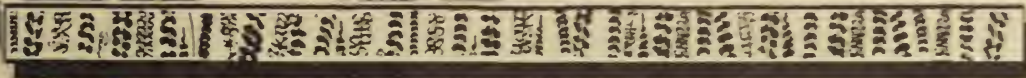




# Hardy Fern Foundation Quarterly



## **THE HARDY FERN FOUNDATION**

P.O. Box 166

Medina, WA 98039-0166

[hffmembership@juno.com](mailto:hffmembership@juno.com)

Web site

[darkwing.uoregon.edu/~sueman/](http://darkwing.uoregon.edu/~sueman/)

**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.

Satellite fern gardens are at the Stephen Austin Arboretum, Nacogdoches, Texas, Birmingham Botanical Gardens, Birmingham, Alabama, California State University at Sacramento, Sacramento, California, Dallas Arboretum, Dallas, Texas, Denver Botanic Gardens, Denver, Colorado, Georgeson Botanical Garden, University of Alaska, Fairbanks, Alaska, Harry P. Leu Garden, Orlando, Florida, Coastal Maine Botanical Garden, Wiscasset, Maine, Inniswood Metro Gardens, Columbus, Ohio, New York Botanical Garden, Bronx, New York, and Strybing Arboretum, San Francisco, California.

The fern display gardens are at Lakewold, Tacoma, Washington, Les Jardins de Metis, Quebec, Canada, University of Northern Colorado, Greeley, Colorado, and Whitehall Historic Home and Garden, Louisville, KY.

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.

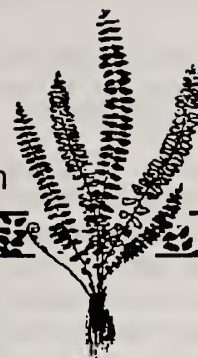
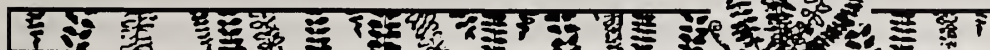
Cover Design by Willanna Bradner.

**HARDY FERN FOUNDATION QUARTERLY**

THE HARDY FERN FOUNDATION

# QUARTERLY

Volume 9 • No. 4 • Editor Sue Olsen



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## The Spore Exchange Needs You

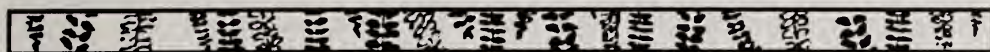
Please continue to send spores to:

Jeff Cross

121 Esplanade Ave.

L305

Kenner, LA 70065



## President's Message

The Hardy Fern Foundation met at the Bainbridge Island Public Library for its July 13<sup>th</sup> board meeting to take a look at its newest Display Garden and we were greatly impressed!

Usually Display Gardens are included as part of Botanical Gardens. This one is not. It occupies a narrow strip of land between the library parking lot and the backside of a Safeway grocery store. Both are in a small strip mall about a mile north of the Winslow ferry landing on Highway 305. Board member John van den Meerendonk took this unlikely bit of land and turned it into a thing of beauty. He had help. He first described his intentions to the HFF board and got their support and a pledge of ferns, then to the Library board and they signed a Display Garden agreement and he was on his way, designing the garden and organizing a volunteer work force from both the HFF board and the library board.

The garden is about 60 feet wide at its widest and somewhat over 300 feet long. It has a tree cover of mainly second growth Douglas fir and a screen of mixed shrubbery hiding the Safeway store. A path runs the length of the garden and a water feature, a small stream, follows the path for about a hundred feet. Many of the ferns have been planted accompanied by appropriate signing. There will also be a sign recognizing the HFF and a memorial to Thomas Gillies, an early and significant benefactor to the HFF as well as a librarian himself. This may give you a brief understanding of what is going on at the Bainbridge Island Library Fern Display Garden. John will give you a more complete description of his work in a later Quarterly.

Although different, this is a significant location for a fern display garden. Bainbridge Island is a familiar place for many of us, particularly those members who live there, but for those less acquainted, let me continue. It is rather a large island, 10 miles long and about 4 miles wide, located about 7 miles due west across Elliot Bay from Seattle. It is reached by ferry from Seattle, but it is connected to the main land at its northern end with a bridge. With the ferry and the bridge it is an important highway link to the Olympic Peninsula.

At the turn of the century it was a lumbering center with square-rigged ships crowding its harbors loading lumber for the rest of the world. When the trees and the mills and the ships were gone there remained two distinct populations, the merchant folks along with the berry farmers year around and the summer folks with their vacation cottages lining the beaches. Now the Island population is changing again, the summer folks are becoming permanent residents, replacing their little beach cottages with substantial homes and the berry farms are filling with tract houses. Bainbridge Island has now incorporated into a city and the new Display Garden is right in the middle of it - to say nothing of the fact that the world famous Bloedel Reserve Estate Garden is an island neighbor just down the road.

We applaud John for his vision, his expertise, and generosity, (this is one of many things he has done to benefit the HFF), and we are grateful to his crew of volunteers and the others who helped him put his vision into reality.

Most sincerely,

John Putnam

## Book Review

by Alan R. Smith, University Herbarium,  
Univ. California, Berkeley, CA 94720-2465

**Ferns of the tropics**, by Wee Yeow Chin. 190 pp. Timber Press, Portland, Oregon. ISBN 0-88192-458-X. Hardbound. \$34.95.

The title of this book is very misleading. Altogether, 77 species of ferns and fern allies are illustrated, using color photographs, but all 77 are native or introduced to southeast Asia, particularly Malaysia, where the author lives. Two introduced tropical American species are also pictured, *Adiantum latifolium* and the ubiquitous *Pityrogramma calomelanos*. The quality of the photographs varies, some are quite good, others merely average, still others substandard — lacking clarity, focus, and with rather harsh flash reflection, e.g., *Trichomanes* sp. (p. 132). Anyone who photographs ferns knows that they are often difficult subjects, so I'm reluctant to criticize this too severely. However, better photographic pot-pourri exist, such as *A world of ferns*, by J. M. Camus et al. (1991), and more comprehensive works of cultivated ferns also exist, e.g., *Encyclopaedia of ferns*, by D. L. Jones (1987).

The first half of the book provides an overview of fern biology, characteristics of ferns, the terminology used for describing the parts of the plant, common life cycle, a section on fern allies, fern folklore and economic uses, fern propagation, and a discussion of ferns habitats (in Malaysia). I found these topics generally well treated, factually accurate, and in a style that is readily understandable. Good to excellent color photographs, as well as a few line drawings complement the text. The discussion is sufficiently general and lucid that a New World or temperate fern lover can follow and learn.

These introductory chapters are followed by the second half of the book, the treatment of individual species, their major features, interesting aspects of their biology, and notes on cultivation. No authorities or keys are given, nor are there descriptions of genera and species, as might be found in a flora or manual. The names adopted for some of the 77 species are somewhat out-of-date, if recent authorities and monographers are to be trusted. For example, *Pyrosia floccigera* is now usually treated as a synonym of *P. albicans* (Blume) Ching and *Belvisia revoluta* is placed in synonymy under *B. spicata* (L.f.) Copel. I found a total of 13 species that are often or usually treated under other names in the most recent fern literature. Since no synonyms are given, it is not always possible to understand the various nomenclatorial machinations so familiar to fern specialists.

The book concludes with a two-page fern glossary, which is accurate and useful, a bibliography, which is very incomplete for the purpose and audience intended, and a list of fern societies. The bibliography omits reference to a number of still available works that might conceivably be quite useful to those interested in learning more about tropical Asian pteridophytes, including the following: *Ferns of Malaysia in colour*, by A. G. Piggott (1988); *Ferns and orchids of the Mariana Islands*, by L. Raulerson and A. F. Rinehart (1992); the luxurious *Ferns and fern allies of Japan*, ed. K. Iwatsuki (1992); *Common ferns of the Philippines*, by M. L.

*continued on page 76*

## Imposing Plans of a Botanical Garden in the Czech Republic

Roman Pavela and Vendula Peskova

*We welcome Roman Pavela, fellow fern enthusiast, of the Czech Republic as a new member. With his membership subscription he enclosed the following article regarding the Botanic Garden in Plzeň, where he is curator. We thank him for this interesting contribution and look forward to exchanging information in the future as well. We gratefully share this in his words.... Ed.*

In the Europe's heart, how is usually Czech Republic called, several botanical gardens occur. One of these is situated in Plzeň (Pilsen), in the town, famous for the reader rather by production of the world-known brand beer than by the botanical garden. Regardless for all, this town's botanical and zoological gardens have a rich history, developing presence and imposing future. And because one of the activities involves ferns, we would like to introduce them to you much closer.

First something from the history. The Botanical Garden of the town Plzeň arose from the original Kodet's garden, which represented standard architecture of the twenties of the 20<sup>th</sup> century. The garden was originally situated on an acreage of 2,5 ha (6.1777 acres). Here a dendrological section with more than 400 sorts and cultivars of woody species, rose garden, perennials, bulbous species, rock garden plants has been concentrated.

The botanical garden was united with the neighboring zoological garden in one unit in 1981. Although both gardens were under the same management, they did not affect each other yet. After a glasshouse for collections of succulents from Africa, Madagascar and the Canary Islands was built, an idea to organize joint zoological-botanical expositions took place, fully different from those, which had been used in botanical gardens so far. New exposition includes not only plants but keen visitors can also spot typical representatives of the animal kingdom from the appropriate regions.

Based on this conception, a paper was worked out in 1997, resolving the future expansion of the garden in a spatial arrangement, of the zoo-botanical expositions due to zoogeographical definitions. Thus vision of a future biopark has originated, where 24 ha (59.304 acres) will be expositions, representing illusions of typical biotypes of six zoogeographical regions. To fill ecologically-educational functions of the garden, a sightseeing tour with an educational system using surface graphics and showcases, containing documental products of nature was designed in the project. These will help to present recent ecological relations in the regional and global scale in the background of the geological events of evolution and organism dissemination.

Botanical exposition was founded in 1993. It contains European xeric plant communities, garden sceneries next to the African paddock for African savannah illusion, and by chimpanzees, a new illusion of primaeval forest originated, with collection of shade-tolerant plants.

Creation of an educational path, named, "Nature development during the Quaternary", began in 1997. This educational route should show the development of nature in subarctic regions since the end of the Tertiary till the present, covering also botany, zoology, geology and paleontology. Botanical expositions, simulating plant communities from interglacial periods, relics of the Tertiary thermophilic plant kingdom and glacial periods (tundra, taiga, and cold steppe) which occurred on the Central European territory in the early Quaternary period, are the first part of this project. The second part of this educational path was opened in 1998. Its dominant feature is the second largest bear enclosure in Europe for seven bears but also a botanical exposition of the forest development and anthropological exposition of human development. Exposition of forest development is designed by means of the appearance of individual woody plants in separate phases of the Holocene period. Visitors are able to inspect frequent plants of our forest occurring within the plant communities of relict acidophilic and lime-tolerant pinewood, pinewood and oxyphilic oak groves and in the community of the scree forest.

Origin of the recent zoogeographical regions -oriental and Ethiopian- should be demonstrated in the future according to the developmental events. Expositions will comprise geological relations of the geographical changes of the continent locations with consequences of the climate and floristic regions development together with mammal development and migration.

Botanical expositions are prepared for their opening just now - European plant communities of solonchaks, blown sands, calciphilous meadows and limestone rock and Patagonic neotropical zoogeographical region expositions with dominant Humboldt and alpine communities of New Zealand and Australian region.

At the same time, a gene pool pteridophytes project is in progress. A fern collection is to be planted within the botanical expositions. This collection, which is under construction in collaboration with members of the Hardy Fern Foundation, should comprise representatives of the Euro-Asian and North American flora.

Individual sorts of ferns will be incorporated into artificially produced plant communities in such a way as to make an environment for their development, which would as near as possible make no difference to their natural habitat.

The aim of this project is to concentrate the fern collection in a relatively small area, which will serve purely for diversity preservation and partly as a source of material for research purposes which we would like to pursue.

The collection contains some 100 sorts of European plants, gained by collection of one's own, by exchange between the botanical gardens and by presents from the members of the fern societies. Plants will be constantly propagated and replenished depending on our possibilities to make the collections "complete" in the shortest time.

This is only a small part of our plans. We would like to contribute to preservation and development of the world diversity and simultaneously to get the public acquainted with the garden as one great biopark, organized in accordance with the zoogeographical region.

## Fern Foray to the Shawnee Hills of Southern Illinois

W. Carl Taylor – Dept. of Botany, Milwaukee Public Museum, Milwaukee, WI 53233  
Donald R. Farrar - Dept. of Botany, Iowa State University, Ames, IA 50011

In conjunction with the XVI Botanical Congress held 1-7 August 1999 in St. Louis, the American Fern Society sponsored a post-Congress fern foray to the Shawnee Hills of southern Illinois, 8-11 August 1999.

Shortly after 8:00 AM on Sunday 8 August, fourteen of us left the America's Center in downtown St. Louis on a small bus headed south along the Mississippi River in Illinois. At a restaurant in Chester, Illinois we met with seven more forayers and twenty-one of us headed for our first stop at Rock Castle Creek.

Rock Castle Creek is located in southern Randolph Co., a few miles south of Steeleville. Mr. Glenn Miller, part owner and custodian of the site, kindly gave us permission to visit the area. Rock Castle Creek has cut a 20-30 foot gorge through the Pennsylvanian sandstone rocks. In the surrounding oak-hickory woods above the creek, we saw plants of *Asplenium platyneuron*, *Botrychium virginianum*, its sporangia-bearing fertile segment now shriveled, having released its spores in May and June, and *Polystichum acrostichoides*, *Woodsia obtusa* subsp. *obtusa*, the eastern, tetraploid cytotype. These four species are probably the most commonly encountered ferns in southern Illinois. Near the creek we found a nice patch of *Equisetum hyemale*, with ashen sheaths about as long as wide and a few plants of *Athyrium filix-femina* var. *asplenioides* with its blades broadest just above the base and *Botrychium dissectum* var. *obliquum* which was just coming up. On rock exposures above the gorge, we saw several clumps of *Cheilanthes lanosa* with its deep green, hairy fronds and dark brown stipe and rachis. On the shaded, nearly vertical rock outcrops along the creek, we found *Asplenium trichomanes*, *Dryopteris marginalis* with its bluish-green, leathery, nearly rubbery pinnate-pinnatifid to bipinnate fronds, and *Polypodium virginianum* with its narrowly oblong pinnatifid blade with rounded segments. The sori were yellowish orange and the spores were ripe. When we examined the sori with hand lenses we could see the apices of the sporangifers looking like little mittens scattered in the sori. The Rock Polypody is the allotetraploid derivative of the diploid parents *P. appalachianum* and *P. sibiricum*, neither of which occur in southern Illinois. Scattered on the cliffs we found the real prize of Rock Castle Creek, Bradley's Spleenwort, its reddish brown stipes and grayish green pinnate fronds inconspicuously rooted in the rock crevices (Fig. 1). It is a rare fern in Illinois. *Asplenium bradleyi* is the allotetraploid derivative of *A. montanum* and *A. platyneuron*. *Asplenium bradleyi* ranges from New York to Oklahoma. In the Appalachians, where it occurs with both its parents, it is a fairly rare fern, but in the Ozarks, where *A. montanum* is absent, *A. bradleyi* is most frequent.

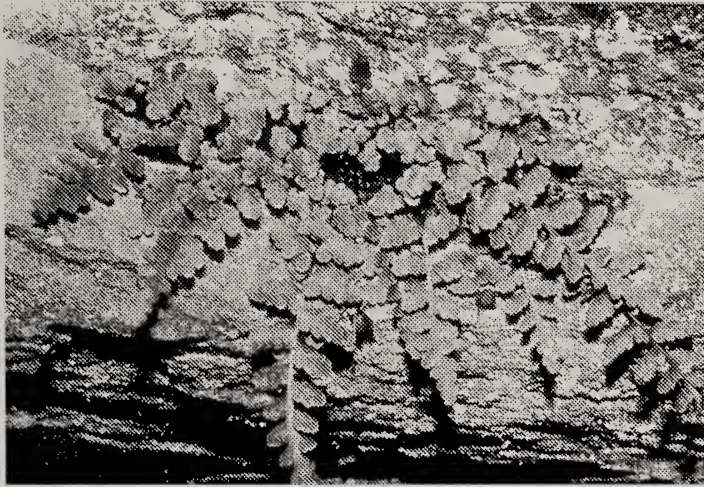


Fig. 1. *Asplenium bradleyi*, Rock Castle Creek

walls of sandstone nearly one hundred and fifty feet high. We approached the canyon on a path that descended through upland woods. From the path we spied *Adiantum pedatum*, *Phegopteris hexagonoptera*, having a narrow, but completely winged rachis, and *Cystopteris protrusa*, with its rhizome extending several inches past its current season's fronds. We entered the canyon through a slippery side canyon trail. The walls of the moist side canyon were covered with plants of *Athyrium filix-femina* ranging from tiny sporelings to large, sporiferous plants. Small plants of the Lady Fern are easily mistaken for *Cystopteris fragilis*, *Dryopteris carthusiana*, or *D. intermedia*, none of which occur here. Upon reaching the floor of the canyon, we were greeted by an especially beautiful plant of *Asplenium pinnatifidum* showcased just above us on a northeast facing sandstone wall. The Pinnatifid Spleenwort is the allotetraploid derivative of *Asplenium montanum* and *A. rhizophyllum*. A few yards further down the canyon wall Don Farrar located dark green fuzzy, feltlike patches of *Trichomanes intricatum*, the independent gametophyte, in small deep pockets in the sandstone. Gametophytes of *Trichomanes intricatum* occur throughout the uplands in eastern North America, but the sporophyte has never been found. Still further down the canyon we saw *Asplenium rhizophyllum*, *A. trichomanes*, *Polypodium virginianum*, and *Cystopteris tennesseensis*, the allotetraploid derivative of *C. bulbifera* and *C. protrusa*. In the rich bottomland forest of the canyon floor, we found patches of *Athyrium filix-femina*, *Deparia acrostichoides*, and *Diplazium pycnocarpon*, which used to all be in the genus *Athyrium*, and some nice plants of *Botrychium biternatum*, each with characteristically long terminal pinnules on its sterile segment.

Monday morning, 9 August, we headed to the La Rue Pine Hills National Landmark along the Mississippi River. The rocks exposed in the bluffs here are chert and limestone, the overlying sandstone having been eroded away. Crevices in the yellow colored chert outcrops near the top of the bluffs contained *Asplenium pinnatifidum*, *A. rhizophyllum*, *A. platyneuron*, *A. trichomanes*, *Cheilanthes feei*,

*continued on page 68*

## Fern Foray continued from pg. 67

with its wiry stipes and fuzzy blades, and *C. lanosa*. Unfortunately, we were unable to find any *Asplenium* hybrids. Floating on the water in the swamps at the base of the bluffs we found *Azolla mexicana*. On a limestone talus slope about a mile down the road we stopped to examine a beautiful colony of *Cystopteris bulbifera*. Its long attenuated fronds were crisscrossed and draped over the talus. Many of the fronds were loaded with bulblets and we found that a number of the young plants in the colony were growing from previously shed bulblets.

Our afternoon stop was a few miles to the north along the Mississippi near the town of Grand Tower. Here, at the river's edge, are isolated "towers" of limestone that the Mississippi has sliced off eastern Missouri. On Devil's Backbone, a spine of these "towers" we found limestone-loving plants of *Asplenium resiliens*, *Pellaea atropurpurea*, and *Cheilanthes feei*. Before heading back to Carbondale, we beheld the awesome "Mighty Mississippi" from another isolated rock known as Devil's Bake Oven. That evening Don gave us an interesting presentation on the nature of canyon microhabitats in preparation for the next day's excursion into Jackson Hollow and the unique habitat of the filmy fern, *Trichomanes boschianum*.

Tuesday morning, 10 August, we traveled to Jackson Hollow in Pope County. Before entering the hollow, we spent a few minutes exploring a flat sandstone exposure above the hollow. Thin soil pockets on the sandstone exposure supported nice colonies of *Cheilanthes lanosa* and robust plants of *Asplenium platyneuron* and *Woodsia obtusa*. Entering Jackson Hollow, we were impressed by large sandstone cliffs that increased in size as we ventured further into the hollow. These cliffs and the adjacent mesic woods harbored beautiful displays of *Athyrium filix-femina*, *Dryopteris marginalis*, and *Polystichum acrostichoides*. On several shaded blocks of sandstone we found areas where the now familiar fuzzy mounds of *Trichomanes intricatum* dotted the rocks. Further down the path on one moist cliff we found



Fig. 2. Rockhouse, Jackson Hollow

about a half-dozen patches of *Woodwardia areolata* scattered in pockets on the cliff face and even fringing the bluff top high above. There were scores of

plants, but we had to search for a minute to locate the contracted fertile fronds. *Woodwardia areolata* was first reported in Illinois in 1968 and it appears to be adapting well to more northern sites in the Midwest. A few hundred feet further on we rounded a turn in the trail and were greeted by a huge sandstone cliff that was undercut about forty feet at its base to form a roof for what is called a rockhouse (Fig. 2). One could crawl back into the rockhouse, where the sloping ceiling and floor met, and find a cool, moist, dimly lit seam packed with *Trichomanes boschianum*. The delicate, membranous, lacy fronds were exciting to see and we wedged ourselves tightly into the site for a closer view of this filmy fern (Fig. 3).



Fig.3. *Trichomanes boschianum*, Jackson Hollow

Most filmy ferns occur in the tropics where it never freezes. Studies have shown that deep in these sheltering rockhouses, temperatures are cool in summer and

seldom freeze in winter, but there is little light for photosynthesis. However, filmy ferns have nearly transparent leaves only one or two cells thick. Light passes right through them. Even dim light can penetrate the leaves for photosynthesis and so these plants are adapted to growing in very low light where other plants cannot survive.

Our afternoon stop was at Bell Smith Springs, another spectacular canyon eroded into the sandstone. Near the picnic grounds, where we had lunch, we admired *Osmunda regalis* lining seepy ridges above a shady pool along Hunting Branch Creek. From here we hiked into the canyon and saw many species that were now familiar to us. These included *Asplenium pinnatifidum*, *Botrychium biternatum*, *Cystopteris protrusa*, *Trichomanes intricatum* and *Phegopteris hexagonoptera*. Our climbs into and out of the canyon by a rock stairs took us to a beautiful tree top overlook of Bay Creek Canyon, one of the deepest canyons at Bell Smith Springs. When we reached the top of the stairs we were hot, tired, and ready to call it a day.

That evening, Don Farrar gave us an overview of the geological history of southern Illinois and how past geologic events accounted for the kinds of rock exposures and habitats we had seen. He also explained how it and more recent activities of man that caused erosive downcutting by stream channels, have created the peculiar habitat we would view on Wednesday; a bald cypress swamp perched fifteen feet above the adjacent Cache River.

*continued on page 70*

## Fern Foray continued from pg. 69

Wednesday morning, 11 August, on our way to Heron Pond Nature Preserve we stopped to see one of the oldest trees in eastern North America, a thousand-year-old Bald Cypress tree forty feet in circumference. The center of the day's activities was Heron Pond, a beautiful cypress swamp. We took a boardwalk into the swamp where we could see the stately gray-brown trunks of Bald Cypress contrasting with the emerald green duckweed that blanketed the water. This seemed like a good spot for a group photo (Fig. 4). Tracy Evans, Ecosystem Interpreter from the Illinois Department of Natural Resources, explained the area's history and current conservation programs. After years of destructive practices, the good news is that the Cache River Valley is now under a broad cooperative state and private partnership program to restore the original swamp and bottomland habitat. In a moment of silence, we could hear only the sounds of nature, the peep of a bird, croak of a frog, and splash of a fish. These sounds of silence are all too rare in today's world.

Several fern surprises awaited us as we hiked around Heron Pond. After adding the expected *Onoclea sensibilis* to our list, we were surprised to find *Ophioglossum vulgatum* near the edge of the swamp. Drier woods along the trail held now familiar old friends such as *Phegopteris hexagonoptera*, *Cystopteris protrusa*, *Diplazium pycnocarpon*, *Asplenium platyneuron*, *Botrychium biternatum*, *B. virginianum*, *Athyrium filix-femina*, *Adiantum pedatum*, and *Polystichum acrostichoides*.



**Fig. 4.** 1999 AFS Forayers: Back Row (standing, L to R) Dan Palmer, Noriaki Murakami, Ken Wilson, Walter Hesson, Jim Parks, Tim Kessenich, Sue Hollis, Jennie Greeson, Barbara Joe Hoshizaki, Barbara Parris, Carl Taylor; Front Row (kneeling or seated, L to R) Burkhard Wilske, Don Farrar, Nabuo Hamada, Hiromi Miyawaki, Carolyn Hesson, Wen-Liang Chiou, Vincent Demoulin Cynthia Dassler, Tracy Evans, Lisa George

We took a trail to champion-size Cherrybark Oak and on our return we had a big, big surprise. Right along the return path, Sue Hollis asked, "What's that?" pointing to a large light green fern with glaucous stipes and elongate triangular, dissected blades. Several of our participants with expertise in Old World pteridophytes knew the plant immediately. It was *Macrothelypteris torresiana*! This species is native to tropical and subtropical Asia and Africa and was first collected in Florida in 1904. It has since spread through the Gulf Coast and up the lower Mississippi River Valley. Our discovery marked an occurrence outside the Gulf Coast and an extension of its range roughly 200 miles north. Significantly, this plant was large enough that it had obviously over-wintered and had produced several smaller offspring. After much discussion, it was decided to collect all of the plants and create two herbarium voucher specimens, knowing that this aggressive, weedy invader could eventually colonize the area and that per-



Fig. 5. Tracy Evans & Cynthia Dassler with *Dryopteris celsa*, Low bluff above Cache River near Heron Pond

haps we had a fortuitous opportunity to slow its pace.

After lunch we set off on our last adventure of the foray. Foray participants Cynthia Dassler, of the Illinois Natural History Survey, and Tracy Evans had set this adventure in motion. They had discovered that nearly thirty years ago, several individuals had reported

*Dryopteris celsa*, the allotetraploid derivative of *D. goldiana* and *D. ludoviciana*, near Heron Pond, but no herbarium voucher specimens had been found. Following the best recollections of those who had first seen this species, we followed a route along the Cache River to where the river borders a wooded ridge. Peering into and scanning across the low, deeply shaded slope of the ridge, we were stunned to see almost immediately several strikingly large fronds. In an instant we approached these fronds in an excited trot. Yes! It was *Dryopteris celsa* growing among a jumble of sandstone boulders (Fig. 5). We had rediscovered this very rare Log Fern, *Dryopteris celsa* in Illinois. We collected and pressed two fronds to serve as voucher specimens.

Anticlimactically, in this same area, but on boulders below the ridge, we added our last new species, *Pleopeltis polypodioides*, bringing our trip totals to 35 species in 23 genera.

*continued on page 73*

## *Pellaea atropurpurea* Purple Cliff-brake

James R. Horrocks - Salt Lake City, Utah



*Pellaea atropurpurea*

The genus name *Pellaea* is derived from a Greek word meaning "dusky", while "atropurpurea" means literally "dark purple", although some insist the color is more of a blue than purple. This difference of opinion may be due to variance among specimens. The frond color is a bluish-green. This species is often referred to as Purple Cliff-brake, Hairy Cliff-brake, Blue Cliff-brake, and Winter brake. The meaning of the word "brake" has been lost in time. This species is found in much of eastern North America, from Canada to Florida, and occurs westward to the Rocky Mountains and southward into Mexico. It is most often found growing in limestone crevices and is epipetric on limestone ledges. Rarely is it found growing in open ground. It also occasionally frequents sandstone and shale and even granite, where the soil is rather acidic. Purple Cliff-brake is an apogamous triploid and, according to Lellinger, is the hybrid cross between the tetraploid *P. glabella* and

the diploid *P. ternifolia*. It also in turn hybridizes with *P. occidentalis* to form the rare *P. suksdorfiana*. It is slow to awaken in spring and produces a sparse number of fronds at first, adding more as the season progresses. This species could be confused with other members of this genus although it is much larger than, for example, *P. glabella* or *P. brewerii*.

**Description:** The rhizome is short and creeping with bright brown hairy scales. The fronds are from four to as much as twenty-four inches long, rather leathery in texture, and once-pinnate near the top, but twice-pinnate below. The stem is dark purplish-brown to black, with a hint of blue in some specimens. The pinnae are a greyish-green to a pale bluish-green. The sterile fronds sport pinnae that are more rounded to elliptical and that tend to be more evergreen. The fertile fronds, being much taller, are far more elongated and sometimes hastate (halberd-shaped). The sporangia develop as roundish or oblong clusters under the rolled back margins of the pinnae and pinnules.

**Culture:** Purple Cliff-brake can tolerate some sun if native conditions can be simulated. It should be grown where it can get good light and where there is good air circulation. It is probably best grown in pockets of limey soil in close proximity to limestone, but can be grown in neutral to somewhat acid soils, although it tends to be less vigorous. It is somewhat evergreen in milder climates but quite deciduous in very cold areas. It should be kept watered in the dry season. This species, being apogamous, is readily grown from spores and

because of the abundance of the spore culture can be experimented with in different areas of the garden. For something quite unusual, Purple Cliff-brake is worth a try.

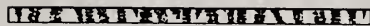
**References:**

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Field Book of Common Ferns (1949) Herbert Durand, G.P. Putnam's Sons, New York

Ferns to Know and Grow (1984) F. Gordon Foster, Timber Press, Portland



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**THE HARDY FERN FOUNDATION**  
**QUARTERLY**

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**Fern Foray to the Shawnee Hills of Southern Illinois**

continued from pg. 71

After returning to Carbondale, names and addresses of new friends were exchanged, good-byes were said, and we began to disperse in various directions. Some of us returned to St. Louis the next morning to catch planes for foreign lands and far away cities. Finally, nobody got snake bit or broke anything, some of us got souvenir chigger bites and poison ivy, and everybody got memories of the diversity and beauty of southern Illinois.

## Fern Diversity Preserved at Perry Creek

A.R. Kruckeberg - Prof. Emeritus, Botany, University of Washington

Fern aficionados have come from many places worldwide to view the abundant fern diversity in this exceptional ecosystem. Perry Creek, located in the western, wetter Cascades of Washington State, now has been set aside as a Research Natural Area by the U.S. Forest Service. Research Natural Areas (RNA) within the Forest Service jurisdiction, offer maximum protection for some unique attribute of an ecological habitat: an old growth forest, a serpentine barren, or a rare species. As RNAs, the sites are preserved in perpetuity for their singular botanical attributes and are used for research and for their educational values. The Perry Creek RNA was signed into being on 10 July 1997 and will be protected as are other RNAs in the Mt. Baker-Snoqualmie National Forest (Franklin, et al. 1972).

The Perry Creek RNA came into being at a snail's pace. In the 1970s, I proposed to the Forest Service that special protection for the site was amply warranted – this, a veritable “Eldorado” of fern diversity, should be preserved. I had published an account of the habitat that could be used to support its preservation (Kruckeberg 1976). Only when Laura Potash, botanist for the Mt. Baker-Snoqualmie National Forest was assigned the task of preparing an Establishment Report, did progress toward RNA status begin. The report by Ms. Potash provided ample justification for setting aside the entire Perry Creek drainage as an RNA.

The original number of fern species and fern allies (26 in Kruckeberg 1976) has been upped to 30 (Potash 1996a, b). Notable among the thirty are *Asplenium trichomanes*, *A. viride*, *Polystichum andersonii* (and its hybrid with *P. munitum*, Wagner 1973). Further, Perry Creek is a veritable grape-fern devotee's paradise; at least six species of *Botrychium* are known from the area. This exceptional grape-fern diversity was first noted by Warren H. (“Herb”) Wagner and T.M.C. Taylor during forays concurrent with the 1969 International Botanical Congress in Seattle.

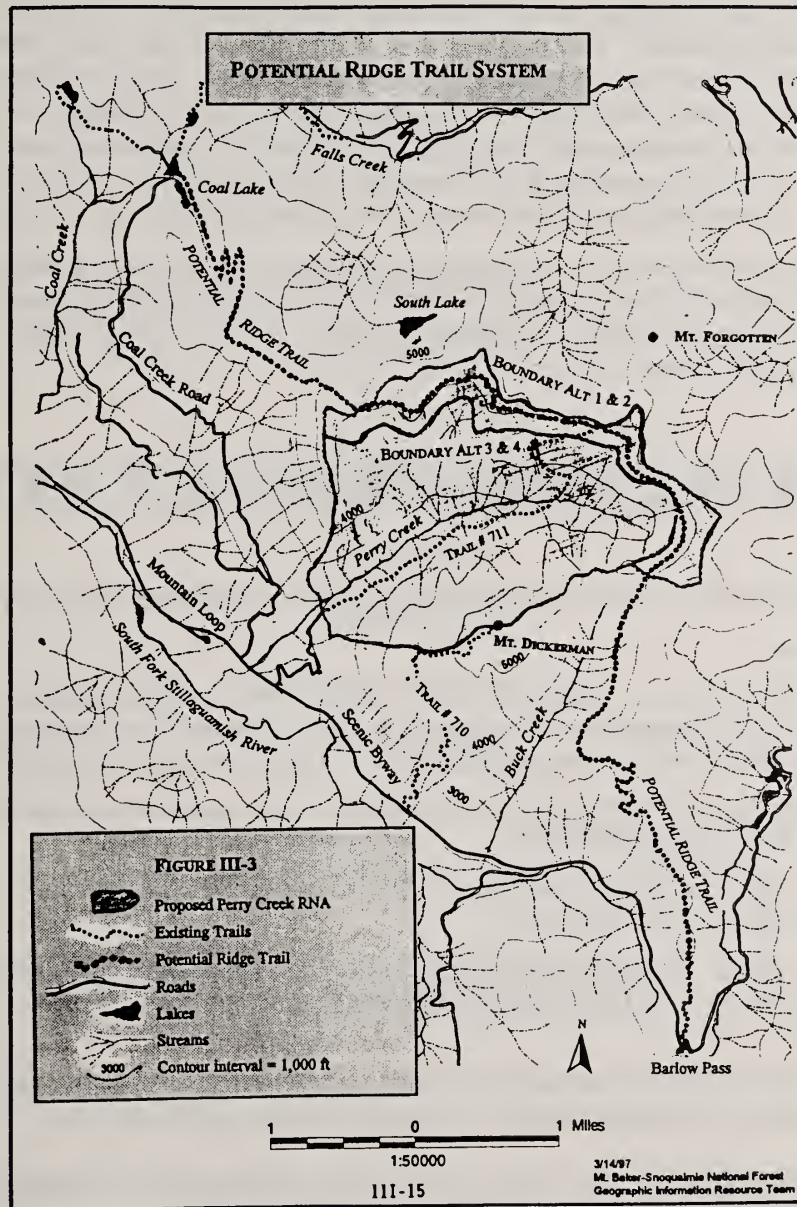
So, where is Perry Creek? It is in eastern Snohomish County, WA; from the map (Fig. 1) it is a tributary of the South Fork Stillaguamish River. Perry Creek is reached by a side road heading north from the Mountain Loop Highway, ca. 25 miles east of the town of Granite Falls. The unpaved access road terminates at the trail head. The trail soon enters a pristine habitat unique to the typical forested slopes of the western Cascades. In place of old-growth western red cedar – western hemlock forest, the dominant habitat type from just above the trail head all the way to Perry Creek Falls is a hardwood glade: open stands of three species of maple (big-leaf maple, vine maple and Douglas maple) amidst a wet moss-shrouded bouldery talus derived from high-above Mt. Dickerman. It is among the massive rocks of the talus that the ferns thrive.

Fortunately for fern-lovers the RNA does have a pre-existing trail access that will be maintained. Hikers need not venture off the trail to behold the area's rich flora. Disturbance of the habitat will be minimal; the often impenetrable vegetation (thimbleberry and salmon berry) as well as the formidable talus slopes will keep hikers on the trail.

After a lengthy review process involving several alternative boundaries, the Forest Service wisely chose the version that preserves the entire drainage (2348 acres) as an RNA (see map).

Protection of unique habitats has become an integral part of conservation efforts worldwide, in the latter years of the 20th century. Private (independent) organizations like The Nature Conservancy and Audubon Society have joined Federal agencies in such efforts. It is gratifying to have preserved a habitat rich in fern diversity. Perry Creek may be one of the very few fern habitats given such protection. We must see to it that other sites rich in ferns are given protection as natural area preserves.

*continued on page 76*



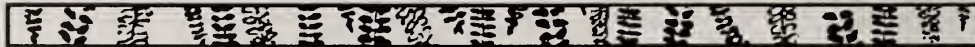
**Fig. 1.** Location of Perry Creek RNA. Boundary Alt 1 & 2, with maximum area chosen by Forest Service. Potential Ridge Trail System rejected for now. From Potash 1996b.

## Book Review by Alan R. Smith continued from pg. 63

So. (1994); and Hong Kong ferns, also by M. L. So. (1994). All of these are similar books intended especially for fern fanciers and growers (but also useful to professionals), and all have good color photographs of common Asian ferns. It is inexplicable why they are not mentioned in Dr. Wee's bibliography. There is also no mention of several popular books dealing with the growing of ferns, for example, Ferns for American gardens, by J. Mickel (1994); Ferns to know and grow, by F. G. Foster (1984), also published by Timber Press; and Fern grower's manual, by B. J. Hoshizaki (1975).

The list of fern societies, arranged by country, is badly out-of-date (except for a few of the larger ones) and not very useful, only one year after publication (and even when published). Yes, maybe most of the societies still exist, although some in the United States do not), but the contact persons, postal addresses, e-mail addresses, and web sites have changed in many cases. At least two individuals cited as contacts are deceased and had left us well before this book went to press. A more current list of fern societies can be found in a recent issue of Fiddlehead Forum [Bulletin of the American Fern Society] 26(2): 14—16. 1999.

Regretably, and unless you are in the habit of collecting everything related to ferns (afflicted with pteridomania, as I am), I cannot recommend this book, unless your particular interest is in Malaysian ferns and how to grow them. Even then, substitutes are available.



## Fern Diversity Preserved at Perry Creek continued from pg. 75

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*The complete text of "Perry Creek, Washington: Fern-watcher's Eldorado" by A.R. Kruckeberg will be published in the Winter Quarterly....ed.*

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