

Hardy Fern Foundation
Quarterly



Spring 2023

THE HARDY FERN FOUNDATION

P.O. Box 3797
Federal Way, WA 98063-3797
Web site: www.hardyferns.org

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;
Bartlett Arboretum & Gardens in Stamford, Connecticut;
Bellevue Botanical Garden, Bellevue, Washington;
Birmingham Botanical Gardens, Birmingham, Alabama;
Cornell Botanic Gardens, Ithaca, New York;
Dallas Arboretum, Dallas, Texas;
Denver Botanic Gardens, Denver, Colorado;
Dixon Gallery and Gardens, Memphis, Tennessee;
Ganna Walska Lotusland, Santa Barbara, California;
Georgia State University Perimeter College Native Plant Botanical Garden, Decatur, Georgia;
Heronswood, Kingston, Washington;
Inniswood Metro Gardens, Columbus, Ohio;
Lakewold, Lakewood, Washington;
Lewis Ginter Botanical Garden, Richmond, Virginia;
Powell Gardens, Kingsville, Missouri;
Rotary Gardens, Janesville, Wisconsin;
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

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President's Message

To the Hardy Fern Foundation Community:

Spring is upon us, so glorious to have longer days and sunshine ahead. This has been a busy and engaging period for the HFF.

We are organizing and hosting a variety of events this spring and summer. These include in-person workshops, classes, and tours, as well as online webinars.

In March, HFF held a fern cutback workshop and work party at the Stumpery in the Rhododendron Species Botanical Garden. Participants learned the specifics of cutting back various ferns, and made quick work of cutting back the area's ferns. A highlight (reward?) for our work was a visit to HFF's hoop house on the property, affording a fun look behind the scenes at the Rhody Garden. Soon after, a group of hard-working volunteers met at the Bellevue Botanical Garden for HFF's annual fern cutback work party. The gardens look great, and we were productive!

An upcoming event many of us are looking forward to is the 50th anniversary of the fern sales, to be held at Bellevue Botanical Garden this year. On June 3 and 4, HFF and our nursery partners will be offering plants galore, including hard-to-find ferns, some grown from spore by HFF, some larger-sized ferns, and a broad selection of companion plants from the participating nurseries.

On June 4, there will be a Fern Fest Garden Tour in Seattle's historic Mt. Baker neighborhood. A mix of garden styles will be on display, hosted by a passionate group of gardeners located within walking distance of each other. It will be a wonderful opportunity to see a large variety of plants in different contexts. This will be a ticketed event, with tickets sold at Fern Fest and in the neighborhood.

Other tours we have scheduled are a Snohomish Garden Tour on June 29, and a tour of Far Reaches Farm on July 12 (with an opportunity to buy plants). We expect that other classes will be scheduled in the coming weeks, all of which will be advertised on HFF's website and by e-mail.

All in all, there's much to look forward to, with many opportunities to learn and connect with old friends and new. Our appreciation to everyone who has helped or will help staff these events, making them possible and function smoothly. We are grateful.

Yours in garden love,

Bonnie Berk
HFF President

Thoughts on Spore Growing

Article by Julian Reed
Kent, England

Photos by Sue Olsen

Article inspired by questions by Kay Dye.

Kay a HFF member has been growing some ferns from spore from a spore exchange hoping for *Adiantum aleuticum* 'Subpumilum' and ending up with *Pteris*. The same with a *Polystichum*.

This is not the first time this has happened with different growers. *Pteris* is very generous with its spore and is also apogamous so can out compete a lot of ferns with a normal life cycle. This also applies to *Cyrtomium*, *Adiantum* *Pellaea* and some *Dryopteris*. These are the commoner ferns you will bump into that are apomictic / apogamous different words for the same thing. They go from prothallus to fern without sexual reproduction. *Pteris* and *Cyrtomium* as plants in the garden are great but they are notorious for volunteering everywhere.

For the commercial growers apomictic ferns are great as they can get plants quicker, generally the cultivars come true from spore and they can get large volumes.

But how to reduce contamination in your sowings?



FERTILE OSMUNDA

1) Spore donors - brilliant kind folk - thank you for your generosity.

a) It would be great if the fronds were washed under a running tap to wash off stray spores from other ferns. This should reduce cross contamination. Shake off the water. Lay the fronds in paper photocopy paper or newspaper (not glossy) and fold the paper over. Then fold in the open edges twice on the open edges to seal the packet. When the spores have dropped out try to package them up in a fern free room and different ferns in different rooms if possible.

For those of you collecting your own spores for home use

Spores drop out generally quickly. If you put them in paper over night they will have dropped out by the morning. One pinna is usually enough for the home grower but collect whole fronds and send them to the HFF or the BPS.

To clean spores you can use special sieves but most of us use photocopy paper or newspaper.

When the spores have dropped open the packet and remove the frond. Gently lift the paper from one corner and all the rubbish will fall off and the spores will be stuck to the paper.

Refold the paper, tap and gently open and you will find what looks like odd colored talcum powder or soot. These are your spores.



SPORES ON THE RIGHT AND CHAFF ON THE LEFT

Ferns with green spores unless chilled or frozen have a short life and are best sown within 24 hours. For *Osmunda* when you see the bottom of the spore bearing part beginning to go hay colored the rest of the fertile frond should be a sort of emerald green and ready to collect. If it is all hay colored, they have gone.

A lot of ferns have brown or black spore but a good number also have yellow spore like *Dicksonia* and *Polypodium*.

Matteuccia and *Onoclea* need frost for them to shed their spores.

2) Sowing spores

Preparing the pots & compost for sowing

a) Wash your pots or use new ones then pour boiling water over them

b) Bear in mind what soil your fern likes growing in. Most ferns seem happy with a general purpose compost but for some acid loving ferns like *Blechnum* I would sow on an acid "ericaceous" compost while some others will like a gritty limy compost.

c) Sterilize your compost. The easiest way is to put your compost in the pot so it is about half an inch down from the rim when lightly firmed and then put a kitchen paper towel over each pot and drench with boiling water filling them several times to make sure they are hot all the way through, leave the paper on and seal in a polythene bag or under a glass slip to cool. Some people microwave the pots or take-away plastic trays of compost but you must be sure there is no metal in the compost. Then leave it to cool. Once sealed they can be used over a period of weeks. (Ed. Note - I wet and oven bake mine in a pan at 175 degrees for 3 hours. Sterilizes the soil and scares away dinner guests!)

d) Sow them in a room without any ferns. I often will move to different parts of the house to sow my spores on a tea tray and move round the house sterilizing the blade of my knife in a flame between each different type of fern I am sowing. Sow a different one in a different room. Open up a sealed bag get your spore ready to sow and at the last minute remove the paper and then tap a little bit of spore from the tip of your knife over the compost, seal the bag and place in good light but not in direct sunlight.

Be careful not to sow too many spores in a pot as this can cause them to get overcrowded and then you may struggle to get young ferns. If it does seem overcrowded you can transfer little patches of prothalli (called patching off) into fresh sterilized compost, water in and seal up the bag.



CROWDED PROTHALLII

When the prothalli look relatively big it is a good idea to drench them with cold tepid boiled water as sexual reproduction happens through a film of water. If too dry nothing will happen unless your fern is apomictic. I have been known to put the plastic bag with the pot into a pot the same size and lightly pushing it in so I do not split the bag and then put in the tepid boiled water so the water is standing over the prothalli and they can be left for a while sealed in their bags. Then I come back and take the outer pot off and then wait for signs of new fronds. The excess water can be drained off.

Different people have different ways

Some will acclimatize (harden off) the prothalli when they are a good size by opening up the bags slightly and then leave for a few days. Then repeat a couple more times giving more air each time and finally taking the bag off. Then patch them off into sterile trays by making little dimples in the compost and then taking a little patch of prothalli and placing it into each dimple. Then water in with clean water and place in light shade to grow on.

Another method is to let the prothalli begin to throw little fronds. Transfer them into a tray under a plastic dome and then when growing away freely slowly harden off.

Don't panic we have all had to learn the hard way and it can take a long time if it is in a cool room or greenhouse in the UK but in warmer climates it can work quickly.

If you give them 14 hours of light (picked this one up from Sue Olsen) under fluorescent tubes it will bring them on quickly and the added warmth helps as well. An old fish tank works well but the likes of Remko Beuving and Rolf Thiemann have spare rooms with shelving units all with lighting to get their ferns growing.

The difficult bit is hardening off the young plants

If you ever get mold or slime that gets into your prothalli a weak solution of Potassium permanganate the color of a dark rosé wine works well (not the color of red wine!) and does not hurt the prothalli. This can be repeated if need be if the mold is not responding.

Another thing to bear in mind is if you get one or 2 that come up quickly and the rest have not moved they might be unwanted dinner guests.

Also, some ferns like *Dryopteris dilatata* will inhibit other prothalli around them so if you have an abnormally large prothalli and not much close to it bear this in mind.

Things like *Adiantum* will be obvious in the early stages as the stems are hair like, the pinnules might be more rounded than the adult and by the second & third fronds it will be absolutely clear. With *Pteris* ferns their early fronds will be branched into three. *Dryopteris* vs *Polystichum* - As a generalization *Dryopteris* are usually coarser and *Polystichum*s have silver hairs/scales on the new growth.

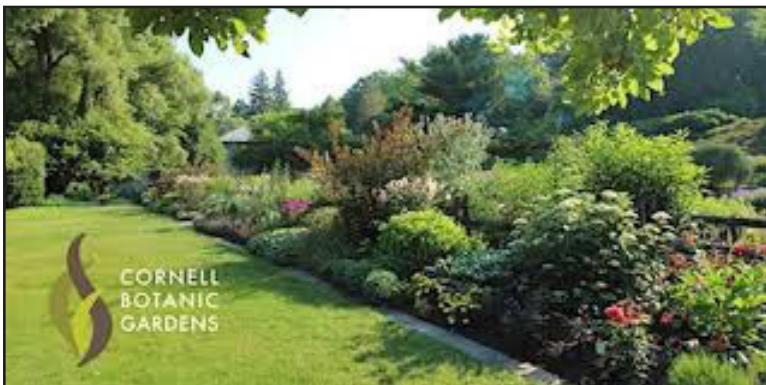
Hope this helps. Julian

Cornell Botanic Gardens Fern Evaluation

Emily Norsen, Horticulturist

Cornell University, Ithaca, New York

Fern Name	Year planted	Rating 1-5	Site description	Additional Notes/ Comments
<i>Adiantum aleuticum</i>	2021	1	Moist shade	Did not survive winter
<i>Adiantum aleuticum</i> 'Imbricatum'	2021	5	Moist shade	
<i>Asplenium trichomanes</i>	2020	4	Moist part shade	
<i>Blechnum spicant</i>	2020	3	Part shade	Dieback from summer drought, showing new growth.
<i>Cheilanthes lanosa</i>	2020	4	Shade	
<i>Dryopteris championii</i>	2021	4	Dry shade	
<i>Dryopteris cristata</i>	2021	5	Part shade	
<i>Dryopteris hondoensis</i>	2021	5	Dry shade	
<i>Dryopteris sieboldii</i>	2020	1	Shade	Did not survive winter. All previous specimens of <i>D. sieboldii</i> died.
<i>Dryopteris wallichiana</i>	2020	2	Shade	Dieback from summer drought, showing new growth.



Ferns in a Nova Scotia Garden

Article and Photos by Iain Jack Hubbards, Nova Scotia, Canada

I once dreamed of growing a garden of native plants. I set out with some earnest, and in a short time collected a decent representation of common and not-so-common native plants. With just as much earnest, and in much less time, it was all consumed by deer. All, that was, but the ferns. So, it was decided then, a fern garden it was to be!

The deer may not love ferns, but neither do ferns necessarily love the place I garden. Even with the sea only a few hundred metres away and the lakes and streams that abound in the area, our site is on the high-and-dry side. The folks who chose this knoll for their home 140 years ago had a dry basement in mind, no doubt. However, that character of the land combined with often dry summers and thin, acidic soils (pH 4.5) over bedrock and rubbly glacial till, conspires to make the site an unlikely fernery. Undeterred, a major garden goal of mine for the past fifteen years has been to find or make suitable spaces for ferns, exploring their temperament, hardiness, and especially adaptability to my Nova Scotian landscape.

Where I garden: Canada's Ocean Playground

Separated from the mainland of eastern North America by a 28 km wide isthmus, the peninsula that is now Nova Scotia is about 600km long and an average 130km wide. You're never really more than half an hour's drive from the coast anywhere in the province. Canada's self-proclaimed "Ocean Playground" - it's on our license plates - Nova Scotia juts out bravely into the North Atlantic just due east the US state of Maine. The North Atlantic and the Gulf Stream heavily influence Nova Scotia's climate and growing conditions.

A bit of Old Scotland...and Morocco?

Made up of ancestral rock heaved together from such far-flung places as Scotland and North Africa, and less-long-ago connected to Massachusetts by a land bridge, Nova Scotia's natural landscapes include the unique northern Appalachian Acadian forest type, the isolated, northern-most edge of the Atlantic Coastal Plain, arctic taiga of the Cape Breton highlands, and recently designated coastal boreal rain forest along its eastern shore. It is truly a place where north meets south, both climate and species, making for great opportunities to garden on the edge.

The Maritime Climate

The Atlantic Ocean and its Gulf Current moderate temperatures in Nova Scotia and its neighbouring provinces New Brunswick and Prince Edward Island, collectively known as the Maritimes. These oceanic influences on Nova Scotia's varied geography create a broad range of hardiness zones across our rather small province, from USDA Z2-6b.

The ocean also brings moisture. At 1,178 mm, average rainfall in Nova Scotia is not very different from that of some, more famously damp, west coast locales. Most precipitation falls in the late autumn and early spring with summers dryer and parts of winter not uncommonly with low or no snow cover, especially in coastally adjacent areas. Our ocean-moderated climate is reflected in varied hardiness zones, with average seasonal temperatures ranging from 2-9C in the spring, 12-24C during the summer (although highs in the upper 20's C and even low 30's C seem more common than they used to), 18C in the autumn, and -3C in winter (extended days in the negative teens C are also not uncommon).

The almost one-hectare parcel where I live and garden, once the centre of a much larger homestead property, shares a common history of clearance for farming, industry and fuel in the 19th century, followed by gradual abandonment as the mid 20th century approached. The result was reclamation of the land by the fastest-growing species, which here has resulted in dense forests dominated by balsam fir and white spruce - "the land of Christmas trees!", in the excited words of one visiting Irish relative. These thicket-like stands of softwood, create dry conditions of very low biodiversity.

Over time, between storms, and with a bit of tender-loving silviculture our small forest has begun to show its Acadian forest roots, with red maple, red oak, yellow birch, white pine, red spruce, (and larch and black spruce moisture permitting), all becoming more strongly represented in the canopy. Shrub and herb layers in our woodland are strongly ericaceous, with blueberry, inkberry, huckleberry, wild raisin, Canada holly usually well represented. However, gardening with deer while trying to re-establish an understory is a considerable challenge. My ambivalence for this introduced species is strained by their repressive effect on forest regeneration. That said, being able to rely on the (near) immunity of ferns has provided a great opportunity and palette of plants to begin the work.

Fern Diversity in Nova Scotia

Roland's Flora of Nova Scotia (1998) describes 47 species of ferns found in the province, although I believe others may have been added since its publication, including the recent discovery of *Botrychium ascendens* (upswept moonwort) in a beach dune plant community on Cape Breton Island. While most ferns in Nova Scotia are terrestrial, many of those are found among or over rock. Our ferns association with the area's rocky geography is reflected in the seasonal drought tolerance of some of our most garden-suitable species, good examples being from the genus *Dryopteris* (*D. intermedia*, *D. marginalis*).

When we took over tenure of this land twenty-five years ago, the existing community of native ferns included *Dryopteris intermedia*, *D. carthusiana*, their hybrids, cinnamon fern, and in a shady crevice down the centre of a car-sized granite erratic, rock polypody clinging for life. A walk further around the neighbourhood will easily find sensitive fern, hay-scented fern, crested wood fern, and interrupted fern, often on the edge or bottom of ditches and other low-lying spots.

There are other ferns native to Nova Scotia, but not my area or ecotype, that I've introduced, do well, and therefore deserve note for their adaptability. These include *Dryopteris filix-mas*, *D. marginalis*, *Polystichum acrostichoides*, *P. braunii*, and *Matteuccia struthiopteris*. Special mention to *Dryopteris goldiana*, native in neighbouring New Brunswick, that despite acidic, often dry conditions faithfully puts up a good show of its big, nearly variegated fronds.

Exotic Ferns in My Zone 5b/6 Garden

After years of soil building and amendment and much trial and error, a number of ferns have made themselves at home in my garden. Amendment has mostly been in the form of any humus-rich material available and, where needed, occasional doses of some source of calcium. What follows is a list of some of the **contented**, **struggling**, and probably **extinct** (for now!?) ferns in my garden.

Rating key:

- 1. Did not survive
- 2. Poor performance
- 3. Attractive, but not thriving
- 4. Good performance
- 5. Best performance

A few ferns that are content in my Zone 5b/6 garden:

Genus / Species Cultivar	Rating	Comments
<i>Adiantum aleuticum</i>	3(4)	Given a choice "moist" spot, my original planting continues to do well, but after almost ten years remains stubbornly put, refusing to explore the surroundings. Likely due the acidic nature of the unamended native soil surrounding it. With attention to soil amendment, this maidenhair is easily grown in Nova Scotia. In fact, it has persisted where our native <i>A. pedatum</i> has failed. Deciduous.
<i>Adiantum venustum</i>	4	Much more gregarious than its Western Maidenhair cousin, this fern has done well anywhere I've paired it with rock, both granite and limestone. Unlike the Polypodies, it is not shy about sharing space with bigger plants, weaving its way in and amongst. Semi-evergreen.
<i>Athyrium</i> x 'Ghost'	5	A reliable performer with impressive drought tolerance. Would likely be a monster if pampered with a decent water regime. One colony is under a large white pine where in spring the red new growth makes an interesting monochromatic scene emerging en masse through the rusty-coloured pine needle mulch. Deciduous.

<p><i>Athyrium niponicum</i></p> <ul style="list-style-type: none"> - 'Regal Red' - 'Applecourt' 	4	<p>These gorgeously coloured and textured lady ferns, in reasonably moisture-retentive soil, do perform well here, even in fairly sunny situations. However, without regular weeding they're prone to be crowded out by just about anything else in the landscape. Deciduous.</p>
<p><i>Dryopteris affinis</i></p> <ul style="list-style-type: none"> - 'Cristata, The King' - 'Revolvans' - 'Stableri Crisped' 	5	<p>Mine are mostly spore grown. Golden-scaled male ferns have settled easily anywhere planted, although I'm not sure whether it's quite as sun-tolerant here as <i>D. filix-mas</i>. Semi-evergreen to evergreen.</p>
<p><i>Dryopteris crassirhizoma</i></p>	4	<p>A strong performer, even when planted out in the native soil, although the plants do not grow very large. These ferns, if planted so they don't quite touch when the fronds collapse from frost in the autumn, and planted in places that don't catch much snow (e.g., under evergreens), all winter will look like intricate, green snowflakes on the rusty-coloured forest floor. Evergreen.</p>
<p><i>Dryopteris dilatata</i></p> <ul style="list-style-type: none"> - 'Crispa Whiteside' - 'Lepidota Cristata' - 'Jimmy Dyce' 	(3)4	<p>I adore these old-timey cultivars and didn't know until seeing the species in the UK how similar it is to our native <i>D. intermedia</i> (if only intermedia sported the same way!). Fully hardy and easily grown in any average garden soil, it tolerates sun fairly well here. Of all the ferns I grow this shield fern is the most susceptible to foliar nematodes, which have a distorting or necrotic effect on the fronds making them unattractive by mid-summer, and therefore perhaps a less useful garden candidate if nematodes are an issue in your area. Semi-evergreen.</p>
<p><i>Dryopteris filix-mas</i></p> <ul style="list-style-type: none"> - 'Barnesii' - 'Linearis Polydactyla' - 'Parsley' 	5	<p>Strong performers, regardless of site. Planted in containers or the ground, these ferns tolerate full sun in my garden where they are mostly planted in average garden soil (vs. planted out in the native woodland soil). 'Parsley' not surprisingly stays smaller than described in the rock garden, but grows away happily in gravel with very little humus added, head in the sun and feet tucked under the north edge of a granite boulder; 'Linearis polydactyla' is big enough to compete for resources and attention even among the wild goldenrods and asters that regularly want to take over the borders; 'Barnesii' looks perfectly natural standing up next to any mossy boulder - like little sign posts or punctuation points in the woodland. Semi-evergreen.</p>
<p><i>Dryopteris tokyoensis</i></p>	4(5)	<p>My first success. One of the few ferns that has settled comfortably into the unamended woodland. Its vertical habit makes great counterpoint to the many low-growing, spreading herbs that blanket the forest floor (mayflower, false lily of the valley, bunchberry, wintergreen, many mosses). Deciduous.</p>

<i>Dryopteris x complexa</i>	5	Consistently strong performer; the only fern that grew in every spot planted. Drought tolerant and, until snow covers, good puddles of winter green even after hard frost forces the fronds to the ground. Aesthetically, it seems at home in wild or informal settings as well as cultivated or more formal. Semi-evergreen.
<i>Polypodium vulgare</i> cvs	3(4)	Clinging to a slate rooftop over winter (a la the UK) is not an option in our climate, so my polypodies are almost all planted terrestrially in very gravelly soil. They do well, but struggle to compete, being easily overgrown without regular weeding. There are a few places I've teased them up onto the top of boulders that have a moss covering that goes to the ground as a moisture wick. Evergreen.
<i>Polystichum aculeatum</i>	3 (4)	A pleasant surprise, I didn't think they'd ever take. Very slow to establish, but manages a bright, dry slope seemingly better than <i>P. setiferum</i> . A pleasant green in the 'browning' late-autumn landscape, it holds its shape against the frost better than most of the other <i>Polystichum</i> here. Evergreen to semi-evergreen.
<i>Woodsia subcordata</i>	5	A definite favourite, this little spore-grown fern has made a colony, living happily tucked on the northeast side of a large granite boulder, side-by-side in a hot, sunny border with lavender, thymes and salvias. It is the only fern that has so far spread itself around the garden. Deciduous.



ATHYRIUM 'GHOST'



ATHYRIUM NIPONICUM 'REGAL RED'



**DRYOPTERIS FILIX-MAS
SLIGHTLY CRESTED**



DRYOPTERIS FILIX-MAS 'PARSLEY'.JPEG



DRYOPTERIS CRASSIRHIZOMA



WOODSIA SUBCORDATA

A few ferns that struggle-on in my zone 5b/6 garden:

Genus / Species Cultivar	Rating	Comments
<i>Asplenium scolopendrium</i>	3(4)	Over ten years the original ten plants have slowly dwindled or disappeared. Even with a generous cover of limestone rock, the free-draining nature of the native granite glacial till - imagine the water holding capacity of a mesh bag of marbles - along with sampling by slugs in summer and deer in winter, has slowly doomed the small colony. I do plan to replant this colony after bringing the soil humus up considerably. I have a tray of one-year old spore grown " (thank you HFF spore exchange!) I'll try when they're larger. Evergreen.

<p><i>Asplenium trichomanes</i></p>	<p>(1)2</p>	<p>My spleenworts have all been spore grown, some with uncertain origins. Over time, with attrition, it's become difficult to identify survivors as subsp. <i>quadrivalens</i> or subsp. <i>trichomanes</i>, and so their preferences. Along with limited atmospheric moisture, this may explain my minimal success with this fern. My one success is in a northwest facing crevice between granite boulders (overlaid with large amounts of limestone) in a sunny rock garden, which is super, but doesn't help identify subspecies. In any case, this fern is an uncommon to rare native here in Nova Scotia and so obviously hardy. With attention to moist shade (and provenance!) this fern could easily be enjoyed in more Nova Scotian gardens. Evergreen.</p> <p><u>Note:</u> A scan of my garden at the end of Dec. '22 found volunteer spleenworts (!) growing in damp shade beneath a concrete set of steps, only a couple metres from my one already established plant. Subsp. <i>quadrivalens</i>?</p>
<p><i>Athyrium filix-femina</i></p> <ul style="list-style-type: none"> - 'Minutissimum' - 'Victoria' 	<p>3(4)</p>	<p>There are many more I'd grow, but lady ferns rightly resent the lack of consistent moisture my garden offers. They perform well early in the season, but then tend towards an early dormancy as the heat and dryness of high summer set in. Deciduous.</p>
<p><i>Dryopteris erythrosora</i></p> <ul style="list-style-type: none"> - 'Brilliance' 	<p>2</p>	<p>I saw this fern growing in a sunny town square in S. Carolina and realized this fern likes some heat. Until then my autumn ferns were planted in sheltered shady spots under conifers that really didn't warm up until sometimes late in June, the ferns slowly following. I've since moved most to areas that get full spring sun, which I hope will coax them up a bit earlier, give them a longer season and more bulk to survive. Time will tell if that was their only gripe. Evergreen.</p>
<p><i>Dryopteris pseudofilix-mas</i></p>	<p>(2)3</p>	<p>I was doubtful about this fern, and while it's been very slow to get to the 'I think it's taken' stage, most of the original plants have persisted and even grown by one or two fronds a season. Fingers crossed, I'll be able to up their rating to a solid 3(4) in a future report. Semi-evergreen.</p>
<p><i>Dryopteris wallichiana</i></p>	<p>(1)2</p>	<p>I'm on my second attempt with this fern. So precious was the single crown I procured via post from BC, I held it in a pot in the unheated greenhouse for a year before nervously settling on a spot for it. This time I chose a spot further into the wild part of the property where cinnamon ferns occupy the sheltered edges of wetter spots blanketed with sphagnum. Here, nestled between its large cousins it is in its third season. Still small, I'm hopeful it's a 3 in the making. Deciduous.</p>

<i>Polystichum x dycei</i>	3	It wasn't until the third season this fern looked like it might make it. In this case the slope of bright, high shade was well amended with humus and limestone rock. Their transition to the landscape was likely negatively affected by being kept too long in pots and probably forgotten about more than once. Age and size will hopefully increase their tolerance to the bright, high shade and seasonal dryness of the site. Semi-evergreen to deciduous.
<i>Polypodium glycyrrhiza</i>	2	Tiny ferns, evergreen or not, are easily lost in our winter landscape and, mosses and lichens aside, hanging out in a tree over winter is a poor survival strategy in NS. That said I have coaxed licorice fern to grow in two places: 1) in the gravelly edge on the downhill side of a limestone path overhung with evergreen where the snow doesn't gather, and 2) in the duff captured in the crotch created knee-high off the ground where a clump of red maple trunks meet. This slightly elevated spot makes them visible all winter. The idea came from a trip to Seattle where I saw this fern growing up high in big leaf maple trees (thank you Richie and the rest of the HFF gang for a fabulous tour!). Evergreen.
<i>Polystichum makinoi</i>	2(3)	I can't stop trying to grow this fern. Two specimens show promise, both seeming to appreciate a rocky, humus-rich slope on the free-draining edge of a limestone path. 2023 will tell if this fern gets a solid 3. Evergreen.
<i>Polystichum setiferum</i> - 'Divisilobum'	2(3)	So lovely, but, even with soil amended to increase moisture retention and pH (and all my hopes and dreams), soft shield doesn't seem to tolerate our inconsistent summer rains. Starting with bigger plants (mine are usually in 10cm pots) could give them a better chance. Evergreen.
<i>Struthiopteris spicant</i> (<i>Blechnum spicant</i>)	3	Of five planted on the downslope side of a large white pine, one robust individual (although small by catalogue standards) lives happily among a colony of mayflowers. Again, enough volume of moisture-retaining soil appears to be the limiting factor for this fern's reliability in my NS garden. Evergreen.

***We would love to see your fern evaluations.
Send them to Sue Olsen at foliageg@gmail.com.***

A few ferns that my zone 5b/6 garden has killed...repeatedly:

Genus / Species Cultivar	Rating	Comments
<i>Arachniodes simplicior</i> 'Variegata'	1	You probably didn't expect to see this fern on my list, but it did survive one winter here, making me think I might just try some zone-busting with it again in the future, planting it somewhere up against my home this time. Deciduous.
<i>Athyrium otophorum</i>	1	I'm pretty sure this fern can only be grown in southern parts of Nova Scotia, and then with good consideration as to site. That said, as with other <i>Athyrium</i> , I think inconsistent moisture is the biggest challenge in my garden. Not readily available in my area, this is a favourite I may just have to try again from spore - that sheltered spot is filling up fast! Deciduous.
<i>Cheilanthes argentea</i>	1	Hardy, but with a substrate pH, moisture regime, and winter protection needs much beyond my interest to provide. Not available locally, but if I were to find it and try it again, I think it would have to be in a trough to survive in NS.
<i>Cheilanthes lanosa</i>	1(2)	<p>One sad and lonely specimen has struggled on among the granite of the rock garden for six seasons, each year putting out a scant handful of fronds. It certainly appears hardy here in NS, but I just haven't found the right spot for this dryland fern that gives it adequate root zone moisture in summer and still protection from winter sogginess. Perhaps a trough. Deciduous.</p> <p><u>Note:</u> Rereading Mike Heim's article (HFF Quarterly Fall '22) I see that the crevice my lip fern survives in may not be vertical enough. I've been nervous to move it but now will relocate it in the spring. Thanks for sharing the photos Mike.</p>
<i>Cyrtomium fortunei</i>	1(2)	Probably the most tested (and killed) fern in my collection, this fern teases, and I keep falling for it. It will grow for a couple seasons, then disappear, regardless of the situation. This suggests to me a mostly easy to grow fern that might not be hardy here without good shelter. Still, I have two specimens currently, one small plant in a wilder position that struggles with competition I suspect will eventually fail, and another sheltered in good soil under the umbrella of a large <i>Rhododendron</i> beside my house. This one is only two seasons in the ground, but already doing better than the other. I hope to eventually report 3 with this fern! Evergreen.

<i>Dryopteris sieboldii</i>	1	Bareroot plants from British Columbia, pushed up a tantalizing few fronds their first season, then were never seen again. I may try this fern again in a more sheltered spot, but I'm doubtful about its general hardiness in most parts of Nova Scotia. Deciduous.
<i>Polystichum polyblepharum</i>	1(2)	Planted alongside other <i>Polystichum</i> that generally fair well, Tassel fern doesn't seem to have a long enough season here, or at least where I've sited it, each year struggling to get fronds up in late June, but then no more than a few over the season. The fact that it does persist tells me I should try this fern again in a spot that warms up much earlier in the spring. Semi-evergreen to deciduous.

Conclusion

Of all the plants I've tried to grow, ferns have taught me the most that hardiness is so much more complicated than the minimum temperature tolerance noted in a catalogue or on a plant tag. In my garden, soil suitability (or, soil at all!) along with consistent moisture are the most limiting factors to growing ferns. The acidic native soil I garden is a full-stop for the small group of calciphiles I've tried to bring into the garden. These will always need greatly amended homes and therefore will necessarily play smaller, special notes in the landscape's symphony.

A decade of growing a large selection of hardy ferns has provided a trial and error opportunity to learn their preferences, things they can or cannot do without, and what suitable niches I have to offer. The humus and nutrient poor, rocky, free-draining acidic nature of the thin soils in my Nova Scotia garden means sometimes needing to alter pH to accommodate a special fern. Combined with typically droughty summer weather this soil profile also means increasing amounts of moisture-holding humus is an urgent and ongoing concern. Another way I think I might increase success with marginally hardy or slow growing varieties in our shortened growing season is to start with older plants in larger pot sizes.

The original aim of this dispatch was to share some personal experiences about cultivating a few specific ferns in coastal Nova Scotia, Canada. Through the writing process, it has grown to become a re-exploration of many years of growing and a fresh look at a few ferns that might need a third (or fourth!) try. As I zone in (pun intended) on the areas of my garden that offer the best chances of fern success, I look forward to reporting back about future results. For long-time readers of the HFF Quarterly already familiar with these ferns, I hope you've found the article an interesting introduction to growing them in Nova Scotia. A special thanks to previous HFF Quarterly fern contributors for the helpful rating scale and reporting format, which I've borrowed to record my efforts.

Best regards and happy ferning,

Iain Jack

Fern Fest 2023 Celebrating Our 50th Anniversary

Plant Sale at Bellevue Botanical Garden

Ferns and companion plants from

HFF hoop

Sundquist Nursery

Keeping It Green Nursery

Saturday, June 3rd from 10AM to 3PM
and

Sunday, June 4th from 10AM to 2PM

Presentation and Talk by Richie Steffan - *The Early History of Fern Fest and the Hardy Fern Foundation*

Saturday, June 3rd from 5PM to 6:30PM, also at BBG

Mount Baker Area Garden Tour

Sunday, June 4th from 10AM to 3PM

Watch for further details coming soon.

Many employers sponsor a matching charitable gift program. Perhaps yours does. If so, please consider Hardy Fern Foundation when making gifts this year. Thank you.

Fifty Years of Fern Sales

Article by Sue Olsen
Bellevue, WA

It was 1973 and a dark and stormy January day when the phone rang. Dorothy Brauss (a founding member of the Friends of the Arboretum which subsequently evolved into the Northwest Horticultural Society) was on the line. "What" she asked, "would you think of having a fern sale this spring"? "Sounds interesting", I replied. "Good" said Dorothy, in her traditional let there be no questions asked manner "then we'll have you be chairman"! I believe I said something intelligent such as "Huh"?

And so it was. There was very little in the way of available fern material in those days. We ordered and potted up natives from an East Coast nursery, and gathered what we could (also primarily natives) from local growers and optimistically announced the sale. It was held in a lovely setting on a woodland path at Seattle's Washington Park Arboretum. Our tables for this inaugural occasion were 4x8 slabs of plywood set on saw horses. This arrangement, so to speak, involved carrying everything down from an arboretum storage area which was at least two stories up into nowhere. Let it also be noted that at the end of our efforts, this "display material" had to be returned to its original storage site which by then was at least four stories up!

Spring of 1973 was notable for the gas crisis with long waiting lines at gas stations and little motivation to drive any farther than necessary. So (the theory goes) folks tended to stay home and find joy in their gardens. Whatever the reason, our sale drew a good crowd and we were sold out by noon of our 10:00 - 2:00 event. We were thrilled.

And thus encouraged we carried on. The following year our "now famous" event even attracted an anonymous donor who arrived nearby and quickly dumped a pickup load of totally tattered freshly dug lady ferns (*Athyrium filix-femina*) -presumably to help our cause. We ended up passing the "donation" on to the arboretum's compost pile where it at least did some sort of good! Meanwhile the public, showed up with great support to produce an even better sale that we enthusiastically oversupplied so that it stayed open for the promised hours.

About this time, Seattle's senior fern enthusiast, Neill Hall, became the curator of the spore exchange for the American Fern Society. I had joined in 1972 as had fellow plant propagator, Mareen Kruckeberg so we welcomed the opportunity to avail ourselves of spores from then unknown species. I had also been encouraged to grow from spore by Carl English of the Ballard Locks who gave me a fertile frond of the then commercially unavailable gorgeous *Dryopteris erythrosora* (autumn fern). It gave us some much-needed material to continually add welcome diversity to the fern sale.

This tale now is approaching 1976 and a US bicentennial celebration which among other Seattle events included a celebration of horticulture. Chaired by Seattle's energetic and visionary plant specialist Betty Miller, who was ever devoted to promoting horticulture, this involved multi day major displays in downtown Seattle by many of the local specialty gardening groups. We were of course involved and had a select site by the public library. Enter now too a wholesale grower, George Anex of West Seattle's Anex Greenhouses who had fortuitously taken an interest in ferns. He brightened our offerings (quite literally) with beautiful plants of yes, that then rare *Dryopteris erythrosora* which were in their prime and waved their come hither rosy fronds to would be buyers. It was a good year.

We had left the Arboretum and because of the construction of the new visitor center, the Arboretum had also left us. We scratched for a new location and ended up hosting the following year's sale at what was then a modest, but friendly, Bellevue Square pavilion. At this time we also decided that based on the long setting up and taking down tasks our efforts warranted having the sale extend for two days. Thus committed we also needed and arranged for night time security. Little did we know that there would be some unexpected (by all) substantial post-midnight sales when some happy fellows emerged from the nearby restaurant/bar in good cheer and having stumbled onto the sale decided that it would be a GREAT idea to bring something home to "the wife". No word on whether they became fern fans!

We were disrupted again by construction this time of what is now Bellevue Square mall. So I tried to make arrangements at yet another Bellevue mall only to be denied by the manager of a hardware store tenant who sold some token plants and wanted no competition! When I asked what fern species they carried he replied, "Both of them, the indoor one and the outdoor one"!

Thus rejected I tried and succeeded in securing us space and whatever we needed at the user-friendly Crossroads mall and just incidentally with a branch of the same hardware store that refused us elsewhere. This worked well for us and that particular year the sale was featured in Sunset magazine bringing in eager shoppers from Portland, OR, Vancouver, BC and Spokane as well as a now regular local following. It was another good year.

Our purchasing options had also expanded by then. More wholesale nurseries had offerings available with one of the best being created by Henry Mollgaard former owner of Mollgaard Floral north of Seattle who established Henry's Plant Farm which specialized in ferns.

The sale was now well into its second decade and well secured. Still actively sponsored by the Northwest Horticultural Society we mailed out preview announcements listing the presumably tantalizing availability for the current year's sale. This served as a splendid advertisement and we delighted in seeing customers coming into the sale with well-marked lists. We self-imposed a requirement that there should be a minimum of 10 plants of anything listed available when the sale opened. Bring on the grand opening!

1984 marked the significant opening of the Center for Urban Horticulture at the University of Washington. With the purpose as the name implies for the advancement and enhancement of horticulture this facility is a major supporter of horticultural activities in the greater Seattle area. It features an outstanding library, meeting rooms, herbarium and offices for research scholars. It thus welcomed our sale which evolved into a Fern Fest with an evening lecture so our now traditional sale became a festival featuring a speaker along with the plant sale. We have hosted some outstanding guest speakers including Chris Page, Reg Kaye and Martin Rickard from the UK, John Mickel, Carl Taylor and Herb Wagner from the US as well as welcome local experts.

And so it was that the interest, curiosity and enthusiasm for ferns and fern knowledge had expanded immensely since our humble beginnings in the 1970's - so much so that a core group of 12 Seattle devoted fern enthusiasts enlisted the support of colleagues from throughout the country to help us establish in 1989 what is now the Hardy Fern Foundation - your organization. The goal then as now was "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". The response over the years has been very rewarding and we're delighted that the membership has grown from 12 overcaffeinated enthusiasts to what is now close to 400 in international scope and interest.

Shortly after our beginnings and of great benefit to our organization and the fern world in general Naud Burnett offered his enthusiastic support to help us reach our goals. Naud is the owner of Casa Flora a magnificent Texas facility that is the country's largest wholesale fern producer. Leaders in tissue culture they bring over a million ferns annually to the world's markets. We have been very fortunate and are most grateful to Naud for sharing these with us as well as for being a wonderful friend.

As for the Fern Fest we turned our support to continuing the NHS sale and lecture event to our mutual benefit. However as the HFF grew and with much appreciated help from Sylvia Duryee, Michelle Bundy, Karin Kravitz and crew we gradually transitioned into a joint venture and eventually the Fern Fest became the provenance of the Hardy Fern Foundation.

Our successful festival also enjoyed expanded opportunities with the opening of the Bellevue Botanical Garden in 1992. They are an HFF affiliate garden and this year we will hold our 2023 Fern Fest there on June 3rd and 4th. To my amazement and delight this will mark the 50th anniversary of the sale. Long may it continue, be educational and enjoyed by many present and future "fernatics" as well as newcomers to the wonders and the beauty of our shady delights. We look forward to seeing you there.

And as a final note and tribute my (our) hat's off to Dorothy Brauss and her pseudo innocent phone call of long ago. Wish she were here to share in the legacy, but the inspiration lives on.....thank you Dorothy!

Botanical Names and Where do They Come From?

Article by Richie Steffen

Many gardeners find botanical names of ferns daunting and prefer to rely on common names. Although this may seem more comfortable, flaws can quickly be found in this line of thinking. Many common names vary region to region for the same fern and many common names are rooted in Western views based in colonial rule, ignoring names already given to a plant by the indigenous people. To further complicate matters, new common names are often made up to facilitate marketing and trademark rights throwing traditional common names to the wind. Botanical Latin may not solve all naming issues, but it does provide a consistent set of rules that are recognized internationally.

Botanical Latin plant names have a long history dating back to Carl Linnaeus and the publishing of his seminal work *Species Plantarum* which serves as the primary starting point for modern plant nomenclature, i.e., the naming of plants. The rules for plant names are developed through international cooperative efforts and are published in the International Code of Nomenclature for algae, fungi, and plants. This publication provides the ultimate guidelines for naming plants.

To keep this document current, researchers, taxonomists, botanists and representatives from institutions from around the world participate in a very important and influential event called International Botanical Congress (IBC). The IBC provides an opportunity to bring together scientists and students from many countries to share their research.

These congresses are held every six years with the next in Rio de Janeiro, Brazil in July 2023. At the IBC, the decisions of the Nomenclature Section are adopted into a revised edition of the International Code of Nomenclature for algae, fungi, and plants. The current document is referred to as the Shenzhen Code after the last meeting in 2018 in Shenzhen, China. The Shenzhen Code is 192 pages without the glossary and indexes.

Although botanical Latin has its roots in Latin, it incorporates languages from around the world. Seeing and understanding a botanical name allows you to know what a particular plant is related to and often provide clues about the plant's appearance, ecology or origin. Botanical names need practice to learn, but over time they open a door to understanding much more about the fern than a common name could provide. Because of the international and historical influences on botanical Latin, it is impossible to pronounce all plant names correctly unless you have extensive knowledge of the pronunciation of international languages and historical names. All we can do as gardeners is do the best we can and if someone corrects your pronunciation ask them to explain why it should be pronounced in that manner.

Botanists and taxonomists are scientists who define our plant world and designate the names of the plants we grow. All plants are given a two-part, or binomial, name consisting of a genus and a specific epithet. Collectively, this two-part name is referred to as a species. If a species is very variable, it can be further defined as a subspecies and/or variety. Occasionally, forma (abbreviated as f.) is used to further designate a unique variation in a species, but this is uncommon and extremely rare in defining ferns. To understand botanical Latin, it helps to recognize what these terms mean and how they are used to group plants together.

Genus (means generic name, plural = genera)

A group of species that share a significant number of traits is called a genus. Traditionally, these common traits were easily recognizable physical features of the plant, such as sori, hairs or scales found on the fronds. DNA studies today are playing a major role in defining the parameters of a genus. Genera can vary in size from one species to over a thousand.

Species (abbreviated sp. or spp., if plural)

There is no perfect definition of a species, but it generally represents a group of genetically similar individuals that can interbreed and produce new plants that look very similar. The evolution of species guarantees a certain degree of variability, but their DNA will always remain close. DNA is now frequently used to define a species, but species has historically been defined using physical similarities, habitat and geographical location of occurrence.

All of the factors that help define a species tend to be a little fuzzy at the extremes. Botanists and taxonomists use the available information about the plant to hopefully make the least arbitrary line to define what is one species versus another species.

Subspecies (abbreviated subsp. or ssp.)

Variety (occasional listed as *varietas*, abbreviated *var.*) Extremes in variation within a species can sometimes be considered subspecies or varieties; they typically have significant differences in physical features and/or differing isolated geographic ranges, but are still closely aligned in DNA make-up. Many feel that subspecies have more differences than varieties, but in truth these two terms are used interchangeably and have no consistency in botanical naming. Historically, taxonomists in the United States tend to use the term variety more in delineating differences and taxonomists in Europe tend towards using subspecies more often. There is an effort to clarify these two terms on the Plants of the World Online, a website launched by the Royal Botanic Gardens, Kew, in 2017.

Plant names change as we learn more about examining the makeup of a plant and how and where it grows in the world. Surprisingly, many plants, including ferns, may have been introduced to cultivation through a single or limited multiple wild collections and then are named based on this narrow genetic profile. This is akin to seeing and eating one apple pie then publishing a paper describing how all apple

pies look and taste. Through continued exploration and study of plants in the wild, we can gain a better understanding of the variation, or lack of variation, within what we consider a species. With the ease of travel today, it should not be surprising that names change.

An excellent resource for correct and current botanical names is Kew's Plants of the World Online website (<https://powo.science.kew.org>). This is an international cooperative effort to digitize data of the world's flora. Plant entries will provide both the current accepted name as well as synonyms. Of course, there are inevitably name changes that one may disagree with on this website. I detest the idea of the revised fern genus *Hemionitis*. It is a bloated genus of 449 species that has subsumed 51 genera including *Allosorus*, *Argyroschisma*, *Aspidotis*, *Astrolepis*, *Bommeria*, *Cheilanthes*, *Chrysochisma*, *Doryopteris*, *Gaga*, *Myriopteris*, *Notholaena*, *Paragymnopteris*, *Pellaea* and *Pentagramma*. I cannot conceive of who decided this makes naming clearer.

Even though we may not all agree on a given current name, the consistency of the world using botanical Latin provides us with unity and a way of ensuring we are all talking about the same plant. As much as a fern may change its botanical name, the diligence of scientists and researchers to build digitized records accessible by the general public allow the average gardener to stay connected with current science better than ever. Is it perfect? Not in the least. But is it better than before? I must agree that it is better. I just hope I can keep up with the changes!

Welcome New Members

Amelia Lane

Michal Dewodzki

Brent Horvath, Intrinsic Perennial Garden Inc.

Owen Albrecht

Carolyn Gutierrez

Renee Gallagher

Daniel Hinkley, Windcliff Plants

Sally Hurst

Deborah Conlin

Tanya Bednarski

Duane West

Tatiana Carter

Jess Brey, Wave Hill

Tim Eck

Joni Laberge

Tony Bielaczyc

Kathleen Grube

Ferns in the Bellevue Botanical Garden

*See and enjoy them at Fern Fest
or whenever you visit.*

Photos by Sue Olsen



**LEFT: ASPLENIUM SCOLOPEN-
DRIUM (IN ENTRYWAY)**

**BELOW: POLYSTICHUM
MUNITUM**



WOODWARDIA UNIGEMMATA



Welcome to our 2023 HFF Spore List!

Thank you to everyone who has taken the time to collect and donate spore, it is very much appreciated.

The Spore Exchange is available only to members of the Hardy Fern Foundation.

Spore is collected by members and shared with other members as part of our mission to encourage the study, cultivation, preservation and propagation of ferns.

To order spore, please visit our website to download our Spore Exchange list. Email spore orders and questions to: hff@rhodygarden.org. Spore costs 75 cents per packet. You will be contacted with the total amount of your order after it is calculated. Once you have received that information, you will be able to pay through our website using PayPal (see below), or by check in USD payable to:

**Hardy Fern Foundation
PO Box 3797
Federal Way, WA 98063-3797**

Please mail spore donations to:

**Michelle Bundy
206 S 216th Street
Des Moines, WA 98198**

Please send cleaned spore if possible.

Thank you!

Updated March 26, 2023

Botanical Name	2018 Spore	2019 Spore	2020 Spore	2021 Spore	2022 Spore
<i>Adiantum aleuticum</i>		DOH		RSGB	NS
<i>Adiantum aleuticum</i> 'Imbricatum'		RSBG			NS
<i>Adiantum aleuticum</i> var. <i>subpumilum</i>					NS
<i>Adiantum hispidulum</i>				KK	
<i>Adiantum monochlamys</i>					NS
<i>Adiantum raddianum</i> 'Fragrans'				KK	
<i>Adiantum pedatum</i>					NS
<i>Adiantum venustum</i>					NS
<i>Anisocampium cuspidatum</i>				EMBG	EMBG
<i>Arachniodes miqueliana</i>		RSBG		RSBG	
<i>Asplenium scolopendrium</i>		DOH			
<i>Asplenium trichomanes</i>					NS

Athyrium filix-femina (Cruciatum-cristatum Gp)			RAS		
Athyrium filix-femina 'Minutissimum'	NS				
Athyrium filix-femina var. angustum f. rubellum 'Lady in Red'	NS				
Athyrium niponicum 'Applecourt'					NS
Athyrium niponicum 'Burgundy Lace'					NS
Athyrium otophorum	NS	DOH		RSBG	NS
Athyrium vidalii		RSBG	RAS		
Blechnum chilense				EMBG	
Blechnum discolor			EMBG	EMBG	
Blechnum hastatum		NS	HFF		NS
Blechnum montanum					EMBG
Blechnum niponicum				DG	
Blechnum novae-zelandiae				EMBG	EMBG
Blechnum nudum				EMBG	
Blechnum penna-marina	JKL				
Blechnum spicant		DOH	RSBG	RSBG	
Blechnum spicant 'Rickard's Serrate'			RAS, EMBG		
Blechnum montanum				EMBG	
Cheilanthes leucopoda		ST			
Cyrtomium caryotideum	RSBG			RSBG	
Cyrtomium fortunei	RSBG	KY		KD	
Cyrtomium lonchitoides	NS				
Cyrtomium macrophyllum	RSBG				
Cystopteris bulbifera		JC			
Deparia lobato-crenata				EMBG	
Dicksonia antarctica			JK		
Drynaria delavayi (SEH ex. Hubei)	SEH				
Dryopteris × complexa 'Stableri Crisped'	RSBG	RSBG			
Dryopteris × complexa 'Stableri'			EMBG		
Dryopteris affinis 'Polydactyla Dadds' (Polydactyla Group)		RSBG			
Dryopteris affinis				KD	
Dryopteris affinis 'Cristata'				EMBG	

Dryopteris affinis 'Cristata the King'		JKL,KD			
Dryopteris affinis 'Revolvans'		RSBG			
Dryopteris affinis 'Stableri Crisped'				RSBG	
Dryopteris arguta	SO				
Dryopteris bissetiana				RSBG	
Dryopteris championii				RSBG	
Dryopteris clintoniana		RSBG			
Dryopteris crassirhizoma	RSBG				
Dryopteris crispifolia				RSBG	
Dryopteris cycadina	RSBG			RSBG	
Dryopteris cystolepidota				KD	
Dryopteris decipiens			RSBG	RSBG, NS	NS
Dryopteris dickinsii 'Incisum'					NS
Dryopteris dickinsii 'Crispa'					NS
Dryopteris dilatata 'Lepidota Cristata'				RSBG	
Dryopteris dilitata (Grandiceps Group)				RSBG	
Dryopteris erythrosora		RSBG			
Dryopteris erythrosora (ex DJHH 14224)			RAS		
Dryopteris erythrosora 'Prolifica'	NS				NS
Dryopteris expansa				RSBG	
Dryopteris filix-mas (Grandiceps Group)	RSBG			KD	
Dryopteris filix-mas 'Barnesii'	RSBG				
Dryopteris filix-mas 'Fluctuosa Cristata'		DOH			
Dryopteris filix-mas 'Linearis Polydactyla'		RSBG			
Dryopteris goldiana				RSBG	
Dryopteris intermedia/West Greenwich, RI				AB	
Dryopteris intermedia - cw Lewisberry, PA - #RAS 2021-001				RAS	
Dryopteris lacunosa				KD	
Dryopteris lepidopoda				RSBG	NS
Dryopteris namegatae		NS	RSBG	RSBG	
Dryopteris polylepis		RSBG, NS		RSBG	
Dryopteris pseudo filix-mas				RSBG	

<i>Dryopteris pulcherrima</i>		RSBG			
<i>Dryopteris pycnopteroides</i>				RSBG	
<i>Dryopteris remota</i>				RSBG	
<i>Dryopteris sacrosancta</i>				RSBG	
<i>Dryopteris scottii</i>				RSBG	
<i>Dryopteris shorapanensis</i> (D. affinis ssp. persica)					EMBG
<i>Dryopteris sieboldii</i>	RSBG, NS			RSBG, KD	NS
<i>Dryopteris stewartii</i>			JKL	RSBG	
<i>Dryopteris sublacera</i>	RSBG			RSBG	
<i>Dryopteris tokyoensis</i>	RSBG			RSBG	NS
<i>Dryopteris uniformis</i> 'Cristata'				KD	
<i>Dryopteris wallichiana</i> (SEH ex China)			RSBG		
<i>Dryopteris wallichiana</i> ssp. coriacea		EMBG	EMBG		
<i>Dryopteris wallichiana</i> ssp. pachyphylla				RSBG, DM	
<i>Dryopteris</i> x <i>australis</i>				RSBG	
<i>Dryopteris</i> x <i>complexa</i> 'Stableri'			EMBG		
<i>Dryopteris yigongensis</i>				EMBG	
<i>Homalosorus pycnocarpon</i> (prev. <i>Athyrium pycnocarpon</i>)				KD	
<i>Lomaria discolor</i>				EMBG	
<i>Lygodium japonicum</i>				DOH	
<i>Matteuccia struthiopteris</i>		BT			
<i>Microlepia strigosa</i>	FZ				
<i>Microsorium diversifolium</i>	RSBG				
<i>Nephrolepis falcata</i> 'Furcans'					
<i>Notholaena candida</i> var. <i>copelandii</i>	ST	ST			
<i>Onoclea sensibilis</i>				AB	
<i>Onychium japonicum</i>			EMBG	EMBG	
<i>Osmunda claytoniana</i>	NS				
<i>Osmunda claytoniana</i> (Ottawa Lake, MI)			SO		
<i>Osmunda japonica</i>			EMBG		
<i>Osmunda lancea</i>		EMBG	EMBG	EMBG	EMBG
<i>Osmunda regalis</i>	RSBG		DOH	AB	

<i>Osmunda regalis</i> var. <i>brasiliensis</i>			RAS		
<i>Osmunda regalis</i> 'Cristata'				RSBG	
<i>Osmunda regalis</i> 'Decomposita'			RAS		
<i>Osmunda regalis</i> 'Purpurascens'		RSBG			
<i>Osmunda regalis</i> 'Decomposita'				RSBG	
<i>Osmunda regalis</i> 'Laurin'			EMBG	EMBG	
<i>Osmunda regalis</i> 'Purpurascens'				EMBG	
<i>Osmunda regalis</i> 'Undulata'				EMBG	
<i>Osmunda regalis</i> var. <i>brasiliensis</i>			RAS		
<i>Osmundastrum cinnamomeum</i> (syn. <i>Osmunda cinnamomea</i>)	NS			AB	
<i>Pellaea rotundifolia</i>	NS				
<i>Pellaea viridis</i>					NS
<i>Phlebodium aureum</i> 'Blue Star'	FZ				
<i>Polypodium interjectum</i>			RSBG		
<i>Polypodium scolopendri</i>		NS, JKL			
<i>Polypodium vulgare</i>	RSBG				
<i>Polypodium vulgare</i> 'Ramosum'	RSBG				
<i>Polystichum acrostichoides</i>				RSBG	
<i>Polystichum acrostichoides</i> 'Cristata'					
<i>Polystichum acrostichoides</i> (cw Lewisberry, PA, #RAS - 2021-002)				RAS	
<i>Polystichum acrostichoides</i> /West Greenwich, RI				AB	
<i>Polystichum aculeatum</i>		RSBG			
<i>Polystichum aculeatum</i> 'Cristatum'				RAS	
<i>Polystichum dracomontanum</i>				EMBG	
<i>Polystichum lacunosa</i>				KD	
<i>Polystichum luctuosum</i>	NS	NS			
<i>Polystichum munitum</i>	RSBG	BT			NS
<i>Polystichum neolobatum</i> (dark green form)				RSBG	
<i>Polystichum neolobatum</i> (olive green form)				RSBG	
<i>Polystichum polyblepharum</i>				KD	
<i>Polystichum rigens</i>	RSBG				
<i>Polystichum tripterum</i>					EMBG

Polystichum tsus-simense				RSBG	
Polystichum wilsonii	SO		RAS		
Polystichum yunnanense			RSBG		
Polystichum xiphophyllum				RSBG	NS
Pteris ensiformis 'Evergemeiensis'	FZ				
Pteris wallichiana				RSBG	
Pyrrosia sheareri		RSBG, NS, SO		EMBG	
Woodsia subcordata			EMBG	RSBG	
Woodwardia unigemmata				EMBG	

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DG	David Gibson	WA
DP	David Persarro	WA
EMBG	Elisabeth C. Miller Botanical Garden	WA
FZ	Lindee Fitzpatrick	Australia
HFF	Hardy Fern Foundation	WA
JC	James Cheshire	OH
JK	Jeanette Kunnen	WA
JKL	Jo Laskowski	WA
KK	Karma Kosmonaut	MA
KD	Kay Dye	IL
NS	Nancy Strahle	WA
RAS	Richie Steffen	WA
RSBG	Rhododendron Species Botanical Garden	WA
SEH	Steve Hootman	WA
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