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Title: **Developing a Class on Hardy Fern Gardening**

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Abstract:

The Morris Arboretum course catalogue has not included any classes on hardy fern gardening. The general public in the surrounding region has a strong interest in hardy fern gardening. The Morris Arboretum has a substantial collection of hardy ferns. For my internship project I developed a class on hardy fern gardening to be taught here at the arboretum. The class covers the history of hardy fern gardening and general cultural requirements. There are descriptions of a variety of hardy ferns that can be easily grown in this area. The ferns are presented into three categories based on their habit: ascending, spreading, or small stature. I taught the class twice to volunteers here at the Morris Arboretum, in order to get feedback and improve the class. There will also be a tour of the fern collection at the arboretum following the lecture. This tour will include many of the ferns that were discussed during the lecture. This class was developed so that my mentor, Shelley Dillard, will be able to teach it in the following years.

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INTRODUCTION

Despite the diverse selection of classes offered at the Morris Arboretum, no course in hardy fern gardening is presently offered. There is a need for such a course: the arboretum has an array of hardy ferns planted throughout the grounds, local nurseries offer many hardy ferns for purchase, the climate in the local area is ideal for hardy fern gardening, and there's much interest among the population. My project is to develop a class on hardy fern gardening to be offered in the Morris Arboretum course catalogue.

TOURING FERN GARDENS

The first step in developing a fern gardening class was to familiarize myself with hardy ferns. I walked the gardens here at the Morris Arboretum, observing and taking pictures of the fern beds. These walks helped introduce me to the kinds of ferns that can be cultivated in this region. The Stumpery in particular has a variety of hardy ferns; it was this garden from which I took examples of ferns to talk about in my class.

Throughout my research I referred to "Ferns for American Gardens" by John Mickel. John Mickel had been curator of the fern gardens at New York Botanical Garden. In September of 2006 I visited the New York Botanical Garden to see their collections. Unfortunately, the woodland garden, which is where Dr. Mickel had curated hardy ferns, had been neglected for some time. It was overgrown with weeds and, according to my host, suffered from a severe flood followed by prolonged drought. However, there were species of sensitive fern and ostrich fern, along with some *Dryopteris* and *Athyirum*, which helped me see up-close the hardy nature of these species. I include this information in the class.

Although the actual fern garden was in a pathetic state, New York Botanical had many plantings of ferns. Their home gardening section had excellent examples of *Athyrium* and *Dryopteris*. The purpose of these plantings was to demonstrate how to use ferns in the home garden; it was a real-life example from which I drew inspiration. I experienced the type of gardening which I was developing a class on.

TOPICS COVERED DURING THE PRESENTATION

For the class I relied heavily on John Mickel's "Ferns Form American Gardens." This book is exhaustive in its information. He covers the history of hardy fern gardening, botany, how to use ferns in the landscape, as well as an encyclopedia of hardy fern species. This last section covered virtually all ferns that can be grown in this area, with information on zone requirements, landscape use, culture, availability, habit, and cultivars.

Dr. Mickel discusses the origins of hardy fern gardening, which had its beginning in Victorian England. Although the cultural requirements are somewhat different for North American gardens, the basic foundations are the same. I turned to two books on British Hardy Fern Gardening for cultural requirements. These are Reginald Kaye's "Hardy Ferns" and F. Foster's "The Gardener's Fern Book." .

Throughout my research I found information on the Victorian origins of hardy fern gardening. According to John Mickel, it began with the plant expedition trips to places overseas,

from which plants were collected and brought back to Britain. Wardian cases we used to cultivate these tropical plants. Interest in ferns increased as exotic new species were brought over. It was not long before English gardeners began paying attention to the ferns growing in their own British Isles. It was there that they discovered the characteristic crested varieties of British Ferns still popular today. An interesting aspect of these crested varieties, which I talk about in the class, is their restriction to the British Isles. These ferns do not grow anywhere else in the world in such abundance as in Britain. Mickel states that the reason for this peculiarity is still unknown to pteridologists.

Botanists who study ferns are called pteridologists. My mentor Shelly Dillard explained to me that during Victorian times, there was a phenomenon known as "Pteridomania." The term was coined to describe the manic obsession with collecting ferns from the wild. Some ferns were collected so heavily that they almost became extinct—an interesting fact which I include in the talk.

After researching the history of hardy fern gardening, I sought information on culture. The proper way to grow ferns is one of the most important reasons why people are taking a class. They want to know the general methods of gardening with ferns.
The cultural requirements for ferns were mapped out when Victorians began fern gardening. These are the same requirements for gardening in the Philadelphia region. Three essential factors must be considered when gardening with ferns: Light, Soil, and Moisture.

I have found that light requirements make fern gardening so popular in our region. When I interviewed arboretum staff and volunteers they all praised the shade-loving nature of ferns. Low light requirements make ferns ideal for places in the garden where many other plants cannot thrive.

According to Mickel, ferns prefer dappled shade. This is the kind of shade one finds in a woodland setting where ferns are native. Such shade can be at the edges of trees, the north sides of buildings, or behind fences and walls. In the New York Botanical Garden most of the ferns were in borders of forested areas. They were all clearly thriving in this setting.

Keeping the shade-loving nature of ferns in mind, I make a point of mentioning that no ferns thrive in deep shade. Dr. Mickel emphasizes this point emphatically, as does the Brooklyn Botanical Garden manual of fern gardening. All plants require some light to live. Brooklyn Botanical mentions a helpful tip in determining if your spot has enough light: "make sure you can see the sky from the place where ferns are to be planted."

The second essential element is to consider soil. Dr. Mickel states that ferns prefer one of two types of soil, depending on the species. The majority of ferns prefer soil that is slightly acidic—rich and well draining. I include a slide of a forest floor in the class to drive home this idea. The slide shows the ground covered with decomposing leaves, making the soil high in organic matter. For the home gardener, I recommend amending the soil with compost or mulching with leaf-mold. These practices will acidify a neutral soil just enough without over fertilizing—which can be detrimental to a fern's roots.

Mickel also suggest testing the soil to determine the PH level. A high PH may be common in this region. Mickel states that if the PH is extremely high, and the water is hard, on should select species which prefer an alkaline soil. Such information is valuable to the gardeners in this region where limestone deposits are abundant.

The third vital element is moisture. All of the authors agreed that the surest way to kill a fern is to under-water it. Watering is particularly important when establishing new ferns in the garden. Firstly, one must not allow the roots to dry out when transplanting the

fern. I emphasize this several times throughout the course of the lecture. Hardy ferns can be expensive and the new fern gardener should be aware of the proper transplanting methods before they make the purchase. Secondly, one must water thoroughly for several weeks after transplanting to get them established. After that, provide water during hot summer months and periods of drought.

After discussing the cultural requirements of hardy ferns, I go into a description of the various types of ferns that can be cultivated in this region. For each species, I provide a slide with a photo on the right side, and some general information on the left side. This information includes its scientific and common names, growth habit and size, type of foliage (deciduous or evergreen), and any special points of interest.

The foundation for the following fern descriptions is their habit. The specific growth habit of ferns is what determines how they are used in the landscape. I begin by discussing ascending habits. Such ferns generally have a crown with a stem that rises vertically off the ground. For a first example, I talk about the ostrich fern. This fern is very common throughout the arboretum—perhaps the most common—and it is extremely easy to cultivate. All beginner fern gardeners can have success with the ostrich fern whose scientific name is *Matteuchia struthiopteris*. I recommend using it for large spaces, because although it has an ascending habit, it also spreads by means of runners along the ground. It can fill in an open space quite quickly. For aesthetic value it can be a striking specimen plant. In masses it creates dramatic drifts.

The next group I talk about are the *Athyriums* or Lady Ferns. I begin with *Athyrium filix-femina* common name European Lady Fern. Here is an example of a more fragile looking fern. The foliage looks "lacy" and "feathery." It grows to be one to two feet high. A special feature of this fern is that despite its delicate appearance, it is adaptable to sunnier locations.

The Japanese Painted Fern *Athyrium niponicum* is the second species of *Athyrium* that I include. I mention its tri-colored foliage—a color palette that is completely unique among the ferns and makes this species extremely popular. I include four different pictures of the Japanese Painted Fern so that the audience can get a clear sense of its aesthetic value. One should plant this fern in shady spots because the sun tends to bleach out the colors.

The Wood and Shield Fern group, *Dryopteris*, is next. I include *Dryopteris* because it is very common in this area. The group has some of the most striking and popular species of hardy ferns. I mention the Golden- Scented Male Fern *Dryopteris affinis*. It grows to be very tall and I suggest it as a less aggressive substitute to the ostrich fern. In addition, it is highly adaptable to a variety of growing environments and light levels.

Dryopteris is one genus of fern that hybridizes quite readily. It is important to mention this because gardeners may find different looking forms of *Dryopteris* popping up in their gardens with time. One such species that arose from hybridization is the Dixie Wood Fern *Dryopteris x australis*. I include a photo of its foliage, which is a dark lustrous green.

At this point in my presentation I talk about *Dryopteris erythrosora*, the Autumn Fern. This fern deserves special attention and I devote four slides to pictures. I begin with the description I do for each species. Then there is a close-up of its bright orange foliage. Next I show drifts in the fall time. This slide is particularly striking. Every time I show it the audience is impressed. Finally, I show a collage of pictures of iridescent foliage and sori. The red sori are another striking feature of the autumn fern. At this point in the lecture I take the opportunity to talk about sori—the means by which ferns reproduce sexually. The main point I want to get across is that sori are an additional aesthetic feature to consider when purchasing ferns.

The final species of *Dryopteris* is *filix-mas*, the Male Fern. I show a slide of the fiddleheads emerging in the spring. Like the sori of *erythrosora*, I talk about the aesthetic value of fiddleheads. They have various colors and textures and add interest in the early spring when little else is up.

Ferns also have a spreading habit instead of ascending. They have a rhizome that creeps horizontally along the ground. Due to this spreading habit, these ferns can be invasive. They also require mulching every year because the rhizome tends to float up to the surface of the soil with time.

The Sensitive Fern *Onoclea Sensibilis* has an extremely aggressive habit. I explain that the horticulture community often shuns the Sensitive Fern. However, easy cultivation and strong competition with ground covers gives it merit in the shade garden.

Also with a spreading habit is the Royal Fern group—the *Osmundas*. I begin with what is perhaps the most well known species—the Cinnamon Fern *Osmunda cinnamomea*. It takes its name from the fertile frond that grows from the center of the crown—covered in reddish brown sporangia. These sporangia, I explain, are another means of sexual reproduction like the sori. In the *Osmunda* group, the fertile frond is completely devoid of foliage. An exceptional species is *Osmunda claytoniana*, which has sporangia born on the same frond with leafy tissue, but interrupting the leaflet half way up—hence the common name Interrupted Fern.

All the ferns mentioned up to this point in the class have been larger ferns—growing at least one foot above the ground. The final ten minutes of the lecture are devoted to ferns with smaller statures, which are ideal for rock garden situations. The Northern Maidenhair Fern *Adiantum Pedatum* gets up to thirty inches high. It prefers to live in alkaline soils—a quality that gardeners in this region may appreciate. I also mention two other smaller species of fern: the difficult to grow P*ellea atropurpurea* Purple Cliffbrake—valued for its aqua-marine foliage, and *Phyllitis scolopendrium* Hart's Tounge Fern, which is prone to rot.

I end the lecture with a few final tips for the beginning fern gardener: select only the healthiest looking plants; never let roots dry out during transplanting; water well until they are established.

TEACHING THE CLASS

In preparation for teaching this class in the springtime, I sought out opportunities to give it "test-runs". The education department was generous enough to give me a session with the Arboretum Volunteer Guides. I specifically wanted to teach the class to the guides, because they can include the information on the tours they offer. They are a well-read enthusiastic group of people, who can offer much constructive criticism.

On February 20th, 2007 I taught the class Hardy Fern Gardening: A World Of Possibilities to the guides. Before my presentation, I asked the audience to please make note of what they would have like me to include in the presentation. My mentor Shelley Dillard and our Fernery Volunteer Diane Smith attended the talk.

The lecture was forty-five minutes long—a length that my mentor praised. She said that it was over thirty minutes but under an hour. Considering that this class is going to be taught by Shelley, her satisfaction with the length is very important. Someone suggested that I offer a handout of the species that I talk about. This comment was redundant throughout the audience, so I took note to include a handout with the lecture. Diane Smith noticed some typos on the

slides that I had overlooked. She also suggested that I name some local nurseries where people can get these ferns. Overall I found this first trial run to be extremely helpful—both because of constructive criticism and experience in teaching the class.

I took a second opportunity to teach the class with revisions having been made. On February 28th I taught it to the horticultural volunteers. I found this audience to be slightly more challenging than the volunteer guides. I was talking at the end of a long day for the volunteers. They had been listening to lectures all morning and afternoon. Many of them were falling asleep during the talk. In general there seemed to be a lack of interest from the audience—undoubtedly because they were so exhausted. This experience was valuable to me. Here was a chance to teach a class to a less enthusiastic audience. While they didn't offer much in the way of constructive criticism, they did give me the opportunity to "toughen-up" and force myself through a rather difficult situation. I now feel prepared to teach this class to a variety of audience temperaments.

TOURING THE GARDEN

The second part of this class is a tour of the hardy fern collection here at the Morris Arboretum. Many of the species in the lecture are in the Hardy Fern Garden of the Stumpery. This is the most obvious place to visit during the tour. We will then walk to the Hill and Cloud area, where there are large drifts of Ostrich Fern growing. The walk back takes us through the woodland garden; here people can see species of *Dryopteris* and *Athyrium* in a more naturalized setting than the Stumpery. The tour will give the audience a chance to experience many of the ferns they were just shown. From an educational point-of-view this is an excellent opportunity. Also, people are likely to remember the Morris Arboretum as they embark on their new fern gardening endeavors; here is a way for the fern collection at the arboretum to gain more attention.

CONCLUSION

A class on hardy fern gardening satisfies a need in the course curriculum at the Morris Arboretum. No such class presently exists. There is a strong interest in hardy fern gardening in this region—my time with the volunteer guides confirmed this. The collection at the Morris Arboretum is generally ignored by visitors and guides. The class was developed with these needs in mind. It addresses the ferns that can be grown in this area and are grown here in the arboretum. It covers the cultural requirements of ferns and some interesting history. Perhaps most importantly, this class was developed with input from Shelley Dillard, who will teach it in the coming years—long after I, Travis Galileo, have moved on.

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