

**Almanac:  
Society for  
Pacific Coast  
Native Iris**

**FALL, 1995  
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## PUBLICATIONS AVAILABLE FROM THE SPCNI TREASURER

### Check List of Named PCI Cultivars

*Lewis Lawyer*, Editor: 57 pages. Lists and describes Pacific Coast native iris and named hybrids to date. \$5.00 postage paid.

### Diseases of the Pacific Coast Iris

*Lewis & Adele Lawyer*: ALMANAC, Fall 1986. 22 pages, 9 photographs. \$3.50 postage paid.

### A Guide to the Pacific Coast Irises

*Victor A. Cohen*: The British Iris Society 1967. Booklet, 5.5 x 8.5, 40 pages, 16 line drawings, 8 color and 6 black-and-white photographs. Brief description of species and sub-species including their distribution. \$4.00 postpaid

### A Revision of the Pacific Coast Irises

*Lee W. Lenz*: Photocopy of *Aliso* original. Booklet 5.5 x 8.5, 72 pages, 9 line drawings, 14 photographs, and 12 maps. Definitive work on the taxonomic status of the *Californicae*, with a key to the species and sub-species. Detailed maps and accounts of distribution. \$6.00 postage paid.

### Hybridization and Speciation in the Pacific Coast Iris

*Lee W. Lenz*: Photocopy of *Aliso* original. Companion booklet to the above, 5.5 x 8.5, 72 pages, 30 figures, graphs, drawings, and photographs. Definitive work on naturally occurring interspecific crosses of PCI, including detailed account of distribution. \$6.00 postage paid. If ordered together, both Lenz booklets may be obtained for \$10.00 postage paid.

## SEED AVAILABLE

Seed of species and garden hybrids is available for \$1.00 for the first packet and \$.50 for each additional packet from the Seed Distribution Chairmen listed in the column to the right.

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## MEMBERSHIP & SUBSCRIPTIONS

The Society for Pacific Coast Native Iris is a section of the American Iris Society; membership in AIS is a prerequisite for membership in the SPCNI. If you wish only to receive the ALMANAC (two issues per year), the annual subscription rate is \$4.00.

Membership	Individual	Family
Annual	\$ 4.00	\$ 5.00
Triennial	10.00	12.00
Supporting Annual	6.00	
Life	50.00	65.00

Please send membership-subscription monies to the SPCNI Treasurer.

## ALMANAC

**DEADLINES:** March 1 and September 1. Back issues are available for \$3.50 each, postpaid. Complete chronological index \$2.00, postpaid. Index by subject matter, or by author, \$4.00 each, postpaid. Please address the Editor.

## PRESIDENT'S MESSAGE

Well, it's time to prepare our gardens for the next bloom season. Pull all those weeds out, spray for hidden moths and other ilk. Cut back those irises that need more work done on them. Then sit back and wait for the first bloom to show.

Janice and I traveled to Seattle and Victoria, B.C. the second week in October on a vacation. We visited Jean Witt, checked out her garden, and compared it to mine in Arkansas; both seemed to be in about the same condition.

Here in the "outback" (Arkansas), the Pacificas this year were just great; had lots of bloom. What might be a "first" in our area, the blue form of *I. innominata* received a First Place award at our annual iris show this spring.

A lot of interest was sparked for growing Pacificas after showing the slides from the Lawyers, the Korns, Dot Hujzak, and mine at the AIS Convention in York this May.

Our capitol grounds here in Little Rock has several floral societies which sponsor the plantings which decorate the capital building ground. Our Central Arkansas Iris Society has one section on the south side of the building where we have been growing Tall Bearded for over 25 years. Because my garden was on tour this spring and I was able to show Pacifica slides at our local show, it has been requested that we have a whole section for the Pacificas as well as TB's on the capitol grounds. Donations of divisions of *I. douglasiana*, *tenax*, *innominata*, or any other divisions that you may be able to spare will be welcomed and gladly received for this new section of our capital grounds.

I look forward to seeing you in Sacramento in 1996.



## FROM THE EDITOR

This issue has a lot of space devoted to seeds and planting. The seed list has some very interesting entries, and there is an article on germination which may help you determine how best to plant them. I am mentioning this because seven years have passed since our first seed list was published. I think it is about time that we request feedback regarding your successes and failures, and publish a summary of the results. We have heard from many of you from time to time, and have noted your experiences in the ALMANAC, but it would be nice to have them compiled together in one place.

Perhaps this coming season you can pay particular attention and take some notes on those plants you have started from seed. Let us know how they are performing. Perhaps for a lot of you they are not performing, but that is also information we need. If you get me the information, I will save space in the Fall, 1996, ALMANAC.

We also need seed for next year's seed exchange. Our greatest need is what most

of you have the most of: open pollinated or selfed seed of garden varieties. It can be packaged either as individual named varieties or as mixed garden hybrids. Save seed from your garden hybrids and send them to Colin and Teressa Rigby, our Seed Distribution Chairmen. Those of you who live near a source of wild species seed will find that it is an enjoyable experience to get out in the woods and search for seeds when the pods are ready.

For those of you living in the southern part of California, here is a special appeal to you. We need more seeds of *Iris hartwegii* ssp *australis*. Will someone who lives close enough please make a collection for our members. I remember seeing them in bloom when I was a kid, and I don't think the memory or my excitement will ever be erased. It's hard to believe, but that will be 61 years ago next spring.



## BOB WARD, OUR NEW PRESIDENT

Bob Ward was born in Sunbury, Pennsylvania, in July 1928, the seventh son and the thirteenth child in a large family. He attended local schools, and at the age of 17, joined the Navy and served his country for four years.

From then on, he was a self-made man. His childhood days, working in the family vegetable fields, had provided experience in growing things, and stimulated his interest in horticulture. And this interest was carried over into his professional life as a horticulturist, plantsman, and importer of Japanese bamboos.

Japanese maples and bamboos have been a continuing specialty, which, since his retirement, has been sustained through his garden in Little Rock, Arkansas. There he hybridizes plants and maintains a beautiful garden at 54 Belmont Drive. In it are 24 Japanese maples ranging from bonsai to over 30 feet in height. There is a large dawn redwood and a bald cypress, both over 50 feet. The remainder of the garden is devoted to perennials interplanted with irises, mostly Louisianas and Pacificas.

His interest in Pacific Coast native iris was initiated when he visited San Francisco in 1980 and brought back 3 clumps of *I. douglasiana* purchased at Golden Gate Park. All three are still doing well in his Little Rock garden. In 1983, he visited Richard Richards' garden in Southern California, where he crossed several dozen of Richard's heat-tolerant Pacificas. He has been hybridizing and growing them ever since.

Under his full name, Robert Fabel-Ward, Bob has registered several iris

varieties, including the Pacificas, CATTYWAMPUS, DAVID MARK WARD, SHAMAYIM, and WOLKENTANZ.

His exceptional facility for languages has been a valuable asset to Bob. He can communicate in German and Russian. This has enabled him to speak and write to other botanists and horticulturists such as Dr. George Rodionenko, of St. Petersburg, Russia, and Dr. Vladimir I. Sakonov of Sakalin Island in the former Soviet Union, the latter an honorary subscriber to the ALMANAC.

The ability Bob Ward has in growing both species and hybrid PCIs in an environment so different from their origins is to be much admired. Arkansas is colder in the winters and warm and wet in the summers. He can not control the weather, but has studied PCI needs and experimented with planting mediums until he has amended his soil to provide the most favorable mix for his area. In addition, through experimentation, he has found that certain positions in the garden are more favorable than others. He has found, like many of us, that planting seed is more dependable than transplanting, although the latter is also a necessary procedure. Everything Bob does for his PCIs, including his breeding program for adaptability to his climate, is well planned, organized, and implemented, and his success is no accident. He emphasizes: "One must experiment in order to have success with the Pacificas; plant seeds and more seeds!"

Bob says, "My hope for the future is to have *munzii* bloom from the several seedlings made with it in my garden."



## NEW CHECK LIST POLICY

We are now updating the entire *Check List of Pacific Coast Native Iris Cultivars and Species* every year. The current issue, up-dated through 1994, has grown from the 48 pages in the 1990 Fourth Edition, to 57 pages, and new

cultivars and information will add pages to the book each year.

Updated segments will no longer be printed in the *Almanac*. The current issues of this publication is listed under *Publications Available* on Page 2.

## A BOOK ON PACIFIC COAST NATIVE IRIS

The Society for Pacific Coast Native Iris is planning to publish a comprehensive book on the species and hybrids of the series *Californicae*. We would like this book to match the quality of *The Japanese Iris*, authored by Currier McEwen and sponsored by the Society for Japanese Irises. We envision coverage of every facet of the PCIs accompanied by quality colored pictures and drawings.

Funds are being accumulated, although only about \$500 is on hand to

date, largely through the efforts of Gigi Hall and others who have sold potted iris and donated the money to SPCNI.

Initial planning is scheduled for the coming year. David and Evelyne Lennette have made a tentative offer to act as Editors and liaison with section authors and a publisher. The Lennette's have had professional experience in this capacity, the latest, editing a book on diagnosis of viral infections, which they have just completed.

## SIERRA DELL WINS MITCHELL MEDAL

SIERRA DELL (Lawyer '88) has been awarded the Mitchell Medal for 1995. Runners up were Joe Ghio's CALIFORNIA MYSTIQUE and BIG MONEY.

Sierra Dell was selected from a cross of

a Lawyer seedling, XP4P, by Sierra Butterflies (Lawyer '84). Both parents can be traced back three generations to *I munzii*-derived material from Thornton Abell, Joe Ghio, and Lee Lenz.



SIERRA DELL From a watercolor painting by Lewis Lawyer

## EXPEDITION 1996

Adele Lawyer

Because the American Iris Society is holding its annual convention in Sacramento, California, from April 24 through 28, 1996, we decided to arrange a day trip to see *Iris hartwegii* on Monday, April 29, immediately following the Convention. Many residents outside of California have never had an opportunity to see Pacific Coast native iris growing in the wild. This, to me, is always a thrill, - to see how nature does the landscaping.

Although *Iris hartwegii* is not the most beautiful of the *Californicae* series, proximity to Sacramento dictated our decision to visit this species. *Hartwegii* is a resident of the foothills and mountains of the Sierra Nevada. It's range is from about 2000 to 7000 feet in elevation, extending from Butte County on the north down to Tulare County. It varies in color from yellow-orange, yellow, and pale yellow, to violet at its northern and southern perimeters. It is possible that *hartwegii* will be in bloom at the Annand garden in the foothills above Paradise, which those who attend the Convention will be visiting on Thursday or Friday.

With the help of the botanist at the El Dorado National Forest Station, we have located two colonies of *hartwegii* a few miles east of Placerville, (known as Hangtown in the 49er days). He told us that all the specimens he has seen are in

the light yellow range. Lee Lenz tells us that we should also be able to find violet colored flowers if they haven't all been replaced by apple trees.

In accordance with an agreement at our last meeting, we will be driving to the iris in private cars. It would be appreciated if those of you who live in the area or are driving to the convention, would let us know if you have extra room (and how many you can accommodate) in your cars to share with visitors to Sacramento who may need transportation.

Let Adele Lawyer know if you will be coming with us, and your transportation status. When we hear from you we will eventually mail you a map, and other pertinent information. For those of you who are attending the convention, I will be at the SPCNI Section meeting and the Awards Banquet for sure.

It should be fun, - more like the first expedition since we haven't done this before, and also because we have never seen these particular colonies in bloom. We have seen the plants, however. They were growing well, and there were considerable numbers of them. We also know that all of our native iris are wonderful to see, existing just where they want to be! Write to me at 4333 Oak Hill Road, Oakland, CA 94605.

## EXPEDITION 1995

On June third and fourth, a bus load of us left from our headquarters motel in Vancouver, Washington, and headed out to see species iris and other plants and flowers on a trip planned by Colin Rigby, with the aid of Scott Christy, Bill Farrell, and Carol Wilson.

Our first stop was the Berry Botanic Garden in Portland where we wandered through the extensive property admiring the well-maintained plantings.

Next, we went to the Hagg Lake area in Oregon to see



*Iris Gormanii*

what was originally known as *I. gormanii*, and now described as a yellow form of *I. tenax*. It's type location was Scroggin's Creek, on the eastern slopes of the Coast Range, and this area was erased from the earth when a dam was built and water covered it's home. Some farsighted individuals, anticipating danger to the species, dug some of the plants and moved them to three higher areas above Hagg Lake. It was to one of of these three areas that we were guided by Carol Wilson.



Finding *Iris gormanii* for the first time

The saviors could not have foreseen that the piece of land they chose for *gormanii*'s new home would also seem suitable for dumping unwanted articles, nor that it would appear to be just the place for target practice for those who needed to keep their shooting arms in condition! When our bus pulled up to the iris location, we were as startled to see the group who were target shooting there, as they were to see us! When we explained our mission, however, they held their fire, and watched us as we took pictures of what they considered weeds at the borders of their shooting range. And indeed, it was difficult to see the iris among the tightly encroaching vegetation.

Although it was not a scenic location, with debris scattered around, and compacted ground in the heavily traveled portion, the iris were thriving among the bracken, grasses, and saplings. Most were in shades of yellow to cream, though a few near-whites showed a hint of lavender. They were attractive, ruffled, and vigorous.

We then proceeded to Dundee to visit Chehalem Gardens, which specializes

in Siberian and *Spuria iris*. The proprietors, Tom and Ellen Abrego, known to many of the participants, greeted us warmly, and we were pleased to see that almost everything was in bloom! The iris were not the only treat for the eyes, since the lovely rock garden, the perennial gardens, and the view of the valley from their hilltop home and nursery, made an indelible impression on our group.



The *gormanii* were hiding

The dinner that evening was a buffet, tasty, generous, and satisfying after a busy day. This was followed by a slide program and a discussion, in which it was decided that in the future there would be bus trips on alternate years only. In 1996 and other alternate years,



Group at the Chehalem Gardens

one or more locations to see native iris in the wild and/or in gardens would be described, and maps provided so that the sites could be located and visited by private cars.

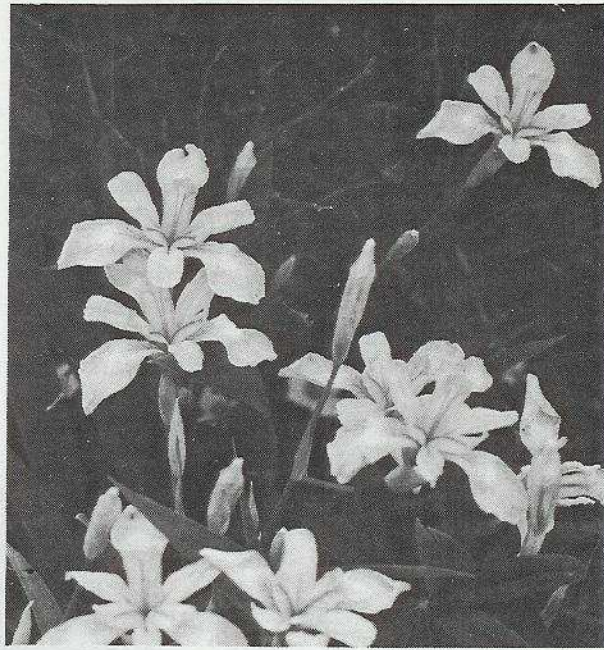
On Sunday morning we visited the Leech Garden, a native plant garden operated by the city of Portland. It was a fine garden and their gift shop was open, so that many of us came home with treasures of books, tee shirts, or such like purchased here.

Next was the Derr's Rainbow Gardens, at Estacada, now commercial. It was a treat to see the beautiful tenax growing wild here among the more sophisticated iris hybrids of all kinds: TBs, Siberians, Pacificas, Cal-Sibes, and Sino-Sibes, - all growing well, and most in full bloom.

The climax of the day was our visit to *Iris tenuis* country in the Mount Hood area. After lunch, we spent the rest of the day exploring the slopes. *Tenuis*, the star here, is an *evansia*, which is endemic to this area alone, and is difficult to grow anywhere else in the world. It grows in such profusion here that it covers every sunny inch of the ground.



*I. tenax* in the Derr Garden

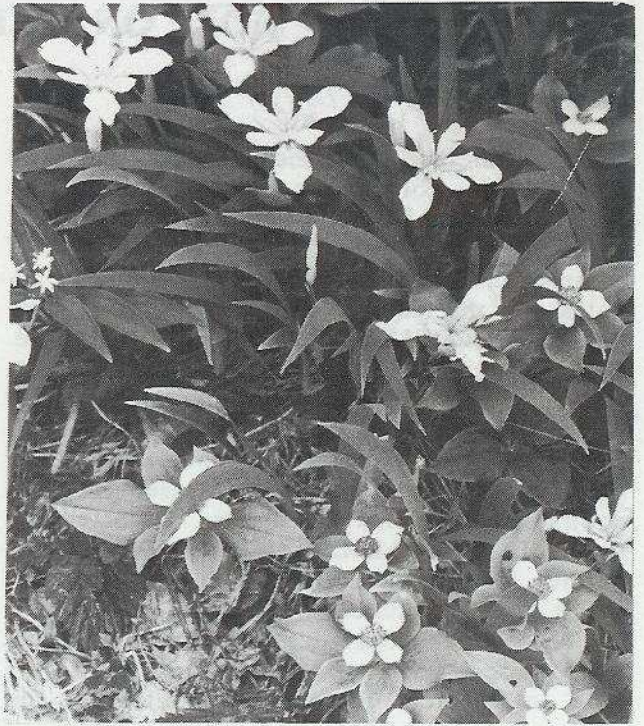


*Iris tenuis* in profusion and close-up



that is in the sun, except for the space in which grow Dwarf Dogwood (*Cornus canadensis*), Branched Solomon's Seal, (*Smilacina stellata*), blue lupin, violets, Bear Grass (*Xerophyllum tenax*), the Coast Rhododendron (*R. macrophyllum*), sapling oaks, and new growth conifers which some day will take over again. There were endless opportunities for photographing. Sometimes, pressing through territory to approach a subject, we would sink down into the porous soil, ankle deep and deeper. Those of us who reached the highest elevation on the forest road, (about 3500 feet), could look down at pink Rhododendrons as far as we could see into the blue distance. *Iris tenuis* followed at their feet part of the way down the hill, but none were blooming in the dense forest trees higher up the hill where light could not penetrate.

It was a spectacular end to an enjoyable two days with friends who have a common interest. We thank the cooperating weather, which has been perfect for our trip 7 years in a row!



Tenuis and dwarf dogwood



*Iris tenuis*, not strictly a PCI, but temptingly photogenic

## MORE ON SEED GERMINATION

Compiled by Lewis Lawyer

The interest in seed germination, and the search for some special procedure which would enhance the outcome, was apparent in Adele Lawyer's Fall, 1987 comprehensive summary of the many articles on the subject which had been published in the ALMANAC up to that date. Each of the 26 authors quoted in the summary had reported a technique which had worked for them. Unfortunately, however, no data were given comparing their methods, and it wasn't until Gene Loop's controlled germination tests, reported in the Fall, 1994, ALMANAC, that we had accurate information which could be compared and evaluated.

The conclusions detailed in his article were based on several years of tests, the bulk of which involved establishing the optimum temperature for germination of a single lot of *I. douglasiana* seed. The outcome of these tests was conclusive, but he felt that it was important to determine if seed of other species would follow the same general patterns as those observed

in *douglasiana*. With this in mind, he and his wife made a special trip to harvest seed of 5 other species from 7 areas in Oregon and California. Gene concluded tests of those seeds this year, and has provided us with the information contained in Table 1. The table isn't very big, nor does it contain many complicated figures, but it represents a few years of planning, the hand construction of unique electronically-controlled temperature chambers described in his 1994 article, and hours of painstaking work. For this, we certainly owe Gene a vote of thanks. In the mean time he is planning a new series which will expand his study on the effect of various preplant treatments on total germination.

Fortunately, his new data fit well with those obtained from *I. douglasiana*, and there appears to be no reason to recommend modification of germination techniques for any one species insofar as optimum temperatures are concerned. Following are the new data:

TABLE 1. GERMINATION TESTS ON WILD SEEDS COLLECTED IN 1994

Species & Source	Test Number	Percent Germination				
		34°	42°	50°	60°	70°
<i>Iris macrosiphon</i>	1	10	84	86	64	0
Indian College, Novato, CA	2	18	80	92	80	0
<i>Iris macrosiphon</i>	1	16	62	82	56	0
Lake County, CA	2	4	82	66	54	0
<i>Iris munzii</i>	1	24	82	88	88	0
Bear Creek, CA	2	58	92	84	82	0
<i>Iris chrysophylla</i>	1	0	86	94	38	0
Cow Creek, OR	2	14	94	88	28	0
<i>Iris innominata</i>	1	0	14	28	0	0
China Flat, OR	2	0	8	44	4	0
<i>Iris tenax</i>	1	0	56	70	28	0
Cow Creek, OR	2	2	74	88	22	0
<i>Iris tenax</i>	1	0	24	74	10	0
Highway 58, OR	2	0	56	58	4	0
Average all Tests		10	64	74	40	0

Despite the fact that they are from 5 different species, Gene's new data are in complete compliance with the conclusions in his Fall 1994 article regarding the optimum range of temperatures for germination of PCI. In that report he writes: "The PCI seeds need cool temperatures to germinate. Room temperature is borderline maximum for some batches of seed, too high for others. They will germinate well at temperatures of 40 degrees, albeit slowly." At that time he had not tried temperatures below 40 degrees. Table 1 shows that some seed will germinate at 34 degrees but later we will present some data which indicate that holding the seed at temperatures close to freezing for a long period of time can be lethal.

You can usually learn something about conditions necessary for satisfactory seed germination by studying climatic and soil conditions in the area where the species grow wild. The PCI grow from the edges of the Pacific ocean to just under 7000 feet in the Sierras, and from southern California to central Washington. With this divergence of climate, you might have expected to find greater differences between some of the species. When you think about it though, these ideal, cool, spring temperatures do occur seasonally in all the areas where the PCI occur naturally. Also, you will find possibly controversial evidence later in this article which indicates that the seeds need only about 20 days of cool or cold temperatures to start some sort of a germination process, after which warmer temperatures hasten or may even enhance further growth.

There is some indication from the data in Table 1 that *Iris munzii* is more tolerant of temperatures both above and below the ideal range for the other species, but since it also germinates best at temperatures optimum for the other species, this possible difference is only of academic interest.

Another item which appears to be primarily of academic interest stems from a germination test which I started in 1988, the results of which were so unexpected and so difficult to explain, that I have been sitting on them ever since. Last year I ran a similar test with identical results, so I feel that it is time to publish them for your evaluation.

These tests differ from those of Gene Loop in that I used 4" pots containing a soil mix, whereas he uses Petri dishes and

moistened filter papers as the germination medium.

Seed source for my tests was from hand crosses made in 1986 with Sierra Dell as the pod parent and a pollen parent involving one of my lines by one of the Lenz *I. munzii* lines. After all small seed was discarded, the 12 pods yielded 302 seeds.

To act as a control, 20 of the seeds were planted directly in the garden in a mix of garden soil, oak leaf mold, and peat moss.

The remainder of the seeds were planted November 16, 1988, in 4" pots, 10 seeds per pot. Planting mix was a commercial mix labeled as 2 parts peat moss and 1 part each of ground fir bark, mushroom compost, and sand. The pots were filled to a uniform depth and compacted uniformly by hand. The 10 seeds were placed on the surface, covered with a measured amount of the same planting mix, and again compacted. Each pot was watered to moisture-holding capacity.

Four of the pots, 40 seeds total, were placed immediately in a "holding room" where the thermostat was set for 70 degrees. Temperatures actually observed ranged between 65 and 75 degrees, and one night, when the control malfunctioned, it dropped to 60 degrees. Later, as the outside temperatures increased, temperatures as high as 80 degrees were observed. Temperature variations within the pots was not measured, but naturally would have fluctuated somewhat less than the air temperatures.

All but the above 4 pots were placed in a spare refrigerator devoted to the test and set for 31 degrees. Measured air temperatures in the refrigerator ranged from 31 degrees to 36 degrees. A large shallow pan of water kept in the refrigerator to help keep the pots uniformly moist, was never found to have iced. The pots were kept in this refrigerator for varying amounts of time, after which they were removed to the holding room described above. Time in the refrigerator varied from 10 days to 100 days.

Four of the refrigerated pots had super-imposed treatments. In one of the pots, the 10 seeds were treated with Orthocide, a fungicide which helps prevent damping-off fungi from attacking the seed. One of the pots was watered with a weak solution of Subdue, which would act similarly to Orthocide, but for a different group of fungi. Two of the pots were enclosed in plastic bags to help pre-

vent drying. All of these pots were held in the refrigerator for 70 days, and since there were no differences in germination observed between these pots and the other pots held for 70 days, they have been lumped together in Table 2.

After their allotted time in the refrigerator, the pots were removed to the holding room for germination (sprouting) counts. One seed, in a pot held 10 days in the refrigerator, sprouted after 33 days in the holding room. All other seeds

which sprouted, did so between 58 and 90 days after being placed in the holding room. No additional sprouts were observed after 90 days. After more than 100 days in the holding room, all pots were placed on a bench in the garden where they were automatically watered every night through the remainder of the summer. They were kept moist as needed through the winter months and until the following spring when final counts were made.

TABLE 2. RESULTS OF 1988 GERMINATION TESTS

REFRIGERATOR (Nov '88 - Feb 24 '89)		HOLDING ROOM (Nov '88 - May '89)		GARDEN (May '89 - Feb '90)		TOTAL
No. days held	No. seeds involved	No. seeds sprout	percent sprout	Additional seeds sprout	Percent sprout	Percent Sprout
0	40	0	0%	9	22%	22%
10	30	4	13.3%	21	70%	83.3%
20	20	16	80%	3	15%	95%
30	20	8	40%	8	40%	80%
40	20	2	10%	12	60%	70%
70	120	1	0.8%	21	17.5%	18.3%
100	20	0	0%	3	15%	15%
0	20	*	*	12*	60%*	60%*

\*Planted directly in the garden, Nov., 1988. Germination is for first year only.

The results noted in the first line of the table, where the seed was placed directly into the holding room, correlate with those obtained by Gene Loop, that is that PCI seed does not germinate well, if at all, at temperatures above 70-75 degrees. It is interesting, however that germination of this seed after an additional winter in the garden was only 22 percent compared to a potential of 80-90 percent. This suggests a deterioration of seed quality in the warm, moist, environment from causes unknown, possibly the detrimental action of organisms in the planting mix.

Germination was somewhat better, 15%, where the seeds were held for 10 days at cold temperatures prior to placing in the warm room. Highest germination, 80%, was obtained when the seed was refrigerated for 20 days, but began to fall off, 40% and 10%, when held for 30 or 40 days. Note also that total germination, after overwintering in the garden, was very good in all three variables, however there is an indication that all times longer than 20 days at the cold temperature was

detrimental as indicated by total germinations of 95%, 80%, and 70%.

Like Gene Loop, I wondered if these results were limited to seeds having *I. munzii* background, so last year I repeated the crucial parts of the 1988 test using a lot of *I. douglasiana* seed gathered by Adele Lawyer and one of pure *I. munzii* obtained from Gene Loop. Planting medium for the new tests was a home mix of 3 parts oak leaf mold and 1 part peat moss screened through a 1/4-inch mesh screen.

Planting method was similar to that used in the 1988 test, i.e. the seed was placed evenly on the surface of the planting mix and covered with a uniform amount of the same mix.

None of the pots were held at room temperatures because I felt that the outcome of that regime had been well established

Twenty seeds each of the two seed types were placed out doors over winter. Germination was 50 percent for the *munzii* and 65 percent for the *douglasiana*. Of the hundred seeds each left in

the refrigerator for 100 days and then placed out in the warm spring garden, none of the douglasiana seed sprouted. Four of the munzii seed sprouted after spending 6 months in the garden.

My preconceived idea of the outcome of the original 1988 test was that since the seed germinates well after 2 to 3 months of outdoor winter temperatures, 70 days in the refrigerator would be optimum. That is why so many seeds were subjected to that regime. However, since initial germination of the seed subjected to this environment was only 0.8%, and final germination only 15%, it is quite obvious that my preconceived assumption was wrong.

In my refrigerator tests, the temperature control had been set just above the setting where the pan of water started to form ice crystals. Apparently this critical temperature had allowed the seeds to start an internal germination process which could not proceed further until warmer, perhaps even slightly warmer, temperatures prevailed.

While seemingly at odds with data from other tests, it is apparent that something has happened to the seed in these tests, even after only 10 days in the refrigerator. It also seems that whatever happened to the seed is complete after 20 days, since optimum germination, 80 percent, occurred when these seeds were placed in the holding room where no germination occurred without it. Furthermore, this development seems to have progressed far enough so that the seed will eventually be killed unless temperatures occasionally rise high enough to allow sprouting and growth to continue,

Does this suggest that there is a phase of the germination process which starts immediately after conditions are right, and which can be complete in 20 days, but which can not be visually observed until some 30 to 60 days later?

Seed in the wild germinates after being subjected to temperatures well below those in my refrigerator. Also we know from information quoted in Adele's 1987 article, that PCI seed can be kept frozen in a home freezer for several weeks without harm. So why was the seed killed when held too long at temperatures just above freezing? At temperatures below 32 degrees, germination apparently can't even start, and if freezing temperatures occur, even for long periods of time, before the seeds start the germination process, the

seed is unharmed. At my test temperatures, the seeds apparently started the germination process but were unable to continue growth at those near-freezing temperatures and eventually died, perhaps from a lack of food source, or because, in that condition, the seeds were more vulnerable to invasion by organisms in the soil mix.

## HARD SEEDS

Seed germination can be delayed for a year or more by a condition referred to as "hard seeds", so-called because it is often caused by hard, thick, or oily seed coats which inhibit water absorption. It can also be caused by hormones or other growth-inhibiting chemical substances in the seed. The effect of impenetrable seed coats can be alleviated by scarification or removal of a portion of the seed coat by scraping with a file or sand paper or cutting with a knife. The effect of both impenetrable seed coats and chemical inhibitors can usually be minimized by soaking the seed in water for one or two days before planting.

Preventing germination by hard seeds is a mixed blessing. In nature it delays the germination of a portion of the seeds for one or more years even if ideal conditions for germination prevail. Thus if a killing late freeze or unusual hot dry spell follows the ideal germination period, the entire population will not be wiped out. The rest of the seeds will wait around until next year or the year after.

For a gardener, however, hard seeds can cause problems. In our garden the weed, purslane, appears after each cultivation, even though we haven't allowed it to seed for years. With Pelargonium it is so serious that seed producers routinely scarify all Pelargonium seed before shipping. We know it exists in many species of iris, including the PCI, and have known of irisarians who leave their seeds in the pot an extra year to take advantage of the additional germination.

We don't pay much attention to the problem because we have so many more seeds than we have room for plants. Between 1978 and 1988 we planted around 1200 seeds each year, 10 per foot of row, in rows 4 inches apart in a bed of our garden soil blended with peat moss. Total annual emergence over those ten years ranged from 44 percent to 53 percent. Highest emergence in plots having 20 or more

seeds was: 85, 87, 87, 87, 88, 88, 90, 93. 95, and 100 percent.

Since 1989, we have planted the seed in 6" plastic pots filled with a mixture of 3/4 oak leaf mold and 1/4 peat. Total annual germination has ranged from 38 to 54 percent, and the highest germination has ranged from 72 to 81 percent or about 15 percent below the highest germination in the field plots noted in the paragraph above.

As stated before, we don't pay much attention to germination because we have room for only 200 to 400 plants each year, and easily produce more than double that number. If you have only a few seeds or seeds from an irreplaceable source, however, you might want to try one of the treatments recommended for hard seeds, the simplest of which is soaking the seed in several changes of clear water over a 24 hour period, and then planting while the seed is still wet.

In Adele's 1988 summary of all the articles on seed germination which had appeared to that date in the ALMANAC, several people had reported pre-conditioning the seed, including soaking and refrigeration, but none had given actual counts or had comparative data from a control. Gene Loop is planning some tests to get reliable data regarding preplant treatment, and may have something to report in the next issue of the ALMANAC. We would also appreciate any information you, our readers, have gathered on the subject.

#### POOR SEED

Poor seed is possibly easier to produce than good seed. Every pod seems to have a good share of tiny unfertilized specks which could have become seeds if only the pollen had gotten to them. When you blow the seed to separate the chaff, you usually also eliminate several light-

weight seeds which are little more than shells. We have recently published articles citing borer damage to seed, and now Joe Ghio has called our attention to a condition which we have seen each year since we have been making PCI crosses. The seeds in a part or all of one or more of the locules are stuck together and are seemingly infested with a fungal or bacterial growth which leaves the seed inviable. Sometimes the growth is cottony and the seed obviously covered with a fungal growth. One year when we collected some *I. douglasiana* seed from the Regional Botanic Garden, almost half the seed was infested. I had not paid much attention to the problem, assuming that it was caused by any organism that happened to be available when some sort of injury rendered the pod vulnerable.

When Joe sent us a few pods from his garden with this same problem, Adele placed individual seeds from each pod in separate moist chambers to see what would develop. To our surprise every seed was infested with the same fungus, a very primitive member of the Phycomycetes. So, as Adele was thrashing our seed, about two months later, she saved some of the seeds having this problem. None of them developed the fungus found on the Ghio seed, and no two fungi could be positively identified as being alike. So again we could possibly assume that the problem can be caused by several fungi or bacteria which happen to be available when conditions are right for invasion.

We plan to study the problem further next season to see if we can ascertain at what stage of growth invasion takes place, and what conditions are responsible for the invasion. Also it is possible that the original invading organism is a specific pathogen, possibly the Phycomycete found earlier on Joe Ghio's seed, and that the fungi we found on our seed two months later were all secondary invaders.

## SOURCES OF MAIL ORDER PACIFIC COAST NATIVE PLANTS

There is good and bad news on the mail order front. There are two fine, new sources, and two that will no longer serve our needs.

First, we are sorry to report that Portable Acres, which has long been a dependable source of the widest range of Pacifica varieties, from the hard-to-get

older tried and true to the very newest introductions, will no longer be in business. You will be glad to know, however, that Colin and Teressa Rigby will continue to be active in our society as Trip Coordinator and Seed Chairman. It is only their knees that are occasionally out of commission.

Thankfully, none of the varieties in Colin's care have been lost. His stock has been transported to Fort Bragg, on the Mendocino coast, where Jay and Terri Hudson are adding them to their nursery at *The Iris Gallery*. Although Jay is now heavily occupied as Chairman of the 1996 AIS Convention, he will be getting out a catalog sometime next year. The address of the Iris Gallery is 33450 Little Valley Road, Fort Bragg, CA 94537. Catalog \$1.00

Portable Acres has transferred introduction of Vernon Wood's Pacifica varieties to the Stockton Iris Gardens, where Abe Feuerstein and Gigi Hall have already produced their 1995 catalog and shipped a large number of Vernon's outstanding Pacificas to the many who have ordered them. For their 1996 catalog, Stockton Gardens address is P.O. Box 55195 Stockton, CA 95205.

John Weiler's Rialto Gardens, to our regret, is no longer a source of Pacificas. Growing, selecting, and hybridizing PCIs in the Central Valleys had been an en-

couraging source of heat resistance, which is much needed in many areas of the country. Too many of our breeders have been developing varieties adapted to the cool Pacific Coast. The Stockton Gardens may provide an environment much like that of Rialto Gardens. John Weiler's varieties will be available through the Iris Gallery, D & J Gardens, and Aitken's Salmon Creek Gardens.

Joe Ghio has expanded to additional acreage, but this should not have a noticeable impact on his PCI listings. Besides his Bay View Gardens, 1201 Bay Street, Santa Cruz, CA 95060, there are three other established sources of mail order plants of which we are aware:

Aitkin's Salmon Creek Gardens

608 NW 119 St., Vancouver WA 98685

D and J Gardens

7872 Howell Prairie Rd., NE, Silverton, OR 97381. Enclose SAE for Pacifica listing

Millar Mountain Nursery

5086 Maclay Road, RR 3, Duncan, B. C., Canada V9L 2X1. PCIs plus species.

## A TETRAPLOID WILD OREGON IRIS

*B. LeRoy Davidson, Bellevue, Washington*

The doubling of chromosomes, or tetraploidy, can manifest itself in different ways, not all of them advantageous. The flower itself is often the most obvious indicator, as we know from having raised tetraploid pogon iris of all sizes, heights, and color patterns. But often the complications in the genetic makeup of tetraploids is evidenced in lack of vigor and sterility. Here is the story of just such a 4N Pacific Coast iris.

Back in the days of the earliest interest in the Pacific Coast Irises, a great wealth of enthusiasm was generated among the wildflower mavens of the San Francisco Bay area, and those stricken by this wild iritis gravitated around their mentor, Sydney B. Mitchell, to celebrate annually with a double pot-luck: - food for the stomach as well as for the soul. All were invited to bring their most exciting iris finds, whether from the wild or from seedling beds.

Everyone was aware that there were a number of species out there between the Pacific and the mountains, but it was not always just clear which was which, and the books often seemed confusing.

Identification and evaluation were the serious focus of these joyous gatherings. Fred Deforest (then from Petaluma) brought *I. douglasiana* selections; Bob Nourse (Ukiah) brought *I. macrosiphon* and *purdyi*; Julia Cates (from down the Peninsula) brought the new, golden *innominata*, an Oregon iris, and hybrids she'd raised from it.

The Mitchell's garden at this time was almost awash with seedlings that sprouted everywhere. Often these showed superior quality, - the beginnings of a garden strain. And, just as Professor Mitchell predicted, the tradition continued with seedlings and seeds shared generously. Rose Mitchell, for instance, gave Jack Craig, (one of a succession of "Garden Boys", another being Frank Reinault) *Carte Blanche* to help himself to whatever he liked. These acquisitions were mated in later years with other wild irises gathered by a teenager at Fort Bragg, California, Elwood Moleseed. Some were also from another collector, Dr. Bowman, for whom Jack had also worked as Garden Boy. Irises of the Craig-Moleseed strain are acknowledged as having contributed

heavily to his own strain by Joe Ghio, in turn.

Going back to those Iris Days at the Mitchell's, it was in about 1940 that Connie Hansen's Dusky Purple seedling knocked them all dead! It's phenomenal substance was suggestive of the shavings from a carpenter's wood-plane! It had been grown from seed sent from the Willamette Valley Foothills in Oregon. Recognizing that here was indeed something of unique character, Professor Mitchell sent it off to the campus Botany Laboratory for a chromosome count, and it was reported back as having twice the expected number of all *Californicae* ( $2n=40$ ), and that it was a tetraploid *Iris douglasiana*. It was reported as such in the AIS Bulletin

When I met Connie Hansen some years later, she had moved from Berkeley to nearby Lafayette and had taken this now-dwindling iris with her in a couple of big pots. She said that I was welcome to them if I would come and get them! In due time, I drove to California, met the generous lady, had a good visit, and came away with the two pots, one of which remained in San Francisco for safe-keeping with Bill Martinez, who had been a participant in the last of those gatherings at the

Mitchell's. The other pot came back to the Northwest with me, and was planted in the open Douglas fir woodland of my Bellevue garden, where it seemed happy, - flowering modestly, although it could never be described as flourishing.

Each season I looked forward to this flowering amidst the mossy growth at the base of an old stump, to the broad-petaled flowers borne in pairs at the summit of staunch, foot-high stalks, and to the subtle coloring, - sort of woodrose or brown-purple. Although they had what appeared to be good pollen, I never got any takes from it, nor did I get germination from the few, poorly-developed seed I was able to coax. - Meanwhile, in San Francisco, Martinez broke his iris clump up, but lost all of the divisions to a drought. In Bellevue (in sympathy) my plant began to decline in vitality, and in spite of TLC, it was finally lost, as well.

I now wonder whether this tetraploid PCI left an influence on the Mitchell seedlings of its day. Reflecting back on it, I remember those softly glowing flowers from staggered bracts, (not borne opposite on the summit of the stem) and that they had the shortest of perianth tubes. It was, of course, a misidentified *Iris tenax*!

## LETTERS TO THE EDITOR

*Lech Komarnicki, Warszawa, Poland*

This letter is to inform you that ten PCI plants survived a Polish winter in my garden! True, it was not a very hard winter, but we had two weeks with temperatures about 36 degrees Fahrenheit below the freezing point.

Dr. Tamberg told me some time ago that in his opinion PCIs are frost hardy enough, but the problem is in the desiccating winds during European winters. He grows his plants in a cold greenhouse and never has had any problem. As I have no greenhouse, I mulched the plants heavily, - first with pine needles, and then with dead poplar leaves. Next, the plants were covered with a fibrous cloth. I do not know the name of the cloth in any language, and so have enclosed a sample. The producers of the cloth inform me that the fabric allows air and water to penetrate and keeps temperatures 4 to 6 degrees F. higher than surrounding temperatures. The cloth is also

said to prevent drying.

I left one plant mulched to the tips of the leaves, as were the others, but not covered by the fabric. It died in March when after a relatively warm February, frosts came back. The plants under cover had started to grow during February, and the tips of the leaves which came above the mulch were later burnt by frost; but the plants all survived.

This is of course no firm evidence yet, as it was only one winter; but it may be of interest to the growers in the northern states. The procedure is quite easy.

Because of the very cold spring, the plants started to grow again only in May. Although they produced quite nice clumps, there were no blooms. Let me hope, however, that they WILL flower next year.

*Editor's note: The fabric Lech sent was very soft, filmy, and light, with a much more open weave than women's hose, - somewhat like Kleenex tissues, more like a paper than a fabric.*



Dorothy Hujsak, Tulsa, OK

I thought I would drop you a note to tell you about my Pacific Coast irises. I have been so thrilled and happy with them, especially this year, and I want to thank you for the encouragement you have given everybody all these years.

BANBURY MELODY, SOQUEL COVE, CANYON SNOW, SUSIE KNAPP, and OJAI increase every year.

And this year, all my many seedlings have bloomed, - well, it seems as though they all have. All colors, and some beautiful pinks, (real pink), and browns. My husband counted 50 blooms on one seedling clump! And one brown seedling with bubble edges caused him to say it was the prettiest thing in the garden!

I brought a bunch to our last show, (not to enter), but just so others could appreciate them.

*Steve Taniguchi, Santa Clara, California*

Although I have been growing PCIs since 1991, I noticed that this year some strange things occurred with my plants.

1) This year was a great year for rust symptoms on the PCIs. I took notes on how my potted plants fared. "O" indicates no evidence of rust, "1" indicates an insignificant amount of rust, "2" indicates that there were clear and unsightly symptoms of rust present, and a rating of "3" indicates that the plant looked horrendous.

There was no correlation between the rust grade and the exposure of the varieties to morning or afternoon sun, or even partial or total shade.

Grade "O": AUGIE, BIG WHEEL, JOEY, OLD MONTEREY, PACIFIC DAZZLER. TIDY WHITE

Grade "1": CANYON SNOW, NAPA VALLEY, PACIFIC HIGH

Grade "2": BOOM TOWN, IDYLVILD,

MUNRAS, OJAI, PACIFIC HIGH  
Grade "3": AMIGUITA

2) Late in the season a few of my plants produced flowers at the very base of the foliage. I wondered if this happened to others and if it was preventable.

3) My plants bloomed early, but what really surprised me was that a pot of AUGIE bloomed again later. It still had one good flower when I returned from the 1995 Expedition in June. I gave some PCIs to a friend of mine, and she told me that RARE REWARD "re-bloomed" during the Memorial Day weekend. Are there any PCIs that rebloom reliably?

*Ed. comment:* 1) *Your grades on rust differ enough from ours that I suspect we have different races. Amiguita, for example, has always been graded here as one of the most resistant clones. Rusts are notorious in their ability to produce genetically-different races.* 2) *We have noted occasional flowers blooming at ground level on iris, including PCIs, Siberians, Japanese, and TBs. Don't know why.* 3) *We have occasional late (and very early) bloom stalks, which seem to be random, not associated with a specific clone. Pasatiempo and City Hall, however, which are normally early bloomers (January or February) often bloom again in April. Perhaps some of our readers have noted varieties which routinely rebloom for them. An article on this would be of interest.*

*A. John Trinder, Stoke-on-Trent, England*

Stoke-on-Trent is not reckoned the best iris-growing country in the U.K., but *Ii tenax*, *douglasiana* hybrids do well. *I. innominata* is a bit dicey, and the rest very marginal. I am the proud possessor of a few hundred seedlings from Ghio and have hopes that some will be worth keeping and will adapt to our conditions.

## NEW MEMBERS and ADDRESS CHANGES

Barnes, Janice  
109 North 6th Street,  
Mount Vernon, WA 98273

Brodslley, William  
P.O. Box 6176,  
Carmel, CA 93921

Brookins, Howard L.  
N75,W14257 North Point Dr.  
Menomonee Falls, WI 53051

Burleigh, Antonette  
210 SE 102nd Avenue,  
Vancouver, WA 98664

Canning, Carol  
9877 Hillview Drive,  
Palo Cedro, CA 96073

Carson, Hazel  
6177 Tooley Street,  
San Diego, CA 92114

Clements, Richard  
6589 River Road,  
Jordan, NY 13081

Corthals, Michael  
508 Beebe,  
Alpena, MI 49707

Cypret, Ladona  
30802 Chihuahua Valley Rd.,  
Warner Springs, CA 92086

Dawson, Carol C.  
4435 Golf View Avenue  
Corvallis, OR 97333

De Ruig, Laurie  
3355 D Street,  
Hayward, CA 94541

Dixon, Patricia  
702 San Juan Grade Road  
Salinas, CA 93906

Ferris, Rennie  
P.O. Box 258  
Newport, OR 97365

Forte, Mary  
9320 Lakota Way,  
Atascadero, CA 93422

Fox, Margaret  
819 North Citrus Avenue,  
Azusa, CA 91702

Gifford, Jerry  
5647 Myrtlewood Drive,  
Nashville, TN

Grant, Neil  
28 Wenonah Avenue,  
Rockaway, NJ 07866

Hawkins, Carolyn  
7329 Kendel Court,  
Jonesboro, GA 30236

Ladne, Paula A.  
1016 168th Avenue S.E.,  
Bellevue, WA 98008

Latil, Jean-Louis  
Le Maupas,  
05300 Lazer France

Madigan, Margaret  
1622 North Main,  
Rose Hill, KS 67133

McNames, Keith M.  
60 Atkinson,  
Detroit, MI 48202

Meyer, Carryl  
2532 Highwood Drive,  
Missoula, MT 59803

Moore, Shelly S.  
111 Harkins Road  
Woodside, CA 94062

Morita, Nancy G.  
6 Cypress Road,  
San Anselmo, CA 94960

Mutschler, Mrs. Char  
280 Alice Avenue South,  
Salem, OR 97302

Nicholls, Diana  
4724 Angus Drive,  
Gainsville, VA 22065

O'Keefe, Beatrice R.  
5605 Mac Donald Avenue,  
El Cerrito, CA 94530

Pillsbury, Fran  
946 El Cajon Way,  
Palo Alto, CA 94303

Pryor, Dick  
1061 Fremont Street  
Colusa CA 95932

Richie, Charles  
5033 V Street  
Sacramento, CA 95817

Rose, Mary H.  
1703 Best Road,  
Mount Vernon, WA 98273

Rust, Ollie  
5405 Bartlett Drive,  
San Bernardino, CA 92407

Sears, Patricia  
28565 Sandlake Road  
Cloverdale OR 97112

Shotts, Florence  
P.O. Box 571,  
Sky Forest, CA 92385

Simmons, Ruth B.  
Route 1, Box 67,  
Walters, OK 73572

Stewart, Joyce  
25786 Tierra Grands Avenue,  
Carmel, CA 93923

Stoneburner, Dennis,  
2114 Avenel Avenue,  
Roanoke, VA 24015

Szmuriga, Nancy  
444 South 5th Avenue,  
Highland Park, NJ 08904

Tomlinson, June  
Route 3, Box 262,  
Marlow, OK 73055

Trio, Shirley  
2701 Fine Avenue,  
Modesto, CA 95355

Turner, Barbara  
650 W. Barrell Springs,  
Palmdale, CA 93551

Turner, Priscilla,  
200 Broughton Court,  
Roseville, CA 95746

Wallbank, Rosemary  
208 Sunset Drive,  
Salt Spring Island, B.C., V8K Canada

### NEW ADDRESSES

Boonin, Sara  
40 Central Park S. #6-C,  
New York, NY

Hoffmann, Siegfried & Donna  
P.O. Box 1005  
Port Orford, OR 97465

Hublely, Mrs. Robert P.  
5926 Twinberry Drive,  
Banning, CA 92220

J & L Bluebonnet Plantation  
2205 9th Street,  
Hempstead, TX 77445

Kelly, Terry  
839 Pomona Avenue  
Albany, CA

Kemper, Alice V.  
134 Malet St.,  
Sonoma, CA 95476

Korn, Ruth & Lawrence  
7785 S.W. Village Green Circle,  
Wilsonville, OR 97070

Turner, Priscilla,  
200 Broughton Court,  
Roseville, CA 95746

Ulmer, Jana  
346 Keystone Ct.  
San Rafael, CA 94903

# 1995-1996 SEED EXCHANGE LIST

Seeds are available on a first-come, first-served basis. All seeds are priced at \$1.00 for the first packet, and \$.50 for each additional packet. Please order by number. Make checks payable to SPCNI, and address orders to Colin & Teressa Rigby, 18341 Paulson SW, Rochester, WA 98579

Unless otherwise specified, all seeds are open-pollinated  
 Lot numbers of all Garden Hybrids begin with "950", all Species with "951"  
 Lot numbers are followed by the donor-symbol, and the item.

## SEED FROM NAMED GARDEN HYBRIDS

LOT#	DONOR	VARIETY	LOT#	DONOR	VARIETY	LOT#	DONOR	VARIETY
95001	A	Age of Chivalry	95024	F	Dr. Pauline	95048	A	On the Wildside
95002	E	Agnes James			Thompson	95049	A	Pacific Dazzler
95003	A	All Shook Up	95025	A	Eagle Eyes	95050	A	Pacific High
95004	F	Ami Royale	95026	A	Endless	95051	A	Pacific Rim
95005	A	Amiguita	95027	A	Escalona	95052	A	Pink Cupid
95006	A	Augie	95028	A	Fairy Chimes	95053	A	Rio Dorado
95007	A	Banbury	95030	A	Garden Delight	95054	A	Roaring Camp
		Gnome	95031	A	Harland Hand	95055	A	Rustic Canyon
95008	A	Banbury	95032	F	Hybrid Valley	95056	F	Ruth Hardy
		Melody			Banner type			(Valley Banner type)
95009	A	Bat Boy	95033	A	Idylwild			
95010	A	Battle Alert	95034	A	Imp. Valley	95057	A	San Carlos
95011	A	Big Money			Banner Type	95058	A	School Boy
95012	A	Blacklight	95035	A	Las Flores	95059	A	Sierra
95013	A	Blue Moment	95036	A	Las Olas			Butterflies
95014	F	Boomtown	95037	A	Little Jester	95060	A	Sierra Dell
95015	A	Califancy	95038	A	Little Toby	95061	A	Sierra Stars
95016	A	Califia	95039	J	Loma Prieta	95062	A	Simply Wild
95017	A	Campaigner	95040	A	Lompico	95063	A	Solid Citizen
95018	A	Canyon Orchid	95041	A	Mendocino	95064	A	Something Wild
95019	A	Carrot Top			Banner	95065	J	Soquel Cove
95020	J	Claremont	95042	F	Mini Ma	95066	A	Sugar Candy
		Indian	95043	A	Mission Santa	95067	A	Tidy White
95021	F	Clarice			Clara	95068	J	Valley Banner
		Richards	95044	A	Mission Santa	95069	A	Villa Montalvo
95022	A	Coastal Glow			Cruz	95070	A	Western Queen
95029	A	Foothill Banner	95045	F	Moonlad	95071	A	Wild Man
95023	A	Different	95046	A	Native Warrior	95072	A	Wilder Than
		Drummer	95047	A	Ojai			Ever

## SEED FROM MIXED GARDEN HYBRIDS

LOT#	DONOR	VARIETY	LOT#	DONOR	VARIETY
95073	J	Mixed Garden Ghio Hybrids	95073	K	Mixed Garden Hybrids
95073	A	Mixed Garden Hybrids	95073	M	Mixed Garden Hybrids
95073	F	Mixed Garden Hybrids	95073	O	Mixed Garden Hybrids

## SEED FROM UNNAMED GARDEN SEEDLINGS

LOT#	DONOR	VARIETY	LOT	DONOR	VARIETY
95074	A	Mixed Munzii Hybrids	95078	A	XP1F: Sierra Sapphire type
95075	A	XP104A: Blue halo	95079	A	XP1F: (Selected from Abell OP seed)
95076	A	XP143: Sierra Dell X a Lenz-Lawyer seedling	95080	A	XP202: Sierra Dell X Lenz sdlg
95077	A	XP164A: Lawyer sdlg & Lenz seedling.	95081	A	XP210: Selections. from a cross involving 2 good blues.

LOT	DONOR	VARIETY
95082	A	XP210: selections Bulked
95083	A	XP211D: spidery form
95084	A	XP224: Sierra Dell X Laguna Creek

LOT	DONOR	VARIETY
95085	A	XP235: Sierra Dell X Lenz sdlg
95086	A	XP62B: Dark blue source
95087	A	XP69B: Munzii-derived hybrid

### SEED FROM PCI SPECIES

LOT	DONOR	SPECIES
95101	E	<i>I. bracteata</i>
95102	E	<i>I. chrysophylla</i> , Anuktavuk - 3200'
95103	E	<i>I. chrysophylla</i> Cow Creek, OR
95104	E	<i>I. chrysophylla</i> Rogue River
95105	J	<i>I. Chrysophylla</i> X <i>I. douglasiana</i>
95106	A	<i>I. chrysophylla</i> X <i>I. tenax</i>
95107	A	<i>I. douglasiana</i> From the Dembowski garden, Oakland, CA
95108	A	<i>I. douglasiana</i> From the Univ. of CA Botanical Garden
95109	D	<i>I. douglasiana</i> Derr Garden
95110	A	<i>I. douglasiana</i> : white, nice, late maturing
95111	A	<i>I. hartwegii</i> Placerville, CA
95112	A	<i>I. innominata</i> Garden grown
95113	C	<i>I. innominata</i> China Flat, Coos County, OR
95114	E	<i>I. innominata</i>
95115	E	<i>I. innominata</i> Coquille Falls
95116	E	<i>I. innominata</i> Mt. Reuben Road, above Rogue River, OR
95117	E	<i>I. innominata</i> Cow Creek, OR
95118	A	<i>I. innominata</i> X <i>I. tenax</i> From 4 plants crossed by Gene Loop

LOT	DONOR	SPECIES
95119	G	<i>I. macrosiphon</i> Indian Valley
95120	C	<i>I. munzii</i> Bear Creek area, Tulare County, CA
95121	A	<i>I. tenax</i> Garden grown
95122	B	<i>I. tenax</i> Botkin Creek, OR
95123	B	<i>I. tenax</i> Botkin Creek, Benton Co., OR
95124	D	<i>I. tenax</i> Monument Peak, OR
95125	E	<i>I. tenax</i>
95126	E	<i>I. tenax</i> var. <i>klamathensis</i>
95127	E	<i>I. tenax</i> X <i>I. chrysophylla</i> : dark ovaries
95128	E	<i>I. tenax</i> X <i>I. innominata</i> hybrids
95129	F	<i>I. tenax</i> : light shades Near Napavine, WA
95130	V	<i>I. tenax</i> : various shades
95131	E	<i>I. tenax</i> : very dark
95132	E	<i>I. tenax</i> : marked for substance Eden Valley, OR
95133	E	<i>I. tenax</i> : pale forms, Eden Valley, OR
95134	E	<i>I. thompsonii</i>
95135	E	<i>I. thompsonii</i> High Divide Rd., Del Norte Co., CA
95136	N	<i>I. thompsonii</i> High Divide area, Del Norte County, CA

### LIST OF DONORS

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