

SIGNA



Collected *I. nelsonii* #17 ... Abbeville area

See the article by Benny Trahan starting on page 4157

No. 85

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Species Iris Group of North America

Summer 2011 – Number 84

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SIGNA DUES:

One-year membership (one household, U.S.A.): \$12.00; One-year membership (one household, Foreign): \$15.00; Three-year membership (one household, USA): \$32.00; Three-year membership (one household, Foreign): \$40.00; Lifetime membership (individual): \$300.00. We also have an electronic only membership where you will receive your newsletter via E-Mail. The cost for this is \$6.00 for one year or \$16.00 for three years. Rodney Barton - rbartontx@yahoo.com

Make checks payable in U.S. dollars to SIGNA (Species Iris Group) and mail to:

From The President

We have a great issue for you for your wintertime reading pleasure. To start with a great article by Benny Trahan on the Wild Iris of South Louisiana including some wonderful photos of these marvelous plants.

Next an in depth article by Jim Waddick on all it takes to put together the seed exchange. In this article he explains the processes that it takes to obtain, prepare and get the seeds out to you the members. I think you will find it very informative. We should always give a lot of thanks to the volunteers that do the work to bring us this world class seed exchange. We should also note that there are many other committees and people who spend a lot of volunteer time to maintain our membership, keep an up to date WEB site, update and add to the species manual, update our slide and digital photo library, and of course our publications.

Jean Witt has given us a great article on double flowers. We have also listened to our readers when they said they would like to have the Source List published earlier in the year so that they could plant better for the year ahead and what they wished to order.

There is also a substantial scientific article by Dr. Carol Wilson on her work on the Pacific Coast Iris and the relationships with Siberian Iris. Many of you who follow this DNA research will see some classification changes which hopefully will offer some more incite into this fascinating world of plants.

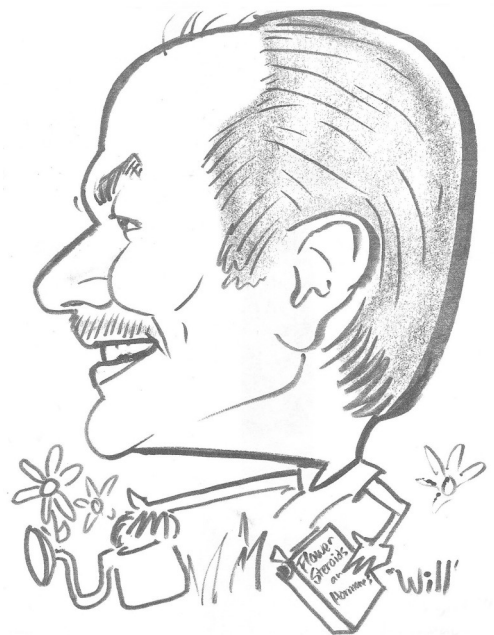
Some of our members have worked together to help those of us who are not scientists better understand some of the terms that are used by putting together a Glossary of Genetic Terms and Phrases for us. I know that I have learned quite a bit that I did not know before of some of these terms and phrases.

Please note that in June of this upcoming year (2012) there will be again a Siberian Species Convention. This time it will be held in Michigan and they have planned a great convention for us with some outstanding gardens to visit. I am planning on being there to see the plantings and hopefully get a chance to talk with John Kaufmann about his work with herbicides on iris. When his study is done he will be giving us an article which should help all of us with our weed problems. For those of you who may not know John is using Siberian, Spuria, and Tall Bearded iris in a study with the use of herbicides to see which can be safely used on these iris and which may cause damage to them. If you have never been to one of these mini conventions, please consider attending as you will find that they are great fun and you get to meet and know so many nice people who share at least one of your interests.

Also included, of course is our 2011 Seed Exchange. This is the 45th year of the SIGNA seed exchange and we are very proud of the work that Jim Waddick, Jim Murrain, all the committee workers and especially all the seed donors do to make this the best Iris Seed Exchange in the world. This is our major funding for our organization and we do wish to give thanks to all who work to keep SIGNA alive and well.

Looking forward we are working on a combined index for all the SIGNA bulletins and will most likely make that available online and as a published index for all who use our bulletins as a reference for articles that they write, for programs they present, for identifying a plant, or just for more information on a particular specie plant or cultivar.

Finally a new slate of officers is currently being assembled by our nominations chairman, Rodney Barton. The committee will present their slate of officers to the board by March 1st, 2012 and they will be announced in the Spring/Summer issue of the SIGNA Bulletin. Any member in good standing who may be interested in a position should contact Rodney Barton as soon as possible if there are no further nominations the new officers will be announced in the Midyear bulletin and shall assume their perspective offices on the last day of December of 2012.



All My Best

Will

Will Plotner

SIGNA Publications

We have some interesting and informative publications available for the Iris enthusiast. We also have the entire 40 years of the SIGNA bulletins available as well. These have a lot of information that cannot be found anywhere else. All our publications are priced as reasonably as possible for our members. Shipping and handling can be combined with orders for multiple items. And you can inquire about them by E-mail at either of the following addresses: SpeciesIris@yahoo.com or gardens@molalla.net

You may also check by mail at the following addresses:

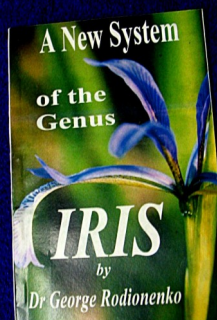
Carla Lankow
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A New System of the Genus Iris by Dr. George Rodionenko

This brand new publication tells of some of the beginning experiences of Dr. Rodionenko and of his studies and observations of the Genus Iris in the wild for over 50 years. It not only offers a new insight into how the genus has expanded but give the most in depth observances and history of Dr. Rodionenko himself. He is and has been a keen observer throughout his life and I think we can learn a great deal from him.

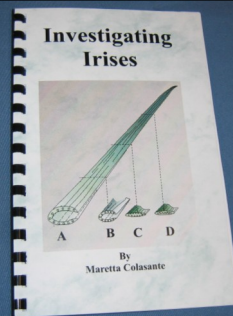
The conclusions he has come to will hopefully provoke a great deal of work on the part of other scientists to prove or disprove his in-depth theories. This book sells for **\$9.95** plus shipping and handling.



Investigating Irises by Prof. Marett Colasante

This contribution, grouping the translation of articles from Italian, French and German into English with comments by Professor Colasante to update the information, represents a data resource for a wider audience to improve and unify the knowledge of the Irises. So, this collection can be a starting point of different opinions and positive discussion and can be used to extract historical information and further subjects of investigation.

The aim of this work, concerning the collection of a lot of *Iris* information from different fields of investigation and carried out for many years from different countries by several experts and Iris lovers, have been achieved. It represents a new model of contribution to the knowledge of the 'Iris world'. The price is **\$9.95** plus shipping and handling.

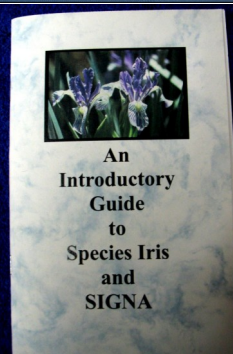


An Introductory Guide to Species Iris and SIGNA

This popular publication was assembled by SIGNA members that have articles that can help any SIGNA member. It has articles on raising some Easy Iris Species, Hand Pollination, Saving Seed, Registering an Iris, Shade loving Iris, A systematic outline of Species, A beginners guide to Iris Taxonomy, a Glossary of Iris Terms, On Line resources, a Commercial Directory, and more.

We have tried to make it an easy read for the beginner but have also included articles of a more advanced degree to give interest to all our members.

The price for this publication is only **\$5.00** plus shipping and handling.



The SIGNA CHECKLIST of IRIS

Our most popular and useful publication has undergone a change of face. Besides being updated in the cultivar section we have done away with the comb binding and put it into a notebook. This will facilitate in the future of only needing to update the sections that are changed. This will greatly help the purchaser in the future. It has sections on Classification, subgenera, pronunciation, parts of the flower, Alphabetical listing of Species, an updated cultivar list, Awards including color photos of all the SIGNA medal winners, a systematic outline of species, cultivars listed by species, a great section of the who's who of Iris, and much more in this 400+ page notebook. The price for this publication is **\$50.00** plus shipping and handling.



Wild Iris in South Louisiana

by Benny Trahan

Like many in South Louisiana, I was growing Louisiana irises before I really knew what they were. These plants are in many gardens, get traded around and often are a total surprise when they first bloom. In my case some seventeen years ago, plants dug because of their interesting foliage from the yard of my father-in-law's deceased aunt produced beautiful purplish blue flowers so impressive that I went to the library to find out something about them.

From my reading I discovered that the unidentified plants were irises, and specifically Louisiana irises. I found it exciting to learn that so spectacular a plant grows wild in the very state where I live. Research on the Louisiana iris species eventually led me back to the swamps and marshes but for reasons other than hunting and fishing. It has become a passion of mine to seek out and study the remaining wild iris populations.

Exploration

Every year since 1997, I have made many trips into the field to see Louisianas growing in their native habitat. Occasionally I travel great distances, but most excursions are two to five hours from my home in Slidell, Louisiana. A few are just an hour away. My longest trip involved two weeks searching throughout Florida for *I. hexagona*.

I often go alone on these trips, but I enjoy it when my wife Kathy accompanies me. Kathy does not enter the swamps, but it is nice to know someone is waiting. My oldest son Benny Jr. and his wife Debbie almost always make one trip each year with Kathy and me to the Abbeville area. We time it to take advantage of peak bloom and to coincide with the Society for Louisiana Irises show in Lafayette. My grandchildren like to participate in some of the shorter trips. They enjoy seeing snakes, turtles, alligators, ducks and the irises.

We make no rigid plans as to when or where to go, and I am always searching for new areas to explore. I utilize road and topographical maps and like to google "Earth" on the Internet to view aerial images of the sites I plan to visit and to search for promising new ones.

We enjoy looking for natural hybrids as well as the species and are always on the lookout for the rare white or yellow iris. We pay close attention to changes in the quantity of bloom and whether the irises are increasing, decreasing or even disappearing from certain areas.

Over the years, we have explored a large portion of the southern part of Louisiana. With a few exceptions, Louisiana irises are no longer found in great numbers at any one location. Though plentiful at one time, only small patches remain here or there in remote locations or in sparsely scattered spots along the sides of roadways. Very few areas offer a view of more than a thousand plants. Most of the large patches either are on private property or they are very difficult to approach.

Habitats

There's a lot to be learned from getting out to see the irises in their native habitats, especially over a number of years. It helps clarify the niche of each species, although to some extent their habitats overlap. But the natural landscape has been irrevocably altered by the construction of roadways, buildings, oil patches, drainage canals, and irrigation ditches.

No species has adapted better to these changes than *I. fulva*. Fulvas are found primarily in low lying open areas such as the rights of way (servitudes) of utility companies cut through woodlands, or along the sides of roadways and streams running through wooded areas. They grow along the edges of, and to a lesser degree into, wooded areas for a short distance.

Most fulvas occur in and along the sides of shallow ditches adjacent to roadways and highways. These ditches usually



I. hexagona #01



contain significant water for only brief periods of time during and after a rain. Fulvas do not like to remain in standing water for long periods, but they do like their "feet" planted in moist to saturated soil conditions. While *I. fulva* is found in

open areas, it seems to prefer a location near trees which offer partial shade or filtered sunlight. Because man has unknowingly created drainage areas ideal as habitat for *I. fulva*, it is now the least endangered of the five Louisiana species.

I. giganteaerulea loves water more than the other species. I have visited many sites where colonies existed on floating vegetation with their rhizomes and roots not anchored to the muddy bottom of the swamp. Along some roadways built through swamplands, I have witnessed giganteaeruleas extending out three or more feet from the bank where the water was several feet deep. These irises do best in standing water all year long. They like full sun to achieve best bloom, but when surrounded by trees they can attain their greatest height. Some grow to over six feet tall.



I. giganteaerulea

Giganteaeruleas can be found within a few miles of the Gulf of Mexico where they are making their “last stand” for survival. They do not face good odds for continued existence in these areas due to the loss of fresh water marshlands resulting from erosion, saltwater intrusion, and past and future hurricanes. There are other populations of *I. giganteaerulea* in parts of South Louisiana further inland from the coast that appear to be holding their own at least for the present.

I. brevicaulis seems to survive well in either wooded, shady areas or in full sun. I have found them in pastures among short grasses where cattle graze and within deep woods under old live oak trees. Brevicaulis can’t tolerate as much moisture as the other species, so they are typically seen on higher ground with good drainage.

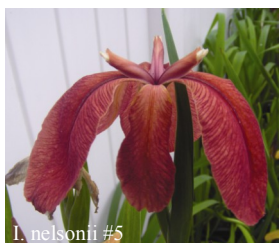


I. brevicaulis

I. nelsonii is found in a very limited area mostly south of Abbeville, Louisiana (hence the old name “Abbeville reds”). The nelsonii habitat today is virtually surrounded by sugar cane fields and is on private property. What is left of these beauties is within swamps of cypress and gum trees located in small depressions that appear to be two to four feet lower in elevation than the surrounding cane fields. These are narrow bands of swamp usually a half mile or less in width and one mile or so in length. The nelsoniis are found in standing shallow water that may remain present all year. Sunlight still penetrates the defoliated tree canopy during growing season and reaches the irises below.



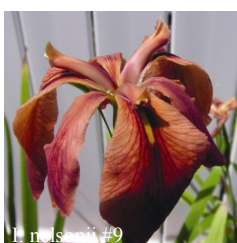
I. nelsonii #2



I. nelsonii #5



I. nelsonii #8



I. nelsonii #9

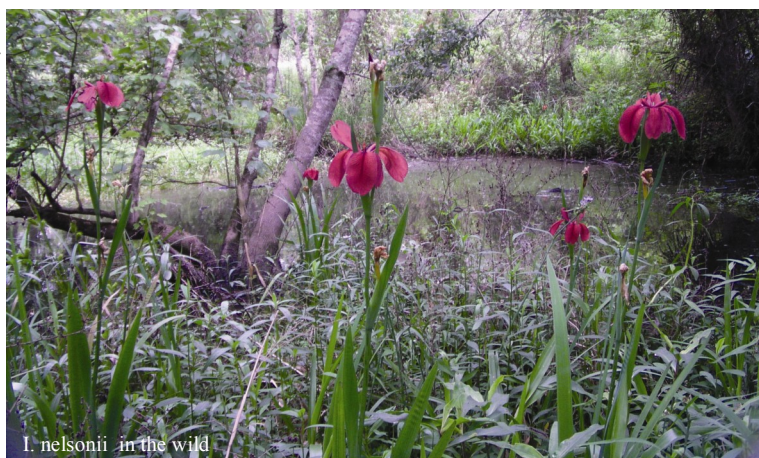


I. nelsonii #11

I have not been able to obtain information on the size or the exact locations of the Abbeville collecting sites of the 1960s. I can only speculate that a much larger area was available to those searching a mere fifty years ago. The remaining wild nelsoniis have not yet been destroyed by cane farming because of the expense required to fill in the natural depressions in which they grow. They also are in prime deer hunting areas. I have no doubt that, unfortunately, the *I. nelsonii* remaining in its wild habitat will become extinct in the very near future.

Iris Heaven

Some refer to areas around Abbeville as “iris heaven.” I certainly do. Four of the five species can be found within a two mile radius. The conditions are perfect for this meeting. The large blue coastal iris, *I. giganteaerulea*, is located along roads to the shores of the Gulf of Mexico, less than 15 miles from Abbeville. The Vermilion River runs through the town of Abbeville heading south towards the Gulf of Mexico. The winding river’s course includes swamps and marshes. I am not sure if some of the land in that area is higher due to the river overflowing its banks and silting over or the possibility of underground salt domes that cause certain areas to be higher in elevation. In any scenario, *I. brevicaulis* has taken advantage of this circumstance and used the higher



I. nelsonii in the wild

ground to make a home. *I. fulva* can be found throughout this area where moisture is present in the soil, but water does not collect on the ground for long periods of time.

The prolific presence of these three irises in their individual but adjacent niches supports the conclusion that *I. nelsonii* was born as a hybrid. *Nelsonii* was strong enough and fortunate enough to find a niche of its own.

What's Out There

There is more variety of form and color among the Louisiana iris species than many realize. Despite extensive destruction of habitat, there is much still to be seen. Some of the forms we have found in the past include white and double branched *I. giganticaerulea* and a nearly six foot tall *I. nelsonii*. There are fulvas in a far wider range of colors than generally appreciated, including not only yellow but also examples that are orange, pink/purple, and a yellow with a pink blush. Yellow *I. fulva* is very rare. I have only found them in three different locations. I have not encountered any yellow *I. nelsonii* but it was found in the past.

The more time I spend with Louisiana irises in the wild, the more unanswered questions I have. I do not know why there is so much variation within all the species. Each new location of a species seems to have at least some characteristics different from the plants in a previous setting, sometimes prompting questions about their origins. The color of the flower, the number of buds, and the height of the scape are all different. *I. fulva* is reported to be 24 to 36 inches tall. However, I have observed them in natural locations reaching heights taller than 48 inches. Fulvas in one spot may have no branching, while in others the majority will have one or more branches. The bud count in some places is normally three or four, but others have produced five and six bud positions per scape. In some locales, the fulva scape has little or no zigzag pattern, while in others it is much more pronounced.

My most surprising find was near White Castle, Louisiana, on the west bank of the River about 30 miles due south of Baton Rouge. One of my friends told me he remembered some irises growing in a ditch while working in an oil field about 20 years ago. The irises in that area should be *I. fulva*. When I found these irises, some were nearly five feet tall and some had multiple branches with as many as nineteen flowers on a single scape. The color range was from red to orange with a yellow infusion.

The White Castle irises are similar to *I. nelsonii*, but they were well over one hundred miles from the *nelsonii*'s Abbeville home. The location is in a ditch on the side of a sugar cane field. A house is situated a little beyond where the ditch ends, and there are a few hunting camps down a dirt road. The irises there are so unique as compared to any other site that I have visited that I inquired at the nearby house, and an elderly lady who had lived there for 30 years reported that she knew nothing of the irises other than that they had always been there.

As to their origin, I can only speculate that they were collected from another place and transplanted somewhere along the drainage path of this ditch. If transplanted, they may have originated around Abbeville. In support of this theory, there is an oil pipeline in that area, and the town of Abbeville has a great deal of oil-related activity. It is possible that an oil field employee relocated from the Abbeville area with his family, and some *I. nelsonii* accompanied him. I will never know with certainty the origin of the White Castle irises, but the stand remains of significant interest, prompting a few trips there each year during bloom season.

Is there a clear dividing line between fulva and *nelsonii*? There is a great amount of variation within *I. fulva* and a lesser amount within *I. nelsonii*, but fulvas are so much numerous and widespread that it is not a surprise. There is not as much purple in the color range of *I. fulva*, and not as much more brick red in *nelsonii*. Fulva often exhibits a yellow infusion (copper appearance) that I have not seen in *nelsonii*. *I. nelsonii* can have a long narrow conspicuous spear signal, or, like most fulvas, it can exhibit no visible signal at all.

Small differences in coloration aside, I have observed no clear distinction between these two species. Specimens considered *I. nelsonii* could be regarded as exceptional fulvas, or weaker specimens of *I. nelsonii* might be seen as fulvas. The two usually are not found growing immediately next to each other, so one can easily identify them in their natural environment. But if they were mixed together, it would be a different story.

Whether the currently named species are the best categories or whether revisions should be considered, I will leave to the experts for debate. I do have reservations as to the species status of *I. nelsonii*. What I have observed is a very good natural hybrid. *I. giganticaerulea* and the *I. hexagona* that I observed in Florida are very similar, though there are variations in both groupings in the wild. With the very liberal parameters used to determine species status, I would not be surprised to find in the future one, two, or more species added to the list of Louisiana iris under the series hexagonae.

Natural Hybrids

One can only imagine what a thrill it must have been in an earlier era to wander through vast fields of irises in south Louisiana and find new forms, the natural hybrids of the species. With the huge colonies of the different species in proximity, it is no wonder that natural hybrids were abundant.

Finding natural hybrids is a different story today. With smaller colonies and greater distances between them, discovering even one new hybrid iris is unusual.

I have found only three or four natural hybrids I felt worthy of further study and preservation. Perhaps there are many more to be found on private property, but many more undoubtedly disappeared as agriculture took over the land. We are indeed indebted to the work of the early collectors.

The Dim Future

I have always believed that the Louisiana iris species are on a death march. Their seeds can only float downstream towards the salty Gulf. The plants cannot advance very far to the north by rhizome multiplication, tidal surge or local flooding.

Many years ago, and to a lesser degree today, urban sprawl claimed and is claiming large amounts of the wild Louisiana iris habitat. I have read articles recounting the once vast iris fields surrounding parts of New Orleans. Large deposits of wild iris could once be found on the outskirts of small towns all over South Louisiana. However, residential development expanded into the surrounding areas and the once large masses of iris vanished. Additionally, the oil industry excavated canals from the Gulf of Mexico through coastal roadways to oil-related business locales in an effort to gain shorter and quicker routes to supply offshore drilling. These canals dissected swamps and marshes, allowing salt water from the Gulf to enter into iris habitat, destroying the irises in those areas. Swamps were and are being drained to create land more suitable for agriculture. Airplanes spraying herbicides very often overspray the intended fields, killing the iris growing adjacent to them.

Development of roadways and highways also destroys iris habitat. In an effort to save time and money, herbicides are used to control the growth of weeds along roadway ditches. It seems as though the decision has been made that it is easier and more cost effective to poison grass once every three months rather than cut the grass once each month, and the iris generally do not survive the poisonous solutions.

Natural disasters like hurricanes also drive salt water into the marshes, killing large populations of iris. Katrina had a huge impact on the Southeast portion of the State. The two or three weeks of standing salty water killed many of the rhizomes. I feel Hurricane Rita actually had a greater impact on the Louisiana iris species than Katrina. My son Benny Jr. and I visited the Cameron area during the 2006 bloom season of *I. giganteaerulea* to determine the condition of this species. Cameron is the coastal Parish that abuts Texas. We did find some small stands in bloom, but not nearly as many as seen in years past.

Giganticaerulea is a very tough species and could temporarily rebound. If the missing iris or their seeds survived, they should be found a mile or so further north where much of the marsh grasses and mud settled.

There are too many reasons why the naturally growing Louisiana iris species will be extinct in the near future. I predict that the first to disappear from the wild will be *I. nelsonii*, followed by *I. brevicaulis*, *I. giganteaerulea*, *I. hexagona*, and finally, *I. fulva*.

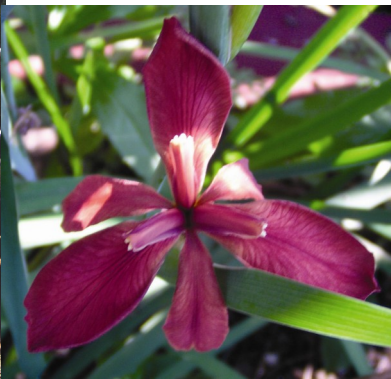
I do not think anything can be done to protect the Louisiana species iris in their natural habitat. Their habitat is disappearing, and purchase of some of the remaining land is cost prohibitive. More of the species iris should be grown by iris lovers, and as the plantings multiply, when division occurs, replanting should be aggressively pursued in wild areas that could support them. We could give them a new start under more controlled but naturalistic conditions.

Even this approach is risky and did not work for me. For years I had been planting species irises in the swamps of Bayou Sauvage East of New Orleans. They were developing into fairly large colonies of red, white, blue, and purple blooms. Each year I looked for natural hybrids in my planted areas. Unfortunately, in the year 2006, they were totally destroyed by Katrina.

From my involvement with the species Louisiana irises, I have gained a greater appreciation for the swamps and marshes of our State. The serenity and beauty as well as the dangers are an attraction that beckons me to return year after year. I cannot adequately describe the scene of moss-draped cypress trees with their knees protruding from the dark, murky water with clumps of large blue or red flowered iris in the background. I wish everyone could witness this iris in its natural habitat.

Benny Trahan

Benny Trahan, Sr. is retired and lives in Slidell, Louisiana with his wife of 44 years Kathy. They have five children and eight grandchildren. His passion for his family and for Louisiana irises, both evident in his article, keep him very busy.



Mighty Oaks from Little Acorns Grow

By James W. Waddick, Missouri

Consider the seed—whether the tiny dot of a petunia seed, the larger acorn or even a coconut. All flowering plants produce seeds and all flowering plants grow from seeds. Everything that will be in that petunia or oak or coconut or iris is packed in each seed. The iris might be a six-foot tall bamboo cane iris (*I. wattii* from China), a two-inch tall *I. minutoaurea* (from Japan) or the latest Dykes Medal winner. It is that potential in each and every seed that is part of the drive to grow plants of all kinds from seed and the joy and surprise of seeing what each seed produces.

The Species Iris Group of North America, SIGNA, a section of AIS, has a long-term active, large seed exchange (see the web site at www.signa.org). SIGNA members are devoted to growing iris species of all sorts from desert to swamp dwellers, from tiny to huge, bearded, beardless, bulbous and a number of related species in the iris family such as *Gladiolus*, *Crocus* and many more. The seed exchange is just that. Some members send in seed and other members take out seed. Between the incoming and outgoing seed lies the mechanism known as the SIGNA Seed Exchange that Jim Murrain and I, co-chair and orchestrate. A few years ago we took it over from Marty Schafer and Jan Sacks and made a few modifications, mostly to take advantage of new internet capabilities. Members from anywhere in the world can now order seeds online as quickly and easily as members in the U.S.

Local members of the Greater Kansas City Iris Society and Pony Express Iris Society and a few local willing friends get cornered into the most work-intensive part of the exchange that involves the actual packing of seed envelopes. Over a week or more, vaguely sane adults hunch over tables and count pin-head-sized seeds and seal them into tiny envelopes.

Seed packing is an extended activity and gives all the seed counters ample time to discuss the virtues of the seeds and irises, as well as a thorough discussion of the irisarians who didn't attend that day. Not gossip, just the facts. We also find time to eat and drink with helpers supplying a variety of snacks and goodies, plus a lunch or dinner and cups and cups of coffee. There's enough coffee and food to make helpers recall this as the good part of the events and forget about the sore backs and headaches from counting minute 'dots' on a seed tray. Helpers return for more of this year after year. We do have fun, or try, as we manage to pack thousands of seeds into thousands of envelopes. Hundreds of man-hours come together in the seed packing days, but the whole mechanism starts months before.

In late summer as iris seeds are ripening and potential donors are collecting them, we are checking supplies for the coming distribution. We need thousands of seed envelopes and seed envelope labels, hundreds of padded bubble shipping envelopes and various minor supplies. We review the existing instructions for donating and ordering seeds that will get posted on the SIGNA web site and printed in the newsletter. Special considerations are needed for foreign donors, and we prepare copies of approved import permits, special shipping labels and instructions for each foreign donor. Seeds entering the U.S. from any foreign country, including our neighbor members in Canada, have to be inspected before we are allowed to receive the seeds. This inspection can take days, weeks or months depending on the schedule of the USDA Inspection Station.

Seed donations start to arrive and each donation is given an abbreviation for the donor that will eventually stay with the seed as it goes to a seed list. We ask that each packet be accurately named and an approximate seed count included. Seed counts are essential to permit an equitable number of seeds and packets. We get as few as three or four seeds in some donations and this results is only a single envelope for the list. Other donations come in large bags measured by weight with thousands of seeds in each.

Sometimes we have to correct spelling or change names to currently accepted names. On occasion we will question the identity of the seed. There are some seeds we can identify on sight and tell there is an error. We will ask the donor for a picture of the flower and can often correct a false ID. We try to make certain that all seed are correctly named, but many seeds look very similar.



Throughout December, we work to prepare the seed list, which often boasts 500 or more separate donations. Once we have a final list with names and numbers, we send this to the editor of the SIGNA newsletter for inclusion in the fall/winter issue and an electronic version to our webmaster Dennis Kramb for addition to the SIGNA web site. Frequently we have late additions that missed our deadlines and arrived too late to fit in their correct list positions. These are often choice additions from our procrastinating members. All these late additions go to the web site, but few make it to the printed list. We urge members to check the electronic version for the most current list. In late December, chaos strikes. The list is printed and

mailed and posted to the web as simultaneously as possible. Some members are checking the web site hourly to be the first to order and get the choicest items in shortest supply. Electronic orders can be made, paid and received literally in moments giving a decided advantage to computer-literate members. By the time a mail order is received, we are almost certain to be out of one or more items that are most restricted. We go to extreme pains to process order reservations on a first come, first filled basis. We check post marks and times as closely as possible. Every order is given a consecutive number as their order of precedence. Then we let these accumulate and take time off to enjoy the holidays.

After the New Year, the first thing we do is organize the seeds for counting and packing. We've cobbled together special packing trays that can house donations for counting and arranged for orders to be filled. Printing labels is the biggest job that we handle all by ourselves. Each packet has a label with a unique serial number that corresponds to the printed seed list plus the species name and a brief description. We have three short lines and sometimes squeeze in a lot of text! It seems each entry on the list has a different number of labels and these have to be ready and waiting prior to seed packing. In 2010 we printed about 5,000 individual labels. It takes days and days!



The last thing before the volunteers are called to count and fill envelopes is the furniture moving. The living room and dining room become seed packing rooms and a spare guest-room becomes the store house and back room for supplies and processing. We set up to six, six-foot work tables, ample chairs and rearrange lights to fit the coming helpers. We figure a lunch menu for four to eight workers, maybe more, and then shop to keep everyone in food, drink and snacks. Helpers arrive from miles around. A number of these seed counters drive over an hour to help out. Currently we only have a few SIGMA members close enough to be cajoled into helping. Most of our helpers are from local iris societies, plus helpers from local Kansas City plant groups and others we can rope in.



Each helper gets one stock packet of seed and a list that shows how many seed and how many packets should be filled. They get that number of empty packets and that many pre-printed labels. If there are just a few seeds, helpers can simply fill packets from stock. More often there are a larger number of seeds and they are poured onto a flat surface—usually a white dinner plate—and counted into equal piles to match the number of labels desired. Sometimes the number of seed in the packet is way off the donor's estimate, and we have to adjust to more or less seed per packet. We stick to the rule of never less than 4 seeds and try to keep seed packets equal in count. Sometime it just isn't easy. If even one seed is dropped on the floor it is trashed unless it is something in very short supply and *totally easy* to confirm its identity. Not all dropped seeds are caught and by the days end a small pile is tossed out.



This continues for hours and days until upwards to 5,000 to 7,000 envelopes are filled and arranged by number in sorting boxes. Of course we take ample breaks, provide lunch (and dinner too if things keep going), coffee, cold drinks, cookies, etc. Lots of iris talk goes on about the seeds, the donors, and seasonal iris news. We do try to 'solve' every possible situation in the local club, the region and AIS. Sometimes a helper brings along a special treat we all devour as we pack seeds. We try very hard to keep cookie crumbs out of the seed packets!

We can count on at least four work days and sometimes six with multiple helpers to get all the seeds from the donor's plastic envelopes, seed envelopes, plastic baggies, boxes and other containers into individual seed packets. There is a general jubilation when the last packet is finished. Hooray.

The packets are arranged strictly in the numerical order that matches the official SIGNA Seed List in box after box to get ready for filling orders. We slightly reorganize the packets and boxes to prepare to fill and pack orders. Now we need a new set of labels—member addresses, return mailing labels, a postal scale and various sizes of padded bubble envelopes and lots of stamps. By the time we have around 100 orders, we ask around for who can 'stand' to help another day. Thankfully we do have friends who understand and appreciate what the Seed Ex is all about. With seeds arranged from number 1 to the end, we set out small boxes to hold each order. Orders may be as small as 1 packet to well over 100 packets. We have orders from every continent except Antarctica. Some orders just focus on one particular group of irises, but most orders have a selection from across the spectrum of those available.

As each order is filled, we soon need to include substitutes and hope the member has listed enough that we don't need to guess. We try to ensure the number of packets matches the order total, but that isn't always possible. Later orders have an increasing number of requested substitutes and guessed additions. Each order is checked at least once and many twice. Then the order goes into a suitably sized shipping envelope along with a brief thank you note. Each envelope gets a preprinted address label, a SIGNA return address label and a mailing label (Air-Mail or First Class). The envelope gets weighed, postage calculated and applied. Envelopes are sorted by size and destination and boxed accordingly.

After this main rush of orders, we consolidate the remaining packets, take down a couple tables and return to semi-normalcy. The guest room changes to hold all of "Seed Central". We fill later orders in groups of 5 or 10 or once a week until the deadline for final orders is reached. What do we do with those inevitable leftovers?



First, we send seed to the New Zealand Iris Society. Their six-month, out-of-northern-hemisphere planting season, works out great to get first choice of leftovers. They send us seed in return. We offer bulk sale to other seed exchanges and the non-iris seeds are usually in demand there. If we still have some goodies left, these will get packed up for the SIGNA section meeting at the annual AIS Convention when possible. Finally the last seeds go to the SIGNA Membership Chair, Rodney Barton, who maintains a half-price seed sale of all older seeds. Fortunately iris seeds maintain good germination for years.

By mid- to late March, all the tables come down, the sorting boxes go into the basement, the guest room is open for business, and we go out in the garden. On the first rainy day, we prepare final reports, balance books and make notes of supplies in need of new orders. Eventually we'll send out reminders to donors to collect seed.

The Seed Exchange is the major fund-raiser for SIGNA, but more importantly it provides its members with a unique source of seeds of a large number and variety of iris species and selections. Many of these are simply not available from commercial sources, or extremely limited and high-priced. Members can obtain seed for a large number of plants of many iris species and selections in a relatively short time. A few species can bloom the year they are planted, but most are likely to bloom in their second and third year of growth. Members can literally go from bare ground to an iris extravaganza for a small amount of money and lots of sweat equity.

Donors from all over the world are just as essential as the local seed counters to make this international effort work. We welcome seeds of all irises under all circumstances, but particularly love to get: wild-collected seed, hand-pollinated seed and well-documented seed. Almost every year we get a species 'new' to the list. Every year there are variations depending on who sends what. This year we had an array of spuria cultivars and they almost all sold out remarkably fast. Small species of the Chinensis Series (*I. henryi*, *koreana*, *odaesanensis* and others) are always popular. One very special group of seed donations includes the wide-crosses involving various bearded and beardless species. Each seedling may present a new combination of genes that produce an outstanding garden plant.

So what do we need to succeed? Well, obviously, more and different seed. We rely on the open willingness of volunteer helpers at all parts of this intricate web. If there is one thing we lack, it is feedback from members. We do know that SIGNA members appreciate the Seed Exchange, but we get very little response to questions such as: Did these seeds germinate well? Did they grow and bloom? Were they true to name or color? Did you grow something really special from SIGNA seeds? In the same line, donors would love to know that their seed went to good hands, grew, bloomed and was exactly what the grower had wished for. Please write us a note or send us email to relay your experiences!

SIGNA welcomes new members to join in the adventure of the Seed Exchange. Information is available from the web site at www.signa.org. Please also contribute seeds to the Seed Exchange!

Doubling in Iris Flowers

by Jean Witt

Double flowers have attracted the attention of gardeners for at least two thousand years – double roses are illustrated on the walls of houses in Pompeii. Mike Unser wrote about 5 of his favorite double irises in *IRISES*, the AIS bulletin for July 2011. Actually we could list many more, both bearded and beardless. Some have been found in the wild; some have turned up in seedling patches; others have been bred specifically. Many are attractive others meagerly freakish. The best ones are stable and permanently double; others are single season accidents, never seen again. In true doubles one set of petals drops out and the other is duplicated. In Iris it is usually the falls that increase in number from 3 to 6 (or more in Japanese irises). A bearded iris with 6 standards and no falls – cupped shaped like a tulip – was listed in catalogs more than 50 years ago but made no impact on the iris scene. *Ed. Note this plant was called Blue Tulip - Knocke '64*

Double flowered *I. ensata* caught the attention of gardeners in Japan several hundred years ago and have been highly prized ever since. '**Rose World**' (Reid 1988) is an American example. In '**Electric Glow**' (Aitken 1992) the doubling is so extreme as to give a pompom effect. 9- and 12-petaled flowers are mentioned in the AIS Judge's Hand Book.

Among bearded irises, '**Japanesque**' (Farr 1922) is a diploid example in which not only petal form is disturbed but also petal color. Double tall bearded have never enjoyed the popularity of the double Japanese but breeders have always put out a few. I grew a pretty blue 4N flatty form Ben Hager called '**Unfurled Flag**' (1982) until one year it flipped back to proper iris shape Terry Aitken has an attractive white TB, 'Frosty Moonscape' (Aitken 2006) in his current catalog - a suitable alternative for those whose climates won't accommodate Japanese.

Not all doubling is complete. Some like the freak flower on IB '**Lady Day**' (Lankow R. 1989) are single season events not particularly attractive. My 4-merous **MTB seedling**, like a 4-merous Trillium is somehow disturbing to the eye conditioned to 3-merous flowers.

Double forms of other beardless species were prized in Japan long before they reached England and the US. 'Rikugi Sakura (Ho Shidara by Hager 1988) is one several double Siberians selected there. '**Rigamarole**' (Bauer/Cobble 2000) is slightly more recent with somewhat wider petals. Blue, White, and spotted double forms of *I. laevigata* have long history in Japan, '**Royal Cartwheel**' (Reid 1991) is a modern American introduction.

Doubles have occurred in several American species. 'Dotties Double' (Warrell 1983 is a double *I. virginica* found in the wild. *I. setosa* seed from Alaska in the 1980s gave me a striking bright blue double, that unfortunately died after blooming and left no seed. In 2005 I saw a pleasing double *I. tenax* in southwestern Washington. The Joe Pye Weed's Garden catalog lists a double form of *I. cristata* 'Dick Redfield', (Schafer/Sacks 2005) that makes a nice addition to the roster of colors forms of that species.

Not all the plant kingdom's efforts at doubling qualify as good garden flowers. The most commonly available *I. pseudacorus* leave a good deal to be desired – it sports an unkempt cluster of petaloids in the center of the flower, rather than true doubling. Better ones are said to be in circulation in Japan.

Over the years I have collected several examples in the "aberration" category. In 1994 my Cal-Sibe '**Far Voyager**' (Witt 1985) gave me a double flower with 6 falls, 5 standards and 7 style arms. '**Half Magic**' (Farmer 1985) produced a flower with 5 falls in the Abrego garden in 1994. I spotted a 4-merous PCN in Joe Ghio's garden in 1986.

I don't pretend that this list of double irises is complete – it only includes those that I've encountered personally. So I challenge our members to let us know what else is out there – good double forms will always be welcome as the existing varieties in the various beardless series illustrate. It would seem that the potential for double flowers is always out there. We just have to keep our eyes open.

All photos by Jean Witt except 'Japanesque' by Bob Gutowski, Dick Redfield by Joe Pye Weed's Garden, '*I. laevigata* 'Monstrosa' by Chuck Chapman' and 'Rikugi Sakura' and 'Dottie's Double' by Sean Zera.

More double irises

A post to the iris-species Yahoo group yielded additional examples of double flowered irises.

Christy Hensler sent a photo of '**Sun Cascade**' (Huber 1992) "It looks a little beat up from heavy rains but it's a true double form of *pseudacorus*. The versata 'Mirabelle Glow' (Huber 2002) will sometimes double here."





Chuck Chapman sent two photos, a **double pseudacorus** seedling “A tidy flat double, unlike the doubles currently out there” and a **double versicolor** seedling. He also sent a photo of *I. laevigata* ‘Monstrosa’ in a pond at the Florence Iris Trial garden.

Walter Moores sent a photo of an aberrant bloom of ‘Oasis Patches’ TB (Chadwick 2000)

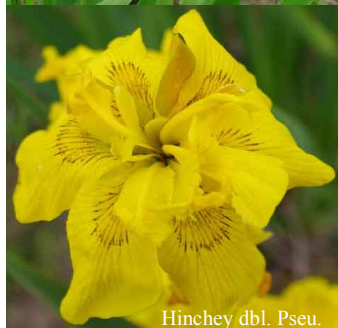
Debbie Hinchey sent another photo of an *I. pseudacorus* double.

Sean Zera sent a photo of ‘Rikugi Sakura’, and commented that “It’s more reminiscent of a garden JI than a species siberian, though, because of the broad falls.”

Joan Cooper commented “I introduced ‘Dottie’ Double’ as an *Iris virginica* Shreivii seedling. If I remember correctly, it is probably the same as *Iris x robusta*, a natural cross of *Iris versicolor* X *Iris virginica*. It was found in an Ohio stand of *Iris virginica* Shreivii doing it’s own thing.”

Finally, for further reading, Anner Whitehead sent the following link to ‘Monstrosities in Iris’, A. Guillaumin; from LES IRIS CULTIVÉS, Paris 1923 on the World Iris Society web page.

http://www.worldiris.com/public_html/Cultives/Cul1.html#anchor1869544 Photos posted on iris-species can be viewed in the archives on hort.net: <http://www.hort.net/lists/iris-species/>.



Iris henryi: A little bit of an Iris

by Jim Murrain

Reprinted from the AIS World of Iris Blog, Sept 28, 2011

<http://theamericanirissociety.blogspot.com>

I relish growing things that are uncommon or rare. Of course sometimes it is rare because it is nearly impossible to grow. Other times it is rare because of its size or subtlety and few have taken notice. Of the later type, one that is easy to grow is *Iris henryi*. One of my favorite irises is this little bit of an iris. It has very narrow grassy foliage and flower size more common in violets. As a matter of fact that would be a good description for it. The violet of the iris world. It even happens to open a pale violet before aging near white. A clump of *Iris henryi* in flower is just, well, adorable! Surprisingly, a clump in bloom is very showy. It covers itself in flowers.

The foliage is evergreen so there is never a chance of misplacing this diminutive beauty. It flowers in abundance early in the bearded iris season: Mid to late April in Kansas City. So far there have been no pests or problems with this iris. It increases rapidly when moved then settles down to concentrate on flowering. At bloom time the older foliage splays neatly to showcase the flowers that are only two to three inches in height. The leaves can reach ten inches but always gracefully arching to appear smaller and in perfect scale. Everything in perfect proportion.

When I say *Iris henryi* has grassy foliage, I really mean it. This could be difficult to find in a lawn of bluegrass. It is best suited to the front of the border in a shade garden, but with bright enough light to encourage flowering. It does not seem to require frequent division but I would encourage that you do so in late summer and share it with close friends.

Iris henryi is a member of the beardless Series Chinenses and is from West Central China. It is a close relative of *I. odaesanensis*, *I. speculatrix* and a few others. We are thankful to Joe Pye Weed’s Garden for propagating and distributing this little rarity. *Iris henryi*, a marvelous, if tiny, gem of an iris.



SIGNA Source List

For Species Irises

We have had many requests for a list of sources of Species Irises. The following list of Commercial Growers (in alphabetical order) that offer in their catalog at least 10 species iris, either bearded or beardless. We know this is by no means a complete list, only a beginning from what we had knowledge of or could find listed elsewhere. If you are a nursery that offers at least ten species irises and would like to be included in this listing in the future please send your name and address and the necessary information about your garden to me, William Plotner, at gardens@molalla.net or to my USPS address as listed below or on the inside front cover. This service is free to members. For Non Members we are asking for a fee of \$10.00 to help cover the cost of mailing this list. If you wish to be included in this list please submit your information and if a non member a check made payable to SIGNA and send to:

SIGNA Source List

P.O. Box 250

Molalla, OR 97038.0250

SIGNA Seed Exchange- Every SIGNA member will receive in the mail (in January 2005 and every year thereafter as long as membership is maintained) a listing of available seeds together with an order form for ordering bearded and beardless species and other irids.

Aitken's Salmon Creek Garden 608 NW 119th St., Vancouver, WA 98685, USA, phone (360) 573-4472, aitken@flowerfantasy.net, Color Catalog \$3.00 www.FlowerFantasy.net, , bearded and beardless species.

Alan McMurtrie, 22 Calderon Cres., Toronto, Canada, M2R 2E5, phone.(416) 221-4344 alan.mcmurtrie@rogers.com, www.Reticulatas.com & www.Irises.biz Order from websites, bearded, beardless and bulb iris species.

Lynn & Peter Markham, 61 Up-land Avenue, PO Box 154, Lunenburg, MA 01462, USA, phone (978) 582-0445, bearded (aphylla) species

Cape Iris Gardens 822 Rodney Vista Blvd., Cape Girardeau, MO 63701, USA, phone (573) 334-3383, capeiris@aol.com, Catalog \$1.00 refundable, beardless species.

Chuck Chapman Iris RR#1, 8790 Hwy 24, Guelph, Ont., Canada, N1H 6H7, phone (519) 856-4424, Catalog \$2.00 refundable, bearded and beardless species.

Clarks Gardens RR Box 3245, Edwards, MO 65326, USA, phone (573) 347-4103, Price List \$1.00, beardless species.

Collector's Nursery 16804 NE 102nd Ave., Battle Ground, WA 98604, USA, phone (360) 574-3832, dianar@collectorsnursery.com www.collectorsnursery.com, beardless species

Ensata Gardens 9823 E. Michigan Ave., Galesburg MI 49053-9756, USA, phone (616) 665-7500, ensata@aol.com, www.ensata.com, Color Catalog, beardless species

Foxbrook Iris 90 Call Road, Colrain, MA 01340 USA, Free iris list, foxbrook@rcn.com, beardless species.

Garden Vision 63 Williamsville Road, Hubbardston, MA 01452-1315 USA darrellpro@earthlink.net Free iris list, beardless species.

Iris City Gardens 7675 Younger Creek Road, Primm Springs, TN 38476, USA, phone (800) 934-4747, greg@iriscitygardens.com, www.iriscitygardens.com, Free Catalog, beardless species.

Iris Colorado 10918 N. Sunshine Drive, Littleton, CO 80125, USA, phone (303) 791-0456, LBaumunk@aol.com, www.members.tripod.com/irisColorado, Free Catalog, bearded species.

Joe Pye Weed's Garden 337 Acton Street, Carlisle, MA 01741, USA, phone (978) 371-0173, jpwflowers@aol.com, www.geocities.com/jpwflowers Catalog \$2.00 refundable, beardless species.

Munchkin Nursery & Gardens, LLC 323 Woodside Dr. NW, Depauw, IN 47115-9039, USA, phone (812) 633-4858 Catalog \$3, www.munchkinnursery.com, genebush@munchkinnursery.com, bearded and beardless species.

Nicholls Gardens 4724 Angus Drive, Gainesville, VA 20155-1217, USA, phone (703) 754-9623, NichollsGardens@juno.com, www.Nichollsgardens.com, Catalog \$2.00, beardless species

Ohio Gardens 148 Alta Street Marietta, OH 45750-2607, USA, phone (740) 374-8612, tvvarner@ee.net, Catalog- First Class Stamp, bearded species.

Pacific Rim Native Plant Nursery, 44305 Old Orchard Road, Chilliwack, BC, V2R 1A9, CANADA, phone (604) 792-9279, paige@hillkeep.ca, www.hillkeep.ca, order off website, bearded, beardless and bulbous

Wildwood Gardens PO Box 250, Molalla, OR 97038-0250, USA, phone (503) 829-3102, gardens@molalla.net www.wildwoodgardens.net Colored Catalog \$5.00 refundable, bearded and beardless species.

A special offer on "Fleur de Lis"

The Society for Louisiana Irises has made a special offer to SIGNA members who subscribe to the SLI publication, Fleur de Lis, before April 1st, 2012. For a one-year subscription, you will receive a free rhizome of a Louisiana iris species (I. fulva, I. brevicaulis, or I. giganticaerulea). For two years, you will receive two free rhizomes. For three years, you will receive all three of these species, plus a specimen of I. nelsonii.

Individual subscriptions rates are: One year, \$13; Three years, \$32; Life, \$200

Subscriptions include a membership to the SLI.

Please contact the Fleur de Lis Editor, Tom Dillard at tomd@pgtc.com.

The Taxonomic Relationships of Pacific Coast Iris

Carol A. Wilson, April 2011.

Reprinted from the SPCNI Almanac Vol. 40, No.1, Fall 2011

Background

Iris is a genus of almost 300 species found in temperate climates of the Northern Hemisphere. Mathew (1981) used three categories when he produced a classification for the genus: subgenus, section, and series. The group of taxa long considered the Pacific Coast irises were included in the series *Californicae*. The series *Californicae* is in subgenus *Limniris* section *Limniris*. Iris species were assigned to section *Limniris* if they had sepals (falls) that lacked beards or crests and rhizomes, which are characters of Pacific Coast irises.

All irises in series *Californicae* have upright narrow leaves that arise as a fan, and slender stems that usually have one to three flowers. An exception is *Iris douglasiana* that produces a branched inflorescence and usually has more than three flowers. The flowering stem can have leaves along its length that resemble the basal leaves or can have small bract-like leaves. Flower color for most species is commonly either violet-purple or pale to medium yellow. *Iris purdyi* has some variation in flower color but typically flowers are rose-colored, while *Iris munzii* flowers are bluish. Flower color can vary within some populations, but most variation is found between populations or species. The flower colors, number of flowers, and leaf characteristics of the Pacific Coast irises are not unique to this group of Iris. In spite of the shared similarity with other irises, usually these relatively delicate species can be easily identified as belonging to the Pacific Coast group.

The Pacific Coast irises have been considered a related group of species since Dyke's (1913) synthesis of the genus *Iris*. This is because these species share several characteristics that are uncommon or unknown among the other irises native to North America. They have a chromosome number of $X = 20$, slender rhizomes, and tough fibrous leaves, produce fertile offspring when crossed, and are restricted to the Pacific Coast region, from Santa Barbara and the San Bernardino Mountains of California north to about Olympia, Washington. The most recent taxonomic revision of *Iris* series *Californicae* (Lenz 1958) recognized eleven species and five subspecies.

All except two of the Pacific Coast irises are found in foothills and mountains. They occur in several north-south oriented mountains including the Coast and western portion of the Cascade Ranges of Oregon and Washington, and the Coast Ranges and Sierras of California. The transverse mountains where they occur include the Klamath Range of southern Oregon and northern California, and the San Gabriel and San Bernardino Mountains of southern California. One species, *Iris douglasiana*, is not found at moderate to high elevations in the region but instead is restricted to a narrow band of coastal headlands from southern Oregon to southern California, and another species, *I. purdyi*, is found in the coastal redwood forests of northern California. I have been studying species of Pacific Coast irises since my M.S. thesis in the mid 1980s when I studied several populations in southwestern Oregon and northwestern California that represented the species *I. douglasiana*, *I. innominata*, and *I. thompsonii*. In the early 1990s I returned to graduate school and investigated relationships among all of the Pacific Coast irises for my Ph.D. dissertation. As a faculty member and researcher I have continued my studies on *Iris*, investigating species from across the Northern Hemisphere that represent the diversity present within the entire genus.

Within this broader context I continue to research relationships among the Pacific Coast irises and their relationships to other *Iris* groups. In the study summarized here I present research that focuses on the relationships Fall 2011 Volume XXXX Number 1 5 among the Pacific Coast irises and their relationships to other groups within the genus, particularly other series recognized in subgenus *Limniris* section *Limniris*.

Methods

The data analyzed and summarized is based on sequences from chloroplast DNA using three regions, the *trnK* intron, the *matK* gene and the *trnL F* region (a length of DNA that contains a short portion of the *trnL* gene and an adjacent intron). The DNA analyzed was extracted from fresh leaf material of each of the 70 species included in the study. Experiments targeted and amplified each of the three sequence regions for each of the species of *Iris* included in the study. The targeted amplification of the DNA regions resulted in many copies that could then be analyzed for nucleotide content. The resulting data matrix contained 3,945 nucleotide bases of which 29% were variable. The data matrix was analyzed using two methodologies, a maximum likelihood method that searched for the most likely branching pattern to explain the nucleotide diversity across the species, and a Bayesian analysis that used Monte Carlo methods that repeatedly randomly sampled the patterns of distribution of nucleotides across the species and determined the repeating patterns revealed. These methods summarized the most probable patterns of nucleotide evolution across the species studied and presented the results as a bifurcating network that was rooted by comparison of nucleotides from a distantly related species. The rooted network produced is termed a phylogenetic tree because it is based on the estimated evolutionary history of the species studied. The phylogenetic tree presented is based on a study published in *Systematic Botany* (Wilson 2009).

Results and Conclusions

The figure below summarizes the relationships of the Pacific Coast irises (series *Californicae*) and other groups in *Iris*. The numbers above branches are the statistical support (0.8/ 1.0) based on the Bayesian analyses. The star is placed on the tree at the node leading to the Pacific Coast irises. The node leading to each group of irises is assumed to be the ancestor for that group. The Pacific Coast irises developed from a single branch on the tree indicating that they evolved from a single ancestor. Based on the chloroplast data used the probability that they form a single group is 1.0. This result agrees with the results from my Ph.D. dissertation, which were based on a data matrix of about 700 nucleotides from the nuclear genome.

The Pacific Coast irises have a sister group relationship with species from the series *Sibiricae* meaning that the two series share a common ancestor. This relationship is supported by the shared chromosome number of $X = 20$ in the group of *Sibiricae* that include *I. bulleyana*, *I. chrysographes*, *I. delavayi*, *I. forrestii*, *I. wilsonii* and *I. clarkei*. These species can also be crossed with the Pacific Coast irises to form fertile seed. The other species in series *Sibiricae*, *I. henryi*, *I. sanguinea*, and *I. typhifolia*, have a chromosome number of $X = 14$.

Several interesting hypotheses can be drawn from the relationships revealed by this study. One is that this data supports a hypothesis that the diversification of chromosome numbers in *Sibiricae* occurred only once leading to the $X = 14$ chromosome and $X = 20$ chromosome groups. Because $X=20$ chromosomes occur in both the Pacific Coast and series *Sibiricae* irises it is likely that their shared ancestor too had a chromosome number of $X = 20$ and that the $X = 14$ chromosome number is derived.

A second interesting hypothesis is that the ancestor to the Pacific Coast irises and the series *Sibiricae* species is likely either to have occurred in North America and eastern Asia or to have lived in Asia. If we follow the family tree back one more step we have an ancestor that gave rise to even more species distributed in both Asia and North America. This would be the ancestor at the node leading to the Pacific Coast irises/*Sibiricae* group and the group that is comprised of species from the series *Laevigata*, *Prismatica* and *Tripetalae*. The single species in the series *Prismatica* is currently restricted to North America while species in series *Laevigatae* are from both North America and Asia. In series *Tripetalae* one species is from North America (*I. tridentata*) while the other is distributed in Asia and North America (*I. setosa*). It is possible that the ancestor to all of these species was initially in North America and dispersed to Asia at least twice, but overall this hypothesis is not as likely because the greatest number of Fall 2011 Volume XXXX Number 1 6 *Iris* species living today is on the Eurasian continent.

A final hypothesis that I want to suggest is the age of the Pacific Coast irises in relation to other groups in the genus. Goldblatt et al. (2008) estimated the origin of the genus at about 45 million years ago but we do not have any evidence about rates of evolution within the genus. All that can be stated about the age of the Pacific Coast irises is that they probably arose more recently than 45 million years ago. We can however, talk about the relative ages of the lineages. The arrow going from left to right below the tree can be used to hypothesize relative ages of the ancestors and their decedents. If a line is drawn vertically from the node (at the star) leading to the Pacific Coast irises to the bottom of the page it passes through the boxes and triangles representing the other *Iris* groups to the right of the nodes where we would assign their ancestors. Although rates of evolution are not necessarily even throughout the tree, it is a reasonable hypothesis that the Pacific Coast irises are young relative to the other major groups shown. It is likely that they are younger than the series *Sibiricae*, further supporting the hypothesis that their shared ancestor came from an Asian origin.

The probable relatively young age of the Pacific Coast irises is interesting, and also a reason why relationships among species are not easily determined. My research has made significant progress in sorting out relationships within the group but statistical significance is lacking for many of these relationships. In general nucleotides are assumed to change over time in a random manner and eventually enough change accumulates to indicate with confidence all of the ancestor/descendent relationships. Finding this accumulated change is one of the goals of my continued research.

I have a couple of final notes about the research presented. One is the arrow shown on the phylogenetic tree. This branch does not have statistical support, as its value is less than 0.8. The best fit of the data is the placement shown for the series *Chinenses*, but with the data used I cannot with confidence tell how the series *Chinenses* is related to other groups of *Iris*. Also, the relationships shown are hypotheses and may change with additional data. Phylogenetic trees are particularly sensitive to the addition of new species, especially species that are quite different from those already included in studies.

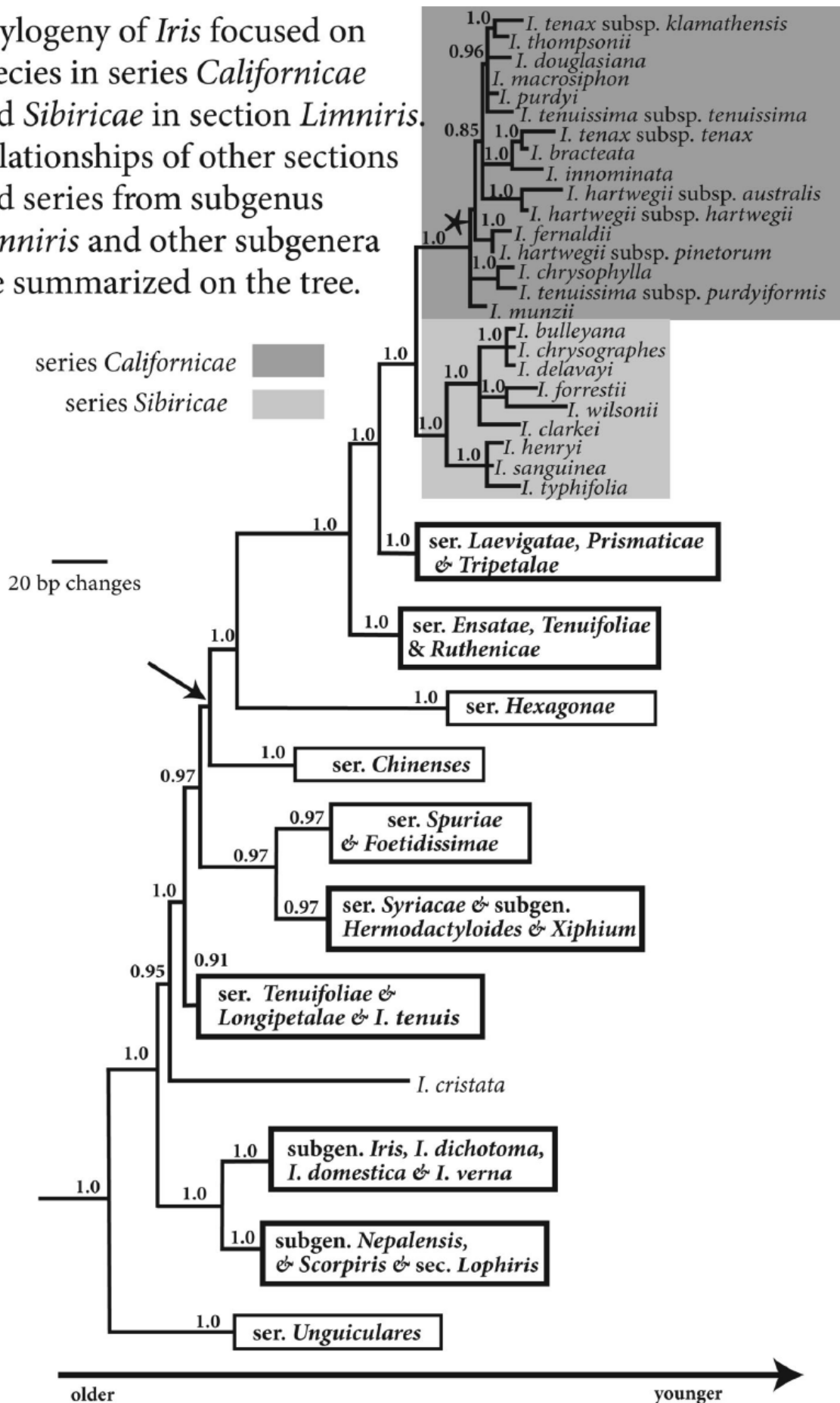
Literature Cited

Dykes, W. R. 1913. *The genus Iris*. New York: Dover Publications, Inc.
Goldblatt, P., A. Rodriguez, M. P. Powell, T. J. Davies, J. C. Manning, M. van der Bank, and V. Savolainen. 2008. Iridaceae "Out of Australasia?" Phylogeny, biogeography, and divergence time based on plastid DNA sequences. *Systematic Botany* 33: 495- 508.
Lenz, L. W. 1958. A revision of the Pacific Coast irises. *Aliso* 4: 1- 72.
Mathew, B. 1989. *The Iris*. London: Batsford Ltd.
Wilson, C. A. 2009. Phylogenetic relationships among the recognized series in *Iris* section *Limniris*. *Systematic Botany* 34: 277-284.
Previous articles by Dr. Wilson also reprinted in SIGNA:

Further Reading

An Investigation into the Status of *Iris thompsonii*, SIGNA #49, Fall 1992, pg. 1782.
A Cladistic Analysis of *Iris* Series *Californicae* Based on Morphological Data, SIGNA # 73, Fall 2004, pg. 3706.
Also by Dr. Wilson's graduate student, Erin Riggs:
Population Study of the *Iris hartwegii* Complex, SIGNA 70, Summer 2003, pg. 3706.
Finally, more about Dr. Carol Wilson's research can be found on the Rancho Santa Ana Botanical Garden web site: <http://www.rsabg.org/iris/>.

Phylogeny of *Iris* focused on species in series *Californicae* and *Sibiricae* in section *Limniris*. Relationships of other sections and series from subgenus *Limniris* and other subgenera are summarized on the tree.



Glossary of Genetic Terms and Phrases

Kathleen Sayce with comments from Debby Cole, Jean Witt and others

Reprinted from the SPCNI Almanac Vol. 40, No.1, Fall 2011

Bayesian analysis: a probability method named after Rev. Thomas Bayes (1702-1761) for methods based on the degree of belief interpretation of probability, also called conditional probability. This enables scientists to evaluate the probability of a hypothesis being correct despite being based on uncertain original observations. This was originally developed by Bayes to quantify probable outcomes in gambling, and is now widely used in insurance, business, physics, and many other areas to estimate specific probabilities based on general observations.

Chromosome: Long structural unit (a polymer chain) composed of many genes, all written in a code composed of thousands of nucleotide units (basic DNA structural units), and which is located in a cell's nucleus. Every species has a typical number of chromosomes. Humans have 23 chromosomes in reproductive cells, and double this in all other cells ($n = 23$, $2n = 46$); Pacific irises have 20 chromosomes in reproductive cells, and double that number in all other cells ($n = 20$, $2n = 40$). 'n' is the number of chromosomes that come from each parent, or the haploid number; $2n$ is the full complement of chromosomes in an organism, or the diploid number. These are also called x and $2x$.

Code: Generally has two meanings, as a noun or a verb.

1. As a noun, refers to the specific order of DNA, RNA or amino acids (AA). These may be genes in a chromosome, portions of a gene, one of several forms of RNA, or amino acids in a protein, thus "the code."
2. As a verb, refers to the action of specifying or defining a sequence of DNA, RNA or AA, thus "to code."

DNA: Deoxyribonucleic acid, whose purpose is long-term storage of genetic information within a nucleus. DNA comes in four forms, and composes double-sided chains that are twisted into spirals, hence the term 'double helix' for the shape. These long polymer chains of thousands of individual DNA molecules make up genes, which link together into even larger units, called chromosomes.

Gene: A functional unit of heredity. Each chromosome holds many genes. Each gene is formed of a stretch of DNA nucleotide bases that code (specify or define) proteins or RNA chains.

Hypothesis: A proposed explanation for a phenomenon (an observation), from Greek, to suppose.

Intron: Short for "intragenic region" a functional DNA sequence within a gene that codes (defines or specifies the sequence) RNA or AA to make active proteins and several kinds of RNA. 'Intron' may refer to either the DNA sequence in the chromosome in the nucleus, or the RNA transcripts that are active in the cell. These DNA and RNA sequences specify the exact shape and composition of each protein needed for cells to function.

Monte Carlo methods: A class of computational algorithms that rely on repeated random sampling (think of throwing dice 1000s of times to see what patterns emerge) to compute the probability of certain results. Monte Carlo methods are used to model phenomena (observations) that have significant uncertainty about inputs, such as business risk, and genetics.

Nucleotide base: The smallest structural units of DNA within each gene on each chromosome in the nucleus, and of RNA, composed of a nucleic amino acid, a sugar and phosphate groups. There are five nucleotide bases.

Phylogenetics: The study of evolutionary relatedness among groups of organisms (e.g. species, or populations). Construction of a phylogenetic tree is part of this process, as is in this paper.

RNA: Ribonucleic acid, whose purpose is to carry nucleic information out of the nucleus to active sites in the cell, and to code (specify or define) proteins needed for cellular function. There are several forms of RNA, including transcription, messenger and regulatory RNA. RNA functions as messenger or regulator molecules, and is active between DNA strands in the nucleus and proteins in the cell. RNA is formed of single sided chains, twisted into a simple spiral, or single helix.

'Targeted and amplified': describes the process of selecting (cutting out) and then multiplying (making many copies of) specific sections of genes, which can then be used for analysis.

For more on plant genetics and plant cellular functions, read Botany For Gardeners, by Brian Capon. This is a good general reference, widely available in paperback

SIGNA Electronic Membership – A Success!

As of December 5, SIGNA had 129 electronic members! That's more than 25% of the total membership and includes 66 new members, and 63 members who have switched to electronic delivery. You can join them by renewing with an electronic membership for \$6 for one year or \$16 for 3 years, or you can contact Membership Secretary:

Rodney Barton rbartontx@yahoo.com, to switch your standard membership to electronic

Siberian & Species Iris Convention Information and Region 6 Spring Meeting

June 7-9, 2012 – Lansing / Kalamazoo, MI

‘A Capital Idea’



Convention headquarters: Causeway Bay Hotel and Convention Center located in Lansing, MI

Room rates: \$94.99 – single / double occupancy; \$104.99 triple / quad occupancy

Reservation made by phone: 517.694.8123 or toll free: 800.333.8123

Thursday Evening, June 7th – ‘A Capital Welcome’ Reception at the Convention Center

Light snacks and beverages

Slide show and Information session

Sponsored by: Connoisseurs of Michigan

Convention Gardens on tour:

Ensata Gardens located in Galesburg, MI is home to more than 180 Siberian varieties, about 450 Japanese varieties, and a host of daylilies and hostas. After viewing the guest Siberians and Species enjoy a stroll through their relaxing gardens and be sure to check out the koi in their ponds.

Jim & Jill Copeland’s garden is located in Lawton, MI. They have a beautiful winding ribbon of Siberian & Species iris waiting for you as you enter their garden. After viewing the guest iris, those who are adventurous should checkout their seedling garden on the backside of their property or a bit closer is Jill’s restful shade garden.



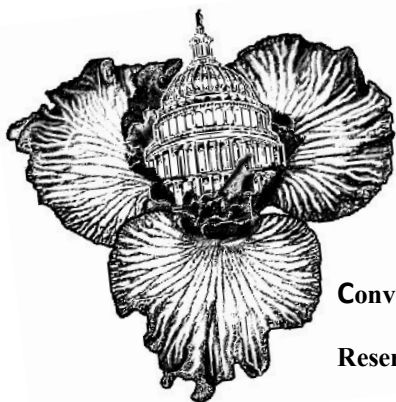
Left to right: Bob Bauer, Judy Hollingworth, John Coble, Jill Copeland, Jim Copeland, Bob Hollingworth. John Kaufmann



John & Jean Kaufmann’s garden located in the Lansing area houses the TriCounty Iris Society’s TB iris in addition to John’s experimental herbicide plots. There should be plenty of bloom for all to enjoy.

Bob & Judy Hollingworth’s gardens are also located in the Lansing area. The guest bed at the Hollingworth’s home was originally laid out as a block S for an MUS welcome, but more beds were added for greater ease of viewing and the block S has become hidden. The Hollingworth’s will also have a good display of hostas and Japanese primroses for all to enjoy. In addition, we will be touring Bob & Judy’s farm where Bob’s seedlings are growing.

We are excited to host the 2012 Siberian & Species Convention and look forward to lots of bloom and sharing it with all of you! See you in June 2012.



Registration Form **Lansing 2012 – ‘A Capital Idea’** **Siberian & Species Iris Convention** **Region 6 Spring Meeting (June 7 – 9)**

Convention Headquarters: Causeway Bay Hotel and Convention Center
6820 S. Cedar St., Lansing, MI 48911
Reservation may be made by phone: 517.694.8123 or toll free: 800.333.8123

1st Registrant _____

2nd Registrant[same address] _____

Name as you wish it on nametag _____

Address: _____

City, State, Zip: _____

Phone: _____ Email: _____

(Confirmation will be emailed where possible)

Registration:

**\$125 postmarked
before May 7, 2012**

**\$150 postmarked
after May 7, 2012**

Registrant #1

☐
☐

Registrant #2

☐
☐

Youth Registration - \$50

☐

(Registration includes: Thursday welcome snack; Friday & Saturday bus transport to gardens & in-garden lunches; Friday dinner; and Saturday Awards Banquet)

Friday Dinner:

Registrant #1

☐

Chicken Florentine

☐

Salmon Florentine

☐

Pasta Primavera

Registrant #2

☐

Chicken Florentine

☐

Salmon Florentine

☐

Pasta Primavera

Saturday Awards Banquet:

Registrant #1

☐

Filet of Whitefish

☐

Roast Turkey

☐

Vegetarian Turnover

Registrant #2

☐

Filet of Whitefish

☐

Roast Turkey

☐

Vegetarian Turnover

Dietary Restraints and/or Medical Concerns: _____

How many will attend Garden Judges Training?

1 hour Species _____ 1 hour Siberian _____

Make checks payable to: Connoisseurs of Michigan (ICOM)

Mail form and payment to: Deb Diget, Registrar, 300 Silver St. Battle Creek, MI 49014

SIGNA: Species Iris Group of North America

2011

45th Species Iris Seed Exchange

Greetings from the Seed Exchange Chairs, Jim Murrain and Jim Waddick. This is our fifth year as co-chairs. The SIGNA Seed Exchange is the heart of SIGNA. Growing iris from seed is a unique opportunity and challenge. Seed donations are reduced from last year, but still has a wide range of offers. Seed orders are filled in the order received. Seed can be ordered from this printed form in the SIGNA Newsletter or on-line at the SIGNA web site www.signa.org. The web site has late arrivals so please check for the most current updates including those that are SOLD OUT. Seeds will be shipped in Jan. and Feb., 2012. Orders received after Mid-March, 2012 will be filled from a reduced inventory by the Membership Chairman, Rodney Barton. Please refer to the web site if placing a late order.

MEMBERS ONLY: Seeds are **only** available to members of SIGNA. Please share your SIGNA list with friends who are non-members. They may copy the order blank, send in their own order, but must include payment for one year's membership (including a reduced price electronic membership) along with their seed order. We have included a place at the bottom of the order blank for new members to join and order at the same time. If you are already a member and wish to pay your dues, you may do that in one mailing with one check or by Pay Pal. We do not accept direct credit card payments..

PRICE: The price of all seeds is **\$1** per packet. There is a **\$2** charge for shipping and packing per order. If ordering and paying on-line, there is an added \$1 per Pay Pal transaction. If you send a check or cash DO NOT add the \$1 Pay Pal charge. The Seed Exchange is the primary fund-raiser for SIGNA and donations are very much appreciated.

SEED LIST INFO: 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 such as 11TB021. All seeds in this years list have the prefix "11". The list is divided into 6 sections. Alphabetic codes are as follows:

I Bearded: Dwarf **DB**, Median **MB**, Tall **TB**, Arillate **AR**

II Crested/ Lophiris: CR

III Beardless: Chinenses **CH**, Foetidissimae **FT**, Laevigate **LV**,
Louisiana **LA**, Pacific Coast **PC**, Siberian **SB**, Spuria **SP**,
Tripetalae **TR**, Misc Beardless **MS**.

IV Bulbous: Xiphium **XP**, Reticulate **RT**, Scorpis **JU**, Nepalensis **NP**

V Wide Crosses: SX (excluding Arilbred – see I Bearded)

VI All Other Iridaceae: XX

ABBREVIATIONS: Abbreviations following the name: **HP** means Hand Pollinated, **OP** means Open Pollinated, **WC** means Wild Collected, and **ex.** indicates that the seeds were originally from another specific source (such as a person, a seed exchange, wild location, named cultivar, or a garden). Seeds of named cultivars ARE NOT identical to their parents and should never be given that name in the garden. They are new seedlings.

AVAILABLE SEEDS: After each item in the seed list, you will find an abbreviation estimating the total number of seeds available. **VF** = Very Few Seeds (less than 25) available. These will sell out quickly. **FW** = Few seeds (under 50) available. **Be sure to check substitutes** when ordering seeds marked **VF** or **FW**. Seeds in short supply may have as few as 4 seeds per packet and these may not be used as substitutes. Items marked **AV** are generally available and most orders will be filled although packets may have fewer seed than items marked **AB** which are in abundant supply, are unlikely to sell out and will have more generous size packets. If you want items with more seeds per packet, order items in abundant supply. We DO NOT send more than one packet per listing per order. We do accept 2nd and 3rd orders, but these are filled in the order received to give all orders more equal chances. Most seed packets will have 10 or more seeds each.

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, we have included names that we were unable to verify. You should also consult the SIGNA Species Database at www.signa.org. There you can view information and photos of flowers, plants and seeds. Correct seed identification is not guaranteed, but based on information supplied by donors. All this information is available at www.signa.org.

Our grateful thanks to the following donors:

Anthony Huber, Laval, QUE, CANADA	AHB	Ka Dai, Chiang Mai, THAILAND	KDA
Alan McMurtrie, Willowdale, ONT CANADA	AMC	Kalaszine D. Ilona, Budapest, HUNGARY	KDI
Bill Chaney, LaPine, OR, USA	BCH	Kenneth Walker, Concord, CA, USA	KWK
Barbara Schneider, Concord, MA, USA	BDS	Kenneth Wilson, Olive Hill, KY, USA	KRW
British Iris Society, UK	BIS	Kathleen Sayce, Nathcotta, WA, USA	KSY
Christine Baer, Belmont, MI, USA	CBA	Lucinda Ebert, Alsea, OR, USA	LEB
Christy Hensler, Newport, WA, USA	CHN	Liselotte Hirsbrunner, Chesieres, SWITZERLAND	LHR
Dave Silverberg, Molalla, OR, USA	DSL	Maurice Boussard, Verdun, FRANCE	MBS
Dennis Van Landuyt, Versailles, MO, USA	DVL	Mark Cook, Dunnellon, FL, USA	MCK
Ian Efford, Duncan, BC, CANADA	IEF	Michael Zubrzycki, Chicago, IL, USA	MZB
Janos Agoston, Halasi, HUNGARY	JAG	Naomi DeVincenzo, Colorado Springs, CO, USA	NDV
Jill Copeland, Lawton, MI, USA	JCO	New Zealand Iris Society, NEW ZEALAND	NZI
Jean Morris, Ballwin, MO, USA	JJM	Paul Martin, Pasadena, CA, USA	PMR
John & Lucy Burton, So. Hamilton, MA, USA	JLB	Paige Woodward, Chilliwack, BC, CANADA	PRN
Jose L. C. Carrera, Pontevedra, SPAIN	JLC	Pat Toolan, Angaston S. A., AUSTRALIA	PTL
Jonathan Lubar, Destin, FL, USA	JLU	Rick Davis, Independence, MO, USA	RDV
Josefine Neuhercz, Budapest, HUNGARY	JNH	Robert Strohmman, Louisville, KY, USA	RST
Marty Schafer & Jan Sacks, Carlisle, MA, USA	JPW	Rick Tasco, Cathey's Valley, CA, USA	RTS
Jean Witt, Des Moines, WA, USA	JWT	Sharon Whitney, Harpswell, ME, USA	SWT
James Waddick, Kansas City, MO, USA	JWW		

DONATING SEED

DATES: For the 2012 SIGNA Seed Exchange. All seeds should be sent **no later than Thursday November 1, 2012**. For late ripening seed, please send a list and brief description of each by the above date, so they may be included. Late ripening seed donations must be received no later than **December 1, 2012**. Seeds received after this date may be listed on the web site as 'Late Arrivals', used as extras or held for the following season's list. Please send all seed to: SIGNA Seed Ex, 8871 NW Brostrom Rd., Kansas City, MO 64152, USA.

ALL SEEDS: Please send seeds of any iris species or any member of the Family Iridaceae. Even the most common and abundant species are welcome and appreciated. Hand-pollinated, wild collected and uncommon species are especially sought after. PLEASE, PLEASE try to hand-pollinate the species in your garden specifically for the Seed Exchange, either by using two clones of the same species or by selfing. Hand pollination assures that a particular species will come true from seed. This is especially important for those species that readily cross with other species. This is the only way to preserve these true species!

WILD COLLECTED: Many of us live near an area where irises grow wild. Wild collected seed is extremely popular and the best way to insure genetic diversity. If you know an area where irises are growing wild, please make a trip to collect from as many plants as possible. Even if it is a widespread species, we have many members who would like to grow seeds of your native iris.

QUANTITY: 100 to 500 seeds are ideal, but any number is welcome. Donations of fewer than 10 seeds will not be listed, but used as extras. Small paper envelopes are the preferred method for packaging seed. Please do not use film canisters, small boxes, etc. as they are difficult to handle or organize.

LABELING: Mark each envelope clearly and legibly with the **CORRECT NAME** of the Iris. If it is a named cultivar, please provide the species name or hybrid group to which it belongs such as Siberian, Spuria etc. If it is from hand pollination, mark it **HP**; if it is wild collected, mark it **WC** and give the town, county, state, country and elevation if known; if it is from plants growing in your garden that were wild collected, write "ex." then give the above information; if it is grown from seed received from someone else or a seed exchange (SIGNA, BIS, NARGS), so indicate. Try to give a brief two to four word description, especially if there are any unique characteristics. Seeds with clear descriptions are always more popular. Be sure to include **YOUR FULL NAME & ADDRESS**.

PLEASE GIVE THE SEED COUNT on every packet. This is extremely important to insure a fair distribution of seeds and give a fair indication when ordering these seeds.

PROHIBITED SEED: Although we appreciate all seed, we will no longer accept or offer typical *Iris psuedacorus*. We will still gladly offer special forms, colors, hybrids and from named cultivars. Increasing evidence suggests that we cannot encourage its invasive nature by sending seed to growers world wide. We hope you appreciate our restrictions, even if controversial.

FEED BACK: Donating seeds is fun, but takes some effort. Our donors would appreciate your feed back on how their donated seeds performed. If they were misnamed let them and us know. Mostly show your appreciation by dropping a note and telling them your experience and thanks, too.

DONATIONS: The SIGNA Seed Exchange is the main fund-raiser for SIGNA. The proceeds go toward the publication of our SIGNA Bulletin and help to sponsor collecting trips, special publications, and research grants. **Please support SIGNA** by donating seed in 2012. **Send seed to:** SIGNA Seed Ex, 8871 NW Brostrom Rd., Kansas City, MO 64152. You may also make a monetary donation on the order form. If you have more questions, please contact Seed Chairmen at SIGNASeedEx@gmail.com or phone 816.746.1949.

SPECIAL NOTE FOR FOREIGN DONORS: For all donors outside of the United States and before sending seed to the seed chairmen, please email in advance for the current regulations regarding import of seed into the US. Foreign donors should send seeds no later than Oct. 15, 2012 to allow time for proper handling and postal inspections. We will provide detailed info on import and documentation to insure safe and legal transfer of seeds.

I Bearded: Dwarf DB, Median MB, Tall TB			
11DB001	bicapitata	AB	PTL
11TB002	cypriana	VF	BIS
11DB003	lutescens ex France, violet	AV	MBS
11MB004	pallida ssp cengialtii	AB	BIS
11DB005	pseudopumila	VF	PTL
11DB006	subbbiflora ex Spain	FW	MBS
11MB007	variegata wc Hungary	FW	KDI
11MB008	aphylla x TB plicata	FW	JLB
11MB009	MTB ex 'High Jinks'	VF	JLB
11MB010	MTB ex 'Spring Muslin'	VF	JLB
11MB011	MTB Mixed	AB	JWT
11DB012	SDB ex 'Bedford Lilac'	AV	RDV
11MB013	SDB ex 'Candy Apple'	VF	RDV
11MB014	SDB ex 'Charabia '	FW	RDV
11MB015	SDB ex 'Cimmarron Rose'	AV	RDV
11MB016	SDB ex 'Eyebright'	VF	RDV
11MB017	SDB ex 'Eye of Newt'	VF	RDV
11MB018	SDB ex 'Hippie'	VF	RDV
11MB019	SDB ex 'Honey Cat'	FW	RDV
11MB020	SDB ex 'Knotty Pine'	FW	RDV
11MB021	SDB ex 'Light Dancer'	AV	RDV
11MB022	SDB ex 'Live Coals'	VF	RDV
11MB023	SDB ex 'Lumalight'	VF	RDV
11MB024	SDB ex 'Pele'	FW	RDV
11MB025	SDB ex 'Sugar Maple'	FW	RDV
11MB026	SDB ex 'Time to Shine'	FW	RDV
11MB027	SDB ex 'Vavoom'	VF	RDV
11MB028	SDB ex 'Web Designer'	FW	RDV
11MB029	SDB ex 'White Bow Tie'	AV	RDV
11MB030	SDB ex 'Wild Horses'	FW	RDV
Arillate: AR			
11AR031	stolonifera	VF	MBS

II. Crested: CR			
11CR032	cristata wc Carter County, KY	AV	KRW
11CR033	cristata	VF	JJM
11CR034	cristata alba	AB	KRW
11CR035	cristata selected seedling	AB	BDS
11CR036	cristata mixed	AB	BDS
11CR037	cristata ex 'Mountain Girl'	FW	BDS
11CR038	gracilipes	AB	JPW
11CR039	japonica ex 'Eco Easter' x ex SIGNA 01S369	VF	KWK
11CR040	japonica ex 'Valley Blue x ex SIGNA 01S369	VF	KWK
11CR041	japonica ex 'Wuhan Angel' x ex SIGNA 01S369	VF	KWK
11CR042	lacustris	AB	JPW
11CR043	milesii	VF	NZI
11CR044	milesii ex BNHM # 94.0289	AV	KWK
11CR045	tectorum	AV	AMC
11CR046	tectorum	AV	CBA
11CR047	tectorum	AV	JJM
11CR048	tectorum	AB	JPW
11CR049	tectorum purple	AB	KWK
11CR050	tectorum album hp	VF	CHN
11CR051	tectorum album	AV	CBA
11CR052	tectorum album	AB	KWK
11CR053	tectorum ex 'Burma Form'	AV	BIS
11CR054	tenuis	VF	PRN
11CR055	wattii	AV	JPW
11CR056	wattii ex SIGNA 06S297 x self	AB	KWK
11CR057	wattii Johnson Clone x ex SIGNA 06S297	FW	KWK
III Beardless : Chinenses CH			
11CH058	henryi	VF	DPR
11CH059	koreana	FW	DPR
11CH060	koreana	FW	JPW
11CH061	odaesanensis	AV	DPR
11CH062	odaesanensis	AV	JPW

Foetidissimae: FT			
11FT063	foetidissima wc Pontevedra, Spain	AB	JLC
11FT064	foetidissima coll OR	AB	DSL
Laevigate: LV			
11LV065	ensata hp ex SIGNA 06N149 Korea	AV	KWK
11LV066	ensata purple	AV	KRW
11LV067	ensata ex Alexeeva #10 – Cream Signal Select	FW	SWT
11LV068	ensata ex Alexeeva #10 – Jill's Q16, earliest bloom	AV	SWT
11LV069	ensata ex Alexeeva #10 - Yaeko's dark color	AV	SWT
11LV070	ensata ex Alexeeva #32 – Phil's branched select	AV	SWT
11LV071	ensata ex Alexeeva #32 (5) – vigor & clump	AB	SWT
11LV072	ensata ex (Cream Signal x Cream Signal –(SW J07/51)) X bee	AV	SWT
11LV073	ensata ex 'Enkaishu'	AB	SWT
11LV074	mackii ex cream, vigorous ext flower E to L	AB	AHB
11LV075	pseudacorus ex 'Bastardii'	FW	KDI
11LV076	pseudacorus ex compact form	FW	KDI
11LV077	pseudacorus ex 'King Clovis'	AB	RTS
11LV078	pseudacorus ex 'Krill'	AB	RTS
11LV079	pseudacorus ex 'Minwansato'	AB	RTS
11LV080	pseudacorus ex 'Seakrill'	AB	RTS
11LV081	versicolor coll Algonquin Park Canada	AB	AMC
11LV082	versicolor wc Leelanau Cty, MI	FW	CBA
11LV083	versicolor	AV	BIS
11LV084	versicolor alba	AB	KRW
11LV085	versicolor violet blue repeater	AB	LHR
11LV086	versicolor white repeater	AB	LHR
11LV087	versicolor ex 'Anticosti Discovery'	AB	AHB
11LV088	versicolor ex 'Between The Lines'	AB	JPW
11LV089	versicolor ex 'Candystriper'	AB	JPW
11LV090	versicolor ex 'Cat Mousam'	AB	JPW
11LV091	versicolor ex 'Epic Poem'	FW	JJM
11LV092	versicolor ex 'Epic Poem'	AB	JPW
11LV093	versicolor ex 'Fatima' violet/ white rebloom	AB	AHB
11LV094	versicolor ex 'Krieghoff' x self	AB	AHB
11LV095	versicolor ex 'Mint Fresh'	AV	JPW
11LV096	versicolor ex 'Murrayana'	AV	JPW
11LV097	versicolor ex 'Murrayana' F2	AV	AHB
11LV098	versicolor ex 'Murrayana' F3	AB	AHB
11LV099	versicolor ex 'Party Line'	AB	JPW
11LV100	versicolor. Ex 'Whodunit'	AB	JPW
11LV101	versicolor AC-12	AB	AHB
11LV102	versicolor Bar – 01 ex Bara-chois Iles de la Madeline, Que	AB	AHB

11LV103	versicolor ex SIGNA 03N173	AB	LEB
11LV104	virginica ex 'Giant Blue'	AV	KRW
11LV105	virginica ex 'Southern Wanderer'	AB	AHB
11LV106	virginica shrevei wc Glencoe, Cook County, IL	FW	MZB
11LV107	virginica shrevei	AB	LHR
11LV108	virginica shrevei ex Green River, KY	AB	KRW
11LV109	virginica shrevei 'Pond Crown Point' x self	AB	AHB
11LV110	virginica shrevei 'Pond Lilac Dream' x self	AB	AHB
Louisiana: LA			
11LA111	fulva ex Grassy Lake AR	AV	KRW
11LA112	fulva decorticated seed	AB	AHB
11LA113	giganticaerulea alba hp	FW	KWK
11LA114	nelsonii hp	VF	KWK
11LA115	LA ex 'My Friend Dick'	FW	JWW
Pacific Coast: PC			
11PC116	douglasiana	AB	PRN
11PC117	douglasiana ex SPCNI 042401 x ex SPCNI 033400	FW	KWK
11PC118	tenax	AV	BIS
11PC119	tenax pale blue	AV	PRN
11PC120	thompsonii	AB	DSL
11PC121	PCN hybrid cream	FW	NZI
11PC122	PCN hybrid yellow	VF	JLC
11PC123	PCN mix 1	AB	BIS
11PC124	PCN mix 2	AV	BIS
Siberian: SB			
11SB125	chrysographes black/purple form	FW	PRN
11SB126	chrysographes hyb	AB	BIS
11SB127	clarkei F2 ex 'Dotted Line'	AB	LHR
11SB128	forrestii hybrids	AB	BIS
11SB129	sibirica ex E. Switzerland	AB	LHR
11SB130	typhifolia ex 'Caitlin's Smile'	AB	JPW
11SB131	SIB ex 'Caesar'	AB	KDI
11SB132	SIB ex 'Caesar's Brother'	AV	KRW
11SB133	SIB ex 'Caesar's Brother'	AB	RTS
11SB134	SIB ex 'Chesiere's Wild One'	AB	LHR
11SB135	SIB ex 'Coronation Anthem'	FW	NZI
11SB136	SIB ex 'Flight of Butterflies'	VF	JNH
11SB137	SIB ex 'Kobaltblau'	AB	JNH
11SB138	SIB ex 'Lavendel Wein'	FW	JNH
11SB139	SIB ex 'Pink Sparkles'	FW	NZI
11SB140	SIB ex 'Ruby Wine'	FW	NZI
11SB141	SIB ex 'Salamander Crossing'	AB	LHR
11SB142	SIB ex 'Snow Prince'	FW	JNH
11SB143	SIB ex 'Sporting Chance'	FW	JPW
11SB144	SIB ex 'Sugi Iri'	AV	RST
11SB145	SIB hybrid	FW	JNH

Spuria: SP			
11SP146	aurea	AV	MBS
11SP147	carthalinae	VF	DSL
11SP148	carthalinae	AV	JWT
11SP149	crocea	AV	JNH
11SP150	graminea	AB	DSL
11SP151	graminea	VF	KDI
11SP152	graminea	VF	KWK
11SP153	maritima wc La Rovina, Spain	AV	BIS
11SP154	notha	FW	JJM
11SP155	notha	AV	JNH
11SP156	notha 80 cm, blue	FW	KDI
11SP157	sintenisii	VF	JNH
11SP158	sintenisii	VF	MBS
11SP159	spuria wc Matra Mtns, Hungary	AV	KDI
11SP160	xanthosporia ex NARGS '02 4773 Turkey hp	AV	KWK
11SP161	SPU ex 'Highline Lavender'	FW	NZI
11SP162	SPU ex 'Imperial Bronze'	AV	KDI
11SP163	SPU Mixed cvs ex BIS 4-6'	AB	IEF
11SP164	SPU Mixed cvs	AB	BIS
Tripetalae: TR			
11TR165	hookeri	AV	BIS
11TR166	hookeri	FW	JPW
11TR167	setosa ex Japan x self	AB	AHB
11TR168	setosa canadensis	AV	CBA
11TR169	setosa canadensis	AV	BIS
11TR170	setosa interior x ensata F3	AV	AHB
11TR171	setosa nana 8" ex SIGNA 96Q368	AB	JCO
11TR172	setosa ex 'Tourist'	AB	JPW
11TR173	setosa hyb 32"	AB	BIS
11TR174	setosa magenta stripes - distinctive	AB	JPW
11TR175	setosa wine - red	FW	JPW
11TR176	setosa mix pink, violet repeater	AB	LHR
11TR177	tridentata	VF	KWK
11TR178	tridentata ex FL	FW	JPW
11TR179	tridentata ex SC	FW	JPW
Misc Beardless: MS			
11MS180	dichotoma	FW	DVL
11MS181	domestica	VF	NZI
11MS182	domestica 30" apricot	AB	RDV
11MS183	domestica 42" red-orange	AB	RDV
11MS184	domestica	AV	JLU
11MS185	domestica ex 'Hello Yellow'	AB	JWW
11MS186	lactea	AB	AMC
11MS187	lactea ex SIGNA 82-228 mauve/white	AV	AMC
11MS188	lactea ex 'Tough Cookie'	FW	KWK

11MS188	lactea ex 'Tough Cookie'	FW	KWK
11MS189	lactea mixed	AB	KWK
11MS190	lazica	AB	BIS
11MS191	longipetala	VF	KWK
11MS192	missouriensis wc La Pine, OR, 4200'	AB	BCH
11MS193	missouriensis wc Lake County, CO	AB	NDV
11MS194	missouriensis wc Sun River, OR white/blue	AV	JWT
11MS195	missouriensis ex NM light blue/white large late	AB	CHN
11MS196	missouriensis ex Odessa, WA E lavender/ white	AB	CHN
11MS197	missouriensis ex Sequim & Whidbey Island, WA mid Lg dk bl /wh	AB	CHN
11MS198	missouriensis var. pelegonus ex SIGNA 98P382	AV	KWK
11MS199	prismatica	AB	JPW
11MS200	prismatica	AV	KWK
11MS201	prismatica var austrina	AB	RTS
11MS202	ruthenica	VF	JPW
11MS203	sisyrinchium	AV	JNH
11MS204	unguiculares	FW	BIS
11MS205	unguiculares	VF	NZI
11MS206	unguiculares alba	FW	KWK
11MS207	unguiculares ex 'Fee D'Hiver'	VF	BIS
11MS208	verna wc Carter County KY	AV	KRW
IV Bulbous: Reticulata RT, Scorpiris JU,			
11JU209	albomarginata	AV	AMC
11JU210	aucheri ex 'Sky Blue'	VF	KDI
11JU211	aucheri dark form	VF	MBS
11JU212	aucheri white and dark	AV	MBS
11JU213	bucharica	AV	JNH
11JU214	bucharica ex 'Swan Wings' yellow	VF	KWK
11JU215	magnifica	AB	AMC
11JU216	magnifica	AB	KDI
11JU217	planifolia	FW	MBS
11JU218	planifolia	AV	PTL
11RT219	reticulata ex 'J.S. Dijt'	AV	KRW
11RT220	reticulata 2nd generation	AB	AMC
11RT221	reticulata hyb	AV	JPW
11RT222	tuberosa	AV	DSL
11RT223	tuberosa	AV	MBS
11JU224	willmottiana	AV	AMC
11JU225	zenaidae	VF	MBS
V Wide Crosss: SX			
11SX226	x biversata ex SIGNA 04N247	AB	BDS
11SX227	x biversata ex 'Little Prince' blue/white /purple E M	AB	AHB
11SX228	x biversata ex 'Riviere Rouge' red & pink hp	AB	AHB
11SX229	x biversata 01-107 E M red self	AB	AHB

11SX230	x biversata 04-04 Violet mauve M L	AB	AHB
11SX231	x biversata 05 - 16 ex 'Gentle Lift' violet	AB	AHB
11SX232	x biversata 05 - 33 red re-bloomer E M L	AB	AHB
11SX233	x biversata 05-33 red select M L	AB	AHB
11SX234	x biversata 011- 27 pink	AB	AHB
11SX235	x biversata pink E M	AB	AHB
11SX236	x biversata red-purple and violet E M	AB	AHB
11SX237	x biversata tall and vigorous	AB	AHB
11SX238	x biversta violet veined white x self	AB	AHB
11SX239	hookeri x ensata F3	AB	AHB
11SX240	hookeri x pseudacorus 'Donau' F3	AB	AHB
11SX241	hookeri x setosa interior ('Innu Spring') violet	AB	AHB
11SX242	maackii ex white pseudacorus x dwarf laevigata E to L	AB	AHB
11SX243	maackii (09 - 79 ex 'Marie Chuard' x versata 4n) x self	AB	AHB
11SX244	x norrissii	FW	MCK
11SX245	x pseudata ex 'Chance Beauty'	FW	CHN
11SX246	pseudacorus ex 'Donau' tetraploid x laevigata SIGNA 06N222	AB	RTS
11SX247	x robusta x self	AV	AHB
11SX248	x robusta (versicolor x virginica 'Southern Wanderer')	AV	AHB
11SX249	x robusta ex 'Dark Aura' ex SIGNA 02N218	FW	JNH
11SX250	x robusta ex 'Gerald Darby'	AB	BDS
11SX251	setosa x ensata	AB	AHB
11SX252	setosa x ensata tetraploid x self	AB	AHB
11SX253	(setosa interior x hookeri 'Labraska') x self	AV	AHB
11SX254	x traversata ex 'Gentle Lift' x self	AV	AHB
11SX255	x versata ex 'Christiane Dead-es' x self	AB	AHB
11SX256	x versata ex 'Hopeful Dream'	AB	AHB
11SX257	x versta ex 'New Approach' x self	AB	AHB
11SX258	x versata ex 'Step In' x self, violet M L	AB	AHB
11SX259	x versata ex 'Tremblant Blues' x self	AV	AHB
11SX260	x versata 03- 37 x self rebloom E to VL	AB	AHB
11SX261	x versata 09 - 48 superversata violet purple 6 falls ML	AB	AHB
11SX262	x versata 09 - 52 superversata purple lilac violet ML	AB	AHB
11SX263	x versata 09 - 62 tetra versata magenta to dk violet	AB	AHB
11SX264	x versata 95- 90 x ensata 'Altai', 'Tenue Royale' x self	AB	AHB
11SX265	versicolor x laevigata	AB	AHB
11SX266	virginica 'Southern Wanderer' x ensata	AB	AHB
11SX267	virginica shrevei 'Pond Crown Point' x ensata	AB	AHB
11SX268	virginica shrevei x ensata F2	AB	AHB
11SX269	x sibtosia ex 'Izzit'	VF	JJM

VI All Other Iridaceae: XX			
11XX270	Babiana scariosa	FW	MBS
11XX271	Bobartia indica	FW	MBS
11XX272	Calydorea amabilis	AB	KWK
11XX273	Cipura paludosa	AB	KDA
11XX274	Crocus banaticus purple form	FW	PRN
11XX275	Crocus speciosus	AB	JPW
11XX276	Crocus versicolor	AB	PRN
11XX277	Dietes butcheriana	VF	NZI
11XX278	Dietes grandiflora	VF	MBS
11XX279	Dietes grandiflora	AB	JLC
11XX280	Dietes iridioides under 20"	AB	DVL
11XX281	Diplarrhena moraea	AB	KSY
11XX282	Gladiolus communis var byz-antinus	VF	MBS
11XX283	Gladiolus garnieri Madagascar form	AV	MBS
11XX284	Gladiolus kotschyanus var caucasicus	AV	MBS
11XX285	Gladiolus miniatus	AV	MBS
11XX286	Gladiolus sericeo-villosus	VF	NZI
11XX287	Herbertia pulchellus	AB	NZI
11XX288	Moraea cookii	AV	MBS
11XX289	Moraea huttonii	AV	MBS
11XX290	Moraea marlothii	AB	MBS
11XX291	Moraea papilionacea	FW	MBS
11XX292	Moraea polystachya	AB	MBS
11XX293	Neomarica sp.	FW	JJM
11XX294	Romulea diversiformis yellow	FW	MBS
11XX295	Romulea ramiflora	FW	MBS
11XX296	Romulea subfistulosa	VF	MBS
11XX297	Sisyrinchium angustifolium wc	AV	KRW
11XX298	Sisyrinchium angustifolium	AV	RST
11XX299	Sisyrinchium bermudianum wc Gravois Mills, MO	AB	DVL
11XX300	Sisyrinchium convolutum	AB	KSY
11XX301	Sisyrinchium idahoense o	AB	KSY
11XX302	Sisyrinchium macrocarpum	AB	MBS
11XX303	Tritonia deusta, blotched form	AV	MBS
11XX304	Tritoniopsis antholyza	FW	MBS
11XX305	Watsonia ex 'Frosty Morn'	VF	NZI

Late Additions:			
11XX306	orientalis ssp gigantea	AB	JAG
11XX307	Dierama reynoldsii ex NARG-Swine-red	FW	PMR
11XX308	Dierama robustumes NARGS White flower	AV	PMR

We appreciate all comments to the Seed Chairman or the President of SIGNA regarding this seed list. We appreciate fresh seed donations any time of the year. Please hand pollinate, collect wild seed and donate garden seed. Thanks from SIGNA. Jim Murrain and Jim Waddick

HOW TO ORDER SEED

You can order seeds in 2 ways:

Fill in this order form or a copy and mail it with payment to the SIGNA Seed Ex address below.

Go to www.signa.org and follow ordering instructions to order on-line.

PRICE: \$1 per packet plus \$2 per order for shipping and handling.

Orders must be received no later than **March 15, 2012.**

SUBSTITUTES: Please mark ample substitutes in case your preferred seeds are sold out especially for those marked **VF** or **FW**. See instructions on order form.

LATE ARRIVALS: Check the SIGNA Web site for late arrivals, SOLD OUT and current availability.

PAYMENT: US members please enclose check or Money Order and make payable to "SIGNA".

Foreign members please use US Currency, International Money Order or a draft on a US bank.

PAY PAL: All SIGNA members may prefer to pay with a Pay Pal account. Simply "send cash" to SIGNASeedEx@gmail.com Send order list of primary choices and substitutes along with mailing address and membership renewal to address above or email to SIGNASeedEx@gmail.com Please add a \$1 Pay Pal service charge.

Mail this form and payment to: SIGNA Seed Ex, 8871 NW Brostrom Rd, Kansas City, MO 64152-2711

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

REFUNDS: NONE. If we cannot fill your order and you have not made enough substitutes, the remaining amount will be considered a donation to SIGNA. Please mark substitutes. We try to fill orders with extras if possible.

DONATIONS: Sending an order to the Seed Ex is an opportunity to support SIGNA. You may round up your check to the \$5 or \$11 mark or simply add any amount. Costs of all supplies and shipping are constantly rising and your help is much appreciated. All workers are volunteers. Thanks.

ADDRESS: Be sure to include your full NAME, ADDRESS and EMAIL address, if available. PRINT CLEARLY.

Our Order form is on the back page.

ORDER FORM FIRST CHOICES: **CIRCLE** the number,
SUBSTITUTES: Place a **CHECK MARK** in the box to the **RIGHT** of the number

001	002	003	004	005	006	007	008	009	010
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PLEASE PRINT CLEARLY

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SIGNA Membership Rates: US \$12/year \$32/3 years;
 Foreign \$15/year \$40/3 years; Electronic \$6/year \$16/3 years

TOTAL PAYMENT

No. of Seed Packets _____ x \$1 _____

Shipping & Handling **\$2.00**

Membership _____

For PayPal Service Add **\$1** _____

Donation to SIGNA _____

Seed Envelopes \$4/100 _____

Total Payment Due _____