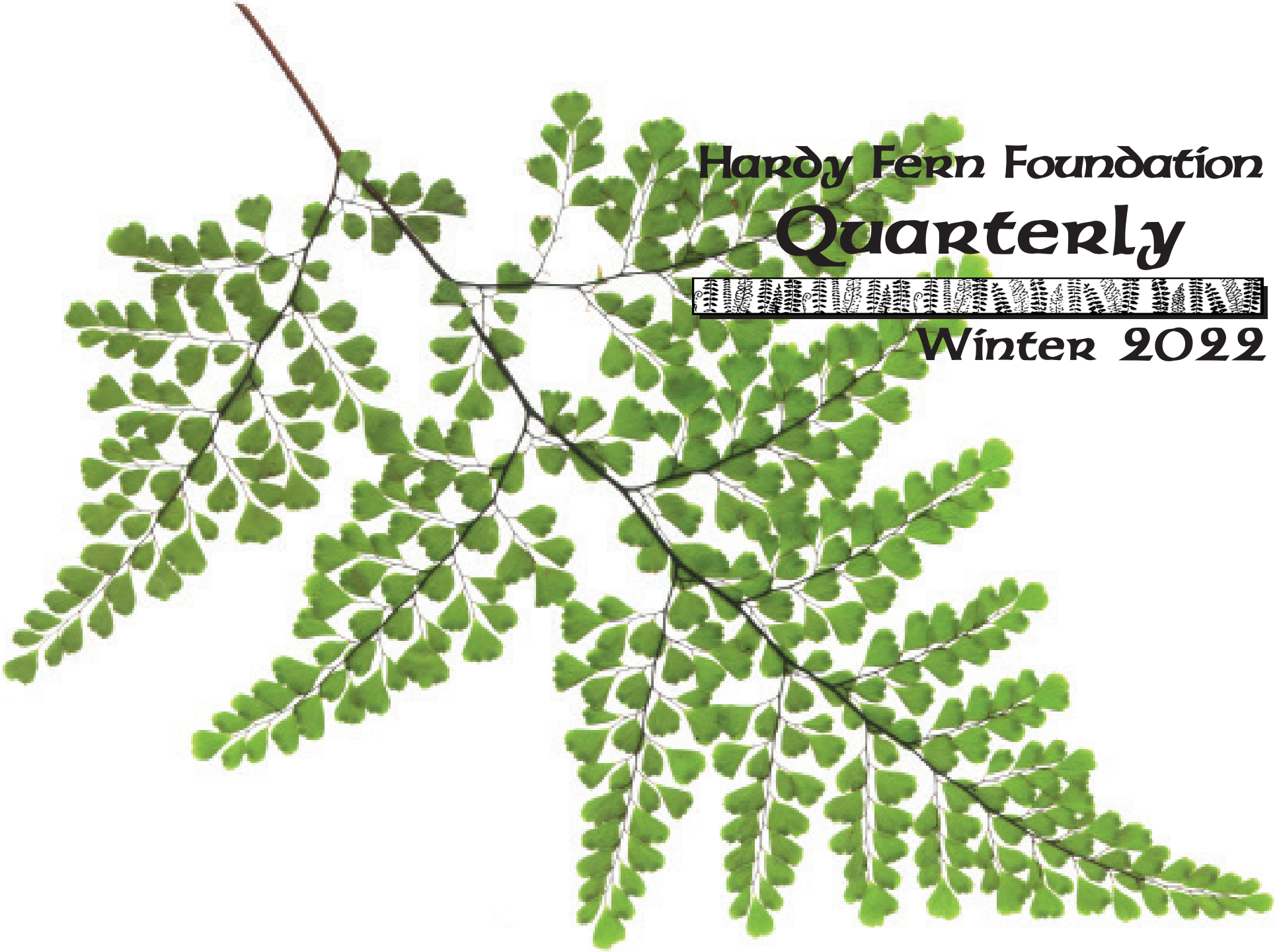

Hardy Fern Foundation Quarterly

Winter 2022

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; ***NEW 2021!***
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

HARDY FERN FOUNDATION QUARTERLY

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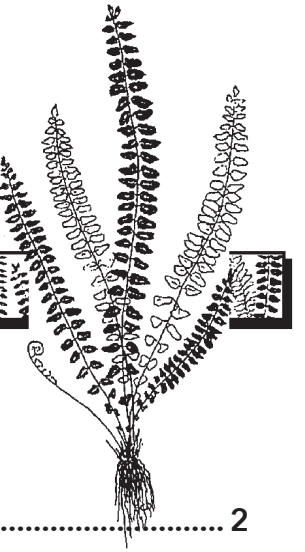


President's Message Winter 2022

HFF Quarterly – Winter Issue

The first days of winter had an icy grip on the Pacific Northwest. Our temperatures were well below normal, and snow and ice covered our gardens for about a week. These were some of the coldest temperatures we have experienced in over ten years and an excellent hardiness test for several new ferns. It will be interesting, and potentially a little disappointing, to see what pushes out new fronds in the spring. Although where I garden is considered USDA zone 8, we have had many mild winters of late allowing many local gardeners to flirt with the idea that it is really a chilly USDA zone 9. Winters like this remind us all that we are wrong!

As I wait for the ground to defrost, I have been able to catch up on some paperwork and sort out and label a few photo files. In this issue, we will continue a garden photo feature with the Elisabeth C. Miller Botanical Garden, where I serve as executive director. I hope you will enjoy a few of my recently sorted images of the garden and its fern collection. I thank HFF board member Dave Gibson and HFF founder and Quarterly editor Sue Olsen for developing this idea to fruition.

I also want to thank everyone who sent donations to the HFF last year. Your contributions make a huge difference in what we can offer through our education programs and on our website. I greatly appreciate the thoughtful generosity of so many. One of the perks that result from these donations is the continuing winter lectures series performed jointly with our UK partner, the British Pteridological Society that is offered free to all of our members. These Zoom webinars have been a constant source of inspiration to me and a fun way to see what other fern lovers are doing in other areas around the world.

I hope everyone had a great New Year and is looking forward to an early spring!

All the best,

Richie

Richie Steffen
HFF President

HAPPY
NEW YEAR!

10 ferns that are easy to grow in my garden near Seattle Washington

Article and photos by Dave Gibson
HFF Board Member
Bainbridge Island, Washington

Growing conditions

Zone 8b. No or little summer rain. Minimum temperatures are in the 20 to 30F (6.7 to - 1.1C).

That puts my garden in USDA garden zone 9 but because we get temperatures in the teens every ten to fifteen years it's in zone 8b. I like to think my garden is in 9D. D stands for *denial*.

My garden is located 13 miles (20.9 kilometers) west of Seattle, one quarter mile from Puget Sound with an elevation of 200ft (61 meters). The garden faces south. It's on a 1 acre tree covered sloped lot with dappled shade. Soil consists of glacier till which is a hard compacted acidic soil with a mix of rocks and topped with organic litter. A mix of compost, dirt and sand are used to help raised beds drain well. I add a compost top dressing at the end of fall before the first frost. Tender plants are covered or brought into the garage and put under grow lights when cold snaps below freezing are

forecast. Our rainy season begins at the end of September and runs through June.

I have compiled a list from the 250 varieties of ferns I grow. It consists of the top 10 easiest ferns to grow in my garden and the five that I have struggled with. I use overhead watering with no timers. Pests includes deer, slugs and leaf hoppers. All are common in the area. The only insecticide I use is *Sluggo* (iron phosphate). For the first time, rabbits have shown up in my garden. Thankfully, a Barred Owl has taken up residence.

Winter in my Garden

Ten ferns that do well in my garden			
Genus	**Species**	**Rating**	**Comments**
Polystichum	munitum	5	Western sword fern PNW native. Drought tolerant. Largest is 6 feet tall with 7 foot fronds. Tolerates some sun and deep shade.
Blechnum	spicant syn struthi-opteris	5	Deer fern. PNW native grown in shade to part shade. One fern has displayed forked tips.
Polypodium	glycyrrhiza	5	Licorice fern. PNW native. Grows in trees and on rocks with moss. Grown in the ground and on nurse logs. Other P. cultivars Sarah Lyman and longicuadatum.
Pyrrosia	sheareri	5	Grown on steep slope with good draining soil. I also grow 12 varieties of P. lingua, P. hastata, and P. polydactyla. P. lingua cuspidata died after a heavy snow load. I cover all pyrrosias when temperatures fall in the low 20's F.

Polystichum	polyblepharum	5	Tassel fern some fronds burnt during extreme heat wave. Looks good in the garden all year. One of my favorites and best performers.
Dryopteris	wallichiana	5	Wallich's wood fern. A fern that takes time to reach mature size. But worth the wait. Currently testing D. wallichiana Jurassic Gold in my garden.
Dryopteris	sieboldii	5	Siebold's wood fern does well under cedar and Douglas fir trees.
Adiantum	hispidulum	5	Rosy Maidenhair Fern comes up late in the season. Has not been through cold temperatures below 20 F.
Adiantum	aleuticum	5	Western maidenhair. I trim fronds in the late fall before snowdrops come up. Also grow Adiantum pedatum.
Asplenium	scolopendrium	5	Hart's tongue fern. I grow many varieties. Easy to grow part to full shade.
Five Ferns that didn't do well in my garden			
Polystichum	acrostichoides	4	Christmas fern still alive. Not a robust grower in the PNW.
Woodwardia	fimbriata	4	Giant chain fern. One survived of the three planted five years ago.
Woodwardia	virginica	2	Difficult to keep soil consistently moist all summer.
Cheilanthes	distans	1	Wooly cloak fern. Slowly died over several years from too much moister.
Osmundastrum	cinnamomeum	1	Cinnamon fern. I let the soil dry out will try again.
Five rare and prized possessions			
Colysis	elliptica f. crispa-variegata	3	Very hard to find and grow in the ground in the PNW. Late to come up in the season. Have one in a pot and one in the ground likes a warm location.
Pyrrosia	hastata 'Mika-sayama'	5	A very small and beautiful fern. I grow one in the ground and one on a moss rock. From Japan. Zone 7 to 9. Evergreen fern.
Pyrrosia	lingua 'Futaba Shishi'	5	I love this fern so much I have 5 of them. This epiphytic fern grows in the ground as well as on my nurse logs and moss covered rocks. Has shallow roots. Looks good all year.
Diplazium	dilatatum	5	This fern is not only hard to find but hard to grow outdoors in the PNW. One the first ferns I bought 10 years ago from Judith Jones who acquired it from Barbara Joe Hoshizaki who acquired it from Sue Olsen. It goes into the garage at first hint of frost. Both rare and a prized possession.
Pteris	wallichiana	5	Hardy and easy to grow zone 7b to 9 bought two from Far Reaches Farm. Loved them so much bought two more from Plants Delights Nursery in December.

Ratings

1 Didn't survive

2 Poor performance

3 Good performance

4 Attractive but not thriving

5 Best performance

PNW = Pacific Northwest

The reason for the ferns not doing well in my garden is mainly due to a lack of or too much moister and not from being in the wrong USDA hardy plant zone. In June 2021 we had a major heat wave. Temperatures reached 108 F. (42.2 C.) A few ferns that were in the intense sun at this time, had burnt fronds for the very first time. During the time of writing this article we are having a cold snap with temperatures below freezing for an entire week. With both the high and low temperature swings it remains to be seen what plants in my garden will survive.

Most of my ferns were purchased at the HFF's plant sale Fern Fest. It is held at the Center for Urban Horticulture in Seattle during the first weekend of June. I also order from several online mail order companies. The following are my favorites: Plants Delights in Raleigh, North Carolina has one of the biggest selections of rare and hard to find ferns; Sebright Nursery in Brooks, Oregon also has a large selection with reasonable prices; Far Reaches Farm in Port Townsend, Washington always has interesting options; smaller nurseries not to be over looked are Fancy Fronds in Gold Bar, Washington; Keeping It Green in Stanwood, Washington and Sundquist in Poulsbo, Washington. You can find these and others great nurseries listed on our web site under resources growers and venders.

This is a new article format that is planned to appear in future quarterlies. It was inspired by Kay Dye an HFF member in central Illinois.

"Owly" - Resident Barred Owl

Polypoduim glycyrrhiza

Spring Adiantum venustum & Athyrium Niponicums

Summer Adiantum hispidulum

She wrote,

It occurred to me as I was reading the Summer Quarterly that if the database was available to members of the HFF that it would be possible to have notes on ferns from other parts of the country (world).

After many emails and board discussions, we came up with a way to get this information out to our quarterly readers as well as people who use the HFF web site. As some of you know, after a grace period, we scan our past quarterlies and post them on the HFF website.

Down the road these articles will be searchable by keywords. In the meantime, you can see what is growing at our affiliate gardens under menu item resources and then affiliate gardens. Each garden provides a PDF fern list.

Thank you, Kay, for your exciting suggestion!

Fall Colors with Alders, Ironwoods and Maples

The hybrid *Polystichum andersonii* x *P. acrostichoides*

Article and photos by Rolf Thiemann Germany

Some decades ago at the beginning of my fern collecting I visited a nursery which besides other perennials also produced some garden ferns. In a large border they had young plants of *Polystichum munitum* to sell. At that time I did not have this species in our garden and wanted to buy one. So I looked to find the best developed plant in this border. Thereby I spotted a conspicuous plant which had deeper incised pinnae than usual. This I bought. The fern developed well in the garden and one year later it was clear that it was not a normal *P. munitum*. But what was it? A mutation or another species? A year later the fern was adult and sterile and it was clear that it was a hybrid. Because I had taken it out of a *P. munitum* border it was clear to me that it was a hybrid with *P. munitum*. The appearance of the plant and the producing of bulbils indicated that *P. andersonii* was the other parent. I labelled the plant accordingly. In summer 2006 a group of fern enthusiasts of the HFF and the BPS visited German fern gardens and also our garden. Judith Jones became enthusiastic

P. munitum

hybrid P. andersonii x munitum, taken in the Miller Garden

about the plant and wrote in the Winter 2007 issue of the HFF Quarterly: „It is truly amazing to come halfway round the world to see this triploid cross between the allotetraploid *P. andersonii*, (*P. munitum* x *kwakiutlii*), back with *munitum*!"

But later I had misgivings whether the parentage was determined correctly. In the meantime I had acquired the real *P. munitum* and could compare it with *P. acrostichoides*. Somehow the appearance of the hybrid was not exactly between the presumed ancestors. It would fit better with *P. acrostichoides* as one parent than to *P. munitum*. But a *P. acrostichoides* hybrid in a *P. munitum* border? All was doubtful. Nothwithstanding I thought more and more that the christmas fern was involved in

P. andersonii

hybrid P. andersonii x acrostichoides

P. acrostichoides

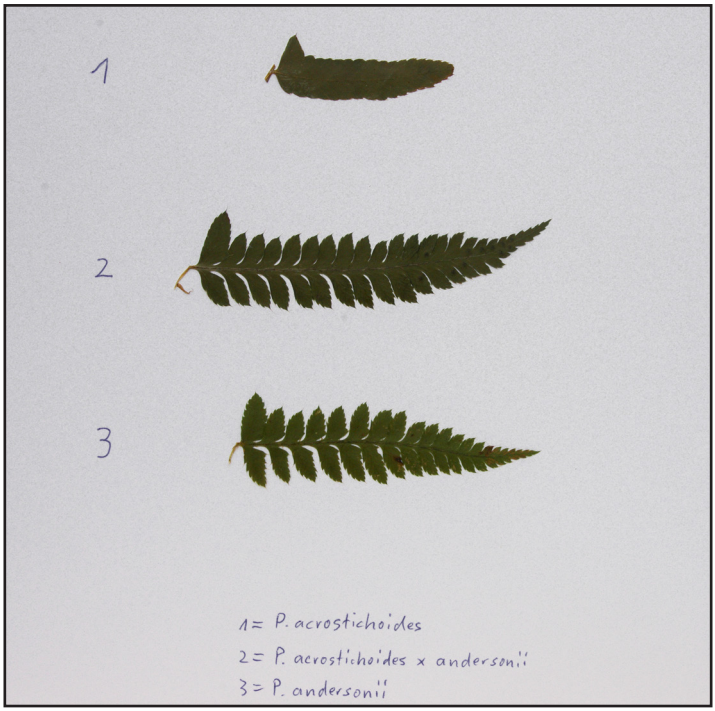
bulbil of the hybrid P. andersonii x acrostichoides

this cross. Some years later the problem was solved by visiting the Elisabeth Carey Miller Botanical Garden in Seattle (what a great experience for my wife Angelika and me!). They cultivate there a plant of the hybrid *P. andersonii* x *munitum*. Now it was clear that my plant could not have *P. munitum* as one parent. The perfect appearance between *P. andersonii* and *P. acrostichoides* indicates without any doubt that the latter is the second parent. Sorry, Judith!

The hybrid *P. andersonii* x *acrostichoides* is bluish green which is typically for hybrids which have *P. acrostichoides* as one parent. The fronds are stiffly upright and are smaller that those of *P. andersonii* x *munitum*. The pinnae are straight and broader in comparison to their length and end abruptly.

The hybrid *P. andersonii* x *munitum* is green and the pinnae are long and slender with a long tip. They are also more or less s-shaped and not straight. The fronds are not upright but more flabby. It seems that this hybrid produces not so willingly well developed bulbils than *P. andersonii* x *acrostichoides*.

The images of *P. andersonii* x *acrostichoides* were taken in rainy weather. Therefore the images suggest more brightness than the plant has in reality.



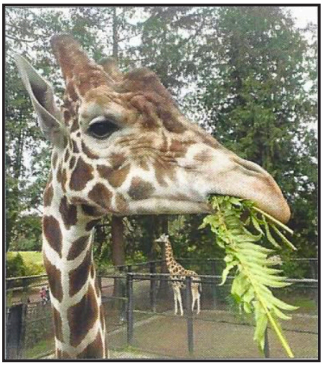
PINNAE OF P. ACROSTICHOIDES (ABOVE), P. ANDERSONII X ACROSTICHOIDES (MIDDLE), AND P. ANDERSONII (BELOW)

Sword Ferns for Zoo Animals

by Anna Carragee
Kubota Garden Foundation Newsletter
Spring 2021
Reprinted courtesy of the Kubota Garden Foundation

Swordfern trimmers, L-R: Anne Avery, Sr. Gardener Giles Morrish, Joy Nishimura, Michael Jaworski, Hal Garcia Smith, Patrick Nunn, and Geri Kennedy

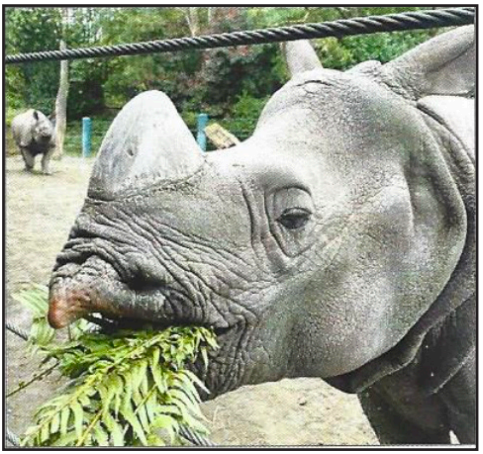
For the second year in a row, the giant pile of sword fern leaves generated by KGF volunteers at the annual Sword Fern Pruning work party was picked up by the Woodland Park Zoo where they were enjoyed by various herbivores. Pruning back the old sword fern leaves each spring is a big task. There are hundreds of sword ferns across Kubota Garden and getting to as many as possible in the few short weeks each spring can feel like a mad scramble. Good thing we have so many helping hands and some hungry animals.



Sword ferns, *Polystichum munitum*, are a Pacific Northwest native plant and make up a large portion of lowland forests. You can tell them by their long leaves that spread out from a round base. The leaves are dark green and have alternating pinnae, the subdivisions in each leaf. Every spring, while their new leaves are still tightly curled at the base it is possible to easily cut the old leaves off by grabbing a bunch in one hand and slicing quickly with a serrated hand sickle, or what we call a "slicey-dicey". For a brief period after the ferns are pruned, they look like small brown mounds until the new leaves burst out all fresh and bright green. Sword ferns are the only type of ferns at Kubota Garden that get this annual pruning treatment.

So, what about the hungry zoo animals? Last year, giraffes and tree kangaroos munched on the dark green sword fern trimmings. This year they made it to the rhinoceros. The Woodland Park Zoo's Browse Gardener works hard to find fresh plants either grown specifically at the zoo for the animals, or from other local area green spaces. They have a whole list of plants that grow in the Seattle area that work for the many different herbivores at the zoo. The annual sword fern pruning work party is an ideal time for the zoo to come get browse from Kubota Garden because they receive exclusively edible materials and no extra sorting is necessary.

Meshiagare! Bon appetit!



New Member List

Dana Cromie

Thierry Delabroye

Mary Denoyer Denoyer Gardens

Jim Emerson

Dan Ettelstein Northwest Specialty Timber

Julia Hofley

Elaine Jerauld

Tim Lindemann

Sophia McCrocklin

Mark Mumford

Mary Myatt

Robert Pemberton

Fred Phillips

Jenica Poduje

Marie Rhodes

Cynthia Robinson Chemeketa Community College

Maria Schneider

Michael Sulzinski

Mary Tipping

Sheryl Wesley

Marc Wheeler Byrne

Cynthia Winnett

Carol Wycoff

FROM DOWNPOUR TO DELUGE:

Growing Ferns in the Floodplain of Washington's Snoqualmie River

Article and photos by Daniel Mount
Carnation, Washington

2 January 2022

The engorge Snoqualmie River before it broke it's banks.

My partner Michael and I farm and garden a wet seven-acres nestled into the 150 acre preserve, Carnation Marsh Natural Area. Our house, as-the-crow-flies, is a few hundred yards from the Snoqualmie River, which originates at about 8000 feet in the Alpine Lake Wilderness of the Cascade Range. The river has a 677-square-mile watershed in the Snoqualmie Pass where the Central Cascades and the much younger North Cascades abut. This water shed, as I see it, is a large funnel, catching the over 100 inches of yearly precipitation at the pass, both rain and snow, and feeding it to the river.

The Snoqualmie River is rather short, only 43 miles, and divided into two sections, upper and lower, divided by the famously dramatic 268-foot drop at Snoqualmie Falls. The river meanders north up the Lower Snoqualmie Valley before it joins the Skykomish River becoming the Snohomish River and finally converging with the salty waters of the Puget Sound north of Everett.

The fertile floodplains of the lower valley, about 70 feet above sea-level, get on average 50 inches of rain a year. Thirteen more inches a year than Seattle. Most of that rain falls between November and March. And more and more frequently as hydrological events known as atmospheric rivers.

So, you can see, when I say wet, I mean wet.

The valley created by this river is the last major valley before the Cascades and is considered the very end of the Puget Lowlands maritime climate. Along with being wetter it can also be much colder in the winter and hotter in the summer than areas closer to the sound, making it a challenging place to garden.

Though we are listed as USDA zone 8, we often experience our first killing frosts in mid-October. And last spring we had two weeks of freezing night-time temperatures in early April. These fluctuating winter temperatures make it hard to grow many tender plants which do just fine closer to the sound. I pray for the years when all my camellia buds survive to bloom.

Still, by far, the worst weather-related challenges are the floods.

This past November the river reached flood level seven times. Seven floods during the whole winter season is already rather extreme. And when it floods in November it invariably floods in January and February, too. Most of these floods were just nuisances blocking both ends of our road basically creating an island where we were trapped for a few hours or a few days. Two of those floods, though, were high enough to cover our property and fill our basement, really a glorified crawl space, which keeps our house above the water, with about a foot of water.

In January 2009 24 inches of rain fell on four feet of fresh snow in "the funnel". When those waters reached our place the river was nearly a mile wide and rushed down our road six feet deep. There was seven feet of water in our basement. When floods reach that size they are truly and horrifically destructive. Can you imagine logs and a 500-gallon propane tank, and even a cow rushing past your house? It is unnerving. You can just imagine what this does to your garden.

What a mess.

Luckily floods of the size are rare occurrences. Still the river has reached flood level 46 times since the fall of 2003. Thirty of those were large enough to completely cover our property with at least a foot of water. You are probably asking yourself, why don't they just move. I ask myself that too at times, mostly during the floods. There are many factors that keep us here that I don't think are necessary to explain in this article. But the main reason is our garden.

With all this talk of water, you might think we were doing hydroponic gardening, or growing rice. Neither is true. As all of you know water is a major factor in gardening and the amounts you get or can apply are deciding factors in what you can grow. But what's underfoot is equally as important.

Flood topping out with seven-feet of water in our hoop house in December 2015. Notice the green pumpkins to the left floating but still attached to their vines.

The Snoqualmie Valley is an agricultural district known for its rich soils prized by farmers. And though the dairies and hops fields of yore are mostly gone, there are still plenty of farms growing predominantly organic produce and cut flowers for the Pike Place Market and other local markets. The soils throughout the valley are variable, but tend to be very silty, as you might imagine of a river valley.

I didn't realize how silty until in 2012, when we dug a 5-foot-deep grave for our dog, we hit no rocks and no clay. The alluvial silty soil at the bottom of the hole was the same alluvial silty soil as at the surface. This is a mixed blessing. The richness of the soil produces beautiful vegetables and fruits, but the denseness of the soil means no drainage. After the extreme flood season of 2019-20, which covered our property with upwards of three feet of water five times, our soil was horribly compacted. The soil in our vegetable bed was so hard you could not penetrate the surface without extreme effort. Even when our neighbor showed up with tractor and plow, he found it hard to break the surface.

It may seem like everything is stacked against us for making a garden on this site. But we have managed to create an interesting and diverse environment for growing edible as well as ornamental plants. As a working landscape gardener for the last 20 years my home garden developed rather haphazardly. At this point it is a hodgepodge of plants rescued from projects over the years and my rather eclectic taste in plants, purchased, grown from seed or received as gifts from friends. The

garden is an odd amalgam of weedy lawns, an orchard, a 60- by 130- foot vegetable bed, a semi-wild area to the back, and some very over-crowded beds of ornamentals. Among this odd assortment of plants we've assembled, there are a few focused collections: namely willows, hydrangeas, irises...

and ferns.

I have always had a fondness for ferns and the shady places they grow, but did not start collecting and studying them until about 15 years ago. Our property had only three native terrestrial ferns when we arrived. Western sword fern (*Polystichum munitum*), western lady fern (*Athyrium filix-femina var. cyclosorum*) and bracken fern (*Pteridium aquilinum).* Strangely enough the bracken fern has vanished as the flooding increased over the years. There was also licorice fern (*Polypodium glycyrrhiza*) which grows well above the flood waters in the big-leafed maples.

In the beginning of my fern collecting I scoured books, consulted growers and pestered HFF members for recommendations of ferns for my unique conditions. Well, I didn't need any more lady ferns. Some of the original ones on the property, which I imagine are decades old, are six -feet tall and wide by midsummer, and their pesty sporelings show up everywhere.

But I did add some of the weedier ferns recommended for wet places like Ostrich ferns (*Matteuccia struthiopteris*) and sensitive fern (*Onoclea sensibilis).* I planted them in the back of our property which slumps down nearly 8-feet from the house into the marsh. After 12 years both are disappointingly wimpy considering their aggressive reputations. Part of this might be due to two very noxious weeds that are part of the "joy" of gardening here: creeping buttercup (*Ranunculus repens*) and canary reed grass (*Phalaris arundinacea*). The back part of the property is very minimally maintained. Anything planted there must pretty much fend for itself. I had assumed both of these ferns would just join this crazy mess with abandon, but that is not the case.

Royal ferns (*Osmunda regalis*) were already favorites of mine. So, of course, they were the first ferns I planted. They are flourishing in a small swale in the back where water stands most of the year, and the water table remains only a foot from the surface most summers. They do get a bit more weeding attention than other ferns back there, which probably contributes to their success.

I have also tried two species of maiden fern several times (*Thelypteris kunthii* and *T. palustris*). All have succumbed to slugs—yes, these wet conditions are ideal for raising leagues of slugs, we don't even need to try. I have introduced two new thelypteroids this year. Hope springs as eternal as the slugs; we will see how they fare.

The bulk of my fern collections has been planted in front of the house which is ever so slightly "higher-and-drier" then the back and goes totally underwater only during the most extreme flooding. Remember, that's 30 times in the last 20 years. This is where I planted the wood ferns (*Dryopteris* ssp.) recommended for wet soils. *Dryopteris*

clintoniana, D. goldiana, D. x *affinis* 'Stableri Crisped' and 'Robusta' have all performed beautifully for me. The latter two grew vigorously becoming space hogs. So as my appetite for new and unusual ferns grew, I moved them to the swampy back of the property where they are happy despite weeds, slugs and excessive moisture.

ASPLENIUM SCOLOPENDRIUM TAKES FLOODS UNFLINCHINGLY. POLYSTICHUM POLYBLEPHARUM IS NOT RELIABLE, THOUGH THE ONE PICTURED HERE HAS MADE IT THROUGH TWO WINTERS. MAYBE A SLIGHTLY "DRIER" SPOT.

As my enthusiasm for ferns grew, so did my collection and my daring. I no longer made wet-loving or wet-tolerance a priority when buying ferns. I began to think of my collection as an experiment in "flood hardiness". I have been very happily surprised at how many ferns actually do not mind flooding, and heavy, moisture retentive soils.

Although hart's tongue fern (*Asplenium scolopendrium*) and its many cultivars do not turn up on any fern list for wet sites, they are totally happy here. I am even finding sporelings under our deck. The maiden hair spleenwort (*Asplenium trichomanes*) is a different story. I cannot even keep it alive in a pot that gets submerged during flooding.

About 5 years in, I broke my ban on lady fern (*Athyrium filix-femina*) and started collecting cultivars. All do, not surprisingly, quite well. As do many cultivars of Japanese painted fern (*A. niponicum*) and eared lady fern *(A. otophorum*).

I also branched out with wood ferns. *Dryopteris dickinsii, D. dilatata* (and it's cultivars) *D. erythrosora*, *D. pseudo-filix*-mas and *D. cycadina* are all unphased by these primarily soggy conditions. *D. koidzumiana and D. expansa*, both ferns which I associate with deep forest duff and relative dry situations are happy and robust here. Only Wallich's and Tokyo wood fern (*D. wallichiana* and *D. tokyoensis*) have sulked and refuse to bulk up, or die. *D. labordei* and *D. lepidopoda* vanished after a particularly wet winter.

AS FLOOD WATERS RECEDE HELLEBORES EMERGE UNSCATHED AFTER A DAY TOTALLY SUBMERGED.

Deer ferns (*Blechnum* ssp.) also have succumbed to these conditions. I can only grow the inappropriately named alpine water fern (*B. penna-marina*) in containers with extra drainage. Japanese deer fern (*B. niponicum*) I can barely keep alive no matter what I do for it. I have finally found a place for our native deer fern (*B. spicant)*. After having tried it in many wetter situations, it finally thrives on the roots of a fir.

Polystichums are also an iffy bunch. Our native sword fern (*P. munitum)* does splendidly. There is one decades-old specimen growing in the wettest part of our

In 2020 snowdrops began to bloom between floods after being submerged under two feet of water for over 24 hours.

property, though I have my suspicions that there is an old cedar log buried under it. I've had varying results with the soft shield ferns (*P. setiferum*). I have grown the cultivar 'Dahlem' in the ground for about 10 years and it is a splendidly large specimen now. 'Divisilobum' and 'Congestum Cristatum' are disappointments, as are Asian saber fern (*P. neolobatum*) and tassel fern (*P. polyblepharum*). On the other hand, Christmas fern (*P. acrostichoides*), which I planted a few years ago seems to be on track to being a good performer.

My fern collection is well over 200 species and cultivars at his point. Many are in containers and will stay there unless I bore of them and decide to make them frondy guinea pigs in my grand experiment. All my polypodies and felt ferns (*Pyrrosia* ssp.) will remain in pots. In a fit of impatience I yanked all of my holly ferns (*Cyrtomium ssp.*) from their pots and planted them in the ground a few years ago. They all look much healthier and happier in the now, and are much more cold hardy.

I can hardly list all the ferns doing just fine in my primarily sodden soils. But I would like to mention a few others which have become favorites. Oriental ostrich fern (*Pentarhizidium orientale*) and upside-down fern (*Arachniodes standishii)* have withstood low temperatures and high waters with amazing resilience.

#1 The epicenter of my fern collection during high water. This is the "high and dry" part of our property.

#2 As the waters recede you can begin to assess the damage. The water can hang at this level up to 24 hours.

#3 Waters fully receded, the ground is scoured and extremely mucky. It will take months to dry out. Notice how upright the sword fern stayed through it all.

Most floods in the valley are minor and only cause road closures, stranding us on an "island"

I'm sure I could increase my success rate if I would bother to amend my soils. The floods actually proscribe amending the soil. Any mulch or fallen leaves are quickly swept away by the swift flood water. During the worst floods the current is so cutting it can expose rootballs, and in the worst scenarios lift a plant right out of the ground and send it to Puget Sound. I always walk our road after a flood and have found several choice plants wedged in the crotch of a tree or lying roots heavenward in a pile of debris.

I plant directly into the stubborn native soil, maybe scooping a few fallen leaves in the vicinity into the hole and mixing in what ever potting mix has fallen off the roots. I do not mulch or fertilize, but leave as many leaves as possible on the ground. As I said, most years floods will invariably rake the garden clean.

Though we are on a well and water is free and plentiful, I rarely water, even when planting, saving our water "budget' for vegetables and fruits. Usually one watering in late July or early August for the ornamental beds is all I do. Our soil stays relatively moist close to the surface, except in the longest dry spells like last summer, requiring me to water three times from June to August. I certainly do not want to make the soils wet going into the fall. There will be plenty of moisture to come.

No matter how infatuated I seem, ferns are not my only love by far. We grow around 2000 plants on our property from conifers to ground covers, herbaceous perennials to flowering shrubs, and bulbs. Though I don't have the space here to even cover a minor fraction of them I would like to mention a few fern companions which succeed here. Hellebores (*Helleborus* x *hybridus*) have been amazing performers even blooming before, during and after a flood. I have had mixed luck with hostas some are quite large after all these years, but many vanish after a particularly wet winter. I have my suspicions that is might be an unchecked vole population more than the wet. Our cat who was an avid vole hunter died and our new cat has not acquired the taste yet. So, I grow most of my hostas in pots. Pulmonarias have been outstanding performers here. I have about 15 cultivars which look great well into summer. Sedges are also quite happy here. *Carex morrowii*, *C. plantaginea* and *C. oshiemensis* are all bulking up quickly. As are the *Liriope* ssp. and *Ophiopogon* ssp. And among the bulbs fritillaries, narcissus and snowdrops increase with abandon.

I hope none of you see this as a definitive list for "wet hardy" ferns. Gluey anaerobic clays would never do for most of these ferns. And year-round moisture could be a real problem, luckily for us eventually our soils dry out, at least for a month or two. But I do hope this anecdotal report will embolden you to step beyond the soil and moisture requirements recommended for any given fern. To experiment.

As I write this, the Christmas snow of 2021 is slowly beginning to melt. And though it is January, it feels a bit like spring. I can't wait to see all my ferns again. To assess what was protected by the snow, and what I lost to the cold.

But mostly, I just want to muck about in my wet garden again.

HAPPY NEW YEAR FROM SNOWY BELLEVUE, WASHINGTON USA

Article and photos by Sue Olsen
Bellevue, Washington

Editor's Note

It's New Year's Eve Day and it's cold. And as Richie, Daniel, John and Dave noted we've had snow here since Christmas. I'm delighted and think it is beautiful but should you be one who disagrees do remember that it serves as a blanket protecting your plants from the cold and some of the wind while gently carrying down a snowflake tad of nitrogen to nourish your soil.

POLYSTICHUM MUNITUM

Meanwhile, I fully understand it is snowy over much of the country but what is unusual for us – and our plants - is the exceptional cold, down to single digits in some areas. For the last five to ten winters a cold day or two here was maybe 25-30 F. We of course readily adapted and optimistically planted some "borderline hardy" ferns. They've been beautiful. Now however comes the reality brrrr. Fortunately, the snow covering has been sufficient enough to leave a "mulch" but I've been curious and eager to learn about initial local observations so I emailed a query to board members

and friends. What did I learn from the responses? The first and most sensible one was that we won't really have mortality info until late spring. However several members noted that they moved their most vulnerable ferns into their garages and in one case under lights therein. Others placed assorted light weight coverings or even clear plastic semi-cages over their newly planted specialties. (Mind you tree ferns here are wrapped and protected in the fall annually so they had better survive the effort and are not in the survey) Most of our ferns however are on their own and nowhere are they all secure. I have a received a number of reports and here's where there are possibilities that some currently may to be in trouble:

Woodwardias, Blechnums, Doodias, Diplazium dilatatum and *Pyrrosias* are on the preliminary list.

January 4, good news – The snow is melting and plants are looking surprisingly healthy. Watch for a more accurate account in our summer issue.

And, in the meantime please let us know about YOUR experiences these cold days. It would be a great interest to have national and international observations and comments. 🙂 THANK YOU!

Cyrtomium macrophyllum

Bainbridge Island Fern Display Garden

John van den Meerendonk
Bainbridge Island, Washington
Photos by Dave Gibson

The Library Fern Display Garden was first planted in spring of 1999 with 300 ferns representing 70 species and varieties. Through the years the fern numbers have waxed and waned. In recent years the Fern Garden has gotten better with improvements in irrigation, more time and care given to the garden and new fern additions. Today, the garden has about 100 species and varieties of ferns with additions being added each year.

The Fern Garden lies in the middle of Puget Sound about 10 miles west from downtown Seattle as the Raven flies. We receive approximately 39 inches of rain annually. The climate is Temperate-Mediterranean with dry summers and wet winters. The Fern Garden lies under a canopy of 100 foot tall Douglas Fir (Pseudotsuga menziesii), providing partial shade for most of the garden. Winter temperatures have been mild the last few years. The Garden is in Zone 8. As I write this, the weather forecast calls for the week after Christmas with low temperature in the mid-teens F. It hasn't been this cold here in a number of years, so it will be a test for the marginally hardy ferns that have become popular here, like Pteris, Coniogramme, Pellea, and

some Blechnums, Woodwardias, Adiantums and Polypdiums. Fern friends are packing their tender treasures into the garage or home to wait out the cold spell. The tree ferns have been insulated, but we will keep our fingers crossed for their survival.

I make special note that heat damage occurred on a number of ferns this year for the first time. In early June a heat wave with temperatures up to 108 deg. F. occurred. Damaged occurred on *Adiantum aleuticum*, with fronds drying out on a number of large, well-established plants. Other maidenhairs suffered likewise. Our large patch of *Matteucia struthiopteris* (Ostrich Fern) also got dried (burnt) out even though the roots were in moist soil streamside. Our native summer dormant *Polypodium glycyrrhiza*, went dormant abruptly. Lost the Athyrium hybrid 'Winters Fury', a strong growing half dozen of them collapsed and died. We are always looking at the cold tolerance of the ferns we grow. In the future we will be selecting for heat tolerance, even for cooler regions where significant growth affecting heat spells are becoming common place.

Adiantum aleuticum

Bainbridge Island Display Garden Fern List

Fern List and Survey - December 2021

Ratings 1 Didn't survive 2 Poor performance 3 Good performance 4 Attractive but not thriving 5 Best performance

Genus	Species	SSP/VAR Cultivar	Rating	Notes
Adiantum	aleuticum		5	wonderful
Adiantum	aleuticum	var. subpumilum	5	especially wonderful
Adiantum	aleuticum	'Imbricatum'	3	just planted - 2021
Adiantum	pedatum		3	planted - 2020
Adiantum	venustum		4	slow, it is in a dryer area
Adiantum	x 'Mariesii'		4	planted - 2021
Adiantum	x 'Tracyi'		4	planted - 2020
Arachniodes	simplicior		2	slow, needs heat, watch for slugs
Arachniodes	standishii		3	need to move in less wet area
Asplenium	trichomanes		4	in rock wall cracks.
Asplenium	scolopendrium		4	performs well
Asplenium	scolopendrium	'Crispa Group'	4	performs well
Asplenium	scolopendrium	'Cristata Group'	4	performs well
Astroblechnum	penna-marina		5	with reg. watering grows strongly
Athyrium	filix-femina		5	strong grower where wet
Athyrium	filix-femina	ssp. angustum 'Lady in Red'	3	does not stand up well
Athyrium	filix-femina	'Axminster'	4	does well
Athyrium	filix-femina	'Frizelliae'	4	reverts
Athyrium	filix-femina	'Minutissimum'	5	small and tidy
Athyrium	filix-femina	'Victoria'	5	does well
Athyrium	niponicum	'Pictum'	4	needed regular watering
Athyrium	niponicum	'Pictum Regal Red'	4	needed regular watering
Athyrium	niponicum	'Pictum Pearly White'	4	needed regular watering
Athyrium	niponicum	'Pictum Ursula's Red'	4	needed regular watering
Athyrium	otophorum		3	nice, not a strong grower
Athyrium	X 'Ghost'		4	

Athyrium	X 'Godzilla'		3	
Athyrium	X 'Branford Beauty		3	
Athyrium	X 'Winter's Fury"		1	Heat spell and dryness in June, '21
Blechnum	chilense		5	doing well
Blechnum	novae-zelandiae		1	just planted – 2021
Cyrtomium	falcatum	'Rochfordianum'	4	nice
Cyrtomium	falcatum	'Butterfieldii'	4	only one left
Cyrtomium	fortunei		4	nice
Cyrtomium	fortunei	var. intermedia	4	nice
Cyrtomium	fortunei	var. clivicola	4	nice
Cyrtomium	devexascapula		4	new, looks good
Cyrtomium	macrophyllum		4	special
Doodia	media		5	in a happy spot
Dryopteris	affinis		5	big, bold, takes sun
Dryopteris	australis		4	like moist
Dryopteris	X complexa 'Robusta'		5	big, bold, takes sun tough
Dryopteris	X complexa 'Stableri'		5	big, bold, takes sun
Dryopteris	X complexa 'Stableri Crisp'		5	very nice
Dryopteris	affinis	'Crispa Gracilis'	5	wonderful dwarf
Dryopteris	affinis	'Cristata'	5	strong grower
Dryopteris	affinis	'Pinderi'	3	
Dryopteris	bissetiana		1	recently planted
Dryopteris	championii		4	
Dryopteris	crassirhizoma		1	died out long ago
Dryopteris	cycadina		5	very nice
Dryopteris	dilatata	'Crispa Whiteside'	1	died out
Dryopteris	erythrosora		5	super
Dryopteris	erythrosora	'Brilliance'	4	
Dryopteris	expansa		5	local native

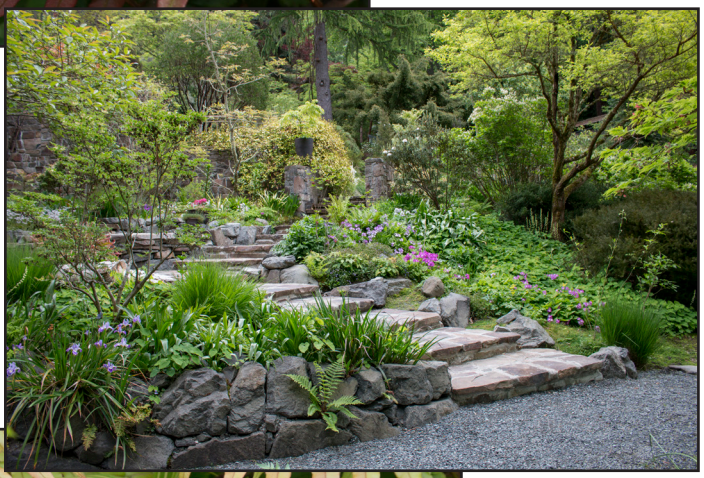
Dryopteris	filix-mas	'Barnesii'	4	
Dryopteris	filix-mas	'Cristata Jackson'	4	
Dryopteris	filix-mas	'Cristata Martindale'	5	
Dryopteris	filix-mas	'Linearis Polydactyla'	4	
Dryopteris	filix-mas	'Parsley'	4	
Dryopteris	hondoensis		1	planted 2021
Dryopteris	intermedia		1	planted 2020
Dryopteris	koidzumiana		1	died out
Dryopteris	lepidopoda		4	slowly getting nice
Dryopteris	pulcherrima		4	
Dryopteris	pycnopteroides		4	
Dryopteris	sieboldii		4	shade, warmth
Dryopteris	tokyonesis		4	
Dryopteris	wallichiana		4	very nice
Dryopteris	wallichiana	'Jurassic Gold'	?	planted in 2020
Gymnocarpium	disjunctum		1	died out
Gymnocarpium	dryopteris		1	died out
Matteuccia	struthiopteris		5	aggressive where moist
Matteuccia	struthiopteris	'Jumbo'	5	
Onoclea	sensibilis		3	slow to establish streamside.
Onychium	japonica		1	died out
Osmuda	regalis		5	happy stream-side
Osmuda	regalis	'Cristata'	5	happy stream-side
Osmuda	regalis	'Purpurascens'	5	outstanding
Osmuda	regalis	'Undulata'	5	very nice
Osmundastrum	cinnamomeum		5	performs well, beautiful
Pellaea	rotundifolia		1	died out
Polypodium	glycyrrhiza		3	on ground
Polypodium	scouleri		5	I keep in moist shaded site
Polypodium	vulgare		2	hanging on

Polypodium	vulgare	'Bifidum'	2	hanging on
Polystichum	acrostichoides		4	does ok
Polystichum	aculatum		4	
Polystichum	andersonii		1	died out
Polystichum	braunii		3	
Polystichum	X dycei			
Polystichum	luctuosum		5	unique steely green
Polystichum	makinoi		4	
Polystichum	mayebarae		1	died out
Polystichum	munitum		5	our dependable tough grower
Polystichum	neolobatum		5	super
Polystichum	polyblepharum		5	year around beauty
Polystichum	rigens		4	
Polystichum	setiferum		5	does so well as all setiferums here
Polystichum	setiferum	'Bevis Group'	5	does so well as all setiferums here
Polystichum	setiferum	'Divisilobum Group'	5	does so well as all setiferums here
Polystichum	setiferum	'Plumosum Group'	5	does so well as all setiferums here
Polystichum	setiferum	'Congestum Cristatum'	5	does so well as all setiferums here
Polystichum	setiferum	'Dahlem'	5	does so well as all setiferums here
Polystichum	setiferum	'Herrenhausen	5	does so well as all setiferums here
Polystichum	setiferum	'Rotundatum Cristatum'	4	does so well as all setiferums here
Polystichum	tsus-siense		5	nice and dependble
Polystichum	xiphophyllum		1	lost – died out
Pteridium	aquilinum		1	native
Struthiopteris	spicant		5	our wonderful native
Woodwardia	fimbriata		4	in protected area near building
Woodwardia	orientalis		-	planted in 2021
Woodwardia	unigemmata		5	one of the best, stream side

Ferns of the Elisabeth Miller Botanical Garden

Photos by Richie Steffen

Blechnum wattsii



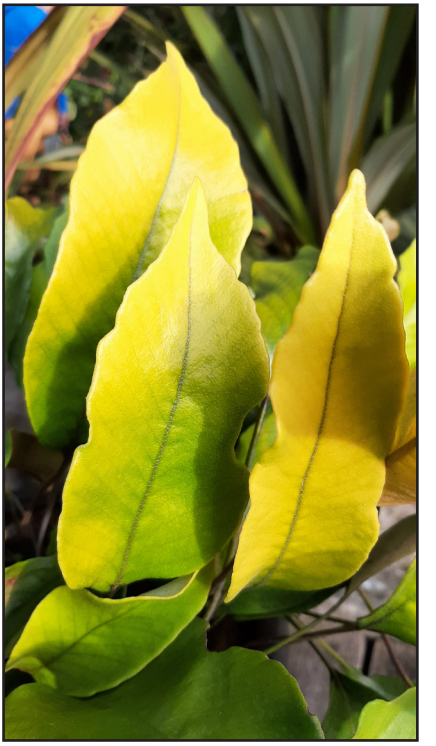
Lower stone staircase

Blechnum novae-zelandiae

Athyrium otophorum, Paeonia suffruitosa

Blechnum discolor

Dryopteris yigongensis



Pyrrosia lingua 'Ogon'

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