



**Hardy Fern Foundation
Quarterly**



Summer 2012

THE HARDY FERN FOUNDATION

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The Hardy Fern Foundation was founded in 1989 to establish a comprehensive collection of the world's hardy ferns for display, testing, evaluation, public education and introduction to the gardening and horticultural community. Many rare and unusual species, hybrids and varieties are being propagated from spores and tested in selected environments for their different degrees of hardiness and ornamental garden value.

The primary fern display and test garden is located at, and in conjunction with, The Rhododendron Species Botanical Garden at the Weyerhaeuser Corporate Headquarters, in Federal Way, Washington.

Affiliate fern gardens are at the Bainbridge Island Library, Bainbridge Island, Washington; Bellevue Botanical Garden, Bellevue, Washington; Birmingham Botanical Gardens, Birmingham, Alabama; Coastal Maine Botanical Garden, Boothbay, Maine; Dallas Arboretum, Dallas, Texas; Denver Botanic Gardens, Denver, Colorado; Georgia Perimeter College Garden, Decatur, Georgia; Inniswood Metro Gardens, Columbus, Ohio; Lakewold, Tacoma, Washington; Lotusland, Santa Barbara, California; Rotary Gardens, Janesville, Wisconsin; Strybing Arboretum, San Francisco, California; University of California Berkeley Botanical Garden, Berkeley, California; and Whitehall Historic Home and Garden, Louisville, Kentucky.

Hardy Fern Foundation members participate in a spore exchange, receive a quarterly newsletter and have first access to ferns as they are ready for distribution.

Cover design by Willanna Bradner

HARDY FERN FOUNDATION QUARTERLY

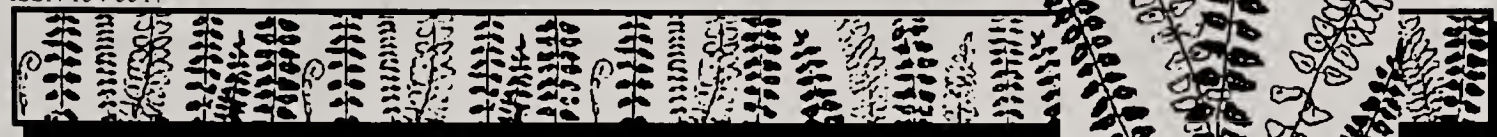
THE HARDY FERN FOUNDATION QUARTERLY

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President's Message ~ Summer 2012

Greetings! It has been said; "today, half of the world's population lives in cities, by 2030, another five billion people will have joined them". Maintaining healthy, livable cities is one of the great challenges of the 21st century.

Long before it became fashionable to be green; the Puget Sound area was and continues to be green. Over the past 23 years of its existence, The Hardy Fern Foundation has performed well in the task of preaching and teaching conservation of our environment via this "greening" process.

Even though, beleaguered by a deep recession, we have been fortunate to experience a rather steady growth of interest in the use of ferns in the landscape.

Noteworthy projects include: The Signature Bed at the UW Botanic Garden in 2004, establishing a fern glen at The Bellevue Botanical Garden in 2010, a Stumpery at The Rhododendron Species Foundation Garden in 2009, adding ferns to the landscaping at the approach to the 'Ravine Experience' at the Bellevue Botanical Garden in 2012 and there are plans to plant a fern garden at the Poulsbo Library on Bainbridge Island, Washington, as a memorial to Jocelyn Horder. We will continue to have a strong presence in the Seattle and Puget Sound Area.

The 40th annual Fern Fest was held Friday, June 1st and Saturday, June 2nd. Our guest speaker, retiring director George Sanko, spoke of "Outstanding Ferns of the Georgia Perimeter College Fern Glade" our new affiliate. (See page 60) His enthusiastic style of presentation and the detailed descriptions of this remarkable collection kept everyone's attention and gave attendees great inspiration for their own gardens.

Thank you to Susie Egan, trillium specialist and new board member, for a most enjoyable and informative tour of their beautiful garden, May 12th, 2012. (See page 49)

I would like to thank all of you for a wonderful 3 years as President. Your kindness and support made my job easier and most pleasant. Thank you too to the board for the gift certificate to Wells Medina Nursery. I am overwhelmed by and profoundly appreciative of your generosity and look forward to the opportunity to add some special plants to my garden.

With warmest regards,
Pat Kennar



Cyrtomium caryotideum

James Horrocks

Salt Lake City, UT

The genus name *Cyrtomium* is derived from the Greek “kyrtoma” or “arch” referring to the veins forming nets in arching patterns. The species name *caryotideum* is also from the Greek meaning “nut-like”, probably a description of the leaves which resemble those on some nut trees. In some books this fern is referred to as the “Dwarf Holly Fern” but considering the fact that the fronds can attain two and one-half feet in length, “Dwarf” is hardly descriptive. David Jones describes it as “Dwarf” and also mentions it growing “readily in acid, humus-rich soils....” One wonders if he is actually describing *C. caryotideum* at all since John Mickel calls it “bold” with large pinnae, the fronds being from twelve to thirty inches in length. It is also described as preferring limestone habitats. Sue Olsen tells us, “In many of its natural sites, this species grows in muddy limestone clefts, though neither mud nor lime is necessary....” In Japan it is said to frequent “calcareous areas”, again, limestone. S. P. Khullar describes it as “an occasional fern in the west Himalaya, usually found in damp shaded localities.... usually at water-falls or along streams.” The range of this species is from India and the Himalaya to China, Japan, the Philippines, Taiwan, and even Hawaii, where it is usually found in mountainous areas. There is even a rare variety ‘Micropteran’ in parts of Africa and Madagascar. One other variety is recorded ‘Incisodentatum’. There is also a hybrid with *C. falcatum* that is said to be hardier than either parent species.



Cyrtomium caryotideum

Description: The rhizome is short, thick, and erect and covered with old leaf bases. The straw-colored stipes are tufted and densely scaly at the base, but sparse above, the dark brown scales being lanceolate to oblong. The stipes are one-third to one-half the length of the once-pinnate frond which displays three to six pairs of rather pale matte green pinnae that are oblong-ovate to ovate in outline. Khullar mentions that at least in specimens from the west Himalaya there is sometimes “a purplish region around the midribs”. The pinnae margins are spine-toothed and usually display a rather prominent auricle on the anterior side or frequently it is biauriculate, having auricles on both sides at the base of the lower pinnae. The auricles taper to an acute tip. The pinnae, in large specimens, can be as large as those of *C. macrophyllum*. The terminal pinna is large, often the largest and cleaving two or three times. As in all cyrtomiums, the sori are scattered about on the underside of the pinnae but are often sparse or even absent near the margins. The sori display a large, light brown, peltate indusium with margins distinctly erose-dentate to fimbriate. The spores are brown. This species is an apogamous triploid.

Culture: *C. caryotideum* is at its best in an area with moderate temperatures and moderate humidity. It does not do well in semi-arid climes as the author can attest and is a Zone

6 or 7 denizen. Open shade is to its liking although it has been said to tolerate deep shade. The soil should be humusy but any good garden soil will do as long as it drains well but is kept moist. As in many other species of this genus, *C. caryotideum* does well in alkaline soils and of course a limestone cobble. It is quite dramatic near the edge of a pond or water-fall, presenting a sharp contrast to more finely-cut dainty ferns such as *Cystopteris bulbifera*, another lime-lover. Being apogamous, this species can be readily grown from spore giving the gardener ample material to experiment with. All in all, it is a rather bold and attractive addition to any shaded garden in Zone (6) 7 to 10.

References: Ohwi, Jisaburo, 1965, *Flora of Japan*, Smithsonian Institution, Washington D.C.

Olsen, Sue, 2007, *Encyclopedia of Garden Ferns*, Timber Press, Inc, Portland

Hoshizaki, Barbara Joe, and Moran, Robbin C., 2001, *Fern Grower's Manual* (Revised) Timber Press, Inc., Portland

Mickel, John, 1994, *Ferns for American Gardens*, MacMillan Publishing Co., New York

Jones, David L., 1987, *Encyclopaedia of Ferns*, Timber Press, Inc., Portland

Rush, Richard, 1984, *A Guide To Hardy Ferns*, British Pteridological Society, London

Tagawa, Motozi, 1975, *Coloured Illustrations of the Japanese Pteridophyta*, Hoikusha Publishing Co. LTD, Osaka

Khullar, S.P., 1994, *An Illustrated Fern Flora of The West Himalaya*, Vol. 2, R.P.S. Gahlot for International Book Distributors, Dehra Dun, India

In Memoriam



We are sorry to report that Barbara Joe Hoshizaki passed away on May 30. Barbara was a UCLA graduate in botany and active in the world of ferns her entire life, serving many organizations as well as being an active gardener. A researcher, she published many scientific papers and wrote the familiar Fern Grower's Manual first published in 1975 with a revised edition co-authored with Robbin Moran published in 2001. We send our sincere condolences to her husband Takashi.



A Trillium Love Affair

Kathryn Crosby

Vashon, WA

There is no doubt about it, Susie Egan has been seduced! Not by our old friend Romeo, but by one of the loveliest of North American shade loving wildflowers the trillium. And how could she not be? Whether you, like Romeo, belong to the house of Montague and favor “Rosey Wake Robin”, “Whippoorwill Toad Shade”, and “Sweet Beth”, or like Juliet are from the house of Capulet and favor “Painted Lady”, “Stinking Benjamin”, and “Bloody Noses”, that which we call a trillium by any other name would be as lovely!(1)

The seduction began some years ago. Susie was wrapping up her successful career of managing law offices and was looking for a new love. She had long been attracted to gardening and was especially interested in native and woodland plants. This ultimately led her to the study and propagation of trilliums, the creation of Cottage Lake Gardens, a display garden and nursery featuring trilliums, and the “Trillium Tea, Talk and Tour of the Trillium Trail”. On May 12th, 2012, an eager group of Seattle area HFF members drank the tea, learned from the talk, and delighted in touring the Trillium Trail guided by Susie Egan.

We were not the first to enjoy Susie’s garden. In response to strong interest from the local gardening community, she created the “Trillium Tea, Talk and Tour” three years ago. This year two dozen garden clubs and over 400 people walked the Trillium Trail with Susie during the six-week peak trillium blooming period.

Our visit both started and ended with tea and treats served on, yes, trillium motif china. (Thanks, Michelle Bundy for the lovely food!) After the opening tea, Susie explained more about the advent of the garden:

“In 2004 I retired from a long career managing law offices. This allowed me the time to take Master Gardener training and focus on my own gardening. I knew from the beginning that I wanted to design the garden as a public display garden so people could see how you can garden in the shade below the Douglas fir canopy with plants suitable to the Pacific Northwest, including a lot of wonderful native plants.

Eventually I decided that I wanted to focus on one genus, but wanted it to be something different and unique. I thought long and hard and decided on trilliums. They have a mystique about them in that they are one of the most beloved wildflowers, becoming more endangered with their habitats shrinking. I began to study them, travel to see them in the wild, and propagate them. Then I decided I wanted to start a National Trillium Collection as there were only two other official trillium collections in the world, one on the east coast and one in England, but none on the west coast. At present I have 45 of the 47 species in the world and will soon have those to complete the collection.”

Cottage Lake Gardens was initially situated on a one-acre lake shore property in Woodinville, Washington. With the recent acquisition of an additional acre of adjoining property, the garden will soon double in size. Susie, with the help of her husband Kevin, has already started building the nature trails that will expand the existing garden into the new property. They have also added a 14 X 21 foot glass greenhouse to support their trillium propagation work.

Trilliums are very difficult to propagate. For years horticulturists simply collected them in the wild and sold them as mature plants, since it takes 5 to 7 years to grow a flowering plant from seed. This was not great for the wild populations! Since Kevin has a background in molecular biology, propagating trilliums by tissue culture has become a long term goal. In the meantime, they are patiently growing them from seed.

Susie's nursery and plant sales started out simply as a means to pass on extra plants to friends and neighbors and as a way to raise money for the Friends of Cottage Lake. Over time the word spread and now the seasonal plant sales have become much anticipated events. To increase both the variety and the selection, Susie is bringing in additional plants from local wholesale growers. Plant prices are always very reasonable and free plants are often available, so all who attend can easily participate in the joy of gardening. This year I added to my trillium collection with Washington's *T. parviflorum*. I was also delighted to find the choice double *Anemone nemorosa* 'Vestal'. One has to be prepared, since the trillium sale is up and over in about 2 hours!

The plant sale dates are listed on the garden's website at www.cottagelakegardens.com. One can also sign up for email notification by emailing Susie at segan@cottagelake.com or visiting the Cottage Lake Gardens Facebook page and clicking "Like".

Susie's talk touched on many subjects, including just where trilliums fit in the kingdom of plants, their interesting evolution and geographic distribution, as well as their growth cycle and how they propagate in nature. Of course the talk included photos and descriptions of many of Susie's favorite trilliums and information on the best places to find trilliums both in gardens and in the wild.

One of the very important things Susie shares, which is news to many, is that trillium seedlings are easily mistaken for weeds and are often pulled out by eager and well-meaning gardeners. A number of us have been guilty of this for years! Fortunately I had learned this particular lesson sometime back, so I now have some very nice clumps of *Trillium ovatum* growing under my *Rhododendron loderi* 'King George'.

Susie explained that the "tri" in trillium comes from the Latin word for three. The name seems a perfect fit, since trilliums have 3 leaves, 3 flower petals, and 3 sepals, which extend from the base of a flower after it has opened and tend to protect the bud.

Taxonomists divided the genus into two subgenera, *Trillium*, the pedicellate trillium, and *Phyllantherum*, the sessile trillium. Those in the subgenus *Trillium* have spreading flower petals growing on a stalk while those in the subgenus *Phyllantherum* have erect petals that tend to "sit down" on the topmost leaves. We saw beautiful examples of both types during the talk and while on the walk. The most unique was the much

coveted double form of *Trillium grandiflorum*. Susie has two varieties of the double form: 'Snowbunting' and 'Floro Pleno'.

She obtained 'Snowbunting' from Paul Christian's *Rare Plant Nursery* in England (<http://rareplants.co.uk>). 'Floro Pleno' was found at Rick Lupp's Mt. Tahoma Nursery in Graham, Washington (<http://backyardgardener.com/mttahoma>). Catch one if you can!

Trilliums truly are an American treasure, since they are found in few other parts of the world. There are a few which are native to Japan and a couple to be found elsewhere in Asia, but all the rest are endemic to North America, with the greatest diversity found in the Appalachian Mountains and the Southeastern US. The flowers come in many colors, ranging from white to yellow, pink, red, reddish-brown, and green.

Susie and Kevin's recent trillium travels took them to Winterthur Gardens in Wilmington, Delaware, where the first Trillium Symposium was held. They went on to Mt. Cuba Research Center in Hockessin, Delaware, which houses one of the official National Trillium Collections. Next they traveled to Decatur, Georgia, where they met trillium author Don Jacobs and visited his garden, Eco Gardens, where they were able to buy plants and get a copy of his book *Trilliums in Woodland Gardens, American Treasures* (2) personally autographed. Kevin read the book from cover to cover! The trip finished at the Huntsville Botanical Garden in Alabama, home of an "unofficial" National Trillium Collection. There they met Harold Holmes, who hosted them on a trillium trek the next day. And of course they have journeyed to Gatlinburg, Tennessee, and participated in the Annual Wildflower Pilgrimage in the Great Smokey Mountain National Park. This area is considered the prehistoric origin of trilliums.

Plans for future travels include a trip to the South Island of New Zealand to attend their annual trillium event and get author Gay Henderson to autograph a copy of her book, *Trilliums for your garden* (3), as well as a visit to the Cincinnati Botanical Garden to learn more about their work on propagating trilliums by tissue culture.

Susie has produced several lovely posters to advertise the Cottage Lake Gardens Trillium Tea and Tours. I have one featuring photos of eleven different trillium blooms. There is another featuring a lovely painting commissioned by Susie of trilliums flowering in her lakeside garden. It is available for purchase on the Cottage Lake Garden website. The Trillium Tea and Tours at Cottage Lake Gardens have become quite popular, so you need to book early. Perhaps the best approach is to monitor the Cottage Lake Gardens website. When the tour dates are announced, gather a group and make your reservation and don't miss the annual trillium sale!

The mystique of trilliums has clearly captured Susie Egan's head and heart. This love



Trillium grandiflorum 'Snowbunting'
Photo courtesy of Susie Egan

affair is bearing fruit for us all. Through her efforts trilliums are becoming more widely available and their use in the garden better understood and appreciated. A third National Trillium Collection is near at hand. Susie is also bringing her energy and enthusiasm for shade loving woodland plants to the Hardy Fern Foundation as a new board member. Welcome, Susie!

We started this little piece with Shakespeare, so why not end with him too? I suppose the Bard might say “The sun shows his head for joy, for never was a happier story told than that of Susie Egan and her trilliums

(Additional photos on pages 56 & 57.)

References:

Case, Frederick W., Jr. and Case, Roberta B., 1997, *Trilliums*, Timber Press, Portland: “Rosey Wake Robin” (*T. catesbaei*); “Whippoorwill Toad Shade” (*T. cuneatum*); “Sweet Beth” (*T. vaseyi*); “Painted Lady” (*T. undulatum*); “Stinking Benjamin” (*T. erectum*); “Bloody Noses” (*T. recurvatum*)

Jacobs, Don L. and Jacobs, Rob L., *Trilliums in Woodland Gardens: American Treasures*, 1997, Eco-Gardens, Decatur

Henderson, E. Gay, *Trilliums for your garden*, 1998, Hazard Press, Christchurch

***Polystichum munitum*....A Closer Look**

Incised Polystichum munitum

Geoff Stephenson

Attadale Gardens, Scotland

The grand parent of this interesting *Polystichum munitum* originally came from the garden of Peter Hainesworth at Achnashallach Wester Ross Scotland. After Peter died his daughter Sue Scott of Stromeferry near Lochcarron offered our garden here in Attadale some of his ferns, one of which was a *P. munitum*. The spore sowing from this plant along with the others produced many sporelings and I seem to remember that my tactic at the time was only to keep about 50 of each because of space restrictions and also because of the time needed to look after them....after all this was being done in my spare time. Of the fifty some would be for sale but others mainly would be used as block plantings near our newly proposed fernery.

All in all Peter’s various gifted plants and spore collecting visits to other gardens produced about 2000 young plants for our garden and sale. It was at this stage that Martin Rickard visited along with Pat Acock and made



Polystichum munitum
‘Highland Ridge’
Photo courtesy of
Geoff Stephenson

sense of my spore sowings with regard to identification. I had no clue to what I was working with and was unsure of what direction the project was taking. Martin's and Pat's visit was a divine intervention and gave us encouragement. The original block planting of *P. munitum* sporelings are still surviving near our fernery and it was from a subsequent visit by Martin that he picked up on the fact that these plants were interestingly more incised, some more than others.....hence our delightful cultivar. Since the incised pinnae are so reminiscent of the Coulin ridges on Skye amongst many other dramatic ridges in Scotland I've chosen 'Highland Ridge' as a label for this variation.

A New Sword Fern Cultivar

Daniel Mount
Daniel Mount Gardens

Carnation, WA

I have waded through many seas of sword ferns (*Polystichum munitum*) over the years, mostly on the hunt for chanterelles, but just as often on the hunt for a trail I shouldn't have left. Last fall, on one such off trail meander waist deep in sword ferns, I was stopped by the unique beauty of one of them.



Polystichum munitum 'Tolt Twirl'
Photo courtesy of Daniel Mount

Of the nine species of *Polystichum* in the Northwest *P. munitum* is by far the most common. This ubiquity almost makes them invisible, and I must admit I don't look at them closely. Rarely have I been impelled to stop and take more than a passing glance at a slight ruffling, a curl or a fringe to the pinnae. Yet, the beautiful fern I saw that day could not be overlooked. It was smaller and perkier than the surrounding ferns, though obviously mature. That was not the extent of its beauty, though. It was the uniformly and completely twisted pinnae giving the entire plant a distinctly tousled look, as if it were in motion, though there was no wind that day under the towering canopy of naked big leaf maples.

As a gardener I have always admired sword ferns, left them in and added them to many shade gardens I created. This admiration I am sure is shared by many. They are workhorses in the Northwest shade garden. Yet, rarely are they more than a backdrop for some exquisite epimedium, exotic arisaema or showy hosta. I think that is about to change. The fern I found on that let's-get-back-to-the-trail hike last November suggests graceful playfulness as its pinnae twist toward their tips. I named it 'Tolt Twirl' acknowledging the area near Carnation where I found it. Of the 4 pups I collected 3 lived, I kept one for myself and gave the other two to fern loving friends for assessing. The jury may still be out on 'Tolt Twirl' but I think it won't be long before it is a sought after specimen, not only for fern lovers, but for gardeners in general.

Polystichum munitum 'Sword Play'

A serendipitous creation of a crested sword fern

Karen Engel, Snohomish, WA

Mt. Forest Farm Nursery

Back in 1989 an article in *Fine Gardening* magazine caught my attention. The title was: "Growing Ferns from Spores - Propagate more kinds than you can buy." At that time, my husband and I were starting up a small wholesale nursery with an emphasis on hostas and ferns seemed an ideal companion. And so began my adventure of growing ferns from spore.



Polystichum munitum 'Sword Play'
Photo courtesy of Karen Engel

When I started collecting spores I quickly realized that one frond from *Polystichum munitum* provided me with an abundance of spore to experiment with. My main problem came to be how to clean spores and avoid growing fungus and bacteria. It was very discouraging to successfully produce a layer of prothallia only to see it overtaken by mold. In John Mickel's book *Ferns for American Gardens* I found his suggestion to spray a mist of dilute fungicide to guard against contamination. At one point I sprayed a flat of *Polystichum munitum* prothallia with fungicide and was able to rescue a few young ferns. All of them were crested.

I grew them on but lost most of them to harsh winters. One was planted in my brother's garden in Portland and 6 years later is thriving (Photo above). Of the original ferns, most were either sterile or produced very few spores. To my surprise - and glee - the fern in my brother's garden was fertile! And ferns from these spores are also crested and holding their characteristics after 2 years.

The original clones are much smaller than their native parent; after 6 years reaching about 12 inches. Each frond has terminal crested and each pinna has a small crest. The second generation, which I have designated as *Polystichum munitum* 'Sword Play', has the terminal crested on each frond with some diversity to the density of the crests along with some fronds also being forked. The pinnae are not crested but have a twist to the ends. It is too soon to know if they will be fertile, but I will be watching and waiting!

"Pteridotrivia"

"Who discovered that ferns reproduced by spores?"

Visit our homepage at www.hardyferns.org to find out!

The Fern Man Cometh

Jo Laskowski, with apologies to Eugene O'Neill

Seattle, WA

In 1990, George Sanko—biology prof and inveterate educator—founded the Georgia Perimeter College Native Plant Garden a little outside of Atlanta, and became a botanist. In 2001, he started a Ferns of the World collection there. On Friday night, 1 June 2012, after the first day of HFF's annual Fern Fest in Seattle, WA, he was there to tell us all about it.

“Us” was an audience of forty-odd people, fern nuts all, many from the day's earlier Fern Fest sale. A brief introduction, the lights were dimmed, and George was off and running with a lively commentary and slides. Unaccustomed to Southern speech patterns, I was concentrating on the cadence of his voice, on correctly hearing the words, and incidentally getting quite drowsy as his hypnotic voice flowed on. “Ah'm a plant person.” drifted by, then abruptly his soft-spoken demeanor morphed. His voice rose loudly—“Ah'm.....a.....TEA.....cher.....first!” Each word dropped solemnly into the pause before it. Then, in his normal voice, “...and how Ah can use plants to teach.” Startled by the magnificent and unexpected volume, my preconception of the genteel Southern educator vanished.

All of the plants—some 1,500 of them—in the older Native Plant Garden are strictly that—of native origin, from all parts of the United States and Georgia. They're part of an intense conservation effort for native, rare, and endangered plants. Those words, that intention, sound dry on paper. But to see the Native Garden is to experience quite the opposite. Georgian azaleas were stunning on screen—they must be positively seductive in person. Shade plants proliferate.

George emphatically stated that the goal is to have every such plant possible, and he's on course to make native plants difficult to overlook for their performance and beauty. By the way he unflappably said “If there's a shade plant Ah don't have, Ah'll give you fifty bucks,” you know he has it. Or will. And you know if it's possible to figure out how to give a plant the right conditions for it to thrive, it'll happen here.

Georgia has volatile weather, making it a challenging location. The Garden lies in a flood plain, and Doolittle Creek makes frequent use of it. There's runoff from The Georgia Perimeter College campus upslope. On top of all this, it's in the Piedmont region, where the basement rocks are overlaid with a thick layer of decomposed rock called saprolite. This is a fancy way of saying the garden sits on the infamous “red clay” of Georgia.

But obstacles can be opportunities, too. During “reclamation” the accidental discovery of rocks gave birth to the fern collection. Rock slabs were used to create raised beds, simultaneously avoiding the drainage problems while getting the plants closer to the viewer, at the ready for any teaching moment. Fern Mountain is a granite outcrop used



**Georgia
Perimeter College
Garden**

Fern Mountain

Photo left courtesy of
George Sanko

Trillium sulcatum

Photo right courtesy of
Susie Egan



Anemia phyllitidis

Photo left courtesy of
Naud Burnett

**2012 Hardy Fern
Foundation T-shirt**

See details on page 68





Pellaea calomelanos
var. *calomelanos*

Elsenbroek Garden

Photo left courtesy of
Naud Burnett

Blechnum tabulare

Photo right courtesy of
Naud Burnett



Trillium
chloropetalum

Photo left courtesy of
Susie Egan

**Georgia Perimeter
College Garden
flooded**

Photo right courtesy of
Rick Barnes



to grow lithics, mimicking what has been observed on countless botanizing trips. Today, a little over two acres of the four plus-acre Garden is dedicated to ferns. There are some 390 taxa, and 10,000 – 12,000 individual plants, making it the most complete temperate fern collection in the United States, and possibly the world.

The xeric collection within the bigger fern collection started with 40 taxa, but has since declined to 23. Trial and error has been the mantra during acquisition and planting, coupled with a healthy persistence you don't often find. George has doggedly replanted failed xeric species two or three times before writing them off. PermaTill was originally put down to deter voles, and turned out to provide perfect drainage. PermaTill is a readily available, (*...but not in the west...ed.*) although prohibitively expensive, rock product found throughout Texas and the South. It's expanded slate, created by firing it in a kiln in excess of 2,000°F. Roughly a third the weight of ordinary rock or sand, it allows excess water to drain away. The small pockets created on its surface during the firing process hold air, moisture, and nutrients. These are then available for plants over time. Now the xeric fern bed is assembled with 6–10" of river sand on the bottom, potting soil/compost above, then 12" of PermaTill on top. The root systems are going nuts, and George was enthusiastic about these exacting plants—"The success blows my mind."

The addition of xeric perennials to the bed was found to have a beneficial, stabilizing effect on both communities. Overhead watering unexpectedly works best. The problem still remains, however, in getting the timing right in weaning the xerics off water. And finally the pithy conclusion, "If you make three years, you beat the odds of a fern dying." A few of the xerics that have done well:

Cheilanthes lanosa/Hairy lip fern: found on Stone Mountain, GA, where it grows across the granite surface in mats. George told us how he gathered it by running a shovel underneath, then lifting and rolling it up like a mat. Then "Ah was FERN MAN!" running around wearing a mat of *C. lanosa* like a cape. Apparently some red wine was involved here...

Cheilanthes tomentosa/Woolly lip fern: found on Stone Mountain, GA. *Cheilanthes yavapensis*: native to Yava, Arizona. *Cheilanthes buchtienii*: declined after seven years, however. *Cheilanthes bonariensis*: neotropical. *Pellaea ovata*/Cliff brake: of this one George remarked that it's been a "surprise that it grows so well." Neotropical. Pellaeas are notoriously difficult to grow in confinement, needing extraordinarily dry conditions that are hard to reproduce outside of their native Tex-Mex, Mexican, and South American haunts.

The Woodland Fern Glade is in the flood plain. Water rises anywhere from one to two feet, up to eight feet during flood events. The week before Hurricane Katrina, a nine-foot rise was recorded. Talk about drainage problems! *Dryopteris erythrosora*/Autumn fern: remarkably, this plant has survived 20 immersions by Doolittle Creek. A slide showed a huge display of them, flourishing in spite—or because—of their muddy ablutions. The goal in the flood plain is to plant out huge swathes of each fern. They're well on their way with this one. *Dryopteris x australis*/Dixie wood fern: there are nearly 1,000 individuals of this plant growing now. A cross between *D. celsa* and *D. ludoviciana*.

Matteuccia struthiopteris/Ostrich fern: a “vigorous” colonizer, its croziers can be eaten, served up sautéed with butter and garlic. This fern has been grown for its fiddleheads for over 200 years in Nova Scotia, Canada, and is their largest export crop. *Dryopteris ludoviciana*/Southern wood fern: a lover of swamplands and wet woods, it’s brilliantly sited in the flood plain. *Osmunda cinnamomea*/Cinnamon fern: their preference for flooded feet makes them perfect for the flood plain, too. *Woodwardia areolata*/netted chain fern: it needs high light to thrive. *Onoclea sensibilis*/Sensitive fern: also noted that it needs high light.

On to The Pines, or the Piney Wood Trail. Rock screes provide excellent drainage and growing environment for some ferns, and the woodland setting creates perfect light and soil conditions for the remainder. Happy ferns from this area: *Diplazium pycnocarpon*/Narrow-leaved glade fern. *Goldies*: when George said this, I was pretty sure I knew what he was talking about. When an audience member asked, it was *Dryopteris goldiana*, Goldie’s wood fern. George’s familiar nicknames made me feel all warm and fuzzy. *Deparia acrostichoides*/Silvery glade fern: if a native Georgian (a person now, not a plant) encounters this fern and is unsure of its identity, “they’ll refer to them as ‘ladies’ and leave ‘em alone.” It is superficially similar to both *Athyrium* and *Diplazium*. It has previously been known both as *Athyrium thelypteroides* and *Diplazium acrostichoides*.

Lepisorus bicolor/Sichuan ribbon fern: George was intrigued by the epiphytic tendencies he was seeing in this fern. A slide showed one that was 6–8” up a pine trunk, and still going. A creeping fern in its native Himalayas and southwest China. *Woodwardia japonica*/Japanese chain fern: aside from the two native ferns—*W. areolata* and *W. virginica*—this is the only *Woodwardia* that does well in the Garden. *Adiantum pedatum*/Northern maidenhair: this fern is “most difficult.” It’s finicky, and seems to prefer to be planted by rocks. *Coniogramme japonica*/Japanese bamboo fern: Japan and eastern Asia. *Coniogramme gracilis*/Narrow leaf bamboo fern: Japan. *Coniogramme intermedia*/Intermediate bamboo fern: eastern Asia and the Himalayas. Each one of these conioqrammes is a forest floor species. *Camptosorus rhizophyllus*/Walking fern: wants lime. Easily recognized by its tip-rooting habit, which gives it the appearance of “walking” over the limestone surfaces it loves. *Pyrrosia* and all cultivars/Felt fern: China and eastern Asia.

He concluded. The lights rose, and he was answering questions. Late the next afternoon I was returning unsold ferns to their places in the HFF hoop house. I came across the ferns that George had bought. I’d be mailing them on to him at the Garden. He had done “real good,” with ferns across all genera—*Dryopteris*, *Polystichum*, *Polypodium*, *Adiantum*, *Selaginella*, *Osmunda*. I heard his voice rise in my head—“Ah’m.....a.....TEA.....cher.....first!” I smiled. Yes, you are, Fern Man. Yes, you are.

Pteridophytes in the Deep South

Rick Barnes ~ The Georgia Perimeter College Fern Garden

Surrounded by the flood plain of a creek, a forest of Loblolly pines, and a college campus parking lot, “trial” is the emphatic word describing the Georgia Perimeter College Native Plant Garden. Despite conditions that seem less than ideal at first flush, by recent estimates the site is home to a total of 1340-1540 species of plants native to the United States and Ferns of the World. Over one-third of the taxa in the garden are pteridophytes. Located on 2 acres adjacent to the Decatur campus of the college that boasts 5 campuses throughout the metro-Atlanta area, the floral display was started in 1991 by George Sanko, then Professor of Botany at the college, as a means for his students to observe native plants first-hand. Starting with a sunny open area below the parking lot, Sanko and his ever-changing ranks of staff and volunteers carved a growing ecosystem from the forest and invasive privet along Doolittle Creek and began planting species that would be seen on field trips to the Blue Ridge Mountains, some 70 miles to the north. As the years passed, plants from many native plant communities in the southeast were added, ranging from the mountains on the north to the unique flora of the savannas of the Florida panhandle.

As indicated above, the growing challenges at the garden are formidable, with drainage right at the top of the list. The flood plain has been inundated to a depth ranging from 1-8 feet on fifteen to twenty occasions since the garden was started. Seams of compacted clay run through the soil of the flood plain, prohibiting direct planting of all but the most adaptable species. *Woodwardia areolata* (netted chain fern), *Onoclea sensibilis* (sensitive fern), *Dryopteris ludoviciana* (Florida wood fern), and *Dryopteris x australis* (Dixie wood fern) are our natives that have adapted best to the flooding conditions. Of these, Dixie wood fern dominates the garden, with a range of 500-1000 of this single species displayed. *Dryopteris erythrosora* (autumn fern) is the exotic least affected by the periodic flooding. Both native and exotic ferns of the genus *Polystichum* seem to have the greatest difficulty growing in saturated soils. In an effort to avoid the flooding, the fern garden has migrated to higher ground over the years, into a grove of Loblolly pine trees. Here, the soil is quite acidic (common to southern soils) and root and water competition is extreme. The answer to these obstacles has been found in raised beds mounded with a mixture of native soil, compost, sand, and medium ground pine chips. Improvement of soil drainage is most critically important with reference to the successful growth of the exotic ferns. (See photo page 57.)

Climate and rainfall are almost as challenging as the site of the garden itself: here we are at the mercy of Mother Nature. Drought has prevented our flora from the benefit of our typical annual rainfall of 50 inches for nearly half of the period we have been in existence. In one period of two years, rainfall was down by 26 inches. In 2007, following weeks of mild winter weather, several nights of below-freezing temperatures killed or set back many plants in the garden coaxed into growth by the warm temperatures, even though this “Easter Freeze” fell within the normal April 15th average last frost date. The freeze was followed by a summer of drought that would forever instill in the minds

of southerners the fact that water is not an unlimited resource. Prior to the freeze, the garden boasted nearly 440 fern taxa: that number was reduced to 390 after the freeze.

Despite the challenges, we have raised a garden of beauty and diversity. In the late-1990's, Sanko accidentally discovered a beautiful outcropping of large rocks hidden beneath a tangle of Chinese privet and other invasive species. Though more likely a pile of rocks pushed together by someone clearing adjacent land in past years, "Fern Mountain" has become the focal point of the fern garden- a place where native ferns mingle with ferns of the world. (See photo page 56.) Although in most cases the native ferns outperform

the exotics, we have found that exotic species of *Dryopteris*, *Coniogramme*, *Arachniodes*, *Thelypteris*, *Pyrrosia*, and *Osmunda* do exceptionally well here. A notable exception to this is *Arachniodes simplicior*, the East India holly fern. A positive surprise genus in our mounded beds under pine shade has been *Osmunda*, both native and exotic species. The only native *Osmunda* that fails to thrive in our garden is *O. claytoniana*, the interrupted fern: we are simply too low in elevation and latitude for the species to thrive. We have, however, beaten the odds in the case of *Matteuccia struthiopteris*, ostrich fern. Despite the native range dwindling in southern Tennessee, some 125 miles to the north, the plant seems to be quite content here, one of the first ferns to unroll its crociera in the spring.

Pervasive droughts led to interest in the possible use of xeric ferns from the drier western states as gardening plants for the south. Several species of these, such as *Cheilanthes lanosa*, *Cheilanthes tomentosa*, and *Astrolepis sinuata* are native to Georgia. Since 2004, many forays to Texas and Arizona have led to the introduction of nearly a dozen species of xeric ferns to the garden. An outgrowth of this effort has been the establishment of a sand bed dedicated to flowering herbaceous and woody plants of the west, into which have been incorporated xeric ferns. In the humid south, drainage is critical to the survival of these plants. In addition to coarse sand, other growing beds for these western ferns and flowering plants are composed of 100% PermaTill, heat-expanded slate. This material provides a quick-draining, stable growing media with high cation exchange capacity. Our overriding challenge to growing these ferns are the winters: the xeric ferns survive wet winters or cold winters, but we have found the combination of the two to be devastating.

Following the visit of the Hardy Fern Foundation and the British Pteridological Society to our garden on June 14, 2011, efforts were made on our behalf to have the Georgia Perimeter College Native Botanical Garden join the 17 other Hardy Fern Foundation Affiliate Gardens. We consider this a privilege and honor, and will do whatever is necessary to be a worthy addition to this network of outstanding fern gardens. If your travels bring you to the sunny south, we hope you will contact us and visit our garden of "trials"!



Georgia Perimeter Garden, Xeric Bed
Photo courtesy of Rick Barnes

South African Journal

Pat Riehl

Vashon Island, WA

The South African fern trip, organized by Jennifer Ide and lead by Jolanda and Alan Nel of South Africa, happened in mid February 2012. All the time and effort that went into this trip by Jennifer, Jolanda and Alan cannot be fathomed. It was enormous. Jolanda and Alan saw to every detail. They found beautiful hotels and great ferny sights to oh and ah. They took such good care of us all with patience and humor. We owe them a huge debt of gratitude. Thank you all.

Day 1 ~ Pretoria

Due to airline problems I was about 15 hours late arriving. My jet lag was terrible so I was not sure what day it was or which garden I was in. My apologies to the garden owners. I think it was the Elsenbroek garden. This is a well-manicured stroll garden with ponds and brick pathways. I hadn't expected to see all the cycads - beautiful large cycads greeted us at the front. Agapanthus lined the brick drive. I loved the front waterfall pond with water moving through an old log spilling into the pond from several openings. Huge *Platycerium robusta* hung from the trees.

Behind the house was a large swimming pool with more areas to stroll. We had a peaceful lunch on the owner's patio. I am not doing justice to this garden as my head was still in the clouds.

Dayson Garden

I managed to make some notes for this collector's garden and mentally divided the garden into two zones: one was a large desert garden the other was a smaller greenhouse garden.

The gated and fenced desert garden was a wonder of rock gardening. Beds were defined by brick and rock as were the paths. The beds were full of desert succulent trees: big elephant footed trees, cactus, cycads and ferns. We were greeted at the entry to this desert by *Pellaea calomelanos* var. *calomelanos* and we all had to take its picture. (See photo page 57.) Have you ever noticed that the number of bent over picture taking bodies is totally related to the interest in a particular plant? Other ferns in this desert area were *Pellaea viridis*, *Cheilanthes eckloniana* and *C. involuta* var. *involuta*, *Asplenium splendens*, *A. rutifolium*, and *A. boltonii*. One oddity was a large single leafed plant called *Brunsvigia grandiflora*. Lots of bending over this non fern stranger followed.

The second area was a small round greenhouse filled with goodies including *Davallia fejeensis*, various adiantums and streptocarpus. Outside the greenhouse but in the shade was a large blechnum like fern *Stenochlaena tenuifolia* and more platyceriums.

Day 2 ~ Fernhaven Nursery and Villa Fern Garden, Pretoria

We parked at the entrance to the nursery with the intent of viewing the Villa Garden first. Big mistake! Once everyone was herded out of the nursery we made the short walk to the garden. A land of big ferns like *Blechnum tabulare*, (See photo page 57.) *B. brasiliense*, *Woodwardia unigemmata*, *Cyathea dregei*, *C. dealbata*, *Dicksonia fibrosa*, and *D. sellowiana* waited. Uncle! There was also a large greenhouse in this garden which had stock for the nursery mostly of bromeliads. One that caught my eye was an incredible red from Puerto Rico.

Back to the nursery. At the entry was a huge *Drynaria* basket. On the walls were all sorts of adiantums that had spored themselves in the crevices. Want a cute little *Selaginella pallescens*? There was a wall made of cut branches filled with sporelings of adiantums and selaginella.

We had lunch at Stone Cradle with the South African Fern Society. This eatery was amazing. Imagine every kind of item you could possibly want to eat and it's here. All was served cafeteria style. One can keep going back for more and more until you popped. Jolanda had again attended to every detail by bringing wine with her own computer made labels. The bottles of red and white wine had fern labels with names like Maidenhair Sauvignon Blanc and of course the picture on the label was an adiantum. I tried to figure out how to bring some empty bottles home. No luck. But very clever. Ronell Klopper one of the authors of the new book *Ferns of South Africa* joined us and many of us brought out books to have them signed. This book weighs five pounds at least. I brought it to have it signed and it will go nicely with my stones in the backpack!

After several hours we all waddled out and got to see our first images of what we all think of as Africa, wild animals. We headed to Rietvlei Preserve.

This preserve was sort of in the middle of a housing area which seemed unusual. But we were thrilled to see zebras, antelope and from a distance our first rhinos. Every rhino seemed to have its own bird perched on its back. We drove through the park and came across three rhinos crossing the road. Amazing! I understand there were about seven of these amazing animals poached recently. The poachers had to come in by helicopter which didn't alert the surrounding home owners because the phone lines and other services that run through the preserve are maintained from helicopters. I gather poaching is a real problem, especially of rhinos.

Our final stop of the day was a return to Jolanda and Alan Nel's garden for those who arrived late.

Jolanda and Alan Nel Garden

First, a thank you to Jolanda and Alan for taking all of us back to see their garden again. On this day the group was composed of the not so jet lagged and the severely jet lagged. I was in the latter group who missed the tour of this amazing garden the first time due to circumstances beyond our control.

It started at the driveway and immediately we knew we had entered the world of a fern fanatic. The driveway had *Cyathea brownii*, *C. cooperi* 'Brentwood', *C. dregei*, *C. robusta* and *C. dealbata*. *Dicksonia* was represented by reliable favorites *D. antarctica* and *D. fibrosa*. Maybe I shouldn't say anything about the *Woodwardia unigemmata* or *W. radicans*! The front garden was to the left of the driveway. The garden beds form a sort of semi-circle providing privacy from the street. There we found *Blechnum inflexum* and *B. minus* and later saw *Asplenium aethiopicum* and *Asplenium splendens*, *Cyrtomium falcatum*, many dryopteris and platyceriums such as *P. veitchii* and numerous cultivars of *P. bifurcatum*. But as with all good fern fanatics there was whimsy here too with fern motifs impressed in clay stepping stones.

We walked down the side of the garage towards the back garden where if you can get past the human blockade bent over the troughs you are at the wrong house because a trough means treasures - therefore a blockade of bodies. There appeared to be an electric fence around the troughs. Was that for the two guard dogs or us? Just kidding. The troughs were filled with *Cheilanthes farinosa*, *Adiantum reniforme*, *Ceterach capense* and *C. cordatum*, *Anemia dregeana*, and *Asplenium pinnatifidum*. At the back and side of the house were more impediments. On the right was a greenhouse full of all sorts of goodies and not just ferns (sorry) but orchids and tillandsia, plants I could recognize. Ferns in here were *Blechnum tabulare* and *B. patersonii*, *Huperzia gridioides*, *Polypodium ensiforme*, *P. crassifolium* and *P. bombycinum*, *Cyathea capensis* and *Drynaria boniii*. Thank heaven for plant tags!!!

On the left directly behind the house was a lath house filled with all sorts of surprises. One wall consisted of soil pockets, a very popular idea in the US right now, which had *Adiantum raddianum* 'Weigandii', *Elaphoglossum drakensbergense*, *Pteris multifida* and *Asplenium australasicum* just to do a little name dropping. A small pond was surrounded by *Cyathea dregei*, again, *Angiopteris evecta*, *Aglamorpha heraclea* and numerous pteris, microlepia, polystichum and so much more.

Inside the house were more ferns but many were art objects: clay lanterns with fern frond designs, wood sculptures of fronds and cooper impressions all made by Jolanda who is a very accomplished artist as well as a plantswoman.

For the lucky group who got to see this garden twice it wasn't enough. For those of us just lucky to see it once, it was impossible to take in. One could spend many hours here and still not read all the plant tags. This is a plant lover's garden but also a garden of two wonderful people and it showed. It was a treat to see. Thank you.

Day 3 ~ Check out of Centurion Hotel, Pretoria

Peggy and Danie de Jager garden in Witbank

This was another collector's garden with a pretty excited but cute little dog. Along the front walk was a crested *Nephrolepis* hybrid. Nearby was *Cyathea tomentosa*. There was just too much to describe. As one walked into the garden there was a forest of tree ferns all bought mostly without names so ID was beyond most everyone but a few were

recognizable such as *Cyathea cooperi* 'Cinnamon'. Among the tree fern forest was a tree full of strange round objects dangling from the branches. They were weaver bird nests. They added to the exotic nature and feel of the tree ferns.

Other tree ferns and ferns in this garden that were identified were *Cyathea robusta*, *C. dregei*, *D. antarctica*, *Blechnum appendiculatum*, and *B. tabulare* with the telltale new red growth. There was also a small aviary with white parrots? and small greenhouses filled with I-have-no-idea cool plants. I didn't linger in these. It was too hot!

I asked about one type of unusual stone that I saw in several gardens. It comes only from the Cape region and is very smooth with defined striations. I had never seen anything like them and Peggy very kindly gave me several. I was thrilled until I realized I'd be carrying these in my back pack all the way home!

Our next stop of the day was the Tree Fern Forest – a forest of *Cyathea dregei* where we had lunch and wandered a little. Everyone fanned out to take pictures of wild flowers butterflies and anything that one fancied. Circling the lid on the top of a water tower was a large patch of *Pleopeltis polypodioides* or *macrocarpa*. Most tree ferns were standing in a stream bed so getting close to many wasn't possible. What a wonderful sight they were.

One last stop was a hurried trip to Mac Mac Falls so named because there are two falls next to one another. Twins! Because we arrived at closing time this was a very quick trip where we walked down to a viewpoint to see the twins. The canyon floor the falls empty into was not visible but the walls were beautiful and lush. What treasures must be in all the vegetation.

This was a tourist stop because there were tables with items for sale though the vendors had all left for the day by the time we arrived. There were many ferns to stop and look at on the way to the falls but most of us were not botanizing.

Our lodging for the next few days was Mt Sheba which is set in beautiful countryside.

Day 4 ~ Mt Sheba. Forest Walk with John Burrows

We carried a lunch to eat along the walk. This loop walk took the morning as we went through lush forest. At the mid-point was a dramatic waterfall with a good spot to eat lunch. Good luck finding a spot to sit however.

On this day we saw the first filmy ferns: *Hymenophyllum tunbridgense* and *Crepidomanes melanotrichum*. Other ferns we encountered were *Asplenium varians*, *A. splendens*, *A. lobatum*, *Polystichum macleae*, *Elaphoglossum acrostichoides*, *Lepisorus schraderi* and *Huperzia dacrydioides*. A few non ferns, yes they do occur, were noteworthy - an orange crocosmia and a white blooming begonia. The morning was spent moving along the up and down of the trail, taking photos and asking my usual question "What is this fern called". Most of it was very shaded with only one stream to cross besides having to manage one's way across the stream just below the falls.

We all ended up back at the lodge and those of us who dragged the mammoth South African fern book got the chance to get another author's signature.

The afternoon was spent at what is called the Lost City. We drove to an area not far from the lodge and hiked maybe a mile to what looked like old ruins but what were really large rock formations. In among the rocks were *Asplenium friesiorum*, *Elaphoglossum acrostichoides*, and large *Blechnum tabulare* with spent fertile fronds. Yes, I looked. Also from here was a photo opportunity to see the lodge and its surroundings. On the surface of the ground was a familiar looking plant - an *Eucomis autumnalis*! A few had green flowers with the typical pineapple top. I would never have expected to see it here. I also would have preferred to not see ticks! Someone had one on their pant leg.

After a very civilized pre dinner drink, dinner was served in the lodge. Another fine day. *To be continued in the next issue...*

Ferns of Southern Africa A Comprehensive Guide

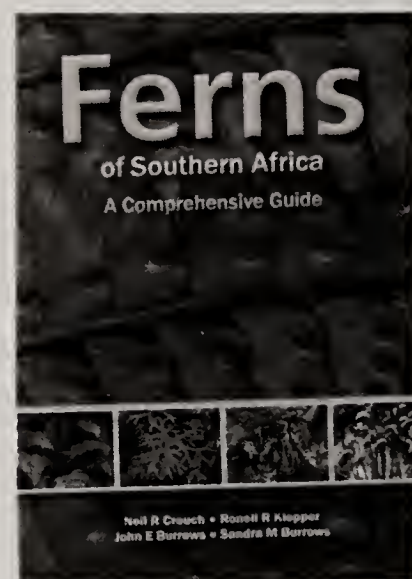
NR Crouch, RR Klopper

JE Burrows & SM Burrows 2011

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Tim Pyner

Southend-on-Sea, England



South Africa is a wonderful country with some magnificent scenery. Particularly in the mountainous areas, ferns and lycophytes form a significant proportion of the vegetation. Over 300 species are currently recognised as occurring in South Africa and with the exception of 2 species all have been seen and photographed in the wild by the authors. Earlier this year I was lucky to be able to participate with the BPS excursion to South Africa and even more fortunate to be able to take and use this beautiful book. I found that by using the guide I was able to identify most of the species seen, even ferns from difficult genera such as *Cheilanthes* and *Asplenium* were readily identified.

Upon opening the book a brief introduction is followed by the keys to the families. The familial classification follows recent papers that have used molecular evidence to re-define the family boundaries. A form of multi-access key combined with thumbnail drawings is used which sounds complicated but I tried it on several species and found it fairly simple to use. My only criticism is that some of the drawings are too simplified and I found a couple slightly misleading but this may be because I was not looking at it as a beginner. Most experienced pteridologists will skip this part.

The generic classification and nomenclature used throughout the book is commendably up to date e.g in *Hymenophyllaceae*, *Polypodiaceae* and *Ptisana* segregated from *Marattia*.

On entering the main part of the book, the genera and species are keyed out under each family heading with help of useful thumbnail photos. I would have preferred the species keys to be placed at the start of each generic account as I found that I had to keep flipping back many pages in large families when trying to identify a particular fern. Each species account occupies 2 pages and is illustrated with small but very clear photos showing habitat, habit and close up views of rhizome, frond, scales and sori details. The species descriptions are brief but clear with key characters highlighted. Tables giving comparative characters of similar species are a very useful innovation. Small but clear distribution maps for each species also proved very helpful.

Using the guide in the field is the real test and I found that the keys worked extremely well and combined with the descriptions and illustrations most ferns were readily identified. For example I saw many species of *Asplenium* and all apart from one odd plant were quite easily identified. *Cheilanthes* is another large genus, well represented in South Africa that can be confusing. Although only relatively few species were seen they were clearly identified using the keys and descriptions.

The only real problems that perplexed me and other colleagues occurred with *Polystichum* and the *Dryopteris inaequalis* aggregate. The former required close attention to rhizome type and details of scales, pinnule teeth and indusia. This was fairly straightforward if sufficient care was taken although the character 'basal basisopic arista of each pinnule folded in over the upper lamina surface' in species such as *P. sinense* and *P. transvaalense* may be apparent in herbarium specimens, however in living plants the arista is directed upwards from the lamina. Looking for the folded-over arista was initially confusing. However, helpfully, it does give a slightly bristly texture to the frond compared to the other species. Some species appeared very different when growing in and outside forest which proved troublesome on occasions. Identification only proved difficult when we encountered a mixed population of 3 species and probable hybrids in Golden Gate National Park. Research into hybrids is clearly needed as not many are recorded for the region.

Dryopteris inaequalis has recently been split into 3 species that seem to be clearly separated using microscopic characters. The distribution maps indicated that 2 species, *D. lewalleana* and *D. pentheri* occurred in the areas visited however the field characters were difficult to interpret and too inconsistent to reliably identify the species seen.

The beautiful photos of both ferns and habitats are the highlight of this book. They are not only wonderful to look at but beautifully laid out and most ferns could be identified just by browsing the pictures. The text is set out in a way that is not only very attractive but also easily accessible and usable to the reader. The guide is reasonably priced and a soft cover version is now available that may be more practical in the field. I can recommend this book without reservation and it should be on the bookshelf of all fern lovers. If they are able to spend time in South Africa this book will be essential.

Hardy Fern Foundation T-shirts

The new 2012 HFF shirts have arrived!

This year our shirt design features a tranquil array of native U. S. ferns done by the U.S. Forest Service called 'Celebrating Ferns.' The shirt itself is short sleeved and comes in a soft, mossy green. The rich greens of the fern fronds show up superbly against their black background! (See color photo on page 56.)

Sizes available include: small, medium, large, x-large and xx-large. These are 100% pre-shrunk cotton and run true to size.

Cost is \$25 each with an additional \$3 for shipping and handling.

Shirts can be ordered by phone or email. (They will also be available through our website, www.hardyferns.org as of July 21st.)

To order or for more info please contact Michelle Bundy at 206-271-7470 or hff@rhodygarden.org.

Thanks for your support!



Model Sue Olsen,
wearing a size medium.
Photo courtesy of Michelle Bundy

WELCOME NEW MEMBERS!

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Bob Caldwell

Melinda Duplessis

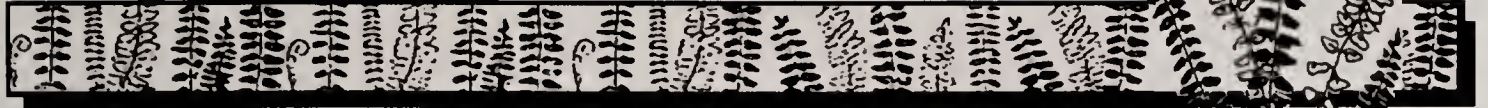
Peggy Herman

Karen Maykuth

Rosemarie Havranek & Nathan Myhrvold

Kathleen Sabo

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