor var. *kermesina*

Irises of Russia:

The Collection of the Pyatigorsk Ecological-Botanical Station

Nina Alexeeva, Gennady Firsov and Peter Zhurbenko

This article is dedicated to the memory of Dr. Anatoly D. Mikheev, an expert on the flora of North Caucasus, especially that of the Mineral Waters district. Taxonomist and systematist, his special interests were Iridaceae and Asteraceae and threatened species of vascular plants. He promoted the conservation of biodiversity of Caucasian flora and considerably enlarged the collection at the Perkalsky Arboretum. He took the photographs in this article.

The Ecological-Botanical Station of the Komarov Botanical Institute of the Russian Academy of Sciences is located at the North Caucasus, Pyatigorsk, Stavropolsky Krai, Russia. It occupies an area of 13.5 hectares at the Perkalsky Arboretum (established in 1879) at the foot of Mashuk Mountain (601 m above sea level) at the edge of the town. It is here that work on the conservation and investigation of native flora of the Caucasian Mineral Waters area is carried out. It is a specially protected territory of the Russian Federation. The collection of the Perkalsky Arboretum numbers 1,200 species of both woody and perennial vascular plants. The staff of the Station introduces into cultivation many useful and decorative plants that can survive outdoors in the local climate. Special attention is paid to species that are threatened in the wild. The Station and the Arboretum also serve as an educational base for many universities and institutions not only from the Caucasian Mineralniye Vodi, but from other regions of this country as well. Dr. Anatoly D. Mikheev was the director of the Station from 1982 until 2014. He promoted the establishment of the collection of rare and exotic plant species such as *Ginkgo biloba*, *Metasequoia glyptostroboides* and *Liriodendron tulipifera*. A unique collection of rare, interesting and endemic species of the genus *Iris* has also been established and is maintained here. The collection of reliable and trustworthy samples of living plants was established mainly by way of expeditions and other trips into the wild.

There are 27 species of *Irises* in the Caucasus representing 3 subgenera: *Iris*, *Limniris* and *Xyridion*. More than a half of them are endemics, such as *I. camillae* Grossh., *I. carthaliniae* Fomin, *I. grossheimii* Woronow, *I. iberica* Hoffm. (photo 1), *I. mzechetica* Rodionenko and *I. schelkownikowii* Fomin. There are 3 species, *Iris notha* Bieb., *I. pseudonotha* Galushko and *I. timofejevii* Woronow, that have a very limited area of distribution and are endemic to Russia. *Iris acutiloba* C. A. Mey, *I. colchica* Kem.-Nat., *I. klattii* Kem.-Nat., *I. pontica* Zapal. and *I. scariosa* Willd. et Link are represented in Russia by rare specimens at the edge of their habitats. All of these irises are cultivated at the Station in Pyatigorsk. There are also irises from Pyatigorsk and the Stavropol region: *I. furcata* M. Bieb., *I. halophila* Pall., *I. pumila* L., *I. sibirica* L. Two species, *I. alexeenkoi* Grossh. (photo 2) and *I. pseudonotha* Galushko, came from Derbent in Daghestan. Not only are there Caucasian species in cultivation at the Station, but there are also irises from Asia including *I. darwasica* Regel, *I. sogdiana* Bunge and *I. stolonifera* Bunge. These Asian irises also flower and fruit well at the Station.

There are 14 species of irises growing wild in the North Caucasus. In this article we pay attention to 10 species: *Iris acutiloba*, *I. colchica*, *I. furcata*, *I. klattii*, *I. notha*, *I. pontica*, *I. pseudonotha*, *I. scariosa*, *I. sibirica* and *I. timofejevii*.

Iris acutiloba C. A. Mey. was described by C.A. Meyer in 1831 from Azerbaijan, environs of Baku. The type is kept in St. Petersburg at the Komarov Botanical Institute (LE!). It has dense, compressed roots. The leaves are 8-10 (15) cm long, 4-6 mm wide, dove-colored, sickle-shaped. The flower stems are up to 25 cm high. The flowers are whitish, strongly veined and streaked brownish or grayish with a dark reddish-brown or blackish signal patch in the center of the falls. The seeds are brown and oval with a white, later yellow, aril. It flowers in May and fruits in July.

The species is distributed in Russia as a small population in the Caucasus (Daghestan, 12 km west from Makhachkala). Beyond the borders of Russia it occurs also at Azerbaijan (to the north from the Kura River) and in North Iran. It grows on dry rocky slopes and sandy areas of mountains and foothills.



Iris colchica Kem.-Nat. was described by L.M. Kemularia-Natadze in 1938 from Abkhazia, near Sukhumi. The isotype is kept in St. Petersburg at the Komarov Botanical Institute (LE!).

The leaves are thin, narrow-linear, 60 cm long, 3(10) mm wide, usually recumbent, with clearly-seen longitudinal nerves, twice as long as the flower stems. The flowers are large, 6-7 cm diam., violet-reddish. The seedpods are on a long stalk, oblong-egg shaped, six-angled, winged and are without a short tip. It produces globular, yellowish seeds with a wrinkled paper-like seed coat. *I. colchica* flowers in July and fruits in August-September. The plant is endemic to the Caucasus. Quite rare, it grows among trees and shrubs, in stony soil and along dry southern slopes in the middle belt of mountains.

Iris furcata Bieb. was described by M. Bieberstein in 1819 from the Northern Caucasus. The lectotype is kept in St. Petersburg at the Komarov Botanical Institute (LE!). The leaves are green, 25-40 cm long, 8-10(15) mm wide, straight and sword-like. The flower stems are thin, graceful and usually branched above the middle. Some plants only produce a single flower. The flowers are 3-4 cm long and densely violet-red with a beard on the falls. The seedpods are small, 3-4 cm long and obtuse at the top. The seeds are dark brown. It flowers in May and early June and fruits at the end of July and into August. *I. furcata* grows in the foothills on slopes of varying exposure, degree of illumination and soil moisture. It is a plant of dry open mountain terraces, grassy slopes from the forest belt up to 2200 m above sea level. It occurs in the Caucasus, represented by rare populations in Russia at the border of its natural habitat.



I. furcata

Iris klattii Kem.-Nat. was described by L.M. Kemularia-Natadze in 1948 from Talysh, Azerbaijan. The type was destroyed in a fire in Berlin. The leaves are 70-90 cm long, 10-15 cm wide, nearly linear and equal to the flower stems. The flowers are dark-blue or blue with dark veins. It produces seedpods with a tip and six ribs which are merged in pairs. The seeds are rather dirty white, tabulate and semi-circular. It flowers in July and fruits in September. *I. klattii* is a Caucasian species, represented by

a relatively small population in Russia at the border of its natural distribution in Daghestan and also Azerbaijan. It prefers open, well-illuminated areas with varying moisture and boggy meadows.

Iris notha Bieb. was described by M. Bieberstein in 1819 from the North Caucasus, near Konstantinogorsk (now Pjatigorsk). The lectotype is kept at Komarov Botanical Institute (LE!). The leaves are widely linear, 8-16 mm wide, 65-



I. notha

80 (95) cm long, gradually narrowed to the end, dense, elastic and equal to the inflorescences. The flowers are intense blue or cobalt blue. It produces seedpods with a tip and six ribs which are merged in pairs. The seeds are flat, compressed, semicircular, dark smoke-colored with bronze tinge. *I. notha* flowers in June and July and fruits in August and early September. It is an endemic Caucasian species and occurs from the north or northeast to the Caucasus Mountains. It also occurs in a few small populations at Krasnodar Krai, Stavropol Krai, Chechnja, Ingushetija and Daghestan. It grows on steppe meadows, among shrubs and rarified forests, slopes of hills, foothills, with mostly southern, and more seldom, northern exposures. This species is suitable for planting in parks and for use as cut flowers. Plants may become weak and die in

moisture during the flowering period.

Iris pontica Zapal. was described by G. Zapalowicz in 1906 from Moldavia (near the town of Benderi on the Dnestr river). The type is kept at Krakov (?). The leaves are narrow-linear, up to 20 cm long and 4-5 cm wide. The stems are scarcely above soil surface at 2-3 (7-9) cm long. The flowers are rather large, 5-7 cm in diameter, violet-reddish or violet-blue, with a pleasant aroma. It produces short, wide seedpods with globose or angled reddish-brown seeds. *I. pontica* flowers in June and fruits in July-August. It is a Caucasian species, which is



I. klattii



I. pontica

represented by only a few populations in the European part of Russia and the North Caucasus. Beyond Russia it also occurs in Moldova near the Black Sea and South-Eastern Europe. It grows on open grassy slopes in the steppes and is quite rare.

Iris pseudonotha Galushko was described by A. Galushko in 1983 from the northeast Caucasus, from lower reaches of the Kuma River between Velechaevskoje and Kumsy. The leaves are linear, sword-like, slowly tapering to the end, 25-50 cm long, (5) 8-13 mm wide, usually shorter than the stems, grayish-green, smooth and lower than the inflorescences. The flowers are dirty whitish violet-blue or whitish dirty blue with dark veins. The seedpods are oblong-cylindrical with a long tip and six sharply protruding winged ribs merged in pairs. It produces compressed, semicircular, light-brown seeds. It flowers in July and fruits at the end of August and the beginning of September. The species is endemic to the North Caucasus and occurs at the northeast of the Caucasus Mountains and in Daghestan along the Caspian Sea. It is a plant of wet, salty places and produces dense hummocks.



I. pseudonotha

Iris scariosa Willd. ex Link was described by K.L. Willdenov in 1820 from the coast of the Caspian Sea, near the mouth of the Volga River. The type is kept at Berlin (WILLDENOV/00959 (B!)). The leaves are tough, intensely glaucous, sickle-shaped, 10-20 cm long, 10-12 mm wide. The inflorescences are 5-8 (15) cm long. The flowers are 3.5-4.5 (5.5) cm in diameter, usually pale-violet but may vary from dark violet to light blue to nearly white. A very few specimens have a yellowish tinge. The haft of the standard is equal to the plate of the standard. The spathes don't cover the perianth tube. The seedpods are fusiform. It produces globose-oblong dark brown seeds. It flowers at the end of May and fruits at the beginning of July. It is a European-Caucasian endemic and mainly occurs in the northwestern and western parts of the Caspian Lowland (Astrakhan region, Kalmykia) and in the northeast to the Caucasus Mountains. The natural range is bordered by Elton Lake in the north and the lower reaches of the Volga and Kuma Rivers in the east, and comes through the Nogai steppe (Kizlyarsky district of Daghestan) in the south and lies at Ergeny and the Prikalaus heights in the west. It grows in salty soils on slopes and dry plateaus among desert-steppe motley grass vegetation [*mixed grasses and forbes*]. In places it extends into sandy areas. The species is promising for planting in rock gardens and flower borders. It has not been used in Russian breeding. Foreign breeders call it *I. glaucescens* by mistake.



I. scariosa

Iris sibirica L. was described by Carl von Linne in 1753 from samples collected in Siberia and Europe. Type is kept at London (LINN 61/19!). The leaves are linear, long-acuminate, 50-80 cm long and 6-8 (10) mm wide. The inflorescences are cylindrical, hollow inside, 60-100 cm long, in general considerably higher than leaves, and have typically 3-5 flowers, that are pale or dark violet-blue. The seedpods are 3-ribbed, short, oblong-oval with the length nearly twice (1.5-2 times) as much as the width. The seeds are light grey and flatly compressed. It flowers in June and fruits at the end of July into August. It is widely distributed throughout Russian territory from the taiga zone to the warm temperate zone in the European part and is native to the Caucasus and to Western and Central Siberia. It also occurs beyond Russia in Armenia, Kazakhstan and Central Asia. It is a plant of flooded lands, boggy and forest meadows, birch groves and forest glades. *I. sibirica* is promising for the selection of winter hardy forms. Also it is suitable for cutting, to decorate groups of trees and shrubs, for mixed borders and solitary plantings in lawns.

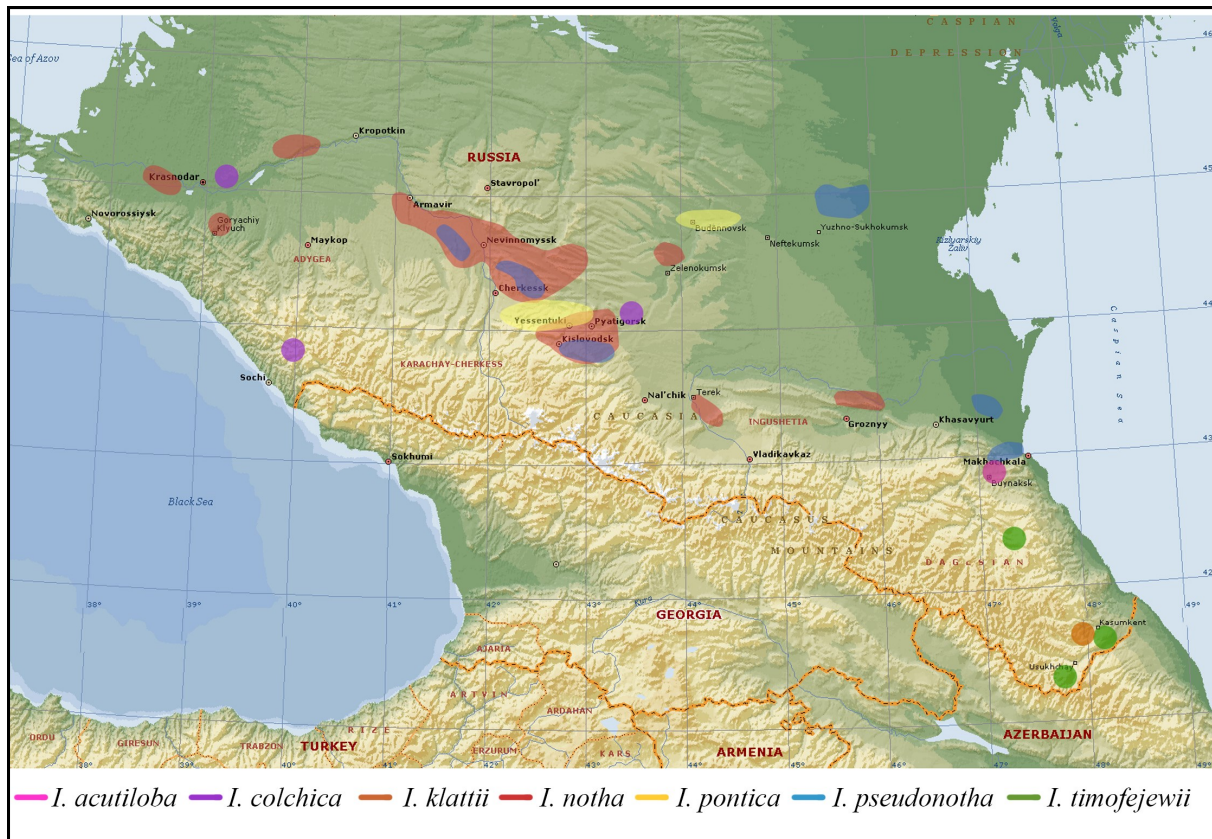
Iris timofejewii Woron. was described in 1924 by J.M. Woronov from samples grown from rhizomes collected by A.A. Grossheim at Daghestan. The lectotype is kept at Tbilisi (TBI?). The leaves are tough, intensely glaucous, sickle-shaped, 10-20 cm long and 10-12 mm wide. The flower stems are up to 5-8 (15) cm high. The flowers are 3.5-4.5 (5.5) cm in diameter, bluish-violet. The haft of the standard is not longer than 1/3 of the standard's plate length. The spathes almost cover the perianth tube. The seedpods are fusiform. The seeds are dark brown. It flowers at the end of May and fruits at the beginning of July. It is a rare species endemic to the Caucasus. Several localities are known in Daghestan in the area around the villages of Bushrak, Khodzhal-makhi and Zudakhar (Levashinsky district), as well as Urada village (Sovetsky district) and Mizgin-Adzhi village (Akhtinsky district). It grows on stony slopes with southern exposures, mostly among xerophytic shrubs and perennials, typical for southern slopes rich with calcium in the middle mountain belt in Daghestan, where it forms large (30-40 and even 70-90 cm across) and dense hummocks.



I. timofejewii

This work was conducted as a part of an institutional research project N 0126-2017-0021 of the Komarov Botanical Institute of the Russian Academy of Science.

Natural Distribution of Select Irises in the North Caucasus



Maps by Peter Zhurbenko. Base maps were obtained from Microsoft Encarta Premium 2009. Distributions are based on studies of the Herbarium (LE) and literary sources.

SIGNA Seed Exchange 2017

INTRODUCTION

Greetings and welcome to the 2017 species iris seed exchange. Growing iris from seed is a unique opportunity, a challenge and the heart of SIGNA. It is also our major fundraiser and supports the publication of our newsletter and other projects. See below for ordering instructions.

I'd like to offer a special thanks to our donors. Obviously without them there wouldn't be a seed exchange. Please consider collecting or saving seeds for next year's exchange. See last summer's newsletter for instructions for donating seed.

Below you will find general information about the exchange, a list of donors and the list itself. Ordering instructions and an order form are included if you intend to order by mail. We strongly encourage everyone to use the web site to place your order. Web orders are received immediately, whereas mail-in orders are delayed. Since orders are filled in the order received, the delay may cause you to miss out on some selections.

Thanks for your support and generosity.
Walter Pickett

GENERAL INFORMATION

Members only: Seeds are only available to members of SIGNA; however, membership may be paid along with an order. Therefore, please share your SIGNA seed list with friends who are non-members. They may copy the order blank and send in their own order if they include payment for a membership (regular or electronic). Current members may also pay dues along with their seed order.

Price and Payment: The price of all seeds is unchanged at \$1 per packet. (There will be a minimum of 4 seeds in each packet.) There is a flat \$4 shipping and handling charge for orders to the USA. S&H to Canada is \$10 and \$14 to all other countries. We regret the high cost to foreign members, but this charge is less than our actual costs. If ordering and paying on-line, there is an added \$1 per PayPal transaction fee. If you send a check or cash, *do not* add the \$1 Pay Pal charge. Credit card payments are not accepted by mail. Ordering from the web site allows payment with a credit card via PayPal. You do not need a PayPal account.

Orders: Seed can be ordered from the printed form below or on-line at the SIGNA web site www.signa.org. You may also print out your web order and mail it to us. However, we strongly recommend that you order from the web site. Orders are filled in the order received and web orders avoid the delays of mailing. Also the web site may list late arrivals and is updated to indicate sold out items after the first flurry of orders. Sales will close April 1, 2018.

How to read the list: Each variety has a code that indicates year of the list, an alphabet code for the kind of iris and a three digit serial number, for example: 17TB021. All seeds in this years list have the prefix "17." The list is divided into 6 sections and the alphabetic codes are as follows:

- | | | | | |
|----------------------|---|------------------------|------------------------|-----------------------------|
| I. Bearded: | Dwarf - DB | Median - MB | Tall - TB | Arillate - AR |
| | Arilbred - AB | | | |
| II. Crested: | CR | | | |
| III. Beardless: | Chinenses - CH | Laevigatae - LV | Louisiana - LA | Pacific Coast - PC |
| | Siberian - SB | Spuria - SP | Tripetalae - TR | Misc. Beardless - MS |
| IV. Bulbous: | Xiphium - XP | Reticulate - RT | Scorpiris - JU | Nepalensis - NP |
| V. Wide Crosses: | SX (excluding Arilbred – see I. Bearded) | | | |
| VI. Other Iridaceae: | XX | | | |

Abbreviations in the descriptions include **HP** for Hand Pollinated, **OP** for Open Pollinated and **WC** for Wild Collected. **Ex** indicates the original source of the seeds. That may be a person, seed exchange, wild location, named cultivar or garden.

Note: Plants grown from seeds of named cultivars are not identical to their parents and should never be given that name in the garden. They are new seedlings.

Availability: Following each item in the seed list is a code indicating the total number of seeds available. Seeds in short supply (VF or FW) may have as few as 4 seeds per packet and these will not be used as substitutes. Be sure to check substitutes when ordering these seeds.

VF = Very Few Seeds (less than 25) available. These will sell out quickly with only 1-6 packets available. If you place a late order, please *do not* order these items.

FW = Few seeds (about 50) available.

AV = Available. These seeds are generally available and most orders will be filled. Packets will have between 5 and 10 seeds.

AB = Abundant. Seeds are in abundant supply, are unlikely to sell out and will have a greater number of seeds per packet (10 or more).

Only one packet of each item will be shipped per order. We do accept 2nd and 3rd orders, but please give others a chance to obtain rare items. Please list substitutes on all orders!

References: *The Iris* by Brian Mathew, *Iris of China* by James Waddick and Zhao Yu-tang, *The World of Iridaceae* by Clive Innes and the SIGNA Checklists are used to verify names. In a few instances, unverified names may have been used. The SIGNA Species Database at www.signa.org and the AIS Iris Encyclopedia <http://wiki.irises.org/bin/view> are good sources of information and photos of flowers, plants and seeds. Correct seed identification is not guaranteed, but based on information supplied by donors.

DONORS

Our thanks to the following donors:

CPN	Claire Patten, Christchurch, NEW ZEALAND
DKR	Dennis Kramb, Liberty Township, OH, USA
DVL	Dennis C. Van Landuyt, Gravois Mills, MO, USA
FFS	Frank Foster, Salem, OR, USA
JNH	Józsefné Neuhercz, Budapest HUNGARY
JPW	Marty Schafer & Jan Sacks, Carlisle, MA, USA
KDI	Kalaszine D. Ilona, Budapest, HUNGARY
KWK	Kenneth Walker, Concord, CA, USA
MBS	Maurice Boussard, Ventabren, FRANCE
NZI	New Zealand Iris Society, NEW ZEALAND
RBR	Rodney Barton, Hickory Creek, TX, USA
RST	Robert Strohman, Louisville, KY, USA
SIG	Superstition Iris Gardens, Catheys Valley, CA, USA
SZR	Sean Zera, Ann Arbor, MI, USA

HOW TO ORDER

You can order seeds in 2 ways:

1. Go to <http://signa.org/> and follow instructions to order on-line. *Recommended!*
2. Fill in this order form or a copy and mail it with payment to the SIGNA Seed Exchange address below.

Price: \$1 per packet plus \$4 per order for shipping and handling to addresses in the US. S&H to Canada is \$10 and to all other countries is \$14. Orders from this list must be received no later than April 1, 2018.

Substitutes: Please checkmark ample substitutes in case your preferred seeds are sold out. It is especially important for those marked VF or FW. See instructions on order form. Mailed orders require even more substitutes.

Late arrivals: Check the SIGNA Web site for late arrivals and current availability.

Payment: US members may enclose check or money order and make payable to "SIGNA." Foreign members please use PayPal, US currency, international money order or a draft on a US bank.

Payment using PayPal: If you have a PayPal account, you may "send cash" to SIGNASeedEx@gmail.com to pay for your mail-in order. Please include list of your primary choices and substitutes along with your mailing address.

Membership: If you are not a current member of SIGNA and wish to order, please add membership dues and indicate if for one or three years. Current membership rates are given below. You may also pay for membership and renewal via PayPal.

Refunds: Refunds are *not* available. If we cannot fill your order and you have not marked enough substitutes, the remaining amount will be considered a donation to SIGNA. Please mark substitutes.

Donations: Sending an order to the Seed Ex is an opportunity to support SIGNA. You may round up your check to the \$5 or \$10 mark or simply add any amount. Costs of all supplies and shipping are constantly rising and your help is greatly appreciated.

Your address: Be sure to include your full NAME, POSTAL ADDRESS and EMAIL, if available. *Please print clearly.*

Mail order form and payment to: **SIGNA Seedex, Walter Pickett**
 314 E 2nd St
 Ellsworth KS 67439-3504
 USA

2017 SIGNA Seed exchange List

I. Bearded: Dwarf DB, Median MB, Tall TB

17TB001	'Flavescens' OP ex Mackinac Co., MI USA (persisting or escaped from cultivation)	SZR	VF
17TB002	germanica	KDI	VF
17DB003	italica (syn. lutescens)	JNH	AV
17DB004	pseudopumila HP ex 03A005	KWK	VF
17DB005	pumila WC Széchenyi Mt. Hungary	KDI	FW
17DB006	suaveolens HP two clones both red-violet	JPW	FW
17MB007	reginae (syn. variegata)	KDI	AV
17MB008	variegata ex 10MB009 OP	SZR	AV
17MB009	variegata 10MB009 X 12MB008 (PBF, both WC Hungary)	SZR	AV
17MB010	variegata alba	KDI	AV
17DB011	SDB ex 'Bright Button'	JNH	VF

Arillate: AR

17AR012	stolonifera, 'bright blue beard'		
	X 'Tiberius'	KWK	FW
17AR013	stolonifera X stolonifera 'Tiberius'	KWK	FW

II. Crested: CR

17CR014	sp. nova HP ex CDHM 14571 ex Sichuan, China (3200m) japonica like flower, stems leafy, densely clumping	SZR	FW
17CR015	cristata OP mixed blues and violets	JPW	AV
17CR016	cristata ex 'Dash It All' blue w/ long, white signal	JPW	FW
17CR017	cristata 'Edgar Anderson' OP large flowered blue-violet	JPW	AB
17CR018	cristata 'Merle's Wine' OP red-violet	JPW	FW
17CR019	cristata ex 'Sam's Mini' OP dwarf blue	JPW	AV
17CR020	gracilipes blue OP	JPW	AB
17CR021	gracilipes ex 'Buko Form' (dwarf white) OP	JPW	AV
17CR022	milesii	NZI	VF
17CR023	milesii, 3rd gen. ex Nepal	KWK	AB
17CR024	tectorum OP purple	KWK	AB
17CR025	tectorum OP blue-violet	JPW	AV
17CR026	tectorum OP dark purple ex Schmieder	JPW	AV
17CR027	tectorum blue	JNH	FW
17CR028	tectorum blue	KDI	FW
17CR029	tectorum blue	CPN	AV
17CR030	tectorum album	KDI	AV
17CR031	tectorum OP white	JPW	FW

III. Beardless:

Chinenses: CH

17CH032	henryi	KWK	VF
17CH033	speculatrix HP mixed sources	KWK	AV

Laevigate: LV

17LV034	ensata HP ex 10LV122 wild Russian line	KWK	AB
17LV035	ensata ex RISC WC seed red-violet		JPW
17LV036	ensata ex 'Star at Midnight'	NZI	VF
17LV037	ensata ex 'Veined Artistry'	NZI	VF
17LV038	laevigata HP 'Colchesterensis' X 'Lakeside Ghost'	KWK	AV
17LV039	pseudacorus 'Mzchetica' OP	SIG	AV
17LV040	pseudacorus 'F2 Orange'	SIG	AV
17LV041	pseudacorus 'Sushi' OP	SIG	AV
17LV042	versicolor ex 'Between the Lines' OP	JPW	AB
17LV043	versicolor ex 'Epic Poem' OP	JPW	AB
17LV044	versicolor ex 'Faded Jeans' OP	JPW	VF
17LV045	versicolor ex 'Light Verse' OP	JPW	AB
17LV046	versicolor 'Mar-Jan' OP wine red	JPW	AV
17LV047	versicolor ex 'Murrayana' OP	JPW	AV
17LV048	versicolor ex 'Party Lines' OP	JPW	AV
17LV049	versicolor ex 'Versicle' OP	JPW	AV
17LV050	versicolor ex 'Whodunit' OP	JPW	AV
17LV051	virginica 'Southern Wanderer' HP		KWK
			AV
17LV052	virginica var. shrevei HP ex Green River KY	KWK	AV

Louisiana: LA

17LA053	brevicaulis HP	KWK	AV
17LA054	brevicaulis 'Lavender' HP	RBR	1pkt
17LA055	fulva 'Lois' x 'Marvell Gold' both WC yellows	KWK	VF
17LA056	giganticaerulea HP	KWK	AV
17LA057	hexagona HP	KWK	AV
17LA058	nelsonii HP	KWK	FW

Pacific Coast: PC

17PC059	innominata	CPN	AV
17PC060	munzii OP. ex SPCNI 1270.14		KWK
			VF

Siberian: SB

17SB061	delavayi	NZI	VF
17SB062	sanguinea white ex Korea HP	SZR	FW
17SB063	sanguinea HP 06R255, Korea	KWK	AV
17SB064	sibirica blue 90 cm	JNH	AB
17SB065	sibirica ex 'Snow Prince' white OP	JPW	AB
17SB066	sibirica ex 00J085 (ex Switzerland)	JNH	AV
17SB067	03J064 (selected f2s from 'Snow Prince x Mongolius')	JNH	FW
17SB068	SIB OP ex 14SB057 'Kanoa'	RST	VF
17SB069	SIB ex 'Band of Angels'	NZI	VF
17SB070	SIB coll. Wooster, OH, clone 1	RST	AB
17SB071	SIB coll. Wooster, OH, clone 2	RST	AB
17SB072	SIB coll. Wooster, OH, clone 3	RST	AB
17SB073	SIB coll. Wooster, OH, clone 4	RST	AB
17SB074	typhifolia OP ex 13SB208	RST	AV
17SB075	typhifolia OP ex 13SB210	RST	AV

Spuria: SP				17MS130	unguicularis 'Violet Crescent'	CPN	AV
17SP076	crocea	KDI	AV	17MS131	unguicularis 'Francis Wormsley'		
17SP077	graminea	KDI	AV		X 'Marginata'	KWK	FW
17SP078	graminea	JNH	FW	17MS132	verna OP ex 'Cleo Chapel Road'	JPW	AV
17SP079	graminea OP ex. 08SP172	SZR	VF	17MS133	verna OP white	JPW	FW
17SP080	orientalis OP ex 08SP179	SZR	AV	IV. Bulbous: Reticulate RT, Scorpiris JU, Xiphium XP, Nepalensis NP			
17SP081	orientalis	JNH	FW	17JU134	aucheri 'Dark Form'	MBS	FW
17SP082	orientalis	KDI	AV	17NP135	barbatula (I. collettii DJHC 0328)	KWK	AV
17SP083	sintenisii ex Eco Gardens clones evergreen	JPW	AV	17JU136	bucharica white-yellow	KDI	AV
17SP084	sintenisii ex 'Parkville Pal' OP evergreen	JPW	AV	17JU137	bucharica 'Baldschuan Yellow' HP	KWK	FW
17SP085	spuria ssp. carthalinae ex 'Georgian Delicacy' OP but no other in bloom	JPW	AV	17JU138	bucharica ex 'Swan Wings' HP	KWK	VF
17SP086	spuria ssp. halophila	KDI	FW	17JU139	magnifica	JNH	AV
17SP087	spuria ssp. musulmanica	JNH	FW	17JU140	magnifica	KDI	AV
17SP088	xanthosporia HP ex NARGS 02/4775	KWK	AV	17JU141	magnifica ex 'Aman-Kutan'	KDI	VF
17SP089	xanthosporia HP ex 03M126	KWK	VF	17JU142	magnifica 'Agalik' x 'Aman-Kutan'	KWK	AB
17SP090	SPU ex 'Clark Cosgrove'	JNH	AV	17JU143	planifolia	KWK	FW
17SP091	SPU ex 'Goldmania'	JNH	AV	17JU144	planifolia	MBS	AV
17SP092	SPU ex 'Hideaway'	KDI	AV	17RT145	reticulata ex 'White Caucasus'	KDI	VF
17SP093	SPU ex 'Highland Coral'	KDI	FW	17RT146	tuberosa	KWK	AV
17SP094	SPU ex 'Imperial Bronze'	JNH	AV	17RT147	tuberosa	MBS	AB
17SP095	SPU ex 'Red Oak'	KDI	AV	17XP148	xiphium var lusitanica HP	KWK	AB
17SP096	SPU ex 'Social Circle'	JNH	AV	V. Wide Crosses: SX			
17SP097	SPU white-yellow 50 cm	JNH	AV	17SX149	xbiversata 'Simply Cute' OP red-violet	JPW	AV
Tripetalae: TR				17SX150	xnorrisii OP – from named clones and seedlings of merit	JPW	AB
17TR098	hookeri WC N.W. Newfoundland	DKR	FW	VI. Other Iridaceae: XX			
17TR099	setosa fades to white	KWK	AB	17XX151	Alophia drummondii ex SIGNA	RBR	FW
17TR100	setosa ex 'All Stripes' OP white w/ magenta veins	JPW	AV	17XX152	Babiana villosa	NZI	VF
17TR101	setosa ex 'Tourist' OP purple w/ yellow signal	JPW	AB	17XX153	Calydorea amabilis ex 11XX272	RBR	AV
17TR102	setosa ssp. interior WC North Pole, AK USA	SZR	AB	17XX154	Crocasmia aurea	MBS	FW
17TR103	tridentata, mixed clones	KWK	AV	17XX155	Dietes bicolor	NZI	VF
17TR104	tridentata, (03Q227 x John Wood's clone) x sib	KWK	AV	17XX156	Dietes flavida ex 99Z458 cream	RBR	AV
17TR105	tridentata saved from repeat bloom	JPW	VF	17XX157	Dietes grandiflora	MBS	AV
Misc. Beardless: MS				17XX158	Dietes iridioides	JNH	AV
17MS106	cretensis HP	KWK	AV	17XX159	Dietes iridioides	KDI	FW
17MS107	decora ex NARGS 10/1628	KWK	AB	17XX160	Ennealophus euryandrus	MBS	AV
17MS108	dichotoma	JPW	AV	17XX161	Ennealophus fimbriatus ex 12XX361	RBR	AV
17MS109	dichotoma, HP mixed parents	KWK	AB	17XX162	Ferraria crispa	MBS	AB
17MS110	dichotoma white ex 15MS112 OP	SZR	AV	17XX163	Freesia (Anomatheca) laxa, ex SIGNA	RBR	AV
17MS111	domestica ex 11MS153 OP	SZR	AV	17XX164	Freesia laxa ex 'Joan Evans'	NZI	VF
17MS112	foetidissima	KDI	FW	17XX165	Gladiolus byzantinus	MBS	FW
17MS113	foetidissima	FFS	AV	17XX166	Gladiolus communis	MBS	FW
17MS114	lactea	JNH	AB	17XX167	Gladiolus italicus (syn segetum)	MBS	AB
17MS115	lactea OP mix of blue-violet & white	JPW	AV	17XX168	Herbertia lahue	RAB	AV
17MS116	lactea HP falls w/cream ground	KWK	AV	17XX169	Lapeirousia jacquinii	MBS	AV
17MS117	lactea var. chinensis	JNH	AB	17XX170	Libertia grandiflora	MBS	AV
17MS118	lactea var. lactea HP ex Vickery 2009 KZ9, Kazakhstan	KWK	AB	17XX171	Moraea macrocarpa	MBS	AV
17MS119	lactea (as oxypetela) HP ex Russia	KWK	AV	17XX172	Moraea marlothii	MBS	AB
17MS120	lactea 'Tough Cookie' X 'cream ground'	KWK	VF	17XX173	Moraea polystachya	MBS	AB
17MS121	lazica HP, ex BIS 2010 423	KWK	AV	17XX174	Rumulea monticola ex 12xx382	DVL	AV
17MS122	prismatica OP mid-blue-violet ex Warburton	JPW	AB	17XX175	Rumulea atranda	NZI	VF
17MS123	prismatica	NZI	VF	17XX176	Rumulea subfistulosa	MBS	VF
17MS124	prismatica	KWK	AB	17XX177	Sisyrinchium angustifolium	RST	AB
17MS125	prismatica 'Exeter' OP – blue	JPW	AV	17XX178	Sisyrinchium species WC Denton Co. TX USA	RBR	AV
17MS126	prismatica 'Austrina'	SIG	AB	17XX179	Tigridia pavonia 'Sunset In Oz' HP golden orange with red markings	JPW	AB
17MS127	songarica	JNH	AV	17XX180	Tritonia deusta ex 07XX258	DVL	FW
17MS128	unguicularis HP UCBG 89.1012 ex Greece	KWK	VF	Other Iridaceae - bulblets: XZ			
17MS129	unguicularis 'alba' HP	KWK	AV	17XZ181	Gladiolus species - bulblets	DVL	VF
				17XZ182	Gladiolus tristis - bulblets	DVL	VF
				17XZ183	Crocus sieberii - bulblets	DVL	VF
				17XZ184	Freesia refracta - bulblets	DVL	VF

Please place your order before April 1, 2018.

SUBSTITUTES: Place a **CHECK MARK** in the box to the **RIGHT** of the number.

001	002	003	004	005	006	007	008	009	010
011	012	013	014	015	016	017	018	019	020
021	022	023	024	025	026	027	028	029	030
031	032	033	034	035	036	037	038	039	040
041	042	043	044	045	046	047	048	049	050
051	052	053	054	055	056	057	058	059	060
061	062	063	064	065	066	067	068	069	070
071	072	073	074	075	076	077	078	079	080
081	082	083	084	085	086	087	088	089	090
091	092	093	094	095	096	097	098	099	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184						

PAYMENT Number of Seed Packets x \$1 =

S & H All other countries	\$14.00
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Add \$1 if you pay using PayPal

Total Payment Due

Email _____

SIGNA Seedex, Walter Pickett, 314 E 2nd St, Ellsworth KS 67439-3504, USA

Electronic \$6/yr, \$16/3 yrs

