

PORTRAIT OF A SPECIES

ZAMIA PUMILA Linneaus

*The
Florida Sago Palm*

by

Garrie P. Landry

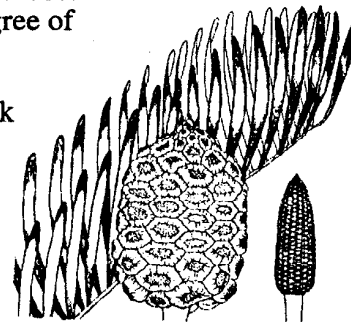
INTRODUCTION

Within the continental United States, only one cycad occurs naturally. Zamia pumila L. can be found in Florida and southeastern Georgia. This small, subterranean cycad once figured in quite prominently as the staple diet of the Florida Seminole Indians, who called it "Coontie." So many names have been used for Florida plants that the true identity still remains a mystery to many who know the plant.

DESCRIPTION

The native cycad of Florida is typically a small, low growing plant with a subterranean stem and spirally arranged leaves. The stems can become quite large and are frequently branched. Only rarely are the stems above ground, and even then it is generally due to soil erosion rather than above ground growth. The stems of Zamia branch naturally. It had been suggested that branching occurred as a result of injury due to fire. However studies indicate that the branching habits are not always linked to injury, and the depth at which the stems occur indicate that fire could not be the cause. However, injured plants as a result do show a higher degree of branching .

The leaves of Zamia are short, thick, leathery, and dark green. In the past, much significance was attributed to the leaf shape, leaflet width and number of teeth per leaflet as well as plant vigor and distribution in assigning a name to plants. Indeed the variability of these features gives credence to the various names which have been used. However some of these variables are controlled by environmental factors such as sunlight. Plants found in shade tend to have wide, flattened leaves and leaflets, while plants found in sun often have "V" shaped leaves and rolled leaflets. These conditions are reversible with exposure to different light regimes. Other features such as leaflet width and number of teeth undoubtedly have a genetic basis and are not environmentally controlled.

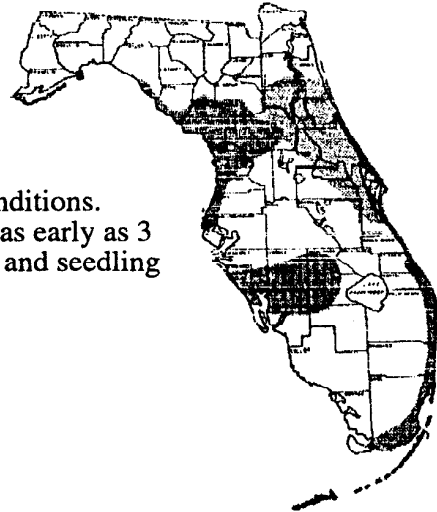


Zamia pumila L. (Florida Cycad)
Portion of Leaf X 1/2;
female cone X 1/2; male cone X 1/2

Cones of the Florida zamia are dark reddish brown. They emerge primarily in late summer and fall with the earliest date recorded in June. Cones usually emerge after leaves are produced, and some plants produce cones and leaves on alternating years. Typically only one seed cone is produced per stem, in contrast to three to five

polleniferous cones per stem. The maximum number of polleniferous cones observed on a plant with multiple branches was 19. Pollen cones emerge one at a time and mature in 150-164 days. Pollen release occurs for 5-8 days after which the cones collapse and disintegrate. Seed cones appear to become receptive to pollen within 154-181 days following initiation and require an additional year for maturation. The average number of seeds recorded per cone is 72. The seeds are encased in a bright orange fleshy covering. Under natural conditions this covering dries and retards water evaporation from the seed. If the covering is removed, these seeds desiccate quickly and viability is greatly reduced for long term storage. Yet, seeds will not germinate unless the fleshy covering is removed or completely dry, even under natural conditions. In an experiment, 50 seeds with the fleshy covering (group #1) and 50 seeds without the fleshy covering gave the following results after remaining 5 months at room temperature. Flotation tests demonstrate that 8% from #1 floated while 84% from group #2 floated. Within one month 86% of the seeds from group #1 germinated. In group #2, only 6% germinated. This suggest that the absence of the fleshy covering contributes to low viability.

The seedlings of *Zamia* grow quickly under the proper conditions. Greenhouse specimens have been known to produced cones as early as 3 years old. Growth in nature is not expected to be this quick, and seedling mortality in nature is generally quite high.



DISTRIBUTION

In Florida *Zamia* is restricted to the peninsula region. While there is some historical evidence that that claim it occurred in the panhandle region, no specimens have ever been found. The Georgia localities, all southeastern Georgia are relatively recent reports. One is apparently an old record, previously thought to be in error as the locality in recent times has to living *Zamia*, the other is a recent discovery of plants in oak forest on coastal islands. On the west coast, it ranges from Perry in Taylor County southward to Monroe and Dade Counties, while on the east coast it is common as far north as the Crescent Beach areas in St. Johns County. *Zamia* is uncommon to rare in central Florida where extensive agriculture has developed. Although it is absent even in areas with little or not apparent disturbances. The largest populations are found in coastal areas and are widely separated. It seems to prefer undisturbed woods dominated by pine and oak. In areas where the Saw Palmetto, *Serenoa repens* is abundant, *Zamia* is frequently uncommon or absent.

Distribution of *Zamia* in Florida shaded areas

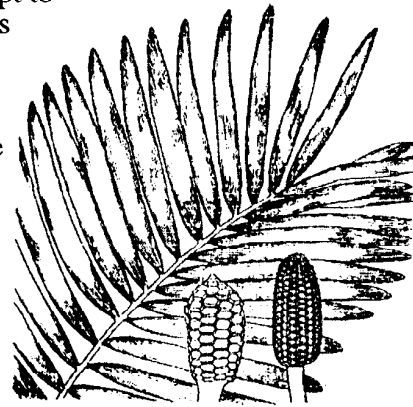
Cold tolerance has been a limiting factor in *Zamia*'s spread northward. Observations indicate that wide leaflet forms are less cold resistant than narrow leaflet forms. Perhaps this is why narrow leaflet forms of *Zamia* extend further inland in northwestern Florida and wide leaflet forms are restricted to the coastal areas.

The distribution in Florida has often been associated with aboriginal sites. Since the Florida *Zamia* was a staple of native Indians, it is frequently found growing on shell middens attributed to Indians.

NAMING AND HISTORY

Originally as many as four species of *Zamia* have been recognized in Florida. The first was *Z. integrifolia* described by Aiton in 1789 from "East Florida." One hundred years later Decandolle proposed *Z. floridana*, based on a specimen sent to him from Florida. In 1920's John Small of the New York Botanical Garden described two new species, *Zamia umbrosa* by virtue of their wide leaflets (these had been previously referred to as *Z. pumila*) and *Z. silvicola* "because of the robust nature of plants in western Florida." Small also reported a Cuban species as occurring in southern most Florida, *Z. angustifolia*. Subsequent treatments of Florida zamia by other researchers have always reduced the number of species recognized. Among the most recent treatments, James Hardin in 1971 acknowledge only one variable species, *Z. integrifolia*, while Long and Lakela in their Flora of Tropical Florida listed two species *Z. pumila* and *Z. angustifolia*. Dan Ward of the University of Florida in Gainesville recognized two species, *Z. floridana* and *Z. umbrosa*, but suggested that they may be introductions of different forms of a single variable species. James Eckenwalder, of Fairchild Tropical Garden suggested that all of the Caribbean zamias' belong to a single variable species *Z. pumila*. The name "pumila" has priority over all other names since Linnaeus described it as the very first *Zamia*. The original specimen of *Z. pumila* came from the Dominican Republic. According to Eckenwalder all of the species of *Zamia* in the Caribbean comprise a single species, *Z. pumila* with two subspecies, *Z. pumila* spp *pumila* and *Z. pumila* spp *pygmae*. The latter has been referred to as *Z. pygmae* and is restricted to Cuba.

There are obvious differences in populations of Florida zamia, and some of the variables have a genetic basis as experimental results have indicated. However, the differences in the populations overlap throughout the state. The conclusion is that there is only one highly variable species, *Z. pumila*. Any attempt to recognize additional species creates inconsistencies. It has been suggested that the different forms found in Florida might represent introductions of various forms from around the Caribbean and elsewhere. It is reasonable to assume that man may have played an important role in the dispersal of *Zamia*. Many Indian groups from South America, Central America, Mexico and the Antilles utilized cycads for food. *Zamia* was the staple of Florida Indians and is common at aboriginal sites. Generally it is accepted that contact did exist between Indians of the Antilles and those of Florida, and the idea of transportation of *Zamia* to Florida seems quite believable. It has been suggested that given enough time and with opportunity for hybridization to occur the different forms in Florida would become less distinct. There is little doubt that this would have occurred had modern man not disturbed Florida.



Zamia pumila from north Florida,
(described as *Z. umbrosa* Small)

CULTIVATION

This is perhaps one of the easiest of all zamias to cultivate. It is widely grown in Florida as an ornamental, as can be seen by the many street plantings in older cities and towns. Today, it is used extensively for landscaping and occasionally as a potted plant. This *Zamia* thrives in well drained sites but not in low wet areas. When transplanting mature plants, extreme care should be exercised to avoid injuring the large fleshy roots.

Once injured, if not properly treated often fungus and bacteria will quickly rot the entire plant.

Although the Florida zamias are relatively cold hardy, generally the foliage is either lost or damaged in hard freezes. Rarely are the below ground stems affected. Seedlings are more vulnerable to cold than older plants, and should not be planted out of doors until they attain some size. With proper care and fertilizing, the Florida zamia can be grown from seed and produce cones in as little as 3 years time. A good sandy peat mixture provides the best conditions for optimum growth.

The seeds of this species germinate readily. However, seed viability diminishes after 5 months, so don't delay in planting them. One method of quickly germinating this species is by removing the protective outer seed coat. Take special precautions not to injure the seed while doing so. Once the seed coat has been removed, the seed should be dusted with a fungicide and placed horizontally on moist sand or vermiculite. Bury the seed only half way. Generally within 48 hours or less, the radical will begin to emerge and germination has begun. The root develops quickly and within a couple of weeks the first leaf emerges. Transplant these seedlings after they become established in the germinating bed. They can remain there indefinitely or at least 3 months. Always handle them with care to avoid injuring the delicate tap root. An injury to a seedling means almost certain death! The aforementioned method to enhance germination in *Zamia* works well for many species of *Zamia*, but not for all cycads. Don't be overly anxious. Allow fresh seeds to germinate naturally, use of this method might be best applied to seeds which are nearing their viability limits.

CONSERVATION

The status of *Zamia* L. in Florida is a precarious one. It is still common in many areas, but at the same time it has disappeared from other well know localities. Certainly it is a highly vulnerable species. Its primary enemies are over zealous collectors and habitat destruction. This species should be monitored closely. Certainly once it disappears from a area it is unlikely to every reappear under natural circumstances. Its survival as a naturally wild species is totally dependant on habitat preservation and imposing limits to taking plants from the wild. However, it is equally disappointing to see witness land development in a area abundant with *Zamia* and not have the plants rescued for horticulture or relocation.

NEWS FROM THE SEED BANK

Dear Members of the Cycad Society,

Within the last 2 weeks all request received by US members were filled and mailed. It was decided to mail all remaining seeds before winter. Seeds will not be mailed again until spring of 1991. If you did request seeds but do not receive a package, please advise me as soon as possible. This means I did misplace your request. If you have received your packets, please send payment to me as soon as you can. The packets are \$2.00 each plus postage. Most people will receive anywhere from 5 to 7 packets. Please pay accordingly, \$10 -\$17 plus the postage it cost me to mail it to you. Currently the seed bank is essentially without seed. *Zamia pumila* and *Cycas media* are the only seeds available. The bank had previously received a number of interesting seeds. If every one who receives seeds pays for them, we will have over \$300 to be used exclusively for buying new seeds.