

Zamia splendens



The history of *Zamia splendens*

by Dr. Bart Schutzman

After Loran Whitelock discovered this species (see pg. 11), other collectors followed. One was Merrill “Buddy” Rogers, whose impressive plant collection I was invited to see in 1981. Plants of *Z. splendens* he collected in Chiapas were donated to Fairchild Tropical Garden Research Center, where I saw them in the nursery area that same year. Mr. Rogers graciously gave me a plant from his own collection, which allowed me to examine it for the few years it took me to feel comfortable describing the species.

Before 1984, everyone knew this plant as the “Malpaso” *Zamia* because of locality in Chiapas from which it was mostly collected. Unfortunately for science, plant collectors have all but wiped out the species at that locality. In a grant proposal to the National Science Foundation, I referred to that species as new to science and included my plans to describe it, but in a sharply worded rejection of my proposal, D.W. Stevenson referred to this plant as “identical to specimens annotated as *Z. purpurea* by Vovides & Rees.” Obviously then, Dr. Stevenson did not believe this was a good species. After all, everyone is entitled to his own opinions! However, much to my amazement (then frustration), just a few weeks later on a visit with the late Dr. Knut Norstog of Fairchild Tropical Garden Research Center [see his obituary in TCS Newsletter 26(3):10-11] I saw a few plants of *Z. splendens* in the greenhouse. They had been collected several months earlier by Dr. Stevenson on a Mexican expedition and were labeled “*Zamia* sp. nov.” (“new species”) in his own handwriting. Oops! Rather than allow my work to be “scooped” by another botanist (common practice in academia, unfortunately), this eager-beaver graduate student sent the description to *Phytologia*, renowned for much faster publication than in the larger journals such as *Systematic Botany*, *Taxon*, or their ilk. I understood then why *Phytologia* was the favored venue for paranoid taxonomists! Fig. 1a-b is the illus-



Fig. 1. Illustration of *Zamia splendens* in Schutzman 1984.

tration included in that my description. It was reprinted the TCS Newsletter 8(4) in 1985. Now, yet again, in the last few years, another challenge has been mounted against the name *Z. splendens*.

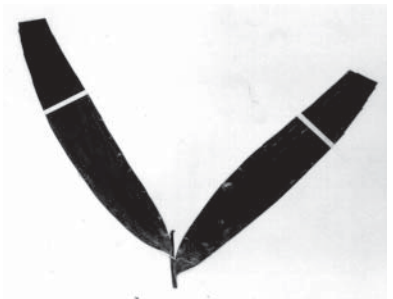
Why isn't *Zamia splendens* listed in the World List of Cycads or the Cycad Pages?

The scientific search for true answers may unfortunately take a back seat to politics. You will find the name *Zamia splendens* listed in the Cycad Pages only as a synonym of a 130+-year-old name, *Z. verschaffeltii* (coined by Miquel [1870]), with a scant Latin description of only vegetative parts and a type specimen (see following section for definition) that consists of a small leaf fragment with two partial leaflets (Fig. 2). Most botanists, as I do, categorize the name *Zamia verschaffeltii* as a “*nomen dubium*,” [= dubious name] because the specimen lacks even a complete leaflet, reproductive material, and locality is listed as “Mexico.” Not knowing where in Mexico to look for the plants, most believe that not enough information can be had from this specimen to allow proper classification. We can only speculate what species the specimen could represent - some large form of *Z. loddigesii*, maybe *Z. polymorpha*, perhaps *Z. lacandona* or a large *Z. paucijuga*, *Z. cremnophila*, or maybe a species we haven't seen again after Miquel described it? Of course, the “*nomen dubium*” status could be reconsidered later if a better specimen were to be found. If we could sequence the DNA of the 130+ year-old type specimen of *Z. verschaffeltii*, the chances are we could determine its identity. Until then, the arguments are not convincing that it fits the description of any particular species. There isn't a good reason to ignore *Z. splendens* because an unidentifiable fragment carries the name *Z. verschaffeltii*!

Also, if one reads Miquel's Latin description of *Z. verschaffeltii*, we immediately notice that no description of reproductive structures is included, most important in distinguishing many *Zamia* species. Also, morphological inconsistencies with the plant we know as *Z. splendens* crop up such as leaflet width and shape. *Zamia verschaffeltii* is described as having straight to falcate leaflets 1 ¼ - 1 ¾” wide and 9-12” long. *Zamia splendens* rarely has falcate leaflets, and they seldom are narrow, usually in the 2-3” wide range, and commonly shorter than 9”. So the arguments for making *Z. splendens* a synonym of *Z. verschaffeltii* are extremely weak at best.

Some taxonomic considerations

In taxonomy, the “type concept” is used for stability of nomenclature. Technically, a name is not assigned to a species



HOLOTYPE OF *Zamia verschaffeltii* Miquel
in *Verh. Med. Kon. Acad. Ind. Naturw.*
ser. 2, 4: 31-32. 1869.
Det.: D.W. Stevenson & S. Sabato Sept. 1984

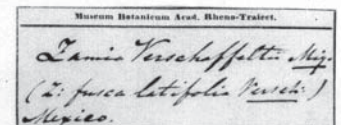


Fig. 2. Type specimen of *Zamia verschaffeltii* and enlargement of its label.

per se, but to a special herbarium specimen known as the “type specimen.” If someone later considers that specimen to belong to another species, then the oldest name (and type specimen) among the specimens known is the one given priority. This is called “nomenclatural priority.” It allows taxonomists to do what they do best - disagree - without turning the nomenclature COMPLETELY inside out! “Lumpers” tend to have a broader concept of a species and routinely must find the oldest name (and specimen) that belongs in their concept of a single species. “Splitters” tend to break out species from larger groups and if no type specimen is found that fits within the concept of the smaller group, a specimen is selected for the type and a new name given. The tug of war between lumpers and splitters helps to explain why names of many familiar plants have teeter-tottered between two different names in our lifetimes. Just think what chaos would reign if, every time a taxonomist had a different idea, he could assign yet another NEW name to a familiar plant!

This brings us to an important point about the methodology taxonomists should use to classify plants. Because there are always differences in classification over the generations, especially in a group like cycads that have been known so long, names tend to proliferate. They are used, forgotten, and new names coined. Before long, many more names exist than there are actual species. The biggest mistake a taxonomist can make is to attempt to find the species that belongs with a particular name. There are many instances where multiple names apply to a single species, so the FIRST task for the taxonomist is to determine how many good species there are. ONLY THEN should one look at the type specimens and the names assigned to them and find the oldest name for each good species. A study of the type specimens is the last part of the taxonomist’s work. Also, my advice to discerning readers is “don’t believe everything you read,” especially if what you are reading is not a refereed (= peer-reviewed) publication. This is especially important in this day of internet publication, where the articles can be changed daily if the author so desires. These electronic will-o’-the-wisps are merely the opinion of a single person and have not been subjected to scrutiny by other workers knowledgeable in the field. Publications that are peer-reviewed have accountability, respectability, and infinitely more reliability.

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 _____ and A.P. Vovides. 1998. A new *Zamia* from eastern Chiapas, Mexico. *Noven* 8(4):441-446. [*Z. lacandonia*]

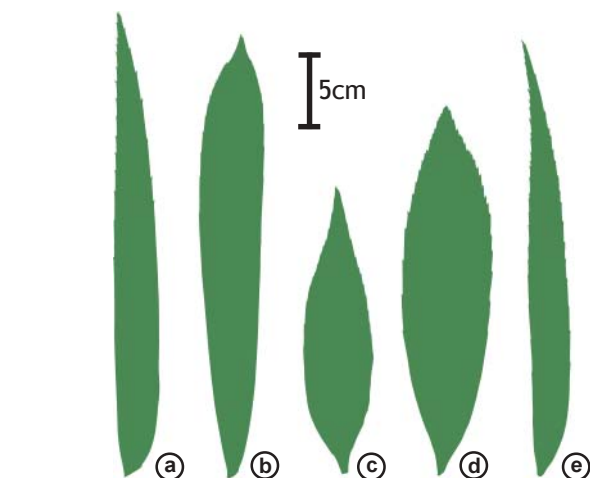


Fig. 3. Comparison of leaflet shapes and sizes in the *Z. splendens* species group. a) *Z. cremnophila*; b) *Z. lacandonia*; c) *Z. purpurea*; d) *Z. splendens*; e) *Z. standleyi*. From Schutzman & Vovides (1998).

Notes on *Zamia splendens*

by Lorán Whitelock

Discovery

I first encountered the plant that was later to be described as *Zamia splendens* on November 3, 1971. This was during my first trip to Chiapas, Mexico, with my good friends Horace and Mary Anderson of Leucadia California. We had been botanically investigating a number of areas in Chiapas that had proved quite interesting, especially in regards to cycads. We were advised that there was a “new” road to the lake formed by the Malpaso dam and that it passed through some very interesting forested areas. It turned out that the “new” road was dirt (or more correctly mud) and was all but impassable! We stopped at a number of locations looking for cycads and interesting plants in general, but were unable to locate any cycads. The road went through a beautiful and all but untouched forest area for many miles. About ten miles from our start at the Pan-American highway I noticed a thickly forested valley entrance to our left. I remember saying “I just know there are cycads in there.” We parked and decided to do a bit of exploration. Luckily there was a faint trail to follow, and we did so for about a half an hour. Although there were many interesting plants, there were no cycads to be seen. I was receiving a fair amount of comment aimed at my statement regarding the presence of cycads in this area, which I tried to ignore. Just then I noticed a beautiful little *Chamaedorea* palm and decided to take a photograph. To my amazement, as I was focusing my camera, I saw what was unmistakably a *Zamia* directly behind the palm! It was a beautiful plant and not one that I was familiar with. More exploration of the area proved them to be a frequent part of the forest understory. We collected several tubers and some herbarium specimens, and then continued on our way to Malpaso.

After returning home and while discussing this *Zamia* with Larry Bussell, a plant collector in Florida, I shared directions to this colony. He subsequently visited the habitat and collected a number of plants which he introduced into South Florida. As far as I know, that was the first introduction of this *Zamia* into horticulture. In 1984 this plant was botanically described by Bart Schutzman as *Zamia splendens*. *Zamia splendens* flourished in Florida and because of its beauty soon became a very prized cycad in collections. In later years, due to the efforts of several plant collectors, *Zamia splendens* was propagated to the point where it is no longer difficult to obtain. This is very fortunate as no collection should be without a specimen of this beautiful cycad.

Description

The name *splendens* is Latin for shining or brilliant, referring to the striking appearance of the leaf, which has an extremely glossy surface. *Zamia splendens* is a small subterranean cycad that produces a tuber that is rarely branched except through injury, and attains a maximum size of about 25 cm (10 in.) long and 5 cm (2 in.) in diameter. In habitat this *Zamia* rarely holds more than two leaves at a time, however, two leaves are more than sufficient to exhibit its beauty. The leaves are upright and slightly arching, glossy dark green, 0.3-1 m (1-3.3 ft.) long, 18-70 cm (7-28 in.) wide, and flat to slightly keeled. The petiole is robust, 32.5-37.5 cm (13-15 in) long and 5-8 mm (0.2-0.3 in.) in diameter, moderately to heavily armed with spines, mainly on the petiole of often extending onto the rachis. Leaflets in four to 10 pairs, very stiff and leathery, opposite to sub-opposite, glossy dark green above, dull below, flat, long elliptical, the vein is visible but not elevated. Median leaflets 27.5-30.5 cm (11-12 in) long and 3-6.5 cm (1.3-2.6 in.) wide, the margins slightly revolute and serrulate in the apical

2/3-4/5 of the leaflet. Emergent leaves generally bright red-dish-brown, however, some individuals with green emergent leaves are known to occur. As the leaves mature and harden off they slowly lose the reddish-brown coloration, however, this process may take several months. Female cones solitary or some plants rarely producing two. The cones vary in shape from almost round to cylindrical and measure 7-13 cm (2.8-5.1

in.) long and 4.5-6 cm (1.8-2.4 in.) in diameter. At first the entire cone is coated with a dense brown tomentum which eventually weathers away, leaving the cone dark green and somewhat glossy. The peduncle is 10-15 cm (4-6 in) long and pendent, the cone tending to bend upright. The sporophylls can be rounded and smooth or show definite facets. The sarcotesta is bright glossy orange when ripe which no doubt aids in the dispersal of the seeds by birds or animals. Male cones are generally multiple and may be produced from two to seven per crown. These are conical and much smaller than the female cones and measure only 4-9 cm (1.6-3.5 in.) long and 1.7-2 cm (0.7-0.8 in.) in diameter. The male cones are also densely brown tomentose but unlike the females, the tomentum does not weather away, as they die shortly after shedding their pollen. The peduncles are also long and pendant on the male cones and measure 8-16 cm (3.2-6.3 in.) long and 0.8-1 cm (0.3-0.4 in.) in diameter.

Habitat

Zamia splendens generally occurs as an understory plant in wet tropical rain forest at an altitude of about 600m (2000ft) but has also been reported near Tuxtla Guiterrez, Chiapas at an altitude of 1500m (4900ft). Rainfall averages about 2000mm (79in) annually, falling mainly in summer; however, the habitat always seems to be very humid even during the dry season. Companion plants in habitat include *Chamaedorea*, *Anthurium*, *Philodendron*, and many ferns.

Distribution

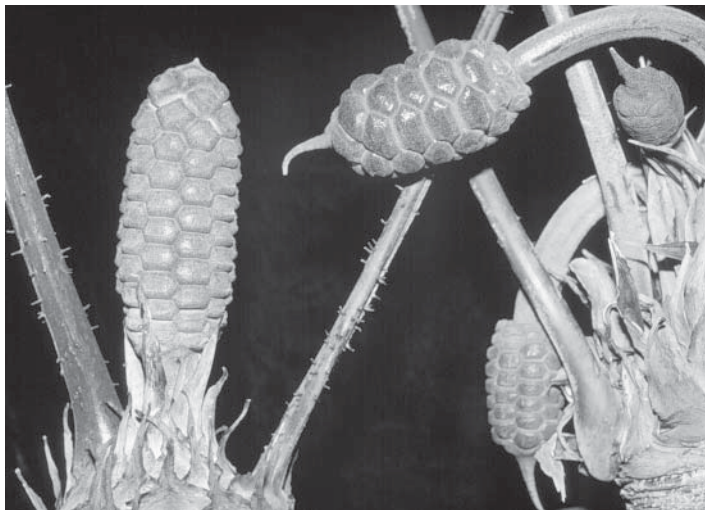
Zamia splendens is endemic to Mexico in the state of Chiapas. It has also been reported from the state of Tabasco, but that plant has somewhat different, although similar, leaves, and cones with very short peduncles. More fieldwork is definitely called for.

Cultivation

Zamia splendens is a trouble-free garden plant in areas with tropical to subtropical climates, however, it has also proven to be a reasonably hardy plant in Southern California which is classed as a warm temperate climate. When provided with a moist, well-drained soil and overhead cover *Zamia splendens* can be a very rewarding plant even in temperate climates. Its beautiful reddish emergent leaves and broad, glossy green leaflets make this *Zamia* a superb addition to any garden. Under cultivation *Zamia splendens* grows more robust than it does in its natural habitat and produces many more leaves. I am not the least bit reluctant to suggest that specimens of *Zamia splendens* be added to any garden where the proper conditions for its maintenance can be provided.

Conservation

It would seem that the conservation status of *Zamia splendens* is relatively secure. It ranges over a large area where it is still reasonably common. This coupled with the fact that *Zamia* in general manages to survive the destruction of the forest which it inhabits. During a short period of time in the 1970s *Z. splendens* was commercially collected and many hundreds of them were exported to the United States. I made an examination of this original collection area in 1990 and found *Zamia splendens* to be relatively common and reproducing in good numbers. The habitat of this *Zamia* is located in areas that are well suited for coffee production and much of the area has been cleared for the planting of coffee. The slash and burn agriculture in Mexico continues unabated and because of this the habitat of many plants, including *Zamia splendens*, is threatened.



Comparisons of *Zamia lacandona* with *Z. splendens*. above, male cones: *Z. lacandona* on left; below, female cones: *Z. lacandona* on left. Photos by Loran Whitelock.



A large, unusually branched specimen of *Zamia splendens* growing at the University of Florida. Photo by Bart Schutzman.

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Growing *Zamia splendens* in California

by Irv McDaniel

Zamia splendens has been an exceptionally good grower for me. I currently have three coning size plants (two female and one male) which produce many seedlings each year. The leaflet width varies from about 1 1/2" to almost 4". New leaves are produced every year and range in color from a bright pink to a medium red color.

Seedling leaves are also similarly colored and plants generally produce three to five leaves in their first year. The large plants were coning size when I acquired them and I have not kept any of the seedlings long enough for them to cone, so I'm not sure at what age they begin coning.

Numerous cones are produced each year; males have up to 15, while the females have six to eight normally. Cones are pendulous, which can make fertilization interesting at best. With the plants in pots, I generally tip them over on their side or sometimes completely upside down in order to fertilize them.

Plants are kept in an unheated greenhouse. I suspect that they would be fine outdoors in a frost-free area. They would probably also do very well indoors in a brightly-lit area.



Coning male plant of *Zamia splendens*. Photo by Irv McDaniel.



Coning female plant of *Zamia splendens*. Photo by Irv McDaniel.

Phenology of *Zamia splendens* in South Florida

by Jody Haynes

Zamia splendens is a small, beautiful, acaulescent cycad with "splendent" (glossy) leaves (hence the name!) that often emerge in amazing shades of pink, orange, and/or red. It grows well in South Florida with very little care, and it performs equally well in partial to full shade. Montgomery Botanical Center (MBC) is currently growing 19 plants of this species in the ground, representing six accessions. The sex of all 19 plants is known, and the sex ratio is 1.7:1 (male:female).

Individual plants typically flush only once per year at MBC, with a peak of vegetative activity in June (Fig. 1a). Male cones emerge primarily from December through February, and pollen is released four to five months later, primarily in April and May (Fig. 1b). Female plants typically begin coning in February, and the female cones take 10-12 months to mature (Fig. 1c).

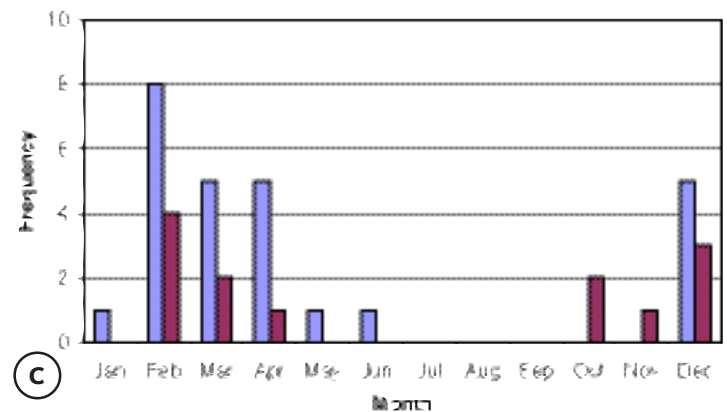
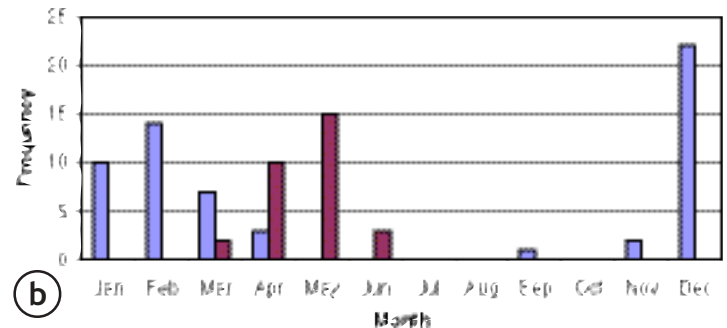
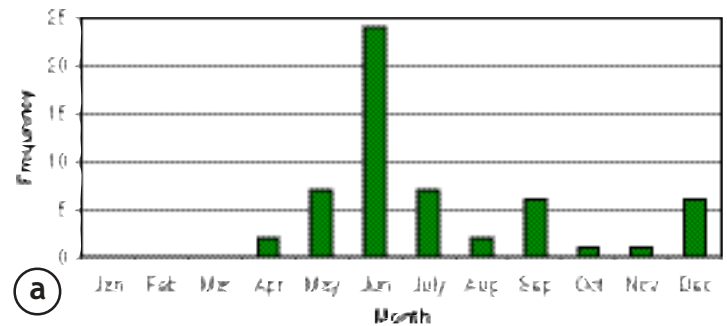


Fig. 1. Phenology of *Zamia splendens* at MBC: a) vegetative flushes; b) male cone emergence and pollen release; c) female cone emergence and maturity.

Growing *Zamia splendens* in Central Florida

by Tom Broome

Zamia splendens should be considered a greenhouse plant in my part of central Florida. Almost every year, the temperatures will go down to the mid 20's, and every three years we go down to the lower 20's. I have observed leaf damage on plants at 28F. This should be considered close to the lowest temperature you would want to subject your plants to. These plants prefer shade, so at least they are protected to some extent when grown under trees.

This species is one of the most attractive zamias, having shiny green leaves, that are typically reddish-pink emergent. There aren't too many zamias that display such a beautiful color. Plants grow fairly fast, and can mature in three years from seed. Males will start maturing in three years, but it may take four to five years for female plants to produce their first cones. The stem needs to have a two inch diameter or larger to produce cones. Many breeders, including myself, have found that young *Zamia splendens* plants can "cone themselves to death" under cultivation. One of my female plants with a two-inch diameter produced three cones at the same time. Not knowing at the time what would happen, I pollinated all three cones. Before the seeds could be picked, the entire stem collapsed, and looked like a paper shell because the starch in the stem had been used up. At least two other breeders I know had the same thing happen to them, which certainly shows a pattern. I now cut off all but one cone on my females when I want to produce good seeds safely. Males can also produce many cones per apex. I have seen as many as six male cones

from a single stem, which helps for breeding because only a small amount of pollen is produced from each these small cones. Leaving all the male cones on a plant does not cause the same problem, because they don't use up as much energy as female cones that are held on the plant for almost a year.

Zamia splendens reacts well to fertilizer application, and for that matter, to cultivation in general. In habitat they usually hold only one or two leaves, whereas a plant can produce many apices and many leaves per apex under cultivation, forming a very impressive mass of stems and leaves. The stems of *Zamia splendens* can split open if the plants are grown too fast. For this reason, I use a good, long term, time-release fertilizer like Polyon, or Nutricote.

This species should be a favorite for all cycad collectors. In protected areas of central Florida, they make very beautiful landscape plants, especially when new leaves are emerging. I recommend this zamia for anyone growing rare cycads, whether they are used in the landscape or are confined to a greenhouse. They do not occupy much space in the greenhouse, so just about anyone could have a small breeding colony for seed production.

Future "Cycad Focus" Species

September 2004	.....	<i>Encephalartos ferox</i>
December 2004	.....	<i>Bowenia spectabilis</i>
March 2005	.....	<i>Zamia pygmaea</i>
June 2005	.....	<i>Ceratozamia euryphyllidia</i>
September 2005	.....	<i>Encephalartos laurentianus</i>
December 2005	.....	<i>Zamia fischeri</i> / <i>Z. vazquezii</i>

