



**Hardy Fern Foundation  
Quarterly**



**Spring 2015**

# 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

Volume 25  
ISSN 1542-5517

No. 2

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## \*\*\*FERN FEST 2015\*\*\*

Please join us at the Hardy Fern Foundation's annual fern and companion plant sale! It will be held at the Center for Urban Horticulture on June 5, 12-6:30 and Saturday June 6, 9-2. Come meet the HFF board and wonderful volunteers, find one of the largest collections of ferns for sale anywhere and get all your fern questions answered by very knowledgeable gardeners.

Friday evening there will be a lecture at 7:00 pm by Pat Riehl who will share a presentation on the ferns and sights of Japan based on a 2014 trip to Japan hosted by several Japanese Fern groups.

## President's Message ~ Spring 2015

Here in the Pacific Northwest, this past winter has been one of the mildest on record. After a cold first week in December, the temperature has rarely dipped below the freezing point. In my President's message on this date in 2013, I described the emergence of the Ostrich Fern, *Matteuccia struthiopteris* as just "beginning to emerge and unfurl". In 2014 I described this fern as "half unfurled and about 12 inches tall". This year this fern is at two to 3 feet tall and almost completely unfurled. Of course other plants in the landscape have also exhibited this early "awaking" from their winter sleep. The buzz at nurseries and garden centers is how early spring is this year. Flowering cherries and magnolias are in full bloom. On a woodland walk last week end (first week of spring), native skunk cabbage, *Lysichiton americanum*, was in bloom and its ecological partner, the western lady fern, *Athyrium cyclosorum*, was half unfurled and already 1 -2 feet tall. I have often admired this beautiful combination. Big Leaf Maple, *Acer macrophyllum*, has begun to bloom, which is three weeks earlier than I have observed in the past. Every year brings a surprise on how plants adapt to varying temperatures and rainfall.

This year at the Northwest Flower and Garden show, the Hardy Fern Foundation shared a booth with the Northwest Horticultural Society. Focus centered on acquiring new members for both organizations with a discount on memberships to those who joined both organizations. This 'partnership' was a big success for the HFF. Thirty two new members were signed up and 10 renewed their membership, which was the most that HFF has ever signed up at the Show. A big Thanks to NHS, who have been a supportive partner through the years. This show, the largest in the U.S. after the Philadelphia Flower and Garden Show, is always held in early February, and sets the stage and marks the beginning for the year's gardening season. Wonderful display gardens get visitors excited with new ideas. Venders display new, along with tried and true products for every gardening application and new plants are displayed and for sale in the plant market. This show is the harbinger of spring for the Pacific Northwest.

Attention goes forward to the next HFF event, the Fern Festival, to be held at the Center for Urban Horticulture at the University of Washington, on June 5<sup>th</sup> & 6<sup>th</sup> this year. This sale has been one of the largest fern sales in the country with over a hundred species and varieties offered. The sale is also the largest fundraiser for HFF. This year's speaker is HFF board member Pat Riehl, who will give a presentation on her fern trip to Japan with other fern enthusiasts from the British Pteridological Society. I have seen a fern list from the trip that Pat has provided, and so I am looking forward to an educational and interesting presentation. The sale begins on Friday beginning at noon, followed by a catered dinner at five p.m. with a sit down dinner in the adjacent atrium. This is followed by the annual meeting at 6pm. and then the lecture at seven p.m. The sale continues on Saturday, from 9 a.m. to 2 p.m. Fern experts will be on hand to answer questions on all things related to ferns and to help identify ferns that are often bought in. Fern enthusiasts get to compare notes and experiences and to acquire new fern species and varieties. A great time for all participants. So mark your calendars for this remarkable event, and we hope to see you there.

The schedule of HFF events, educational presentations, field trips, etc. for 2015 is available on the HFF web-site. The web –site offers a host of fern information and a growing fern photographic library. The site has become the go to site for fern information.

I find the unfurling of ferns in the spring as the most interesting time for observation. Ferns with color and an assortment of scales and hairs are most prominent and visible. The gradual unfurling of fronds and their pinnae is always a fascination as they expand to their full size.

Happy fern gardening, John van den Meerendonk.

## **Tribute to Sylvia Duryee**

Sylvia Duryee, a founding member of the Hardy Fern Foundation passed away this past December 20<sup>th</sup>, 2014. Sylvia served on the HFF board from the beginning of its establishment until just a few years ago, and was involved with HFF as an Honorary Board member until her death. Sylvia was HFF's largest financial supporter, which has played a large part in sustaining the operation of the HFF through the years. Sylvia's direct approach, commitment and determination played a huge role in the establishment and growth of the Hardy Fern Foundation.

Sylvia was an active, well known long time member of the greater Pacific Northwest Horticultural Community, and served on boards and committees of the Northwest Horticultural Society, the Lake Washington Garden Club, the Seattle Garden Club, the Washington Chapter of the Nature Conservancy, the Washington Park Arboretum and the Totem Girl Scout Council. Sylvia was a life-long supporter of the Girl Scouts. She felt that if young people were connected to nature at a young age, they would cherish and value it throughout their lives.

Sylvia had a life-long passion for nature and for all plants, especially ferns and natives. She created a beautiful garden at her home in Seattle that is full of rare and beautiful plants that she acquired over the last fifty years. She greatly enjoyed sharing her garden and her encyclopedic garden knowledge. She loved the landscapes of the Pacific Northwest and greatly enjoyed sailing on the family's boat, the "P.S." along the wild west side of Vancouver Island, the Queen Charlotte Islands, and Southeast Alaska; areas of pristine, untrammeled, natural beauty, that she would marvel about. She loved exploring and botanizing and determining the scientific names of plants that she encountered. Nature was her inspiration. She was a lifelong teacher always trying to educate those around her to show how beautiful the world is and to protect and preserve it. Each year, Sylvia would propagate and grow ferns and other plants, in a myriad of pot sizes, for the annual HFF Fern Festival with all proceed given to the Foundation. I remember getting my first *Polypodium scolieri* from her many years ago.

I will miss Sylvia, and I will cherish memories of her straight forward approach to life, her love of life and natural beauty, her wisdom and her support, and her beautiful poems.

John van den Meerendonk (see photo page 38)

**The Hardy Fern Foundation extends our sincere thanks to the following donors for their generosity in contributing to the memorial for Sylvia Duryee:**

Clise Properties, by Brian Joyner  
Mary Duryee  
Elizabeth Hebert  
Constance Horder and John Lyndes  
Sally Hurst  
Shelley McIntyre  
Craig Miller and Rebecca Norton  
Debbie Nervik  
Mariette O'Donnell  
Sue Olsen  
June Skidmore  
Megan Smith  
Diane Thompson  
US Trust by Matt Lynch  
John van den Meerendonk  
Deborah Wilson  
Peggy Wilton



*Asplenium trichomanes* by Sylvia Duryee

***Thelypteris kunthii* ~ Southern maiden fern**

James R. Horrocks ~ Salt Lake City, UT

The genus *Thelypteris* comprises about 1000 species of mostly medium-sized terrestrial ferns. Some species have erect or ascending rhizomes while others are short-creeping and then still others have long-creeping stems that can be rather weedy. The name *Thelypteris* is Greek for “Female Fern”, not to be confused with “Lady Fern” of the genus *Athyrium*. *Thelypteris* has in the past been divided up into as many as 30 genera and are difficult to identify, the subtle differences often of an obscure or even microscopic nature such as hair type or spore characteristics or even chromosome numbers. Generic names such as *Cyclosorus*, *Goniopteris*, *Lastrea*, *Oreopteris*, *Parathelypteris*, *Macrothelypteris*, and *Phegopteris* are all associated with this genus.

*Thelypteris kunthii*, named after the German botanist Charles Kunth (1788-1850), and also known in the past as *T. normalis* is a rather widespread species, native to the eastern portion of the southern states in North America and extending further south into the West Indies but becoming rare in Central and South America. In the U.S. this rather handsome fern inhabits swamps, stream banks and ditches, wet woods and even roadsides from south-eastern Arkansas to eastern Texas, throughout Louisiana to Florida, and into eastern South Carolina. This fern is mostly terrestrial in habit although it can be epipetric in moist to even dry woods. It is considered rather common and, because of

its growth habit, rather spreading and weedy. It is a deciduous fern and may certainly be confused with other *Thelypteris* species in its native habitat. It may be mistaken for *T. dentata*, *T. palustris*, or *T. hispidula* var. *versicolor* but the pinnae of *T. kunthii* are narrower, the basal pinnae being the longest. It is quite similar to *T. ovata* but in *T. kunthii* hairs are present on the upper surface as well as the lower, while *T. ovata* is mostly glabrous above. Also, in *T. ovata*, the sori are closer to the margins than in *T. kunthii*. All in all, confidently identifying different species of *Thelypteris* can be challenging even for the keenest eye.

### **Description:**

The rhizome may vary from short to long-creeping, scaly mostly at the tip or apex, the scales a yellowish brown. Stipes are one-fourth to one-half the length of the fronds and are straw-colored but reddish-brown at the base. The fronds are pinnate-pinnatifid, 2 to 4 feet in length and up to 12 inches or more in width. In outline they are lanceolate to narrowly triangular, the basal pinnae usually the longest and not reflexed. The pinnae are deeply incised, bearing stiff white hairs on both sides of the surface area and are narrow and taper gradually to the apices. There can be from 18 to 25 pairs, the pinnae spreading to somewhat curved or falcate and occasionally ascending, the lobes also ascending and often falcate. The sori are round, surrounded by hairs and medial. They have round to somewhat kidney-shaped indusia which are tannish and hairy.

### **Culture:**

This fern is considered easy to grow, being relatively low maintenance and quite tolerant of heat. It is probably better suited to more humid climates where it can take some sun. It has become quite popular in the nursery trade but is usually hardy in Zone 8 through 10 although it may respond well in some Zone 7 gardens with protection. This species tends to spread quickly so it will require plenty of room and care should be taken to keep it separate from more delicate species. It produces attractive arching fronds abundantly and is invaluable where a larger colony is needed. The soil should be kept moist for best results. The Seminole Indians used the leaves to treat muscle weakness and insanity, so if you are feeling weak or a bit crazy, this may be just the fern for you.

### **References:**

- Olsen, Sue, 2007, *Encyclopedia of Garden Ferns*, Timber Press, Portland  
Lellinger, David B., 1985, *The Field Manual of the Ferns and Fern Allies of the United States and Canada*, Smithsonian Institute Press, Washington, D.C.  
Mickel, John, 1994, *Ferns for American Gardens*, MacMillan Publishing Co., New York  
Hoshizaki, Barbara Joe and Moran, Robbin C., 2001, *Fern Grower's Manual (Revised)*, Timber Press, Portland  
Nayland, Ray, 2011, *A Field Guide to the Ferns and Lycophytes of Louisiana*, Louisiana State University Press, Baton Rouge



**It is hard to believe that it has been 25 years since a group of dedicated fern enthusiasts launched the Hardy Fern Foundation!**

**In honor of this 25<sup>th</sup> anniversary we are presenting reports from our affiliates who have helped immensely with testing and evaluations. We sincerely thank them for their cooperation and look forward to continuing our mutually beneficial educational and support activities.**

**~Sue Olsen**

## **Birmingham Botanical Gardens A Hardy Fern Foundation Affiliate Test Garden Synopsis of Over Two Decades of Test Results**

**Daniel D. Jones ~ Birmingham, AL**

The Birmingham Botanical Gardens (BBG) has had the marvelous privilege of being an affiliate test garden for the Hardy Fern Foundation (HFF) for 22 years. The annual selection of fern species and cultivars distributed by the HFF have been planted in a designated Fern Glade, a 4-acre, gently sloping, wooded area of the Gardens punctuated by shelves of exposed bedrock. In March 1991, about three years prior to receiving ferns from the HFF, the Glade was struck by hurricane-like winds. Since the squall-line winds devastated 100's of trees, it was necessary to fill in opened areas by replanting many young trees. Consequently, HFF test ferns received in earlier years experienced, on average, brighter light under a more open canopy than did test ferns planted later under maturing adolescent trees.

The climate in Birmingham, AL has been described as "...a humid subtropical climate that is mild with no dry season, constantly moist (year-round rainfall). Summers are hot and muggy with thunderstorms. Winters are mild with precipitation from mid-latitude cyclones. Seasonality is moderate." ([www.birmingham-al.climatetemps.com](http://www.birmingham-al.climatetemps.com)). Birmingham has an average annual temperature of 62°F and is located on the north edge (formerly 7b) of USDA Hardiness Zone 8a. The average annual rainfall is 52 inches with the wettest month being March (6.1 in.) and the driest October (3.2 in.). The moist, humid conditions enable pathogenic fungi to thrive and are a special challenge to many introduced species, some of which succumb even when provided well modified soils (e.g., Perma Till®) to improve drainage. Fortunately, the gently sloping contour that levels considerably in the lower area of the inclining Glade provides a relatively wide range of natural soil moisture from which to select sites that hopefully will accommodate a given taxon's preferences.

Though a perusal of Birmingham's *average* monthly rainfall data points to available moisture year-round, extended rain-free periods are not uncommon, especially between July–October. Such dry periods can significantly diminish the vitality of less drought-tolerant species. Thus, an automated irrigation network installed in selected areas of the Fern Glade aids in supporting growth and even survival of certain fern introductions.

As one strolls into the ~4-acre Glade on an inviting walkway imprinted with instant “fossils” of fronds, a panorama of ferns beckons. Among the more prominent and vigorous species are several distributed by HFF over the past two decades. The performance results and garden worthiness of *some* (not all) of those ferns tested have been categorized into four separate groups presented in the following four tables. The four general categories are “best,” “good,” “meek” and “poor.” The corresponding tables include comments for each taxon listed. Of course, there are always subjective parameters that influence decisions of such categorizations, but hopefully, the lists and comments that follow provide some helpful insight on the expected success of growing selected ferns in the Birmingham climate.

Taxa proven to be adaptable to an array of conditions and worthy of space in Birmingham gardens include several that are now typically available at local retail nurseries. Table 1 includes a list of those taxa considered to be in the upper echelon of, coincidentally, exactly 100 different taxa trialed at BBG.

Table 1. Some of the best performing test ferns distributed by HFF.

Species, variety or cultivar	Comments
<i>Arachniodes standishii</i>	Somewhat delicate appearance belies toughness and great adaptability of this dark, deep green winner; eye catching for structural variation.
<i>Dryopteris xaustralis</i>	In slightly moist soil a consistently stellar grower even in hottest summers. Upright, tough and a commercial success.
<i>Dryopteris championii</i>	With good drainage, bright light and adequate time develops into one of, if not, the best evergreens ferns. Ascending fronds year-round are an asset.
<i>Dryopteris pacifica</i>	Drought tolerant with staying power. Much stronger growing than its relative <i>D. bissetiana</i>
<i>Dryopteris decipiens</i> (photo pg. 38)	Slow growing. Prefers evenly moist soil, but endures drought periods well. Unique satiny, pink tones are notable. Evergreen.
<i>Dryopteris erythrosora</i>	Commercial success due to adaptability to varying moisture levels and light exposures and evergreen habit, including ascending winter fronds.
<i>Dryopteris formosana</i>	Proven to be exceptionally drought tolerant, disease resistant and long-lived.
<i>Dryopteris stewartii</i>	Makes superb 3'-specimens for years. Deep green, robust growth makes a trouble-free statement in the Glade.
<i>Osmunda regalis</i> 'Purpurascens'	variety <i>regalis</i> : Like its native American relative, <i>O.r.</i> var. <i>spectabilis</i> performs flawlessly in wet, marshy sites, but purplish hue fades quickly.
<i>Polystichum polyblepharum</i>	Commercial success due to its adaptability. Withstands some dryness, but not as drought tolerant as others in this grouping.

Table 2 includes trialed ferns that have grown well over several years and are not too choosy about soil conditions but have, at least in the view of this evaluator, some detracting trait. For example, (e.g., *Cyrtomiums*) initiate spring growth early, and in late winters or

early springs during which a warm spell is followed by a hard (<30°F) freeze, tender new frond growth is frequently killed. Thus, several weeks are required for development of a full complement of new fronds. Another consideration is rate of growth, including slow establishment time to develop into a special garden specimen or a vigorous spreading habit requiring careful site selection to accommodate a potentially invasive habit.

Table 2. Good performing test ferns distributed by HFF.

Species, variety or cultivar	Comments
<i>Adiantum venustum</i>	Once established, does well if adequate moisture available
<i>Arachniodes miqueliana</i>	Nice, desirable fern but not quite equal to its relative, <i>A. standishii</i> .
<i>Athyrium niponicum</i> 'Branford Beauty'	Trouble-free, colorful addition that needed time to offer nice presence in BBG Glade.
<i>Athyrium otophorum</i>	Though typically prefers cooler climate, it has proven to be a consistently worthy fern and its subtle maroon tints offer a chromatic contrast.
<i>Cyrtomium falcatum</i>	Consistently good specimen but often damaged by late freezes; however, usually fills in nicely by July. <i>C. f.</i> 'Butterfieldii' equally as good.
<i>Cyrtomium fortunei</i>	Not as vigorous as <i>C. falcatum</i> , but is less susceptible to later freezes.
<i>Dryopteris affinis</i>	Steady performance year after year and adaptable.
<i>Dryopteris cycadina</i>	Tolerates dry soils and competition from nearby shrubs and trees.
<i>Dryopteris polylepis</i>	Prominent black scales add ornamental quality. Easy to grow; drought tolerant and good vigor. Develops a nice shuttlecock form.
<i>Dryopteris sacrosancta</i> (photo pg. 38)	Adaptable, consistently strong grower, including drought tolerant but can tend to develop unwelcome yellow undertones during dryness.
<i>Onoclea sensibilis</i>	This common native is prominent in multiple sites in the Glade. Vigorous growth in wetter soils necessitates removing weed-like spread.
<i>Phegopteris decursive-pinnata</i>	Spreads vigorously, to the extent it can be quite invasive, especially in moist soils.
<i>Polystichum neolobatum</i>	One of two or three best polystichums for BBG Glade, challenging <i>P. polyblepharum</i> for top rung. Quite adaptable to soil moisture,
<i>Woodwardia unigemmata</i>	Slowly, but steadily, increased in size and is now one of the largest and more prominent ferns in the BBG. Surprisingly, adequately cold-hardy.

The following group of ferns (Table 3) have desirable qualities and on planting may have lasted two or even more years, but during most of the survival period, only weak, stressed, and unsound plants were displayed. Furthermore, none have ever been successfully established in the BBG over numerous seasons. Several were trialed multiple (2–3) times with different soil preparations and exposures tried for each trial.

Table 3. Meekly performing test ferns distributed by HFF.

Species, variety or cultivar	Comments
<i>Adiantum aleuticum</i> 'Subpumilum'	Appealing miniature instills extended effort to accommodate its need for rich, drained soil. But in each of two trials, plants survived three years with loss of vigor during first year making them no longer garden worthy.
<i>Asplenium ebenoides</i>	Fertile hybrid occurs at one site in AL (syn. <i>A. tutwilerae</i> ) but it is difficult to satisfy demanding habit and keep alive for multiple seasons.
<i>Blechnum chilense</i>	Showed more promise in BBG than <i>B. penna-marina</i> , but steadily became weaker and bedraggled, with all 3 trialed plants dying after 4 years.
<i>Cheilanthes argentea</i>	Situated in limey, well-drained soil receiving bright light, it survived a couple of years, but wet winters contributed to its demise.
<i>Dryopteris filix-mas</i> 'Crispatissima'	Consistently less vigorous than strong-growing straight species.
<i>Dryopteris scottii</i>	Summer heat and wet, cold winters are too challenging. Steadily declined over 3 years.
<i>Dryopteris affinis</i> var. <i>azorica</i>	(syn. <i>D. a.</i> subsp. <i>affinis</i> ) Initially good growth like species, but declined, holding onto life tenaciously eight years. <i>D. affinis</i> grows well in BBG.
<i>Gymnocarpium oyamense</i>	It started strong but summer heat was a challenge. It did grow more strongly and survive longer (2 years vs.1) than <i>G. dryopteris</i> .
<i>Polypodium interjectum</i>	Survived 11 years but plants struggled from the beginning and offered minimal ornamental value for the duration.
<i>Polystichum aculeatum</i>	Of two plants, only one sited slightly downhill and thus in more moist soil survived. Vigor seems dependent on amount of summer moisture.

The following ferns (Table 4) have not proven to be sufficiently adapted to BBG's summer heat and/or winter cold. Additionally, the warm temperatures and high humidity nurture pathogenic bacteria and fungi that eliminate susceptible species.

Table 4. Poorly performing test ferns distributed by HFF. (continued on pg. 40)

Species, variety or cultivar	Comments
<i>Asplenium adulterinum</i>	Though planted in porous soil, did not survive one season.
<i>Asplenium trichomanes</i>	Grows naturally on conglomerate rock in widely scattered sites in north AL, but proven difficult to adequately accommodate needs in BBG.
<i>Athyrium vidalii</i>	Though not vigorous, increased in size over three years but did not tolerate record-setting (2007) heat.



**Rock garden  
at the Steffen/  
Peterson garden**

Photo left courtesy of  
Richie Steffen

**Sylvia Duryee  
and John van  
den Meerendonk**

Photo right courtesy  
of Sue Olsen



***Dryopteris  
decipiens***

Photo left courtesy of  
Dan Jones

***Dryopteris  
sacrosancta***

Photo right courtesy  
of Dan Jones





*Polystichum tripterum*

Photo left courtesy of Pat Acock



*Arachniodes borealis*

Photo right courtesy of Martin Rickard



*Osmunda japonica*

Photo left courtesy of Martin Rickard

**Delaware Valley Fern Society booth at the 2015 Philadelphia Flower Show**

Photo right courtesy of Tom Tomer



<i>Blechnum penna-marina</i>	Grows in cool micro-habitats in north AL, but does not tolerate summer heat at the BBG.
<i>Doodia media</i>	Did not survive first winter.
<i>Gymnocarpium dryopteris</i> 'Plumosum'	Planted in fall, it started strong the following spring. However, as it began to experience the hot, humid days of summer it declined continuously and did not re-emerge the following spring.
<i>Polypodium amorphum</i>	Was not happy in hot, humid BBG climate. Did not survive first year.
<i>Polypodium scolieri</i>	Did not survive first winter. Appears to lack sufficient cold-hardiness for BBG climate.
<i>Polypodium vulgare</i>	Lacks adequate heat-tolerance; declined steadily over 2 years. In sharp contrast, <i>P. v.</i> 'Ullong Island Form' grows very well in B'ham gardens.
<i>Polystichum braunii</i>	Not sufficiently heat-tolerant for BBG. Two of three plants died after second summer and remaining did not last through third summer.

Remember, only those taxa included in the HFF trials are mentioned here. Also, only about half of the ferns tested over time at BBG are included in the aforementioned categories, so the lists are not all-inclusive. Generally, the remaining would merit placement somewhere in the middle of the above categories. (i.e., between Tables 2 and 3) and, dependent, of course, on specific site conditions a given plant may perform outside mediocre. Several *Dryopteris* species, such as *D. bissetiana*, *D. x complexa*, *D. clintoniana*, *D. cristata*, *D. indusiata*, *D. namegate*, *D. pycnopteroides*, *D. sublacera*, and *D. tokyoensis* developed into respectable garden assets, just not first-rate at the BBG. Similarly, several *Polystichums* including *P. xdycei*, *P. luctuosum*, *P. piceopalaeceum*, and *P. setiferum* should not be overlooked since they have sustained growth over multiple seasons, but hot, dry summer periods significantly diminished their attractiveness.

The administration of the BBG is supportive of the volunteers who contribute hours of work towards maintaining and improving the Fern Glade. However, as with most public gardens, it is not always possible to closely control activities that can influence the success or failure of newly planted ferns. Such factors as stray footsteps, timing of watering, and removal of layered leaves blown from adjacent walkways can create challenges difficult for some of the more intolerant ferns to overcome. Consequently, in conditions where more controlled attention can be provided, one might expect some of the above taxa classified as meek or failures could be successes. Like for most things, but especially evaluation of plants, there are few absolutes.

## The Birmingham Fern Society Presents: Fern from the Beginnings to the Ends

May 20<sup>th</sup> & 21<sup>st</sup>, 2015 ~ Birmingham Botanical Gardens

May 20<sup>th</sup> at 4:30pm "Propagation of Ferns"

Naud Burnett is CEO of Casa Flora, fern wholesaler in Dallas, Texas. He currently

serves on the Board of the Hardy Fern Foundation. Mr. Burnett is a well-known landscape architect with a degree in landscape architecture from Texas A & M University.

**May 20<sup>th</sup> at 6:00pm “Searching the World for Ferns”**

**Eddie Watkins** is an associate professor of biology at Colgate University and a native of Alabama. He did his undergraduate work at Auburn University, Masters’ of Science from Iowa State University, PhD from University of Florida and post-doctoral fellowship at Harvard University. He is currently the President of the American Fern Society.

**May 21<sup>st</sup> at 10:00am Guided walk and picnic lunch**

The Birmingham Fern Society welcomes everyone to tour the Fern Glade at the Birmingham Botanical Gardens. We will meet on the Blount Plaza at 10:00am. Please bring a picnic lunch.

## **JAPAN 23 October – 3 November, 2014 – Part I**

**Reprinted with permission from The British Pteridological Society Bulletin, Volume 8, Number 1, 2014**

**Introduction – Pat Acock**

During the 12 years we have arranged BPS/HFF meetings the idea of a meeting in Japan regularly came up as a place we would all like to visit. It was therefore remarkably fortunate that Pat Riehl our friend in Seattle met up with Marilyn Tsuchiya and later her husband Kazuo. They had organised botanical and garden tours of Japan for a number of years and said they would make enquiries as to the feasibility of a fern tour. Somehow they managed to find many of the leading fern people in Japan who were only too pleased to help us. We were really blessed by the large number of people who came out most days to help the 18 of us in the group and to all these remarkable people we would like to extend our heart-felt thanks.

We must however make a special mention of our two leaders for the two halves of the tour. Mr. Taketoshi Oka who lead the part of the tour close to Tokyo and Mr. Ichiro Yamazumi who lead us on the Kyoto leg of the trip. Each of these gentlemen had spent hours before the tour with colleagues checking out the sites and had then produced the most splendid detailed check lists for the sites each day with exceptionally reproduced colour photographs of the ferns that made identification and later recall easier. Whilst in the field both of them were the most excellent of companions with their knowledge of plants and the various ecosystems. Their knowledge of the ferns and their ability to show the details to allow us to identify closely related ferns and many times the tiny differences that distinguished the hybrids between these ferns was second to none. Their patience with us and the way they overcame linguistic problems to answer our questions and to enlighten us was mixed with the most cordial good humour so that on parting from them we were all saddened and were thinking of ways that we could return again soon to renew our friendship and experience once more this most superb of fern experiences.

**Thursday 23<sup>rd</sup> October - Tsukuba woodland and Botanic Garden**

**Martin Rickard**

The day had an unpromising start as we woke up to torrential rain which continued until

mid-morning. Mr. Oka, our wonderful guide for this and the next few days, very kindly gave us each a full list of the ferns recorded from every site we visited, many species accompanied by colour photographs. These proved extremely useful throughout the tour.

Fortunately the rain had stopped by the time we reached our first site. It was a coniferous/bamboo plantation near Tsukuba (36°11'19.3"N, 140°09'37.8"E) some way north of Tokyo. This was chosen as a starter site, not too many ferns and nothing rare, although quite a few were new to most of us. We followed a rarely used concrete road up through the woodland. Ferns were not particularly abundant but a good selection grew in the banks by the side of the road. Out of about 35 species seen several are UK favourite garden ferns. *Dryopteris* was well represented with *Dryopteris erythrosora*, *D. uniformis* and *D. bissetiana*. Other familiar species were *Athyrium niponicum* (*Anisocampium niponicum*), *Arachniodes standishii*, *Coniogramme intermedia*, *Onychium japonicum*, *Osmunda japonica*, (see photo page 39) a rather scruffy *Matteuccia orientalis* (now *Pentarhizidium orientale*) with sporing fronds just emerging, *Polystichum tripterum* (see photo page 39) and *P. polyblepharum*.

The less familiar species were the greater attraction, including 3 more *Dryopteris*: *D. hondoensis*, *D. nipponensis* and *D. pacifica*. Difficulties with identification of these few species were but nothing compared to what was in store later during the trip!

Fortunately there were easier species to admire. *Lepisorus thunbergianus* epipetric on rocks was occasional although we'd seen quite a lot of it earlier near a roadside comfort stop. *Arachniodes borealis* not looking like a typical *Arachniodes*, being more like a large *Cystopteris*. (see photo page 39) *Dennstaedtia hirsuta* was a short-fronded species most unlike most dennstaedtiads, and in fact possibly quite attractive if brought into cultivation. *Asplenium incisum*, a pretty little fern, that was growing intermixed with *D. hirsuta*, has been offered commercially by UK nurseries but it does not often persist and is sadly rarely seen these days. *Polystichum longifrons*, looking very like *P. polyblepharum*, caused some confusion. The former differs by having pinnae more widely spaced along the rachis. Rather common was *Stegnogramma pozoii* subsp. *mollissima* with its pendulous fronds carpeting the banks in places. Veterans of the Isle of Reunion trip were pleased to see *Sphenomeris chinensis*, although in those golden days we could still call it *Sphenomeris chinensis*! (Now it is *Odontosoria chinensis*!) Near the top of the road just as we were told to make our way back to the bus Pat Acock let out a squeal of delight! He'd spotted *Diplopterygium glaucum*, a long gangly fronded member of the Gleicheniaceae. One treasure I missed was the charming little filmy fern, *Crepidomanes minutum*. I think that was Kylie's triumph for the day! Finally I should mention a fern ally, *Huperzia serrata*, a handsome but small erect form, a little like our *H. selago*.

After a quick group photo-call we all climbed back into the bus and headed for the Tsukuba Botanic Garden. Here we were met by Dr Matsumoto, who had recently retired as a full time researcher at the gardens. Sadly time was short and after a quick look at examples of species conservation work, we were led around the glasshouse collections. Lots of good things here *Asplenium x kenzoi* caught my eye as did a beautifully grown specimen of *Botrychium multifidum* var. *robustum*. The weather was a bit damp while at Tsukuba so we rushed around the outdoor fern collection, which looked huge and deserved much closer inspection. Name tags frequently involved a 'Fraser-Jenkins'.

Who's he?! Finally we were whisked off to the research area. This was the highlight for me. Two or three tunnels or greenhouses were filled with ferns. In one was a very large collection of *Cyrtomium* species and cultivars. Almost apologetically Dr Matsumoto admitted these were one of his specialities! We just gave them a glance, very frustrating as there would have been much we could have learned, especially with the expert on hand. My obsession these days is with *Polypodium* s.s. and I asked if Dr. Matsumoto could show me plants of the Japanese species. Fortunately he had some in the collection. Their *Polypodium* 'vulgare' is very rare so I was fortunate to be able to see a plant. It is quite distinct from our European species but I do not think a name has been finally fixed. Dr Matsumoto also had *Goniophlebium niponicum* (formerly *Polypodium niponicum*) and most interesting to me was *Polypodium* x *takuhinum* – the hybrid between 'P. vulgare' and *P. fauriei*. Very kindly Dr Matsumoto gave me a piece of the hybrid! This final *Polypodium* session was, for me, the highlight of the day. I'd peppered Dr Matsumoto with many questions and all were dealt with great tolerance and kindness. Later in the week he gave me some *Polypodium* article photocopies, completely unsolicited, just another example of the great kindness of our Japanese hosts throughout the tour.

## **Book Review~*The Ferns and Lycophytes of Texas***

Reviewed by George Yatskievych, Missouri Botanical Garden

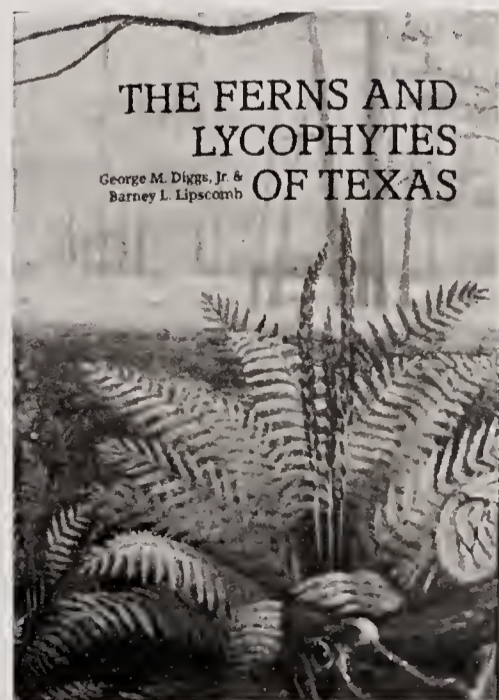
Reprinted with permission from the American Fern Society's Fiddlehead Forum.

Diggs, George M., Jr. and Barney L. Lipscomb. 2014. BRIT Press, Fort Worth, Texas. ISBN-13: 978-1-889878-37-9. Flexbound, 7×10 inches, 392 pp., color photos, distribution maps. \$29.95 + shipping. Order online at: <http://brit.org/brit-press/books/texasferns>.

The recent publication of a new field guide to Texas ferns is a cause for celebration among those with a passion for these plants and who enjoy well-produced books. The authors have long experience studying the flora of Texas, and this book represents a side-project from their more general floristic work. And what a work it is!

Texas is a big state (ca. 269,000 square miles) with a diversity of habitats from sea level along the Gulf of Mexico to 8,749 feet in the Davis Mountains, from swamps to the Chihuahuan Desert, and various other extremes that are discussed in a series of introductory essays. The state is the record-holder among the continental U.S. states with 127 native species (on top of 11 naturalized ones), and only Florida, by virtue of its 39 introduced species (in addition to its 113 natives), has a larger grand total for the mainland U.S. (Hawaii, with 144 native and 30 non-native pteridophytes, remains the U.S. champion).

A table in the introduction extends these bragging rights with a summary record holders and prize winners that emphasize how truly special the fern flora is. It includes such tidbits as the smallest fern (*Azolla caroliniana*, in which the plant can be about the size of a dime), the largest plant (*Dennstaedtia globulifera*, in which a single leaf can be about 4 meters long and more than 2 meters wide), and the strangest habitat (*Pilularia americana*, which is often



a submerged aquatic and even survives nearly 25 meters below-ground on the walls of a deep sinkhole.)

By field guide standards, the new treatment of Texas pteridophytes is lush, with each species illustrated by a combination of line drawings and color photos. Simple maps show the range within Texas and North America (north of Mexico). Organization is alphabetical within the ferns and lycophytes by family, genus, and species. Identification involves the use of dichotomous keys, but the often rambling descriptions tend to emphasize diagnostic characters. The often extensive discussions are an outstanding feature of the work and provide abundant information on the ecology, taxonomy, and other features of the species. The book concludes with a series of appendices, including some places to see diverse pteridophyte assemblages in different parts of the state and a list of suggested references, as well as a useful glossary.

There is little to criticize in this outstanding publication. My main concern is that the relatively “soft” materials used in the binding may not last well with use. Beyond this, the text appears well-edited. The book is scientifically rigorous and includes numerous observations and records not present in the older literature. This is a book that reaches the highest standards for a pteridophyte guide and is a work that belongs on the bookshelf of anyone with an interest in these wonderful plants.

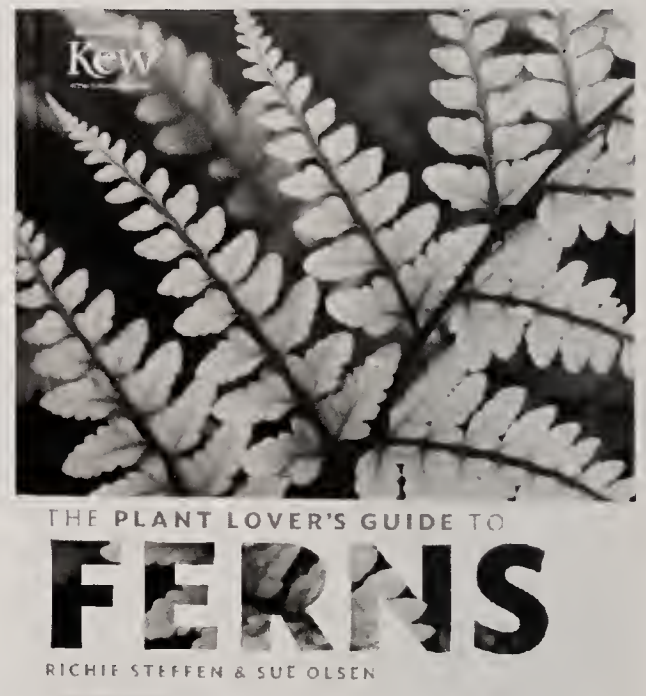
## Book Review, *The Plant Lover's Guide to FERNS*

Richie Steffen and Sue Olsen., 2015, Portland, OR, Timber Press.

Reviewed by Joan Eiger Gottlieb, Pittsburgh, PA

Don't dare open this book unless you are ready to fall in love - this time with a group of plants often neglected by gardeners, ignored by horticulturists, and given short shrift by nurseries.

The gorgeous, full-color photographs of popularly grown species, and many lesser-known ones, simply take one's breath away. Both authors are superb photographers with artists' eyes for arrangement and close-up detail. Whoever complains that ferns have no color interest needs to check out the four different species of *Blechnum* on pages 106-109. They showcase the shades of pink that mark emergent fronds and hint at the transition to green that occurs with maturity. Or, go to page 99 for the silver and burgundy hues that define the foliage of *Athyrium niponicum* 'Pictum', the Japanese painted fern. To quote the authors (p. 7) “The new fronds of *Dryopteris erythrosora* (autumn fern) rival the color of any flower.” A full page picture of the bronze-brushed fronds of this garden favorite attests to the accuracy of their praise, and the color can be enjoyed throughout the growing season as new crosciers push up well into autumn.



The book lures you shamelessly with lavish photo arrays on the Title and Contents pages. An introduction titled “Why We Love Ferns” offers insights into the history and importance of ferns to horticulture, including the Pteridomania that swept Victorian England and yielded many of the cultivars that are still planted today. A chapter on “Designing with Ferns” suggests ferns for specific garden needs, e.g. groundcovers, uprights, color, formal looks, edging, stumperies, rock gardens, wet or boggy soils, and so much more. The pages devoted to “Understanding Ferns” will familiarize readers effortlessly with the parts of a typical fern, including just enough special terminology to increase Scrabble competency without taxing one’s memory too much (e.g. frond, crosier, pinna). Labeled photos make it easy. I really liked the two-page spread on “Distinguishing Characteristics of the Genera” (pp.76-77) - a fully illustrated quick guide to distinguishing a wood fern (*Dryopteris*) from a shield fern (*Polystichum*) or from eight other widespread fern genera.

Allow yourself to be seduced in “140 Ferns for The Garden” - the meat, potatoes, and dessert of the volume for gardeners. It is an alphabetically arranged and photographed roll call (from *Adiantum* to *Woodwardia*) of the best garden ferns for beginner and expert alike, with common names given and lots of helpful habitat and growing hints spread generously. The courtship of the reader continues with a practical Chapter on “Growing and Propagating” that deals efficiently with such need-to-know basics as winter care, pests, diseases, asexual propagation by division and bulbil rooting (leading to clones), and sexual reproduction through spore sowing (the source of attractive variants [cultivars] that arise through merger of egg and sperm).

Wooing of the reader is completed in an extremely useful addendum section that includes lists of nurseries (U.S. and Europe) where responsibly propagated ferns can be bought, botanical gardens around the world where fern collections can be seen, websites, books, and organizations devoted to information about ferns, and a table of hardiness zones essential for choosing species that will survive the temperature extremes where you live. All good things end, and this book does so with a comprehensive index and brief biographies of its two authors - Richie Steffen (curator of the E.C. Miller Botanical Garden Seattle) and Sue Olsen (owner of Foliage Gardens nursery, founding member of the Hardy Fern Foundation, and editor of the HFF Quarterly). Despite the wealth of written and pictorial material in The Plant Lover’s Guide to FERNS, the book is quite portable, its information is logically arranged, and every gardener or plant lover will want to keep it always at hand.

There is more about ferns than the scope and space limitations of this lovely book could or should accommodate (hybridization, chromosome levels, alternation of two independent life cycle generations, apogamy et al.), but which are key to understanding the evolution and diversity of this dynamic group of plants – 10,000 plus species worldwide. The interested reader will be inspired to reach “For More Information” recommendations on page 236. Finally, as an avid gardener, I’ll quibble just a bit with the description of American hart’s tongue fern on page 91 as “extremely difficult to cultivate.” In my Pittsburgh limestone cobble, the tetraploid American plants (spore grown from Ontario, Canada) are more vigorous and hardy than many of the diploid varieties of British origin I have acquired over the years.

Steffen and Olsen have produced a lush, user-friendly book, replete with obvious expertise and a shared love for their subject. Now that you have flirted with their work and are “hooked” (don’t say I didn’t warn you!) it may soon be time to start your own fern garden where you can fondle the fronds to your heart’s content.

## Celebrate *The Plant Lover’s Guide to Ferns*

**May 21 @ 6:00 pm - 8:00 pm - \$15.00**

Celebrate the new fern guide, *The Plant Lover’s Guide to Ferns*, by Richie Steffen & Sue Olsen. Join Richie and Sue for a walk through the signature bed of ferns at the Washington Park Arboretum, learn about the exiting world of ferns from Richie’s lecture and celebrate the launch of their new book on ferns.

Books will be \$20.00 at the event. Proceeds benefit Hardy Fern Foundation and the Northwest Horticultural Society.

## Ferns in the Rock Garden

Excerpt from *The Plant Lover’s Guide to Ferns*

Ferns may not be the first plant you think of for the rock garden, but there are several species of alpine and xeric (dry land) ferns that will thrive in these conditions. There are also many dwarf and compact cultivars of common garden species that are easy to grow and widely available. If you are just starting to experiment with ferns in the rock garden dwarf and compact cultivars are a great place to start. Many of these will grow in typical garden soils and not require extra attention to their watering needs. The compact and upright habit of *Dryopteris affinis* ‘Crispa Gracilis’, dwarf golden-scale fern, and *Polystichum setiferum* ‘Congestum Cristatum’, crested compact soft-shield fern, are charming, tough, evergreen and will tolerate some sun, but one of the most delightful rock garden ferns is deciduous *Adiantum aleuticum* ‘Subpumilum’, dwarf Western maidenhair. In bright light it will only reach a few inches tall with miniature palm-like fronds. For shady rockeries try *Asplenium scolopendrium* (Cristata Group), crested Hart’s tongue fern, or the shiny foliated *Cyrtomium falcatum* ‘Maritimum’, mini holly fern.

True alpine ferns are one of the most challenging groups to grow, but one of the most rewarding giving a gardener confidence in their cultivating skills. A trip to the mountains will show a wealth for ferns thriving in rocky thin soil. These hardy plants are not typically found in the full blazing sun, but find their hold between the shelter of rocks and boulders or on the shady side of shrubs or trees protected from the sun’s strongest rays. The cool mountain air and cool soil temperatures aid in these species tolerance for withstanding high light levels. Recreating this scene in a lowland garden can be quite challenging and requires thoughtful site selection and proper soil preparation for success.

Alpine ferns require bright light levels with no hot sun, an open well drained soil along

with a steady supply of moisture and a cool root run. The shady side of a house is an ideal location for a fern friendly rock garden if it does not have additional tree cover. Alpines can also be worked into existing rock gardens by using rocks and shrubs to protect the delicate fronds from hot afternoon sun. The open shady side of a house will provide bright open sun all day with little to no direct sunlight. Morning sun positions should provide shade by noon. Soil preparation is as important as the exposure. Alpine ferns grow with very good drainage from coarse rocky soils allowing air to reach the roots. Coarse organic matter among the gravelly soils helps hold moisture and nutrients. Snow melt often provides a steady supply of moisture throughout most of the growing season. Replicating this may seem daunting, but is not difficult. Once the location has been selected the area can be built up with stones and a good alpine soil mix. There are many alpine and rock garden soils mixes for gardeners to choose. Local enthusiasts can help in selecting the right mix and a little trial and error will help refine the process. Keep organic matter to a minimum, no more than 10 to 20 percent of the soil mix. As compost breaks down it will become fine particles that clog air space. Any organic matter incorporated should be coarse. Composted bark or compost with the fine particles shifted out give the best results. Generously use materials that support good drainage such as very coarse sand, grit, pumice and fine gravel. These coarse materials can make up 50 to 90 percent of the soil mix, depending on your conditions.

Fortunately, there are some easy alpine species to try. One of the most satisfying is the evergreen *Asplenium trichomanes*, maidenhair spleenwort. Native to mountains around the Northern Hemisphere it will tolerate a wide variety of situations and if it is truly happy will populate the crevices with its offspring. Similar in appearance and in ease to cultivate is *Woodsia polystichoides*, holly fern woodsia. A choice deciduous fern, the bright green fronds are among the first to emerge in late winter to early spring heralding the change of seasons. Spreading ferns are often too rampant and soon outgrow rock gardens. Long runners and brittle roots can be quite difficult to completely remove without dismantling the entire garden. One of the few creeping ferns that should be considered would be *Blechnum penna-marina*, little hard fern. This slow and low spreader is easy to control with bronzy new growth brightest with some sun. As confidence grows more difficult species can be attempted and with a little luck enjoyed for years to come.

Regions with hot and humid summers and warm night temperature will find alpine species difficult if not impossible to please. This does not mean there are not interesting and choice plants for the rock garden. Hotter areas should look to xeric or dry land species. Many of these will thrive in warmer conditions and have the similar compact growth habits of the alpines. As an added feature many xerics have exceptional foliage with hairy scales giving a fuzzy appearance to the frond or waxy leathery leaves with a beautiful blue or gray cast. The Southwestern United States and Northern Mexico have the highest diversity of xeric species, but dry land ferns can be found throughout the world. Like most alpines, xeric ferns grow best with an even water supply during the growing season. Although, they will tolerate considerable periods of drought, regular water and fertilizer will make for a fuller and more vigorous plant. These ferns need excellent drainage, much like alpines, and similar soil mixes used for alpine ferns will generally suffice. Excessive winter wetness can kill xeric ferns. Mulching with an inch or so of gravel or by tucking the fern against a large rock with the roots under the rock

will help keep the roots cool and the moisture even during the growing season as well as protect from excessive wetness while the fern is dormant. Try planting under roof eaves out of reach of regular rains. Some species, particularly from the Southwest and Mexico have a summer dormancy. These should be allowed to dry out and not receive regular watering during this dormant period.

Start with a few of the easier to grow species. *Cheilanthes*, a genus synonymous with xeric ferns, offers two very easy choices for mild winter regions, *Cheilanthes tomentosa*, woolly lip fern, with soft fuzzy gray-green fronds and the tiny *Cheilanthes distans*, bristly lip fern, with short dark green narrow fronds that stand straight up. Both of these dry land ferns will slowly form a small patch. The thin silvery fronds of *Astrolepis sinuata*, wavy cloak fern, make a compact and beautiful clump with an elegant upright habit and is an easier xeric to please. Gardeners from regions with colder winters could try *Cheilanthes lanosa*, hairy lip fern, a choice and hardy slow spreader with fuzzy scales a bit more green than gray. Those up to a challenge should try *Pellaea atropurpurea*, purple-stemmed cliffbrake. It is very hardy, with steely blue-green leaflets and dark purple wiry stems.

Many of these unusual specialty ferns are not widely available. Although, it is tempting to collect a small division of a fern in the wild this cannot be condoned. Most alpine and xeric ferns grow extremely slowly in the wild and often live in a tenuous balance with the environment. Disruption, no matter how small, can cause a species to decline in the wild and rarely do they survive in the garden. (see photo page 38)

## **Delaware Valley Fern Society wins Gold Medal for Plant Societies at the 2015 Philadelphia Flower Show**

The Delaware Valley Fern and Wildflower Society has had an exhibit at the Philadelphia Flower Show every year since 1976. The Flower Show is sponsored by the Pennsylvania Horticultural Society and always occurs in early March. This year the theme was “Light, Camera, Bloom” centering around the idea of theater or movies. Since ferns don’t flower we couldn’t adhere to the theme of “Bloom” so we chose an exhibit of an Art Deco Movie theater overrun with native ferns. The horticultural concept was to illustrate the beauty of native ferns in an uncommon setting. Visitors would gain a new appreciation for native ferns and it would encourage them to make greater use of native plants in their gardens and homes. The movie shown playing on the marquee was “The Natives are Restless” with Sally Frond and Rip Pteris as the leads. There was an element of humor in the exhibit which visitors seemed to appreciate. Coming soon was “On Golden Frond” with Katherine Hepfern, Henry Fronda and Jane Fronda. We won the Gold Medal for Plant Societies. A note of appreciation from Tom Tomer, chair of the flower show committee to the committee: (see photo page 39)

“It was ferntastic. You all done good”. Jack Schieber, - Holland, PA

# THE HARDY FERN FOUNDATION QUARTERLY



*The Hardy Fern  
Foundation Quarterly*  
is published quarterly  
by the

**Hardy Fern Foundation**  
**P.O. Box 3797**  
**Federal Way, WA**  
**98063-3797**

Articles, photos, fern and  
gardening questions,  
letters to the editor, and  
other contributions are  
welcomed!

*Please send your  
submissions to:*

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