



ISSN 0733-8015

Fiddlehead Forum

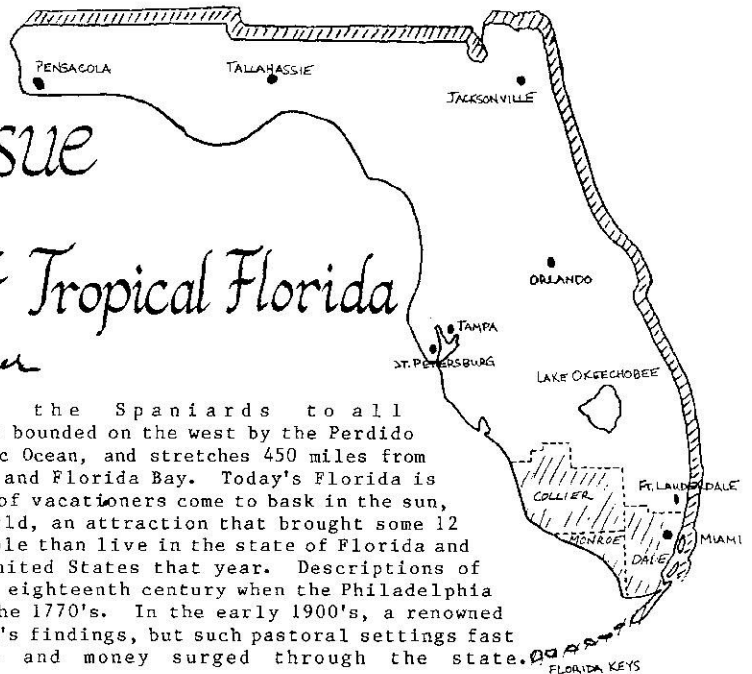
Bulletin of The American Fern Society

~ Editors: Dennis Wm. Stevenson Jan Wassmer Stevenson ~
 ~ Illustrator: Donald D. Ritchie ~ Calligrapher: Ellen Baker ~

"Tropical" Florida Issue

The Ferns and Fern Allies of Tropical Florida

by Roger Hammer



"Florida" was the name given by the Spaniards to all of North America north of Mexico. Modern-day Florida is bounded on the west by the Perdido River and the Gulf of Mexico, on the east by the Atlantic Ocean, and stretches 450 miles from the Alabama-Georgia border south to the Florida Straits and Florida Bay. Today's Florida is generally recognized as a tourist state, where millions of vacationers come to bask in the sun, escape winter blizzards, or escape reality at Disney World, an attraction that brought some 12 million visitors in its first year -- which is more people than live in the state of Florida and twice the number of foreigners that toured the entire United States that year. Descriptions of Florida as an earthly paradise date back at least to the eighteenth century when the Philadelphia naturalist William Bartram wrote about his travels in the 1770's. In the early 1900's, a renowned Florida botanist, John Kunkel Small, reiterated Bartram's findings, but such pastoral settings fast disappeared as a relentless tide of developers and money surged through the state.

Regardless, the magnificent diversity of Florida's flora is still evidenced today by the fact that nearly half of all known tree species native to the United States and Canada occur in the state of Florida. No other state even comes close to the number of orchids (106) that have been reported from Florida, and, although there is no accurate enumeration of all the native and naturalized vascular plants in the state, the number is estimated at about 3,500.

North and Central Florida are dominated by a cold-hardy temperate flora, while the vegetation of the extreme Southern Peninsula, and most particularly the Florida Keys, is of tropical origin and shares a floristic similarity with nearby Cuba and the Bahama Archipelago. Abundant rainfall, warm temperatures, remarkably flat terrain, and a high water-table all contribute to the composition of South Florida's flora. Alternating wet and dry climatic conditions coupled with mild, year-round temperatures offer favorable conditions for tropical plant species, and, although located wholly outside the tropics, the extreme southern portion of the state, which includes the political divisions of Dade, Collier, and Monroe counties, is often referred to as "Tropical Florida".

South Florida is dominated by a variety of habitats, much of it preserved in the 2 million acres of Everglades National Park and Big Cypress National Preserve. From Lake Okeechobee south, covering a distance of about 100 miles, there is a gradual sloping from 17 feet above sea level to sea level at Florida Bay and the Gulf of Mexico. Historically, water that overflowed Lake Okeechobee generally flowed in a southerly and southwesterly direction, but a highly controversial canal drainage system now diverts water to "conservation areas" or sends it directly into the sea. Because of pressure from agricultural and development interests, wetlands were drained, but these practices have now resulted in a spectrum of concerns, including drought, water supply, pollution, and environmental and ecological problems with which Florida must now cope. Drainage has had a drastic effect on Everglades National Park and has critically affected many of the plant communities. The length of hydroperiod effects plant communities. Higher ground harbors extensive pine-palmetto forests and dense stands of broad-leaved hardwoods called "hammocks". Lower elevations, again dependent upon hydroperiod and water depth, are generally dominated by either saw-grass prairies, pine flatwoods, cypress swamps, sloughs, willow thickets, or freshwater marshes and lakes, finally giving way to saltmarsh prairies and impenetrable forests of mangroves along the coastal fringe.

With such a large selection of ecological niches available, it is no wonder that some 1,650 species of flowering plants, gymnosperms, ferns and fern allies have managed to survive without cultivation in South Florida. In the 1932

edition of Ferns of Florida by the early Florida botanist J.K. Small, 107 species of ferns were reported for Florida. In A Country Checklist of Florida Ferns and Fern Allies (American Fern Journal, Vol. 28, 1938) by the late Dr. Donovan S. Correll, the number was listed as 122, and in the most recent work by Drs. Robert W. Long and Olga Lakela, Ferns of Florida (1976), the species account is 135. Thus, Florida accounts for more species of ferns than any other state in the United States. In their monumental work, A Flora of Tropical Florida (1971), Drs. Long and Lakela listed 83 species and varieties of ferns found in the wild in Dade, Collier, and Monroe counties. What with all the taxonomic nomenclatural revisions, range reductions, range expansions, and cultivated "escapees", a complete listing seems arbitrary at best. Some species are exceptionally abundant in a variety of habitats, some may be only locally common, and others cling precariously close to extirpation. It is interesting to note that of the 36 taxa listed as "endangered" by the State of Florida, nine are ferns. It is indeed fortunate that many species are protected in National, State, and County parks. The Fakahatchee Strand State preserve, a forested watershed in Collier county, accounts for 37 different types of ferns, some found nowhere else in the country, and Everglades National Park, encompassing 1.4 million acres, harbors 43 species and varieties.

Pineland areas generally possess a low frequency of ferns, mainly due to the dry, harsh conditions and a high frequency of fires important to the pineland ecology. One fern in particular, however, has adapted to these conditions and is frequently encountered in pineland areas. It deservedly is called the pine fern, Anemia adiantifolia (L.) Sw., and survives fires by keeping its creeping rootstock in crevices of oolitic rocks. Another species that maintains itself in burned-over pineland is the common bracken Pteridium aquilinum (L.) Kuhn var. caudatum (L.) Sadebeck, a wide-ranging, somewhat weedy plant that may form dense thickets. This species is seldom cultivated and is a common cause of poisoning to grazing livestock. It is reportedly carcinogenic.

Of all the varied South Florida habitats, ferns will be the most abundant in areas dominated by hardwoods. Hardwood hammocks and swamps offer favorable conditions for an abundance of ferns, which comes in the form of dappled sunlight, high humidity, rich, organic soil, protection from periodic winter freezes, and, of equal importance, exclusion of fires.

A walk through a typical hardwood hammock could reveal any number of ferns ranging from the common to the extremely rare. Open areas, often created by lightning-caused fires, may become totally engulfed by the familiar boston fern, Nephrolepis exaltata (L.) Schott, a commonly cultivated species generally accepted as escaped and widely naturalized, although treated as a native taxon by some authors. A cultivated relative, the tuber sword fern, Nephrolepis cordifolia (L.) Presl., is also frequent as an escape and is cosmopolitan in the tropics and subtropics.

The common strap fern, Polypodium (Campyloneurum) phyllitidis L., is also frequently seen, either as an epiphyte, a semi-terrestrial on rotting logs, or as a terrestrial plant growing in the rich leaf litter of the forest floor. The large, stiff, strap-shaped leaves of the species are unmistakable. Like many epiphytes, ferns tend to be seen on rough-barked trees, most particularly live oak, Quercus virginiana, which is on the southern extreme of its range in South Florida. Close scrutiny of a live oak will almost always reveal colonies of resurrection fern, Polypodium polypodioides (L.) Watt, whose colloquial name is in reference to the way the fronds curl up when dry and then revive when moistened. Another good host for epiphytic ferns is Florida's state tree, the cabbage palm, Sabal palmetto, which is commonly festooned with two species of ferns. The old leaf bases near the top of the palm will commonly harbor the golden polypody or serpent fern, Polypodium aureum L. [syn.

Phlebodium aureum (L.) Sm.], while the trunk may be draped with the odd shoestring fern, Vittaria lineata (L.) Sm. The shoestring fern lacks strengthening tissue in its fronds and is pendent, closely resembling thick blades of grass.

Casual observers might easily overlook one of South Florida's native ferns. Not only is it diminutive and secretive in its habitat, but it is also quite uncommon and takes advantage of a space generally only occupied by mosses. It is one of the filmy ferns, Trichomanes kraussii Hook & Grev., and is usually found growing low to the ground on the buttressed trunks and roots of strangler figs, Ficus aurea, in company with a moss, Pseudocryphaea flagellifera, which it closely resembles. Another equally rare species, Trichomanes punctatum Poir. ssp. floridanum W. Boer, forms dense mats on the vertical walls of solution holes.

In sharp contrast to epiphytic species that perch high up on their competitors, many ferns take advantage of the moisture provided by the numerous solution holes found in hammocks. Unlike the sinkholes of central and northern Florida that cave in due to underground air pockets, solution holes are formed by the acidic action of rainwater on the limestone substrate. Most have sheer, vertical walls, and some are quite large. These holes were apparently utilized by Florida indians as a source of water and were important to at least some early Florida settlers to hide their illegal moonshine stills. Typical ferns that take advantage of the microclimate provided by these holes would include the maidenhair fern, Adiantum tenerum Sw., the lacy spleenwort, Asplenium myriophyllum Chap., the threatened slender spleenwort, Asplenium dentatum L., creeping or walking fern, Thelypteris reptans (J.F. Gmel.) Morton, and perhaps two species of halberd ferns, Tectaria heracleifolia (Willd.) Underw., and the much smaller Tectaria lobata (Poir.) Morton. Around the perimeter of these holes might also likely be the beautiful Florida tree fern, Ctenitis sloanei (Poepp.) Morton, now becoming rare due to unscrupulous collectors and development pressure. Other select holes that offer exacting conditions may even harbor the exceedingly rare hollyleaf fern, Lomariopsis kunzeana, (Presl.) ex Underw. & Holtt., a species known from but a few protected sites.

Hardwood swamps, most particularly the vegetatively diverse Fakahatchee Swamp, a State preserve, offer sanctuary for an abundance of ferns, many of which require more humid conditions than are found in the somewhat drier hardwood hammocks. One such plant is one of North America's rarest native species. It is a morphologically primitive fern relative known colloquially as the hanging club-moss, Lycopodium dichotomum Jacq., an endangered species represented perhaps by only three individual plants in this country, but protected by miles of trackless swamp, belligerent alligators and fat cottonmouth water moccasins. It grows as an epiphyte on the horizontal branches of pop-ash, Fraxinus caroliniana, and pond-apple, Ammona glabra, two native trees that commonly inhabit the deeper, watery sloughs of cypress swamps.

Due to annual summer flooding, most swamp ferns have taken up an epiphytic habit, although some are even more adventitious and take advantage of floating logs. Old, defunct logging roads offer high ground for both plants and animals, and ferns often reach their greatest abundance on these linear islands that stretch deep into the heart of the Fakahatchee Swamp. Old, abandoned roadbeds often are lined with sword fern, Nephrolepis biserrata Schott, a handsome, robust relative of boston fern, as well as a mixture of the overly abundant wood fern, Thelypteris kunthii (Desvaux) Morton, and the more attractive, shiny-leaved Thelypteris interrupta (Willd.) Iwatsuki. Swampy areas that are only inundated by water a foot deep or less or areas that are simply kept moist throughout much of the year will have a thick understory of swamp fern, Blechnum serrulatum L.C. Rich., and perhaps occasional robust specimens of the commercially

Ferns in Fairchild Tropical Garden

by Nancy Hammer

important royal fern, *Osmunda regalis* L. var. *spectabilis* (Willd.) Gray. Moist ground also favors our largest of ferns, the leather fern, *Acrostichum danaeifolium* Langed. & Fisch., which can also be found abundantly along many of the flood control canals that criss-cross South Florida. This is the only South Florida fern that is sometimes sought out for its edible croziers, or fiddleheads, which may be eaten raw, dipped in batter, and fried or steamed in water.

As mentioned previously, canals dug to drain swamps for flood control and urban sprawl have had severe effects on native plant communities, and in many cases it has been the epiphytes that have been depleted through dessication. One bizarre fern that has suffered from habitat drainage and subsequent fires is the endangered hand fern, *Ophioglossum palmatum* L., that grows almost exclusively on cabbage palms. It is known from twelve Florida counties but was reported as an extremely abundant species by Florida's early botanists. The same is true for the endangered bird's nest fern, *Asplenium serratum* L., which now exists only in areas protected by distance or inaccessibility from rapacious collectors who used to sell truckloads of them to tourists. A relative of the bird's-nest fern has also received endangered status due to drainage of swampland, even though the species shares the same "resurrection" capabilities that *Polypodium polypodioides* possesses. *Asplenium auritum* Sw., the auricled spleenwort, maintains a precarious position in the United States and now appears to be restricted to the Fakahatchee and Deep Lake strands of Collier county. The species was once common on live oaks along the Hillsborough River in west-central Florida, but as these trees were logged, it disappeared entirely.

Other swamp-dwelling, epiphytic ferns that still may be found in South Florida are the endangered narrow-leaved strap fern, *Polypodium angustifolium* Sw., the rare tailed strap fern, *Polypodium costatum* Kunze, and the elegant *Polypodium ptilodon* Kunze var. *caespitosum* (Jenman) A.M. Evans. Swamps are dotted with numerous ponds and lakes, areas not often thought of as fern habitats, but water fern, *Salvinia minima* Bak., successfully competes with the native aroid known as water lettuce, *Pistia stratiotes*, and the invasive, naturalized water hyacinth, *Eichhornia crassipes*.

The numerous National, State, and County parks in southern Florida offer visitors ample opportunities to observe many of Florida's ferns in their natural habitats. A growth and land-use policy is much needed, however, if Florida is to protect its dwindling natural wealth. Perhaps ex-Governor Reubin Askew said it most succinctly in October, 1973 when he addressed a conference on growth and the environment: "Let's look around and see what unchecked, unplanned growth has done to Florida. It threatens to create megalopolis along the entire length of the east coast and from Jacksonville across central Florida to Tampa Bay and down the south Suncoast. Its waste products have polluted our waterways from one end of the state to the other. It has transformed vast estuarine areas and wetlands into waterfront home sites and canals. It has destroyed beautiful and valuable sand dunes and lined our beaches with hotels and high-rise condominiums. True, we have enjoyed economic prosperity. But all can see the warning signals and what they portend if we don't grab the reins of this galloping giant."



ROGER HAMMER IS A NATURALIST FOR METRO DADE COUNTY PARK & RECREATION DEPARTMENT AND DIRECTOR OF CASTELLOW HAMMOCK NATURE CENTER IN SOUTHWEST DADE COUNTY.

Beyond the wrought iron gates of Fairchild Tropical Garden lies an eighty-three acre botanical paradise. It is planted with cycads, palms, flowering trees, and a plethora of epiphytes, lithophytes, coniferophytes, and pteridophytes. Ferns occur naturally or are planted by men as agents of nature. They grow at ground level, at eye level, at an arm's length, or beyond. Some ferns in cultivation are growing under conditions better than they would be growing in nature. Some are at the ends of their ranges, but they are still thriving: growing and reproducing.

At the Founder's Court just within the Garden, palm trees and some cycads are the dominant features. To visually connect the patio and pool with the taller plants, *Polypodium scolopendrium*, the wart fern, blankets the ground. Wart ferns grow directly under the cycads in a cool, shaded environment. Just a few feet away from the cover of the cycads, the intensity of the midday sun and its reflection on the keystone patio could make a lizard's skin shrivel. The wart ferns grow just as readily in the brightest, merciless light as in the shade. Several feet of rhizome must be trimmed off the patio stone annually because of this fern's aggressive nature. On a palm, *Sabal mexicana*, is another fern, the epiphytic *Platyserium bifurcatum* ssp. *bifurcatum*, a staghorn fern. It delights in the comfort and coolness of shade.

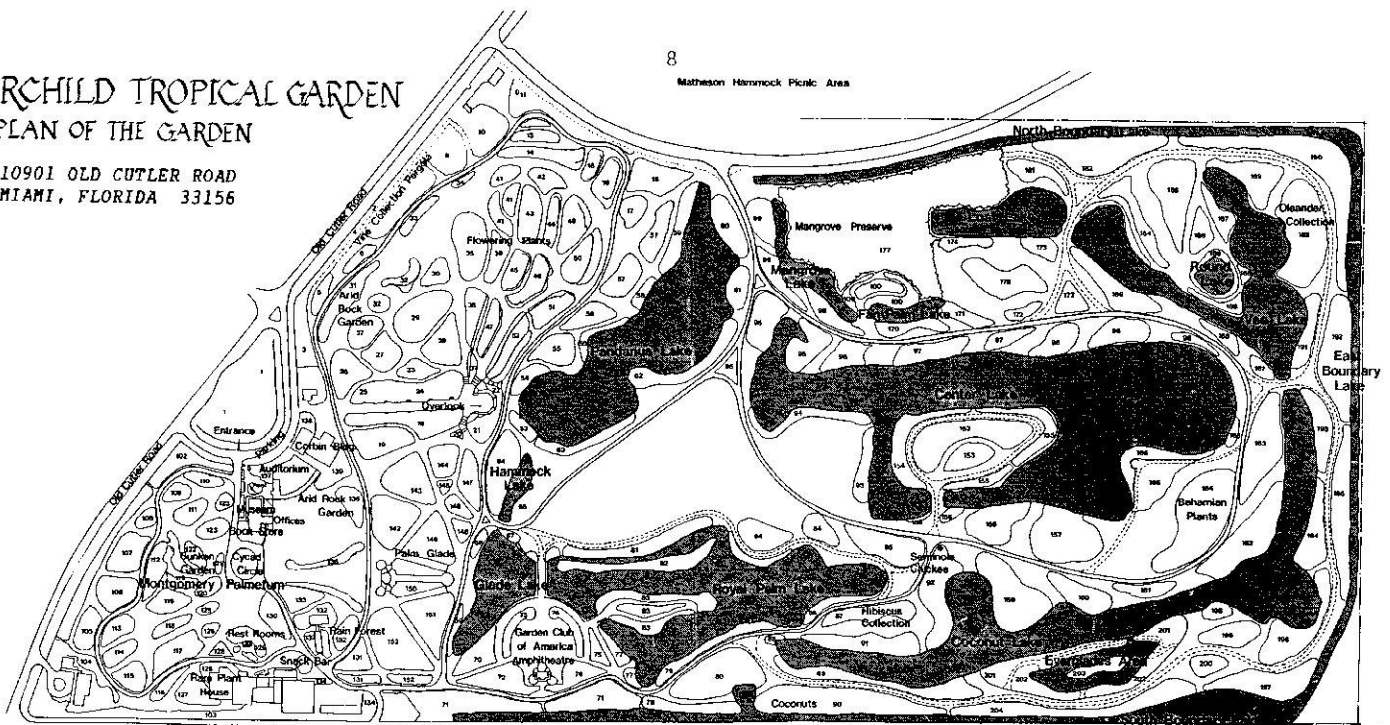
In the Cycad Circle, a brief walk from the Garden's entrance, five genera of cycads represent markedly different habitats from all over the tropical and subtropical world. This Circle is fully exposed to the elements and is surrounded by a black-paved tram road. There is no shelter from the sun and no irrigation. On *Macrozamia moorei*, a cycad from the rainforests of eastern Australia are *Polypodium polypodioides*, the resurrection fern, and *Vittaria lineata*, the shoestring fern. The corky nature of the cycad trunk formed by the leaf bases offers a suitable medium for a secure foothold. The long recurved leaves of the cycad provide shade. These two fern species are subject to dry periods causing the leaves to contract. The resurrection fern completely curls up, exposing the lower surface which is covered by red-centered scales to protect the smooth upper surface. In response to a heavy rain, the cells regain their turgor and the leaves unfurl, crozier-fashion.

West of the Circle, oak limbs covered with bromeliads, orchids, and the resurrection fern encircle the rim of the Sunken Garden. Over decades, this large hole was created by the action of acid water dissolving the limestone. *Nephrolepis falcata* f. *furcans*, the fishtail fern, borders the chiseled limestone walkway that is slippery when wet. Resonating sounds of the gurgling waterfall lure one down into the cool, damp, shaded sinkhole. The walls of this rocky amphitheater are concealed by the softly pubescent, light green leaves arising from a short rootstock covered by silky rust-colored scales of *Ctenitis sloanei*, the Florida tree fern. This uniform lime-green foliage is occasionally interrupted by the finely divided dark, polished green leaves of *Davalia solida*, the rabbit's foot fern, crawling over the rocks. Finally, one's attention is focused on the magnificent *Angiopteris evecta*, the king fern, flanking the waterfall. The bipinnate leaves radiate about ten feet in all directions, gracefully arching over the reflecting pool. Water splashes on the stout stem armored by ancient-looking clavate stipules

FAIRCHILD TROPICAL GARDEN PLAN OF THE GARDEN

10901 OLD CUTLER ROAD
MIAMI, FLORIDA 33156

8
Matheson Hammock Picnic Area



which support generations of mosses and more ferns: *Adiantum* species, the maidenhairs; *Polypodium aureum*, the golden polypody; and *Ctenitis sloanei*, the Florida tree fern.

Enroute to the Rare Plant House, there are beds of *Nephrolepis cordifolia*, the tuber sword fern that can overrun an area if left unchecked. It thrives on adversity... in hot, dry situations, or on rocks, or in the shade of large, spreading fruit trees. Glance upward and settle your eyes on another *Platycerium bifurcatum* ssp. *bifurcatum*, a staghorn that nearly surrounds the three-foot diameter trunk of a native live oak, *Quercus virginiana*. Smooth palm trunks are suitable substrates for some epiphytic ferns, but palms' persistent leaf bases, called boots, provide more than adequate organic matter for creeping rhizomes. *Polypodium aureum*, the golden polypody, is established in the boots of several exotic palms, including the sugar palm, *Arenga pinnata*. The rufous scaled, gnarly rhizome wraps itself around and within the leaf fibers that are as coarse as bristles on a boar's back. Typically, this elegant Florida native is found in the crowns of cabbage palms, *Sabal palmetto*, and in the live oaks. To conserve water during the dry winter months, many or all of the lobed, powdery blue-green leaves are shed from the rhizome.

The exterior of the Rare Plant House is bombarded by the glaring afternoon sun in the summer, not a desirable site for many ferns. Inside, the dramatically different environment is a favorable habitat for ferns and fern fanciers. The shaded roof and the richness of colors and textures create a jungle atmosphere. The odors, fragrances of flowers, and the air's dampness remind us of the hot, humid tropics. The canopy provided by the tree ferns from equatorial areas split the sunlight into sparkling patterns of light on the spongy, mulched paths. The vegetative inhabitants are given daily overhead watering or misting, weekly in the summer (March-November) or monthly in the winter (December-February) fertilizing, and constant dedicated and tender attention by a horticulturist and his crew of volunteers. Paddle fans in the main display area circulate the warm air that rises toward the peak of the thirty-foot ceiling. In the winter, great care is taken to guarantee no less than a minimum temperature of 50 degrees F on those extra cool nights. The upper canopy is dominated by the breadfruit tree, *Artocarpus altilis*, but it is shared by the lacey leaves of the tree ferns. The youngest pinnae of *Cyathea arborea*, the West Indian tree fern, still partially circinnate, are covered in transparent, crystalline scales. The petioles are veiled in satiny beige scales. Although this plant was installed only two years ago from

a three gallon container, it already has a five foot trunk. On the opposite side of the pool is *Cibotium glaucum*, the Hawaiian tree fern. The croziers emerging from the procumbent trunks are masked by golden downy hairs.

The lower level of the Rare Plant House is not as protected as the main display area. Plants here receive the same meticulous horticultural care, but this area is not heated in the winter. Seventy-two percent shadecloth provides sun protection. *Sphaeropteris cooperi*, the Australian tree fern serve as the major component of the high canopy, reaching thirty feet tall. One arching specimen serves as the host to the petite, dimorphic leaves of *Microgramma heterophylla*, the native climbing fern. Another supports the aggressive ascent of *Lygodium clavatum*. An undetermined tree fern from the Philippines steals the scene. Its croziers and mahogany and green petioles are cloaked in woolly, silvery hairs glistening in the filtered light. Just a peak beyond is another *Angiopteris evecta* with its fronds nearly fifteen feet long and its trunk almost twice as tall as the one in the Sunken Garden.

The mid-level canopy is woven by the scabrous leaves of *Sphaeropteris medullaris*, the New Zealand black tree fern and the New Caledonia tree fern, *Cyathea novae-caledoniae*. Even though they are of shorter stature, the dwarf tree ferns, *Blechnum brasiliense* and *B. gibbum* still occupy a "middle zone", planted between rock ledges or even crawling on boulders. An assortment of erect ferns are scattered among aroids, heliconias, begonias, and the rocks of the waterfall. *Diplazium proliferum* and *Thelypteris reticulata*, two mother ferns, lean against limestone rocks. Vegetative offspring bud all along the leaf axils. *Didymochlaena truncatula*, the moon ferns, are scattered among between solid plantings of *Adiantum cultrifolium*, one of the maidenhairs. The stairwells are camouflaged by cascading runners of *Adiantum caudatum*, the walking fern, and *Thelypteris repens*, the creeping star-hair fern. The terraced walls are nearly invisible under the leaves of two common Florida maidenhair ferns, *Adiantum tenerum*, the brittle maidenhair, and *A. capillus-veneris*, the Venus hair fern, and more of the Florida tree fern, *Ctenitis sloanei*!

Florida ferns abound. There is a population explosion and weeding is a necessary function to limit the ranges of some of these ferns in the confines of the Rare Plant House. A young *Pteris tripartita*, the giant brake, an escaped species from the Old World Tropics, grows into a three-foot tall monster within a year. *Tectaria* species, the halbred ferns, vary in size from

the bantum T. lobata to the large-leaved T. heracleifolia. Some species of this genus, the halbred ferns are rampant colonizers that offer a bold texture in contrast to the light airy texture of the maidenheads. The new, rosey leaves of Adiantum tenerum, and the occasional copper colored leaves of A. peruvianum, the silver dollar maidenhair break up the primarily green color scheme. Dennstaedtia bipinnata, the cuplet fern, scrambles on the walls. Spore-bearing chalice line the underside of the five foot long, thrice-pinnate leaves. Asplenium serratum, the wild bird's nest fern does spore prolifically on "living" tree fern fiber, but it is a welcomed problem. Asplenium trichomanes-dentatum, the slender spleenwort, is a treasure nestled in moist, dark grottoes in the walls. They are usually unnoticed by most visitors because they are hidden by the leaves of the maidenheads. In another secret spot is A. myriophyllum. Its filmy foliage as fine as filigree and small rhizome tenaciously cling to the creviced walls where water constantly drips, maintaining high humidity.

Exotic ferns and fern-like relatives cover the ground. Patches of Adiantum cultrifolium with its delicate leaflets on glossy ebony stipes, share space with boulders draped in the short, minutely divided malachite leaves of Selaginella species, the spike mosses. Feathery leaves of S. canaliculata and S. cuspidata run on walls, along the ground, and up the trunks of the tree ferns. Different leaf forms of Asplenium nidus, the bird's nest fern, grow as terrestrials, as epiphytes as they would in nature, on tree ferns, or even as plaqued specimens in cultivation. A. australasicum adorns a rock above the waterfall.

On the grey stucco are plaques holding Platycerium species, the staghorn ferns. The giants of the genus in our collection include P. grande and P. holtumii: Baskets of shield fronds nearly five feet across are becoming appressed to the wall to hold copious amounts of oak leaves in addition to the traditional fertilizer. Silver spore patches turn to a rusty brown when mature. The grey-blue, broadly divided fertile fronds of P. wandae hang next to the narrow-lobed green fronds of P. coronarium. Although the fertile fronds of the latter are still shy of attaining their mature size, the soral lobes have developed. At least eight other species are in our collection including P. andinum, P. stemaria, the triangular staghorn, and P. superbum.

Ferns enhance the flowering orchids on display, hide unsightly pots, fill in gracefully and at other times are in the spotlight. Some plants in sphagnum or tree fern baskets are stunning specimens. A hanging basket of Psilotum, the whisk fern, reaches four feet across. It's a botanical curiosity because it has no true roots or vascularized leaves. The apex of the fronds of Aglaomorpha meyeniana, the bear's paw fern, has slender fertile pinnae beckoning in gentle breezes. Often huge baskets of the sterile Polypodium subauriculatum var. knightiae, Knight's polypody, or the crisped-leaved form of Campyloneurum angustifolium, the strap fern, hang in the foyer, a visitor's first introduction to ferns living in the Rare Plant House.

From the fantastic, we venture to admire the smaller charming ones: the thin silver-haired rhizomes of Polypodium quercifolium the oak-leaved fern which is displayed on a tiered bench; the metallic, iridescent three-foot-long fronds overflow from a tree fern basket of Elaphoglossum herminieri; Polystichum tsus-simense, the Tsusima holly fern, is a lovely miniature--the light grey-green blades are suffused by emerald green veins, Drynaria rigidula and the infertile cultivar whitei in heavy baskets to the small-fry Ophioglossum engelmannii, the limestone adder's tongue, in a four inch pot and others are incorporated into the constantly changing Rare Plant House display.

In the Rain Forest, change isn't so obvious or frequent. Within the Rain Forest, away from the usually travelled path is a quiet, secluded, peaceful Fern Glade that was carved out of a gradual limestone ridge.

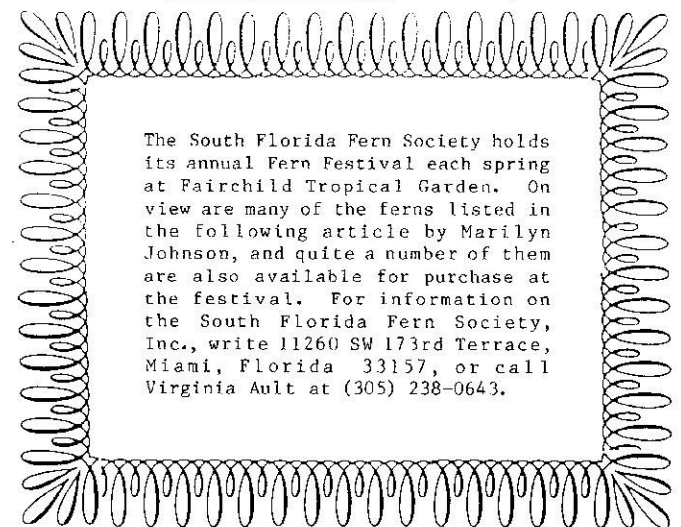
Straight and curved Australian tree ferns surround the simple plantings. The commonly cultivated maidenheads are most prevalent, but a large-leaved Adiantum peruvianum is planted by the shallow pool. An informal bed of Blechnum occidentale, the New World mid-sorus fern, shows young coral-colored leaves which gradually change to the emerald green of the mature fronds. Thelypteris sclerophylla, the stiff star-hair fern, although another Florida native, is not such a prolific colonizer as is Tectaria incisa.

In the oaks that comfort us on a hot summer day, Stenochlaena tenuifolia, the giant vine fern, clambers overhead and out-of-sight to keep company with plants in other families, aroids, cactus, and orchids. A remnant of a South Florida hammock persists a few yards away. Its floor is a thick cushion of leaf litter. Only a few native ferns and no exotics are found here. The lacey bracken fern, Pteridium aquilinum var. caudatum is nearly shaded out, preferring a sunnier location. Anemia adiantifolia, the pine fern, usually enjoys the same habitat as the bracken fern, but it grows luxuriantly among the hammock inhabitants.

Along the brackish shores of the Garden's lakes, Acrostichum danaeifolium, the giant leather fern, is thickly growing, giving sanctuary to the gallinules and grebes that may be in pursuit of shelter. Far into the remote areas of our lowlands, a clump of the smaller, leather leaf fern, A. aureum, can be seen for comparison.

Although the emphasis in the Garden is on palms and cycads, plants visually and somewhat botanically related to ferns, there is a great diversity of pteridophyta growing in a wide variety of habitats and conditions. The site of the Garden was chosen because of its proximity to the warm waters of Biscayne Bay. The adjacent narrow strip of land running from Coconut Grove south to an area once known as Cutler, is the most tropical spot in the continental United States. The closeness of the Gulf Stream to the east coast of peninsular South Florida makes this area "tropical", not just warm. The ferns here are living harmoniously with our climate and our highly alkaline soils. This is a great place for the calciphiles from the West Indies as well as for the epiphytes of Malaysia. Throughout the year, under an azure sky and the evergreen leaves of the native live oaks, one can see over one hundred fifty species of ferns from the Old World and New World tropics and subtropics on display in the extensive plantings on the grounds or in the Rare Plant House of Fairchild Tropical Garden.

NANCY HAMMER IS CURATOR OF PALMS & CYCADS AT FAIRCHILD TROPICAL GARDEN



The South Florida Fern Society holds its annual Fern Festival each spring at Fairchild Tropical Garden. On view are many of the ferns listed in the following article by Marilyn Johnson, and quite a number of them are also available for purchase at the festival. For information on the South Florida Fern Society, Inc., write 11260 SW 173rd Terrace, Miami, Florida 33157, or call Virginia Ault at (305) 238-0643.

Ferns in Cultivation in South Florida

by Marilyn Johnson

Editor's Note: All temperatures in this article are given in Fahrenheit degrees.

SOUTH FLORIDA IS THE BEST PLACE IN THE CONTINENTAL UNITED STATES FOR GROWING FERNS!! --Well, maybe not all ferns. We cannot grow those ferns that need a winter dormancy (not much goes dormant here), and there are ferns known to expire from our hot summer temperatures (highs in the low to middle 90's, occasionally reaching 98°, "cooling off" to the 80's at night). But all in all, we can grow a tremendous diversity of ferns by working a little bit with this climate.

Our winter temperatures usually range from 50° to 75° or even 80°, occasionally dropping into the 40's at night, and rarer still the low 30's and upper 20's. When the temperatures do drop into the low 40's, we have to protect our tropical rainforest ferns, and that is where our great diversity lies. We are able to grow a great many of the fascinating tropical rainforest ferns by helping mother nature just a little.

Our humidity is one of the most important factors in growing these ferns. It rarely drops below 50%, and in the summer is usually above 80% and even 90%.

The growing environments vary among individual growers. We have hobbyists growing their terrestrial ferns in a landscape setting and hanging their epiphytic ones under trees. They also hand water and fertilize. And we have the more sophisticated grower with greenhouses that can be enclosed in winter, and automatic drip watering, fertilization, mist and fogging systems. We also have all stages in between these two extremes. But water and fertilize we must. When our temperatures are in the 90's, some of our epiphytic ferns must be watered at least twice a day. They should also be well watered before a cold snap.

Fertilizing is a matter of personal preference and, of course, time. Almost all hobbyists can find time to fertilize at least once a month. If fertilizing can be done more frequently, lusher growth will develop. The most luxuriant growth will be found in those plants that are fertilized lightly each time they are watered, especially during warm weather. The fertilizer most fern growers use has a ratio of 20-20-20 (Peter's or Miller's). Some growers also use fish emulsion, but this is not a balanced fertilizer as it contains mostly nitrogen (5-1-1). It also seems to encourage fungal growth. Schultz-Instant Liquid Plant Food (10-15-10) is also applied by several growers. This fertilizer can be used each time the ferns are watered.

Slow-release fertilizers are sometimes utilized, either alone if balanced, or in conjunction with a 20-20-20 regime if not. We have had good results with Agriform tablets (14-4-6). Osmocote (13-13-13 or 14-14-14) has been used successfully by some growers, but others have had problems. The pellets tend to wash down toward the roots of the fern, and too much fertilizer is absorbed. The fern may then suffer from fertilizer burn.

The growing media that seem to produce the best results for South Florida's terrestrial fern growers are fast-draining, soilless ones. One such mix contains equal

parts peat, perlite, woodchips, turface, and pea rock (a small native rock containing calcium and magnesium). If an acid medium is required, the pea rock is not added to the mix. Some growers use equal parts of quartz sand, peat, and perlite, while others use equal parts peat, perlite, and wood chips. The important point is that the mix be soilless (because down here fungi grow quite nicely in a medium with soil), and that it drain quickly.

The majority of our epiphytic ferns are grown either upon tree fern or wood plaques or in tree fern baskets (with a fast-draining soilless mix) or sphagnum-lined wire baskets (again with a soilless mix).

If, after all environmental precautions are taken (i.e., fast-draining medium and good aeration of growing area) fungus does attack, we must use fungicide. Some of the fungicides in use are Subdue, Truban, Benlate, Manzate 2000, Banrot, and Captan. When applied in water solution, these fungicides should be mixed with a spreader/sticker. A spreader/sticker will wet the fronds and enable the fungicide to adhere to them. Subdue, Truban, and Banrot should not be used more than once every three months. If used frequently, these fungicides not only will retard the growth of fungi but also the growth of our ferns. Bacterial infections can occur in some ferns (*Platyserium* spp.), but this does not seem to be a major problem here. Agrimycin has been used successfully when bacterial infections have occurred.

Insect and other pest damage is also not a major problem but can be an annoying one, especially if the fern that is attacked is one we would like to enter into an horticultural show. Pests that enjoy living in South Florida and will attack ferns are scale (several kinds), mealy bugs, a variety of caterpillars, spider mites, slugs, snails, and, occasionally, aphids.

Mealy bugs, scale, and aphids can be controlled in varying degrees by Sevin, W.P.; Diazinon, W.P.; Malathion, W.P.; and Cygon (a petroleum-based insecticide, but if applied 1/2 strength with a fine mist on a well-watered fern, does not seem to harm the fern.) Safer Soap works well on these insects and also on spider mites. We can rid our ferns of caterpillars by applying Sevin, W.P. or Diazinon, W.P. Pentac Aquaflo seems to rid plants of spider mites longer than Safer Soap. Slugetta kills slugs and snails -- but only for about 24 hours. They are our biggest destroyers of fern fronds. Zectran (a new formulation) is supposed to stop them for a longer period of time, but we have not used this chemical yet.

We have had a number of people from South Florida collect ferns from a variety of the world's rainforests. We have also had people import ferns bare root, mostly from the Old World Tropics. A number of these ferns, because of the relative ease of growing ferns in this climate, have become established. We, of course, also have in our collections ferns that can be found in most plant nurseries.

The majority of ferns grown here fall into one of the following genera: *Pyrrrosia*; *Platyserium*; *Davallia*; *Polypodium*; *Adiantum*; *Asplenium*; *Nephrolepis*; *Aglaomorpha*; *Drynaria*; and *Pteris*.

Pyrrrosia

Pyrrrosia spp. are tough, but there are exceptions. They have appeared on the South Florida scene primarily through bare root importation. They tolerate the long trip from the Old World Tropics and Subtropics extremely well. The majority withstand low night temperatures (even short periods of low 30's), and almost all love our summers with the exception of *P. polydactylis*. This fern does not care for our summer heat but still grows quite

nicely for us. P. angustata, P. samarensis, and P. varia do not enjoy temperatures below 50° and will burn.

The humidity factor is not life-determining with Pyrrosia spp., as the stellate hairs on their fronds and rhizomes protect them during dry periods. They will, however, give their best growth performance if the humidity is at least 50%.

Platycterium

Platycterium spp. are, of course, the kings (or is it the queens) of the ferns. There seems to be a special mystique connected with them, especially the ones that are so difficult to grow. All known species and many cultivars are grown here. They require varying degrees of protection from our climate.

The P. bifurcatum group and P. alcicornis do not need any special attention during our cool or hot weather.

P. andinum prefers our cooler weather but will grow in our summertime heat if not kept too wet. It should be protected from temperatures 40° and below.

P. grande and P. superbum can tolerate a certain amount of cold weather for short periods of time. Both do well in our summers.

P. coronarium, P. wandae, P. wallichii, P. stemaria, P. ellisii, and P. elephantosis need protection from temperatures in the low 40's and below. All grow extremely well in our summertime if plagued so that they will drain very quickly. P. ridleyi, P. quadridichotomum, and P. madagascariense should also be protected from the cold and from too much water as they are especially fungus prone. P. ridleyi and P. madagascariense are also every creature's favorite dish. Caterpillars and roaches find them very tasty. We have seen the rhizome bud of P. ridleyi devoured overnight by a caterpillar, and we have heard of a pet parakeet who also found the bud of P. ridleyi a flavorsome morsel!

The majority of hobbyists find these Platycterium spp. cold sensitive. However, for the past several years Jerry Horne has only partially enclosed his greenhouse during the winter months and has not heated it. He reports that none of the Platycterium spp. have suffered from cold damage, even the most tender of them. The key to their survival, even though subjected to cold, may be preventive fungiciding, as he does this frequently. The cold may damage part of the root system. The decaying roots may encourage fungal growth which will gradually destroy even more roots.

Cold damaged plants of Platycterium, in our experience, do not die immediately. In fact, many do not appear to be damaged at all after a cold spell, even after a particularly harsh one. However, when spring and warm weather return, their new growth is smaller than the previous year's growth, and each succeeding frond is smaller than the previous one. Eventually, the fern dies. Since we have not allowed the temperature in our own growing area to drop below 50°, we have not had a Platycterium wither away and die.

Davallia

Davallia is also a popular genus here because most species are not too fussy. Almost all of them tolerate quite low temperatures for short periods of time. Some Davallia spp. will lose their fronds for a while during late winter, and, if we have an exceptionally late cold spell, their new growth may be delayed for a short time. Sooner or later, however, new fronds appear lusher than ever, and they love our summers.

Polypodium

Polypodium is a genus that has great diversity in the sizes and shapes of fronds and rhizomes. The species also vary greatly in the growing conditions required. Our natives, of course, (i.e., P. phyllitis, P. latum, P. angustifolium, and P. polypodioides) do not require any special care, but, if we have exceptionally low temperatures, they will be damaged. Species of Polypodium that have thin foliage should, as a rule, be protected from temperatures 50° and below. These thin-foliaged species (e.g., P. ciliatum, P. lycopodioides, P. piloselloides, P. crustaceum, P. musifolium, P. sinuosum, P. myriocarpum) thrive in high humidities. A few of these Polypodium species may be subject to fungal growth during the summer months. Therefore, quick drainage of the growing medium is of utmost importance. P. angustum and P. astrolepis are two ferns which may develop this problem. P. formosanum does not grow as well for us as it does slightly north of South Florida where there is a greater change between day and night temperatures.

Adiantum

Adiantum is another popular genus. Most of us grow a few, and we have several growers that specialize in them. The species from the tropical rainforests need protection from temperatures below 50°. This means we enclose our growing area and perhaps heat it or bring the ferns into the house whenever the temperature drops below this figure. Cultivars of A. raddianum and A. tenerum do not seem to be affected by cold temperatures. The heat from the summer does not seem to adversely affect any of the Adiantum species or cultivars in our collections (the exception may be A. pedatum). The very finely divided fronds of some of the A. raddianum cultivars must be kept dry; if not, the fronds will mat and then rot.

Asplenium

Asplenium spp. make up another very diverse group. We have in cultivation many birds-nest type Asplenium spp. and many with pinnate fronds. A good number of Asplenium spp. grown here have not been identified.

Asplenium nidus, A. australasicum and A. antiquum can tolerate cold and heat with little ill effect. Asplenium nidus var. plicatum is cold sensitive and should be protected from temperatures below 45°. Almost all of the pinnate Asplenium spp. should be protected from temperatures 40° and below. They probably will not die if left unprotected but will certainly have their fronds burned by the cold. All the Asplenium spp. presently in cultivation here do very well in our summer temperatures.

Nephrolepis

We do have Nephrolepis spp. in our collections, but the vast majority grown here are cultivars of N. exaltata. Hobbyists who specialize in growing those cultivars with finely divided foliage must grow them under certain conditions. The very fine foliage must be protected from water. Because only the container and growing medium are to get wet, these ferns must be grown under a protective roof. The cultivars with coarsely divided fronds do not have this problem. As fussy as the cultivars with finely divided fronds are about water on their fronds, they are extremely hardy when it comes to

cold weather. Ann Smith reports that these cultivars are minimally touched by temperatures of 40° and even cold spells in the upper 30's, whereas the cultivars with the coarsely divided fronds do experience frond burning. All of the ferns do survive our harshest cold spell, even if they lose every frond.

Almost all of the species of Nephrolepis tolerate short periods of cold without damage, but the fronds will burn and even die if subjected to persistent 40° temperatures. They do seem to survive no matter what happens to them, and growth resumes when warm weather resumes. All of the Nephrolepis spp. and cultivars in cultivation produce fronds abundantly during our hot weather.

Aglaiomorpha and Drynaria

The species of Aglaiomorpha and Drynaria are among the largest ferns grown. They inhabit the rainforests of the Old World Tropics. Aglaiomorpha spp. should be protected from temperatures 40° and below, although A. brooksii seems to enjoy cooler night temperatures than the other Aglaiomorpha spp. Drynaria quercifolia seems to be able to live through low temperatures without any ill effect. This Drynaria does go dormant for about three months, and this may be the reason it does so well during our winter. The other Drynaria spp. are able to tolerate low temperatures for short periods of time but will suffer with cold burn if not protected from prolonged cold. They thrive in our summers.

Pteris

The first fern a new South Florida enthusiast tries to grow is often a species or a cultivar of Pteris. Pteris was, and still is, popular in commercial plant nurseries. We still keep some of the old time favorites around, as they reward the grower well with minimum effort on his/her part. They also tolerate cold and heat with little complaint.

The preceding ferns are the most popular ferns among South Florida's collectors. The genus Elaphoglossum and the various genera of tree ferns are now up and coming in popularity.

Elaphoglossum

The Elaphoglossum spp., for the most part, have been introduced into South Florida by hobbyists who have personally collected them. Almost all the Elaphoglossum spp. in our collections have originated from the New World Tropics. We have at least 20-30 species that have not been identified.

Elaphoglossum spp. are difficult to establish. Once they are established, however, a great many of them can be grown here without any special growing conditions. They should be protected from temperatures 40° and lower, and, although they prefer cooler night temperatures, do moderately well in our summer heat.

Tree Ferns

Tree ferns (Cibotium, Cyathea, Dicksonia, Sphaeropteris) are grown by several of our collectors. Sphaeropteris spp. and Dicksonia spp. tolerate cold spells with little or no damage. In fact, Dicksonia spp. seem to enjoy our cold weather. Cyathea and Cibotium are another story. Because of the size they attain, Cyathea spp. are, as a rule, not planted in a protective greenhouse, but in unprotected grounds. Dale Boggy has had his Cyathea arborea survive severe cold and even freezing temperatures by packing sphagnum moss around the crown of the tree fern. The existing fronds died, but new growth emerged in the spring. Cibotium spp. should also be protected from temperatures 40° and lower. The tree ferns grow well in our summers.

If you study the list following this article you will see that we grow many other ferns -- too numerous to mention each and every one. It is my intent, however, to describe the cultivation problems of several ferns that I find personally interesting.

Protect from Cold: 40°F or below

- Angiopteris evecta** Twice survived heavy encrustation with ice. The first time it did not even lose a frond.
- Antrophyum callifolium** and unknown Antrophyum spp. These ferns are called the Ox-Tongue Ferns (because they look like them, that's why). Slow, difficult to establish, but once established, not difficult to grow. Grow best with high humidity. Protect from cold.
- Dicranoglossum desvauxii**, **D. polypodioides**. Slow growers. They grow best with high humidity. Protect from cold.
- Hypoderris brownii**. Needs huge amounts of water. Protect from cold.
- Lecanopteris carnosa**. Needs high humidity but is subject to fungal infestations, so good drainage is vital. In the wild this fern is ant-inhabited. Protect from cold.
- Ophioglossum pendulum** and two other unidentified epiphytic Ophioglossum spp. Hard to establish. They do not like their roots disturbed. Very slow growers. They grow best in high humidity. Protect from cold.
- Photinopteris speciosum**. A genus of one species, it is a fern with nectaries. In the wild there is an ant colony living in close proximity with this fern. Collectors have left Photinopteris speciosum unprotected from the cold, apparently with little ill effect.
- Solanopteris**. A genus containing four species, all from the New World Tropics. One species is currently in cultivation here, S. brunei. These ferns are sometimes called "Potato Ferns" because of the tubers that grow from the rhizome. This is another ant-inhabited fern.

Donna Rich reports that this fern was unprotected during our 40° coldspells and did not suffer any damaging effects. It should, however, be protected from freezing temperatures. Solanopteris does seem to grow faster and appear more lush in areas slightly north of South Florida. The nighttime temperature change is greater in these areas, especially during the summer months.

Vittaria elongata, *V. ensiformis*, *V. remota*, and *V. scolopendrina*. *V. elongata* is easy to establish and tolerates cold well.

V. lineata, a Florida native commonly called the "Shoestring Fern", is difficult to establish and is cold sensitive. *V. ensiformis*, *V. scolopendrina* and *V. remota* are also difficult to establish, and all should be protected from 45° and below. The *Vittaria* species grow well in our summertime temperatures.

Presently in the collections of hobbyists
in South Florida

Acrostichum aureum L. (ref. Mickel: How to know the Ferns and Fern Allies. 1979.) (Peninsular Florida, pantropical.)

danaeifolium Langsd. & Fish. (ref. see above.) (Peninsular Florida, West Indies, Mexico to South America.)

Actiniopteris radiata (=australis) (L. fil.) Link, Fil. Sp. 80. 1841. (Africa, tropical Asia.)

Adiantopsis radiata (L.) Fee, Mem. Fam. Foug 5: 145. 1852. (Tropical America.)

Adiantum aethiopicum L. (ref. Tryon and Tryon : Ferns and Allied Plants. 1982.) (Paleotropics.)

anceps Maxon and Morton, Am. Fern Journal, 24: 15. 1934. (Ecuador and Peru.)

asarifolium Willd. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Paleotropics.)

bellum T. Moore. (ref. Hoshizaki: Bailey 17(4): 1970.) (Bermuda.)

capillus-veneris L., Sp. Pl. 2: 1096. 1753. (World-wide in warm temperature or subtropical areas.)

cv. 'Cathedral'. (no printed ref.)
cv. 'Fimbriatum' S. L. Williams, British Fern Gazette 9: 352. 1967.

cv. 'Imbricatum' (Green Petticoats). (ref. Hoshizaki: Bailey 17(3): 1970.)

cv. 'Mairissi'. (=Chilense). (ref. Hoshizaki: Bailey 17(3): 1970.)

cv. 'Magnificum'. (ref. Hoshizaki: Bailey 17(3): 1970)

cv. 'Scintilla'. (ref. Hoshizaki: Bailey 17(3): 1970.)

caudatum L., Mantissa 308. 1771. (Tropical Africa and Asia.)

concinnum Willd., Sp. Pl. 5: 451. 1810. (Mexico to Venezuela and Peru; West Indies)

cv. 'Edwinii' (ref. Hoshizaki : Bailey 17(3): 1970.)

cultrifolium J. Sm. ex Hook., Sp. Fil. 2: 34. 1851. (Tropical America.)

diaphanum Blume, Enumeratio 215: 1828 (New Zealand, Australia, South China and Melanesia)

edgeworthii Hook., Sp. Fil. 2: 14, pl. 81-B. 1851. (China, Himalayas, India, Burma, Japan, Taiwan, Phillipines and Malay Isl.)

excisum Kunze, Analecta Pteridographica 33, t. 21. 1934. (Chile and Bolivia.)

formosum R. Br., Prodr. Fl. Novae-Holl. 155. 1810. (Australia and New Zealand.)

fragile Sw., Prodr. 135. 1788. (Greater Antilles, Virgin Isl.)

fructuosum Spreng., Systema Vegetabilium 4: 113. 1827 (American Tropics.)

fulvum Raoul. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Paleotropics.)

hispidulum Sw., Syn. Fil. 124, 321. 1806. (Asia, Australia, New Zealand, and the Pacific Isl.)
jordanii K. Miller, Bot. Zeit. 1864: 26. 1864. (Mexico to California and southern Oregon.)

latifolium Lam. (ref. Hoshizaki: Bailey 17 (4): 1970.) (Tropical America and West Indies)

macrophyllum Sw., Prodr. 135. 1788. (Mexico to South America.)

cv. 'Variegatum' (no printed ref.)

melanoleucum Willd. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982. (Tropical America.)

patens Willd. (ref. Hoshizaki: Bailey 17(3): 1970) (Tropical America.)

pedatum L., Sp. Pl. 2: 1095. 1753. (North America and Asia.)

var. *aleuticum* Rupr. (ref. Hoshizaki, Bailey 17(3): 1970.)

petiolatum Desv. (ref. Tryon and Tryon : Ferns and Allied Plants. 1982.) (Tropical America.)

pentadactylon Langs. & Fisch., Icon. Fil. t. 25. 1810 (Brazil.)

peruvianum Klotzsch, Linnaea 18: 555. 1845. (Ecuador to Bolivia.)

phillipense L. (ref. Tryon and Tryon : Ferns and Allied Plants. 1982.) (Paleotropics.)

polyphyllum Willd., Sp. Pl. 5: 454. 1810. (Colombia and Venezuela.)

pulverulentum L. (ref. Hoshizaki: Bailey 17 (3): 1970. Tropical America and West Indies.)

pyramidale L. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)

raddianum Presl, Tent. Pterid. 158. 1836. (American Tropics.)

The references for the following *A. raddianum* cultivars will be found in Bailey 17(3) & (4): 1970 by Barbara Joe Hoshizaki, unless otherwise noted. Those denoted by an asterisk should have their fronds protected by water.

Adiantum raddianum

cv. 'Banksianum' (No printed ref.)

cv. 'Bausei'

cv. 'Bridal Veil' *

cv. 'Californicum'

cv. 'Charlotte Parvifolium' *

cv. 'Cluster Glory' *

cv. 'Cordoza Gardens' (No printed ref.)

cv. 'Crested Cluster Glory' *

cv. 'Crested Gracillium' *

cv. 'Crested Majus'

cv. 'Crested Misr' *

cv. 'Crested Micropinnulum' *

cv. 'Croweanum' *

cv. 'Decorum' (Peru)

cv. 'Dissected Leaflet' (= 'Dissectum') *

cv. 'Elegans'

cv. 'Fewkes Seedling' (No printed ref.)

cv. 'Fragrantissium'

cv. 'Goldese' (= 'Brilliant Else') *

cv. 'Gracillium' *

cv. 'Gracillium Elegantissimum' *

cv. 'Gem' (No printed ref.)

cv. 'Grandiceps'

cv. 'Ideal' (ref. Graf: Exotica 6th Edition. 1973.)

cv. 'Kensington' (No printed ref.)

cv. 'Lady Geneva'

cv. 'Lawsonianum'

cv. 'Legrandii'

var. *majus* Hoshizaki. (Uruguay, Brazil and Paraguay.)

cv. 'Matador' (ref. Graf: Exotica, 6th Edition. 1973.)

cv. 'Micropinnulum' (= 'Gracillium Micropinnulum') *

cv. 'Ming' * (No printed ref.)

- cv. 'Mist' *
 cv. 'Owenii'
 cv. 'Ocean Spray' *
 cv. 'Pacific Maid'
 cv. 'Pacottii'
 cv. 'Pelican'
 cv. 'Pink Lady' * (No printed ref.)
 cv. 'Sea Foam' (No printed ref.)
 cv. 'Splendens' (No printed ref.)
 cv. 'Tinctum' (= 'Wagneri') (Peru, Colombia)
 cv. 'Triumph' (= 'Robertson's Seedling') *
 cv. 'Tuffy Tips'
 cv. 'Variegated Tesselate'
 cv. 'Variegatum'
 cv. 'Victoria Elegans'
 cv. 'Weigandii'

- reniforme** L. (ref. Hoshizaki: Bailey 17(4): 1970. (Madeira and Canary Isls.)
seemannii Hook. (ref. Hoshizaki: Bailey 17(4): 1970. (Mexico to Colombia.)
sessilifolium Hook. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)
subcordatum Sw. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)
subvolubile Kuhn (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)
tenerum Sw., Prodr. 135. 1788. (Florida, West Indies, Mexico and Peru.)

The references for the following *A. tenerum* cultivars will be found in Bailey 17(4): 1970 by Barbara Joe Hoshizaki, unless otherwise noted.

- cv. 'Bessonniae'
 cv. 'Cascade' (No printed ref.)
 cv. 'Emerald Dawn' (No printed ref.)
 cv. 'Farleyense'
 cv. 'Fergusonii'
 cv. 'Gloriosum'
 cv. 'Marsha's Pride'
 cv. 'Scutum'
 cv. 'Scutum Roseum'
 cv. 'Sleeping Beauty' (Noprinted ref.)

- tetraphyllum** (Willd.) Hoshizaki, Bailey 17 (4): 1970. (Costa Rica)
 X **Tracyi** (Jordanii X **pedatum**) C. C. Hall ex W. H. Wagner, Madrono 13:1 98. fig. 1-3. 1956.
trapeziforme L., Sp. Pl. 2: 1097. 1753. (American Tropics.)
venustum (D. Don.) Hoshizaki, Bailey 17(4): 1970. (Texas to Guatemala.)
villosum L., Sys. Nt. ed. 10, 2:1328. 1759. (Tropical America.)

There are many more taxa of *Adiantum* in cultivation in South Florida that have not been identified.

- Aglaoomorpha brooksii** (Copl.) Ching, Sunyatsenia 5:262. 1940. (Sarawak, Borneo.)
coronans (see *Pseudodrynaria coronans*)
heraclea (Kuntze) Copl., Univ. Cal. Publ. Bot. 16: 117. 1929. (Sumatra to New Guinea.)
meyeniana Schott, Gen. Fil. (1834) Pl. 20. (Philippines, Taiwan.)
 cv. 'Roberts' (No printed ref.)
splendens (J. Sm.) Copl., Philipp. J. Sci. 6 C: 141. 1911 (Philippines, New Guinea, Malaya.)

There is at least one species of *Aglaoomorpha* in cultivation that has not been identified.

- Anemia adiantifolia** (L.) Sw., Syn. Fil. 157. 1806. (Florida, Greater Antilles, Trinidad, Mexico, Guatemala, northern South America.)
phyllitidis (L.) Sw. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Mexico.)

There are several unidentified plants of *Anemia* in cultivation here.

- Angiopteris evecta** (Forst.) Hoffm., Comm. Soc. Reg. Gott. 12: 29, t. 5. 1796. (Malaysia and Polynesia.)
angustifolia Presl., Suppl. Tent. Pterid. 21. 1845. (Malaya to Philippines.)
Antrophyum callifolium Blume, Enum. Pl. Jav. 111. 1828. (Southern Tropical Asia.)

There are two unidentified species in cultivation.

- Araiostegia hymenophylloides** (Blume) Copl., Philipp. J. Sci. 34: 241. 1927. (Ceylon, southern India, Malaysia, Philippines.)
Arthropteris tenella (Forst. T.F.) J. Sm. ex Hook. f. (ref. Jones and Clemesha: Australian Ferns and Fern Allies. 1981.) (Australia and New Zealand.)
Asplenium antiquum Makino, J. Jap. Bot. 6: 32. 1929. (Japan and Okinawa.)
auritum Sw., J. Bot. Schrader 1800 (2): 52. 1801 (Tropical America.)
australasicum (J. Sm.) Hook., Fil. Exot. t. 88. 1859. (Northern Australia, New Caledonia, Fiji, Samoa, Tonga, Tahiti.)
belangeri (Bory) Kunze, Bot. Zeit. 1848: 176. (Western Malaysia, Tonkin.)
bulbiferum Forst. T. F. (ref. Jones and Clemesha: Austr. Ferns and Fern Allies. 1981.) (Australia, New Zealand.)
daucifolium Lam. (ref. Hoshizaki: Fern Growers Manual. 1975.) (Mauritius.)
feeii Fee. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)
laserpitiifolium Lam. (ref. Jones and Clemesha: Austr. Ferns and Fern Allies. 1981.) (Northeastern Australia.)
longissimum Blume, Enum. Pl. Jav. 178. 1828. (Southern Indochina, Thailand, western Malaysia.)
nidus L., Sp. Pl. 1079. 1753. (East Africa, Madagascar, Mascarene Isls., Seychelles, Ceylon, South India, North & East India, southern China, Indochina, Malaysia.)
 var. **plicatum** v. Av.R., Handbook Malaysian Ferns p. 440. 1908. (Origin not recorded.)
ocoense C. Chr., Kungl. Svenka Vetensk. akad. Handl. ser. 3, 16(2): 53, t. 13(6-8). 1937. (Hispaniola.)
scortechinii Bedd., Journ. Bot. 2887. (Malaysia.)
serratum L., Sp. Pl. 2: 1079. 1753. (Tropical America and Florida.)
simplicifrons F. Muell. (ref. Jones and Clemesha: Austr. Ferns and Fern Allies. 1981.) (N.E. Queensland, Australia.)
trichomes-dentatum L., Sp. Pl. 2: 1080. 1753. (Bermuda, Florida, Greater Antilles, Yucatan, and some islands of the Lesser Antilles.)

There are many more species of *Asplenium* in cultivation in South Florida that have not been identified.

Belvisia Mirbel

We have at least four different species in cultivation that have not been identified.

- Blechnum braziliensis** Desv. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Brazil.)
 cv. 'Crispum' (ref. Hoshizaki: Fern Growers Handbook. 1975.)
gibbum (Lab.) Mett., Ann. Sc. Nat. ser. 4, 15: 68. 1861. (New Caledonia, Aneityum.)
occidentalis L., Sp. Pl. 2: 1077. 1753. (as *B. orientale*) (ref. Proctor; Flora of the Lesser Antilles. Vol. 2 Pteridophyta.)

- (Tropical America.)
orientale L., Sp. Pl. 2: 1077. 1753. (Tropical Asia, Australia and the Pacific areas.)
- Bolbitis heteroclita** (Presl.) Ching in C. Chr., Ind. Fil. Suppl. III, 48. 1934. (N.E. Himalayas, and South China, Malaya to New Guinea.)
- portoricensis** (Spreng.) HENNIPMAN, Amer. Fern J. 65: 30. 1975. (Tropical America.)
- Cibotium chamissoi** (Kaulf.) Berl., Jahrb. Pharm. 21: 53. 1820.
- Coniogramme japonicum** (Thunb.) Diels, Engl. and Prantl Nat. Pflanzenfam. 1(4):262. 1902. (China, S. Korea, Japan, Taiwan.)
 var. **variegatum** (No printed ref.)
- Ctenitis sloanei** (Poeppig. ex Spreng.) Morton, Amer. Fern J. 59: 66. 1969. (Tropical America.)
- subincisa** (Willd.) Ching, Sunyatsenia 5: 250. 1940. (Tropical America.)
- villosa** (L.) Copl., Gen. Fil. 125. 1947. (Cuba, Jamaica, Hispaniola, Dominica.)
- Crypsinus trilobus** (Houtt.) Copl., Gen. Fil. 206. 1947. (Java, Sumatra, Borneo, Malaya.)
- There are two other species of *Crypsinus* in cultivation, that have not been identified.
- Cyathea arborea** (L.) J. Sm., Mem. Acad. Turin 5: 417. 1793. (Greater Antilles, Mexico, Venezuela.)
- neocaledonica** Compton. (ref. Communication between R. Tryon and Fairchild Tropical Garden.) (New Caledonia.)
- pendula** Jenman, J. Bot. 20: 324. 1882. (Jamaica.)
- rebecca** (F. Muell.) Domin. (ref. Jones and Clemesha: Aust. Ferns and Fern Allies, 1981.) (Northern Australia.)
- Cyrtomium falcatum** Presl., Tent. Pterid. 86. 1836. (Japan, naturalized in Australia.)
- Davallia canariensis** (L.) J. Sm., Mem. Acad. Roy. Sci. (Turin) 5: 414, t.9 f.6. 1793. (Portugal, West Spain, Madeira, Canary Islands.)
- denticulata** (Burm.) Mett. in Kuhn, Fil. Deck. 27. 1867. (Malaysia, Australia, Old World Tropics.)
- divaricata** Blume, Enum. Pl. Javae 237. 1828. (Tropical Asia and Malaysia.)
- embolostegia** Copl., Philipp. J. Sci. Suppl. 1: 147. Pl. 3. 1906. (Philippines, Borneo.)
- epiphylla** (G. Forster) Spreng., J. Bot. Schrader, 1799, 2: 271. 1800. (Pacific Island, New Guinea.)
- fejeensis** Hooker, Sp. Fil. 1: 166, t.55D. 1846. (Fiji.)
 cv. 'Dwarf Ripple' (ref. Hoshizaki: Baileya 2(1): 1981.)
 cv. 'Plumosa' (ref. see above.)
- mariesii**
 var. **crinata** Hort. (?) A crested *Davallia* is in cultivation in South Florida; it may be this one. (ref. Hoshizaki: Baileya 2(1): 1981.)
 var. **stenolepis** (Hayata) Hoshizaki, (ref. Hoshizaki: Baileya 2(1): 1981.) (Ryukyu, S. Korea, Taiwan, and China)
- pyxidata** Cav., Descr. Pl. D.A.J. Cav. 278. 1802. (Eastern Australia.)
- solida** (G. Forster) Sw., J. Bot. Schrader, 1800, 2: 87. 1801. (Asia, Malaysia, East Australia.)
 cv. 'Ruffles Ornata' (ref. Hoshizaki: Baileya 2(1): 1981.)
- trichomanoides** Blume, Enum. Pl. Javae 238. 1828. (Malaysia, New Guinea, Java.)
 var. **Lorrainii** (Hance) Holttum, Fl. Mal. 2: 361. 1968. (Malaysia, Philippines, Thailand, and Borneo.)
- Davallodes hirsutum** (J. Sm.) Copl., Philipp. J. Sci. 3C: 33. 1908. (Philippines.)
- Dennstaedtia cicutaria** (Sw.) Moore. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)

- Diblemma tenuilorus** (Kze. ex Mett.) Ching. 1940. (Philippines.)
- Dicksonia antarctica** Labill. (ref. Jones and Clemesha: Aust. Ferns and Fern Allies. 1981.) (Australia, Tasmania.)
fibrosa Col., Tasm. Journ. 2: 179. 1844.
- Dicranoglossum desvauxii** (Klotzsch) Proctor, Rhodora 63: 35. 1961. (Trinidad, N. South America to Brazil and Bolivia.)
polypodioides (Hook.) Lellinger (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)
- Dictyocline griffithii** (Moore) Diels, Nat. Pa. 14: 186. 1899. (Japan, China-India border.)
- Didymochlaena truncatula** (Sw.) J. Sm., J. Bot. 4: 196. 1841. (Tropical America, Africa, Madagascar and from Assam to Java, New Guinea and the Philippine Isls. and eastward to Java. In tropical America it is absent from Jamaica and most of the Amazon basin and northeast Brazil.)
- Diplazium (Athyrum) esculentum** (Retz.) Copl., Philip. J. Sci. 3C: 295. 1908. (Old World Tropics; has naturalized in Florida.)
japonicum (Thunb.) Copl., Philip. J. Sci. 3C: 190. 1908. (Southeast Asia; nat. in Alabama and Florida.)
praestans (Copl.) Morton. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Brazil; elsewhere in American tropics?)
- Doodia media** R. Br. (ref. Jones and Clemesha: Austr. Ferns and Fern Allies. 1981.) (Australia, Tasmania.)
- Doryopteris concolor** (Langsd. & Fisch.) Kuhn in von der Decken, Reisen in Ost-Afrika 8 (3): 19. 1879. (Pantropical.)
ludens (Wall.) J. Sm., Hist. Fil. 289. 1875. (Northern India and southern China, through Malaysia, and eastern Java.)
pedata (L.) Fee, Mem. Fam. Foug. 5: 133. 1852. (Tropical America.)
sagittifolia (Raddi.) J. Sm. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Brazil; in the American tropics?)
- There are at least four different species of *Doryopteris* in cultivation that have not been identified.
- Drynaria bonii** C. Chr., Not. Syst. 1: 186. 1910 (Cochinchina and China.)
quercifolia (L.) J. Sm., J. Bot. 3: 398. 1841. (India and South China, Malaysia to Fiji, and tropical Australia.)
rigidula (Sw.) Bedd., Ferns Br. & Ind. t. 314. 1869. (Sumatra to Polynesia and Australia.)
 cv. 'Whittei' (ref. Jones and Clemesha: Austr. Ferns and Fern Allies. 1981.)
sparsisora (Desv.) Moore, Ind. Fil. 348. 1862. (Ceylon, Malaysia to Polynesia, tropical Australia.)
- Dryopteris erythrosora** (D.C. Eat.) O. Ktze., Rev. Gen. Pl. 2: 812. 1891. (China, Japan, Luzon.)
- Edauroa difformis** Copl., Philip. J. Sci. 81: 22. 1955. (Philippines.)
- Elaphoglossum apodum** (Kaulf.) Schott, Gen. Fil. t.14. 1834. (Tropical America.)
crinitum (L.) Fee, Mem. Fam. Foug. 2: 90. 1845. (Greater Antilles, Trinidad, Central America.)
herminieri (Bory & Fee) Moore, Ind. Fil. 16. 1857. (Tropical America.)
mucosum (Identified by G. R. Proctor to M. Johnson.) (Panama.)
paleaceum (Identified by G. R. Proctor to M. Johnson.) (Panama.)
petiolatum
 var. **dussii** (L.M. Underw. ex Maxon) Proctor, Rhodora 68: 467. (Tropical America)

We have many New World and a few Old World *Elaphoglossum* spp. in cultivation that have not been identified.

- Hemigramma decurrens** (Hook.) Copl., Philip. J. Sci. 37: 404. 1928. (Ryukus, Taiwan, mainland China and Vietnam.)
- Hemionitis arifolia** (Burn.) Moore, Ind. Fil. 114. 1859. (Ceylon and southern India, from northeast India and Burma to Indo-China, and southwards through Malaysia to the Philippines.)
- palmata** L., Sp. Pl. 2: 1753, (ref. Mickel: Am. Fern Jour. 64 (1): 1974.) (Southern Mexico-Costa Rica.)
- pinnatifida** (Baker) (ref. see above) (Southern Mexico to Costa Rica.)
- rufa** (L.) Bernhard; (ref. see above) (West Indies, Central and northern South America.)
- Humata heterophylla** (Sm.) Desv. Prodr. 323. 1825. (Sumatra to the Pacific.)
- repens** (L. f.) Diels, Nat. Engler & Prantl Pflanzenfam. 1(4): 209. 1899. (North India to Japan, Mascarene Isl. to Australia.)
- tyermanii** Moore, Gard. Chron. 1871: 870. f.178. 1871. (China.)
- At least one unidentified species in cultivation in South Florida.
- Hypoderris brownii** J. Sm. in Hook. and Bauer, Gen. Fil. t.l. 1838. (Hispaniola, Puerto Rico, Trinidad, Venezuela, Grenada.)
- Lastreopsis effusa**
var. *effusa* (ref. Proctor: Flora of the Lesser Antilles, Pteridophyta. 1977.) (Greater Antilles, continental tropical America from Mexico to Ecuador.)
- Lecanopteris carnosa** (Reinw.) B., Enum. Pl. Jav. 120. 1828. (Sumatra to Philippines.)
- Lemmaphyllum subrostratum** (C. Chr.) Ching. (ref. Edie: Ferns of Hong Kong. 1978.) (N. India, Indo-china, S. China, Hong Kong.)
- microphyllum** Presl. Epim. Bot 263. 1849. (Korea, the Ryukyus, Taiwan and China.)
- Lepisorus longifolius** (Blume) Holtt. (ref. Holttum: Flora of Malaya, Vol. II Ferns of Malaya. 1954. (N.E. India & Burma; Malaysia to Philippines.)
- Lomariopsis** Fee. At least one unidentified species in cultivation.
- Loucheitis hirsuta** L., Sp. Pl. 2, 1078. 1753. (Mexico and Central America, Venezuela to Colombia and south to Bolivia.)
- Lygodium japonicum** (Thunb.) Sw., Schrad. Journ. Bot. 1800: 2. 1801. (India, Australia, China, Philippines, Japan, Korea, and has become naturalized in the southeastern United States)
- Marginaliopsis wiesbaurii** (Sod.) C. Chr. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Costa Rica, Panama and Ecuador.)
- Merinthosorus drynariodes** (Hook.) Copl., Phil. J. Sci. 6C: 92. 1911. (Malaya to Solomon Islands but not reported from Java.)
- Microlepia speluncaea**
cv. '*coymbifera*' (ref. Hoshizaki: Fern Growers Manual. 1975.)
- Nephrolepis acutifolia** (Desv.) Chr., Verh. Nat. Ges. Basel, 11: 243. 1895. (Tropical Africa, South-East Asia to Polynesia.)
- cordifolia** (L.) C. Presl, Pterid. 79. 1836. (Throughout tropics, Japan and New Zealand, now naturalized in South Florida.)
cv. '*Duffii*' Proctor, Bull. Sinst. Jam. Sci. Ser. 5:42. 1953.
cv. '*Tesellata*' (= '*Plumosa*') (ref. Hoshizaki: Fern Growers Man. 1975.)

The references for the following *Nephrolepis exaltata* cultivars will be found in Graf: Exotica, Ed. 6. 1973, unless otherwise noted. An asterisk denotes that fronds should be protected from water.

Nephrolepis exaltata

- cv. '*Angel Hair*' * (No printed ref.)
- cv. '*Anna Foster*'
- cv. '*Baby Tears*' * (No printed ref.)
- cv. '*Bostoniensis*' (ref. Hoshizaki: Fern Growers Man. 1975)
- cv. '*Bostoniensis Compacta*'
- cv. '*Bostoniensis*' (golden) (No printed ref.)
- cv. '*Bostoniensis*' (petticoat) (No printed ref.)
- cv. '*Courtney Anne*' * (No printed ref.)
- cv. '*Craigii*' * (No printed ref.)
- cv. '*Elegantissima*'
- cv. '*Emerald Dawn*' (No printed ref.) *
- cv. '*Fantasy*' (= '*Fantasia*') * (No printed ref.)
- cv. '*Floral Fantasy*' (No printed ref.)
- cv. '*Florida Ruffle*' (No printed ref.)
- cv. '*Fluffy Duff*' * (No printed ref.)
- cv. '*Fringed Vase*' (No printed ref.)
- cv. '*Hiliii*'
- cv. '*Irish Lace*' (= '*Gracillima Irish Lace*') (No printed ref.)
- cv. '*Magnifica*' *
- cv. '*Marshall Compacta*' * (No printed ref.)
- cv. '*Massii*'
- cv. '*Ming*' (No printed ref.)
- cv. '*Moffei*' * (No printed ref.)
- cv. '*Muscosa*'
- cv. '*Norwoodii*' * (ref. Hoshizaki: Fern Growers Man. 1975.)
- cv. '*Piersonii*' (ref. Hoshizaki: Fern Growers Man. 1975.)
- cv. '*Plymouth Ruffle*' * (No printed ref.)
- cv. '*Porterii*' (No printed ref.)
- cv. '*Roosevelti*' *
- cv. '*Scholzei Tripinnata*'
- cv. '*Shadow Lace*' * (No printed ref.)
- cv. '*Smithii*'
- cv. '*Susie Wong*' (ref. Jones and Goudey: Exotic Ferns in Austr. 1981.)
- cv. '*Trevillian*' *
- cv. '*Verona*' *
- cv. '*Wanamaka Boston*' (ref. Hoshizaki: Fern Growers Man. 1975.)
- cv. '*Whitmanii*'
- cv. '*Wicherii*'
- falcata**
cv. '*Furcans*' Proctor, Rhodora 63: 32. 1961. (Originated in Australia or New Guinea.)
- hirsutula** (Fort.) Presl, Tent. Pterid. 79. 1836. (Paleotropics.)
- multiflora** (Roxb.) Jarrett ex Morton, Contr. U.S. Nat. Herb. 38: 309. 1974. (India; naturalized in widely scattered tropical areas, including southern Florida, the Bahamas, and the Greater Antilles.)
- pendula** (Raddi.) J. Sm., Hooker's Jour. Bot. 4: 197. 1841. (Note: R. Tryon in *The Ferns of Peru*.) 1964, believes *N. pendula* is conspecific with *N. cordifolia*.)
- Neurodium lanceolatum** (L.) Fee, Mem. Fam. Foug. 3: 28. 1852. (Florida, Greater Antilles, Virgin Islands, Belize, Guatemala, Honduras, French Guiana and some islands in the Lesser Antilles.)
- Oleandra nodosa** (Willd.) C. Presl, Tent. Pter. 78. 1836. (Greater Antilles, Trinidad, continental tropical America and some islands of the Lesser Antilles.)

Ophioglossum pendulum L., Spec. Pl. ed II, 2: 1518. 1763.
(From Madagascar through tropical Asia to
Polynesia northward to Assam, Indo-
China, Malaysia and, Hainan.)

There are two epiphytic species of *Ophioglossum* in
cultivation that have not been identified.

Osmunda regalis L. (ref. Mickel: How to Know the Ferns
and Fern Allies. 1979. (Eastern N. America,
tropical America, Europe.)

Pellea viridis

var. *macrophylla* (ref. Hosizaki: Fern Growers
Man. 1975.)

Photinopteris speciosus (Blume) Presl, Epim. Bot. 264.
1849. (Indo-China; Sumatra to
Philippines.)

Pityrogramma calomelanos (L.) Kze., Handb. Gewachs 3:
20. 1833. (Tropical and subtropical
America and Africa; naturalized elsewhere
in warm regions.)

var. *aureoflava* (ref. Tryon and Tryon:
Ferns and Allied Plants. 1982.)
(Tropical America.)

The references for the genus *Platyserium* will be found in
Hennipman and Roos: A Monograph of the fern genus
Platyserium (Polypodiaceae), 1982, unless otherwise
noted.

Platyserium alicorne (Vassei) Desv. (Kenya, Tanzania,
Rhodesia, Mozambique, Comores, Madagascar,
Mascarenes.)

andinum Baker. (Peru, Bolivia.)

bifurcatum (Cav.) C. Chr. (Australia.)

ssp. *bifurcatum* (New Guinea and E.
Australia.)

var. *bifurcatum* (E. Australia.)

cv. 'Cass Hybrid' (ref. Graf:
Exotica, 6th Edition. 1973.)

cv. 'Majus' (ref. Hoshizaki Fern
Growers Man. 1975.)

cv. 'Panama' (No printed ref.)

var. *hillii*

cv. 'Bloom' (ref. Hoshizaki: Fern
Growers Man. 1975.)

cv. 'Drummond' (= 'diversifolium')
(ref. see above)

cv. 'Magnificent' (No printed ref.)

cv. 'Pumile' (= 'pumilum') (ref.
Hoshizaki: Fern Growers Man. 1975.)

ssp. *veitchii* (Underwood) Hennipman and
Roos. (E. Australia.)

ssp. *willinckii* (T. Moore) Hennipman and
Roos. (Java, lesser Sudan Isls.)

cv. 'Lemoinei' (ref. Hoshizaki: Fern
Growers Man. 1975.)

cv. 'Longwood Garden' (ref.
see above)

cv. 'Payton' (ref. see above)

cv. 'Pygmaeum' (ref. see above)

coronarum (Konig ex Muller) Desv. (Burma,
Thailand, Vietnam, Sumatra, Malay Peninsula,
Singapore, Riau Arch., Banka, Java, Anambas
Arch., Borneo, Philippines.)

elephantotis (= *angolense*) Schweinf. (Senegal,
Guinea, Sierra Leone, Liberia, Ivory Coast,
Ghana, Togo, Dahomey, Nigeria, Cameroon,
Sudan, Ethiopia, Congo, Zaire, Angola,
Burundi, Uganda, Kenya, Tanzania, Malawi,
Zambia, Mozambique.)

ellisii Baker. (Madagascar.)

grande (Fee) Kunze. (Philippines.)

holttumii De Joch and Hennipman (Thailand,
Cambodia, Laos, Vietnam, Malay Peninsula.)

madagascariense Baker. (Madagascar.)

quandridichotomum (Bonap.) Tardieu.
(Madagascar.)

ridleyi Christ. (Thailand, Sumatra, Malay

Peninsula, Singapore, Lingga Arch.,
Northeast Borneo.)

stemaria (Beauv.) Desv. (Senegal, Guinea,
Sierra Leone, Liberia, Ivory Coast, Ghana,
Togo, Dahomey, Nigeria, Sao Tom'e, Principe,
Fernando Poo, Cameroon, Central African
Empire, Spanish Guinea, Gabon, Congo,
Cabina, Zaire, Angola, Uganda.)

superbum De Joch and Hennipman. (E.
Australia, tropical and subtropical.)

wallichii Hooker. (E. India, Burma, Thailand
and China.)

wandae Racib. (New Guinea.)

Polybotrya cervina (L.) Kaulf., Enum. Fil. 55. 1824.
(Greater Antilles, Trinidad, Central and South
America.)

osmundacea Humb. and Bonpl. ex Willd., Sp. Pl.
5: 99. 1810. (Greater Antilles except Puerto
Rico; Trinidad, Cent. Amer., northern S. Amer.)

Polypodium

Subgenus **Camploneurum**

angustifolium Sw, Prodr. 130. 1788. (Tropical
America. (An undulated form is also under
cultivation in S. Florida.)

var. *amphostenon* (Kunze ex Klotzch) Baker in
Martius, Fl. Bras. 1(2): 530. 1870, non
Hieron., 1905. (tropical America.)

ellipticum Thunb., Fl. Jap. 335. 1784. (China,
Korea, Japan, and the Philippines.)

latum (Moore) Moore ex Sodiro, Crypt. Vasc.
Quitensis. 371. 1893. (Tropical America and Florida.)

phyllitidis L., Sp. Pl. 2: 1083. 1753. (Tropical
America and Florida.) (a crested form of *P.*
phyllitidis is now in cultivation in south Fla.)

wrightii (Hook.) Mett. ex Diels, Engler and Prantl,
Nat. Pflanzenfam. I (4): 316. 1899. (Vietnam to
southern Japan.)

Subgenus **Microgramma**

ciliatum Willd., Sp. Pl. 5: 144. 1810. (Tropical
America and Florida.)

heterophyllum L., Sp. Pl. 2: 1083. 1753. (Tropical
America.)

lycopodiodes L., Sp. Pl. 2: 1082. 1753. (Tropical
America.)

megalophyllum Desv. (ref. Tryon and Tryon: Ferns and
Allied Plants. 1982.) (South America)

palmeri Maxon, Contr. U. S. Natl. Herb. 17: 600.
1916. (Tropical America.)

piloseloides L., Sp. Pl. 2: 1083. 1753. (Tropical
America.)

squamulosum Kaulf., Enum. Fil. 89. 1824. (Mexico
to Brazil.)

vacciniifolium Langsdorff and Fischer, Pl. Voy.
Russes Monde 8, t. 7. 1810. (Tropical America.)

Subgenus **Microsorium**

crustaceum Copl. (Malaya, Boreo, Sumatra.)

lucidum Roxb., Calcutta. J. Nat. Hist. 4: 486. 1844.
(Northern and southern India, SW China, and Vietnam)

musifolium Blume, Enum. Pl. Javae 134. 1828.
(Sumatra to New Guinea.)

myriocarpum Mett., Farngett. I (Polypod.). 105, n.
198. t. l f. 3. 1856. (Philippines and Southern
Vietnam.)

nigrescens Blume, Enum. Pl. Javae 2: 126. 1828.
(India, Ceylon, Malaysia, Southeast Asia, and
Australia.)

polycarpon Cav. ex Sw., J. Bot. (Schrader) 1800, 2:
21. 1801. (Africa to Tahiti, N. to S. China.)

cv. 'Climbing Bird's Nest' (ref. Hoshizaki:
Baileya 22(1): 1982.) (Introduced from
East Indies about 1964.)

cv. 'Cristatum' (ref. see above.)

cv. 'Grandiceps' (ref. see above.)

cv. 'Ramosum' (ref. see above.)

cv. 'Serrulatum'? (No printed ref.) (A
serrated form similar to cv.
'Grandiceps' except this cultivar is
more erect and does not crest at the
apex of the frond.)

- sarawakense** Baker, Journ. Linn. Soc. 22: 228. 1886. (Malaya and Borneo.)
- scandens** G. Forster, Fl. Ins. Austr. 81. 1786. (New Zealand, Australia.)
- scolopendrium** N.L. Burmann, Fl. Ind. 232. 1769. (All tropics except the American.)
- sinuosum** Wallich ex Hook., Sp. Fil. 5: 61, t.284. 1864. Sumatra to the New Hebrides and Solomon Is.)
- viellardii?** A *Polypodium* that goes under the name 'Mount Elegans' has been cultivated for many years in South Florida. However, I cannot find any reference to this fern which resembles *P. veillardii*.
- Subgenus **Niphidium**
- crassifolium** L., Sp. Pl. 2: 1083. 1753. (American Tropics.)
- Subgenus **Phlebodium**
- aureum** L., Sp. Pl. 2: 1087. 1753. (American Tropics.)
- cv. '**Cristatum**' (ref. Hoshizaki: Baileya 22(1): 1982.)
- cv. '**Ekstrand**' (ref. see above.)
- cv. '**Mandalanum**' (ref. see above.)
- decumanum** Willd., Sp. Pl. 5: 170. 1810. (American Tropics.)
- Subgenus **Pleopeltis**
- angustum** (Willd.) Liebm., Kongel. Danske Vidensk-Selsk. Skr. Naturvidensk. Math. Afh. V 1:186. 1849. (Mexico to Paraguay.)
- astropis** Liebm., Kongel. Danske Vidensk.-Selsk. Skr. V, 1:185. 1849. (West Indies and Mexico to South America.)
- amoenum** Wallich ex Mett., Abhandl. Senckenb. Naturforsch. Gesellsch. Frankfurt 2: 80. 1856. (Northern India to southern China.)
- australe**
- cv. '**Cambricum**' (ref. Hoshizaki: Baileya 22(2): 1982.)
- bombycinum** Maxon, Contr. U.S. Natl. Herb. 17: 592. 1916. (Panama to South America.)
- dispersum** A.M. Evans, Amer. Fern J. 58: 173, Pl. 27. 1968. (Florida, West Indies, and Mexico to Brazil.)
- formosanum** Baker, J. Bot. 23. 105. 1885. (South China, Taiwan, Southern Japan.)
- friedrichsthalianum** Kunze, Linnaea 20: 393. 1847. (Tropical America.)
- glaucophyllum** Kunze, Linnaea 20: 393. 1847. (Tropical America.)
- loriceum** L., Sp. Pl. 2: 1086. 1753. (Tropical America.)
- maritimum** Hieron., Bot. Jahrb. Syst. 34: 527. 1904.
- pectinatum** L., Sp. Pl. 2: 1085. 1753. (West Indies, and Costa Rica to South America.)
- percussum** Cav. in Hooker, Ic. Fil. t. 67. 1828. (Central America to Peru and Brazil.)
- persicifolium** Desvaux, Berlin. Mag. 5: 316. 1811. (Sumatra to Philippines.)
- plebium** Schlechtendahl & Chamisso, Linnaea 5:607. 1830. (Mexico and Central America.)
- plumila** Humb. and Bonpld. ex Willd., Sp. Pl. 5: 178. 1810.
- polypodoides** (L.) Watt, Can. Nat. and Quart. J. Sci. II, 13 :158. 1867.
- pyrrholepis** (Fee) Maxon, Contr. U.S. Natl. Herb. 17: 593. 1916. (Mexico.)
- rhodopleuron** Kze, Linnaea 18: 315. 1844. (Tropical America.)
- siccum** (identified through correspondence by Virginia Ault with M. G. Price) (South America.)
- subariculatum** Blume, Enum. Pl. Javae. 133. 1828. (Tropical Asia.)
- cv. '**Knightiae**' (ref. Hoshizaki: Baileya 22(2): 1982.)
- tridens** (Kze.) (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)
- triseriale** Sw., J. Bot. (Schrader) 1800, 2: 1801. (Tropical America.)
- cv. '**Cambricoides**' (ref. Hoshizaki: Baileya 22(2): 1982.)
- verrucosum** (Hook.) Wallich ex Hook., Gard. Ferns t. 41. 1862. (Sumatra to New Guinea.)
- virginianum** L., Sp. Pl. 2: 1085. 1753. (Northeastern North America.)
- There are many more species of *Polypodium* in cultivation in South Florida that have not been identified.
- Polystichium tsussimense** (Hook.) J. Sm. in Hist. Fil. 219. 1875. (Japan, Korea, China.)
- Pseudodrynaria(Aglaomorpha) coronans** (Wall. ex Mah.) Ching, Sunyatsenia 6:10. 1941. (India, China, Taiwan.)
- cv. '**Porter**' (No printed ref.)
- Pteris cretica**
- cv. '**Albo-lineata**' (ref.: Graf: Exotica, 6th Edition, 1973.)
- cv. '**Parkeri**' (ref. see above.)
- cv. '**Wilsonii**' (ref. see above.)
- cv. '**Wimsettii Multiceps**' (ref. see above.)
- ensiformis**
- cv. '**evergemeiensis**' (ref. see above.)
- var. **victoriae** (ref. Holttum: Flora of Malaysia, Vol.II, Ferns of Malaysia. 1954.)
- longifolia** L., Sp. Pl. 2: 1074. 1753. (Tropical America.)
- multifida**
- cv. '**variegata**' (ref. only about **multifida**, Mickel: How to know the Ferns and Fern and Fern Allies. 1979.)
- quadriaurita**
- var. **argyraea** (ref. Hoshizaki: Fern Growers Man. 1975.)
- vittata** L., Sp. Pl. 2: 1074. 1753. (Old World Tropics, naturalized in Florida and the southern United States and other American tropical localities.)
- Pyrosia angustata** (Sw.) Ching, Bull. Chin. Bot. Soc. 1: 45. 1935. (Malaysia to Polynesia.)
- adnascens** (Sw.) Ching, Bull. Chin. Bot. Soc. 1: 45. 1935. (India, South China, Malaysia, Polynesia.)
- beddomeana** (Giesenhagen) Ching, Bull. Chin. Bot. Soc. 1: 68. 1935. (South India, South China, Malaysia.)
- floccigera** (Blume) Ching, Bull. Chin. Bot. Soc. 1: 71. 1935. (Sumatra to Philippines.)
- hastata** (Thunb.) Ching, Bull. Chin. Bot. Soc. 1: 48. 1935. (Japan, Korea, Manchuria (Taiwan?))
- heteractis** (Mett. ex Kuhn) Ching, Bull. Chin. Bot. Soc. 1: 57. 1935. (Northeast India, Burma, Southern China.)
- lingua** (Thunb.) Farwell, Am. Midl. Nat. 12: 302. 1931. (Northeast India, Vietnam, China, Japan, and Taiwan.)
- cv. '**Cristata**' (=forma **cristata** (Makino) H. Ito in Honda, Nom. Pl. Japan 22: 514.)
- cv. '**Monstrifera**' (=forma **monstrifera** Twagawa, Jap. J. Bot. 26: 21. 1951.)
- cv. '**Nankin-shishi**' (ref. Hoshizaki: Baileya 21(2): 1981.)
- cv. '**Nokogiri-ba**' (ref. see above.)
- cv. '**Variegata**' (=forma **variegata** Sugimoto, Pterid. 384. 1966.)
- longifolia** (Burm.) Morton, J. Wash. Acad. Sci. 36:168. 1946. (Malaysia to Queensland to Polynesia.)
- mannii** (Giesenhagen) Ching, Bull. Chin. Bot. Soc. 1: 55. 1935. (India, Ceylon, Malaysia, Madagascar.)
- numularifolia** (Sw.) Ching, Bull. Chin. Bot. Soc. 1: 47. 1935. (India to Malaysia and the Philippines.)
- obovata** (Blume) Ching, Bull. Chin. Bot. Soc. 1: 47. 1935. (Northeast India to Java.)
- piloselloides** (L.) Price, Philipp. J. Biol. 3:177. 1974. (India to New Guinea.)
- polydactylis** (Hance) Ching, Bull. Chin. Bot. Soc. 1: 48. 1935. (Taiwan.)

- rupestris** (R. Br.) Ching, Bull. Chin. Bot. Soc. 1:49. 1935. (Australia.)
samarensis (Presl) Ching, Bull. Chin. Bot. Soc. 1: 49. 1935. (Philippines.)
shearerii (Baker) Ching in Bull. Chin. Bot. Soc. 1:64. 1935. (Taiwan, Mainland China and Vietnam.)
stigmosa (Sw.) Ching, Bull. Chin. Bot. Soc. 1: 67. 1935. (North India, Indochina, Sumatra to New Guinea.)
varia (Kaulfuss) Farwell, Am. Midl. Nat. 12: 302. 1931. (Sumatra to New Guinea.)

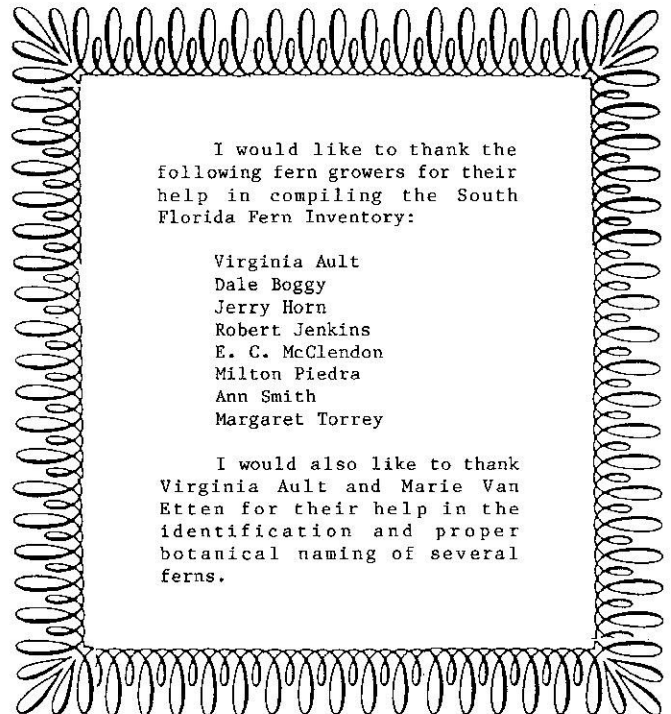
We also have in cultivation a number of unidentified species of *Pyrosia*.

- Quercifilix zeylanica** (Houtt.) Copl., Phil. J. Sci. 37: 409. 1928. (Ceylon, Thailand, Malaysia.)
Rumohra adiantiformis (Forst.) Ching. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America, Australia, New Zealand, Tasmania, and South Africa.)
Scyphularia pentaphylla (Blume) Fee, Gen. Fil. 325, t. 26B, F. l. 1852. (Malaysia to Polynesia.)
simplicifolia Copl., Philipp. J. Sci. Bot. 7C:64. 1912. (Borneo, Malaysia?)
Solanopteris brunei Christ. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Costa Rica to southern Colombia.)
Sphaeropteris cooperi (F. Muell.) Tryon. (ref. Jones and Clemesha: Austr. Ferns and Fern Allies. 1981.) (Australia.)
 cv. "Brentwood" (ref. Hoshizaki: Fern Growers Man. 1975.)
novae-caledoniae (Mett.) Tryon. (ref.: pers. com. between R. Tryon and Fairchild Tropical Garden.)
Stenochlaena tenuifolia (Desv.) Moore. (ref. Mickel: How to Know Ferns and Fern Allies. 1979.) (Old World Tropics, occasionally introduced in southernmost Florida.)
Taenitis blechnoides (Willd.) Sw., Syn. Fil. 24, 220. 1806. (Ceylon, southern India, Thailand, Indo-China through Malaysia to Fiji.)
Tectaria cicutaria (L.) Copl. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982. (Tropical America, Florida, western Texas.)
heracleifolia (Willd.) Underw. (Southern Florida, western Texas, tropical America.)
incisa Cav., Descr. Pl. 249. 1802. (Tropical America and has somewhat naturalized in South Florida.)
vasta (Blume) Copl., Phil. J. Sci. 2C: 411. 1907. (Thailand, Malaya, Sumatra, Borneo and Java.)

There are several unidentified species of *Tectaria* in cultivation.

- Thelypteris deltoidea** (Sw.) Proctor in Bull. Inst. Jamaica Sci. Ser. 5:59. 1953. (Greater Antilles, St. Thomas.)
guadalupensis (Wikstr.) Proctor in Bull. Inst. Jamaica Sci. Ser. 5:60. 1953. (Greater Antilles.)
hildae (identified by G. R. Proctor to Dale Boggy.) (Puerto Rico.)
repens
 var. **tenera** Proctor, Rhodora 61: 306. 1959. (Puerto Rico, St. Kitts, Nevis, Guadeloupe.)
reticulata (L.) Proctor, Bull. Inst. Jamaica Sci. Ser. 5: 63. 1953. (Tropical America.)
torresiana (Gaud.) Alston. (ref. Mickel: How to Know the Ferns and Fern Allies. 1979.) (Tropical America and S. Fla.)
Thayeria cornucopia v.A. v.R., Bull. Dept. Ag. Ind. Neerl. 21: 8. 1908. (New Guinea.)

- Todea barbara** (L.) T. Moore. (ref. Jones and Clemesha: Austr. Ferns and Fern Allies. 1981.) (Australia, New Zealand, South Africa.)
Trichipteris costaricensis (=Cyathea) (Kuhn) Barr. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (Tropical America.)
Trogostolon falcinellus (Presl) Copl. (ref. Copeland: Fern Flora of the Philippines. I. 1958.)
Vittaria elongata Sw., Syn. Fil. 109, 302. 1806. (Polynesia to India.)
ensiformis Sw., Ges Nat. Fr. Berl. Neu. Schr. 2:134, t. 7, f l. 1799. (Polynesia to Madagascar.)
lineata (L.) J. Sm., Mem Acad. Turin 5: 413, t.9, fig 5 1793. (Southeastern United States, tropical America.)
remota Fee. (ref. Tryon and Tryon: Ferns and Allied Plants. 1982.) (West Indies and Central America.)
scolopendrina (Bory) Thw., Enum. Pl. Zeyl. 281. 1864. (Madagascar to Samoa, Malaya.)
Woodwardia orientalis Sw., J. Bot. (Schrad.) 1800, 2 :76. 1801. (China, Taiwan and Japan.)
virginica (L.) J. Sm. (ref. Mickel: How to Know the Ferns and Fern Allies. 1979.) (Eastern North America, Bermuda.)



I would like to thank the following fern growers for their help in compiling the South Florida Fern Inventory:

Virginia Ault
 Dale Boggy
 Jerry Horn
 Robert Jenkins
 E. C. McClendon
 Milton Piedra
 Ann Smith
 Margaret Torrey

I would also like to thank Virginia Ault and Marie Van Etten for their help in the identification and proper botanical naming of several ferns.

Marilyn Johnson

Miami, Florida 33158

Editor's Note: Please address all inquiries about ferns cultivated in South Florida directly to Marilyn Johnson at the above address.

It should be noted that the above nomenclature may not, in all cases, be the same as that accepted in current systematic works. The names are as they appear in the cited works and no attempt at synonymy or nomenclatural priorities has been made. -- DWS

BARNARD COLLEGE

Dr. Dennis Wm. Stevenson
Department of Biological Sciences
Barnard College
Columbia University
New York, New York 10027-5798

MARCH-APRIL/MAY-JUNE 1986
VOLUME 13 NUMBERS 2&3

NON-PROFIT ORGANIZATION
U.S. POSTAGE PAID
NEW YORK, N.Y.
PERMIT NO. 7395

