

forming as they do more or less continuous bands around the slopes and extending up to the elfin forest-clad ridges near the summits of the highest peaks (3500 feet). These impressive forests of palms tend to occupy more sheltered sites and *Euterpe globosa* noticeably falls off in numbers as the upper windy ridges are reached or on the windward slopes. Here temperatures may average 10° or more cooler than at sea level, the soil is perennially soaked, and atmospheric humidity is high. These should all be clues to the successful culture of this palm species when it is attempted.

These Puerto Rican forests of mountain cabbage palms are about the only ones readily accessible to the casual traveler. Elsewhere, particularly in the Lesser Antilles, stands of *Euterpe globosa* can usually be reached only by

strenuous climbing on slick mountain slopes or often through the well-nigh impenetrable thickets of the elfin forest. In Puerto Rico, on the other hand, one can drive by car from San Juan on good roads right up into the belt of palm brake in the Caribbean National Forest. The visitor to this area will be surprised to find how relatively open this forest is under foot with a rather poor representation of shrubs. The abundant moisture and humidity precipitated from rain clouds make mosses abound and these cover many of the palm trunks thereby serving as a fine medium for a wealth of epiphytic plants—chiefly ferns, orchids, and bromeliads. It will probably be from these accessible palm forests of Puerto Rico that propagation material can ultimately be gathered to establish *Euterpe globosa* as a new ornamental.

Pseudophoenix in Florida

R. BRUCE LEDIN¹, STANLEY C. KIEM², and ROBERT W. READ³

I. THE NATIVE PSEUDOPHOENIX SARGENTII

*Pseudophoenix Sargentii*⁴ is the rarest palm native to Florida. It has also been found on certain islands of the Bahamas, and is possibly the species found in northern Cuba, and Hispaniola, but in Florida it has been accu-

rately recorded for only three stations, all of which are on the Florida Keys.

Its discovery, "rediscovery", taxonomy, and relationship have been given by Sargent (13), Cook (4), Small (17), and Bailey (1). Additional information recently come to light concerning this palm in Florida is herein recorded along with notes on the palm's discovery and history.

Early History

Charles S. Sargent, the authority on American trees who for fifty years was director of the Arnold Arboretum of Harvard University, was the botanist who announced the occurrence of the palm in Florida. On one of his few trips

1. University of Florida Sub-Tropical Experiment Station, Homestead.
2. Fairchild Tropical Garden, Miami.
3. Cornell University, Ithaca, New York.
4. The following common names have been given to this palm: hog palm, hog cabbage palm, hog palmetto, buccaneer palm, wine palm, false date palm, false royal palm, dwarf royal palm, ram's horn palm, lost palm, Sargent's palm, feather leaf Florida cherry palm, but perhaps the best common name is Sargent cherry palm, a name which seems to have been originated by L. H. Bailey.

to Florida to collect and to study the tropical trees of this area, he was accompanied by A. H. Curtiss of Jacksonville and C. E. Faxon, the artist who made many of Sargent's plates for his *Silva of North America*. On April 19, 1886, these men, together with Lieutenant Hubbard of the U. S. Navy, on the lighthouse tender "Laurel", visited Elliott Key as guests of Mr. Henry Filer, who had a pineapple plantation on the upper or eastern end of the Key. Here Sargent came upon a solitary palm left standing in a clearing. Sargent thought at first it was a royal palm, but on closer examination he found it to be an entirely different plant, the bright orange-red globular or two- to three-lobed fruits and the conspicuous leaf scars on the otherwise smooth trunk proved to be an "interesting addition to the North American sylvia". He found only six individuals in two localities two or three miles apart. "A few individuals were discovered scattered throughout the woods in the neighborhood of Mr. Filer's plantation" and growing on the border of a field recently cleared. The palms were 20 to 25 feet tall and the trunks were 10 to 12 inches in diameter.

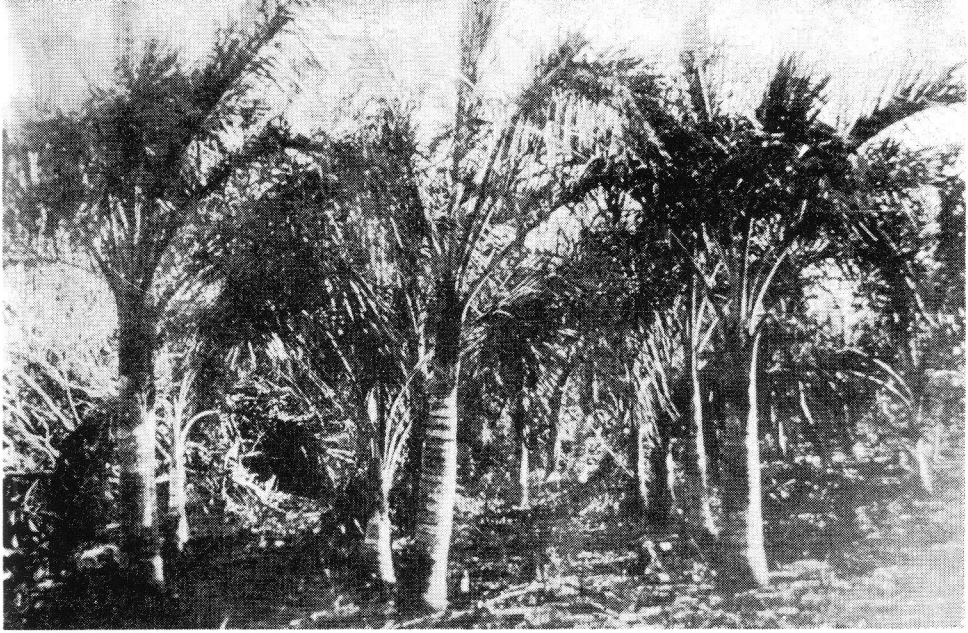
Sargent sent unripe fruit, photographs, and a description of the palm to Dr. Herman Wendland of Hanover, Germany, who was growing palms in the palm garden at Herrenhausen. He at once not only recognized it as a new species, but considered it a new genus as well. He sent Sargent a letter in which he suggested the name *Pseudo-phenix Sargentii*. Sargent published a brief note in 1886 (11) giving Wendland's proposed name.

The discovery of the palm on another island is given in Ralph Middleton Munroe's book *The Commodore's Story* (7). In Chapter 14, "Botany and Fishing"

(page 148) Munroe says: "While visiting the Hines this winter [1886] on Long Key we discovered on its east end great numbers of what appeared to be small royal palms; we afterward learned that Professor Sargent had found isolated specimens on other Keys, and that it was a new variety named by him [*sic*] *Pseudo-phenix Sargentii* [*sic*"]". Munroe at this time took a photograph of the grove of Long Key palms; this photograph was used by J. K. Small in his article on the bucaener [*sic*] palm (17) and is reproduced in this paper (Figure 11).

Further on in Chapter 14 Munroe states: "During the same visit to Long Key we had a northern which brought the mercury down to 36°". This "northern" was the devastating "big freeze" of January 9, 1886. Munroe sent a letter to Dr. Isaac Holden of the American Museum of Natural History who published a little article in the *Evening Post* about the cold spell in south Florida. This article is dated February 8, 1886. From this evidence, then, we conclude that Munroe found and photographed the "royal palm" on Long Key in early January of 1886. Later that year, on April 19, Sargent discovered the palm on Elliott Key. Sargent must have heard about the palm on Long Key; in writing about his discovery of the palm on Elliott Key he states, ". . . late [*sic*] in the same year a grove of them was discovered near the east end of Long Key by a gentleman from Bay Biscayne whose name I can not recall." (12).

A year later, in the spring of 1887, Sargent, Curtiss, and Codman again visited southern Florida, this time to see for themselves the grove of palms on Long Key. In writing about these palms, Sargent (12) states: "There are about



11. Photograph taken by Commodore Munroe in January, 1886, of the native grove of *Pseudophoenix Sargentii* on Long Key. This photograph was used by Small in his article on the buccaneer palm (1922). Notice that the trees appear to be arranged in rows, but this is probably a result of the seeds germinating very close together. The palms at this stage showed no bulges; it is possible that they are 20 to 25 years old. The scrubby vegetation which surrounds the palms had been removed so they could be photographed.

200 plants, large and small, in this grove, which is represented in the illustration upon page 353, from a photograph made by Mr. James M. Codman at the time of our visit to Long Key in the spring of 1887."

Following Sargent's original description of the palm, Curtiss published an account on the new species, giving a report of its discovery and a picture made from a drawing. This appeared as a front page article in the *Florida Farmer and Fruit Grower* for February 23, 1887, published in Jacksonville by A. H. Curtiss (5). Through an error, the name appeared as *Chamoephoenix* instead of *Pseudophoenix*.

Another note by Curtiss in the *Florida Farmer and Fruit Grower* appeared on

page 89 of the March 23 issue (5). And in June 15, 1887, on page 185 of this magazine, E. N. Reasoner published an article describing a visit that his brother, Pliny Reasoner, made to Long Key in the spring of 1887 (10). Reasoner states: "In response to your request for some notes on the *Pseudophoenix* palm on Long Key, recently visited by my brother, I write the following from his description. The palms are growing on the east end of Long Key, in a little grove by themselves, on a high, dry ridge surrounded on all sides by almost impenetrable swamps. The ridge is not more than ten rods in length and five in breadth, and is situated on the southern-most of the two points which extend out into the straights of Florida, and

about eighty rods back from the beach. The surrounding swamps are dense jungles of red mangrove, and the ridge itself is covered with a growth of black mangrove, button-wood, stoppers of various kinds and the great scrambling "nicker-bean" vine (*Guilandina Bonduc*), in addition to the palms.

"The palms are about 150 in number, and the largest specimen of all, the 'great grandfather', is not more than eleven feet in height. Most of the others seem to have reached a 'responsible age', in spite of their small size, and showed old blossom spikes, though not a perfect seed was found. The almost total absence of small plants seemed to show that perfect seeds are very rarely produced, or else that the conditions of moisture are seldom favorable enough for them to germinate. There were many small and imperfect seeds under some of the trees, but no perfect ones. The non-germination of the perfect seeds may also, perhaps, be accounted for on account of the extreme dryness of the soil, which is finely powdered shell covered with a thin stratum of dry leaf mold.

"The most of the island, including the palms, is the property of a New York gentleman, who has extensive cocoanut groves along the beach, and who has already taken commendable steps to protect the trees from the vandal's axe. It is worthy of note that the eastern extremity of Long Key is not more than eight miles distance from the old home of Dr. Perrine, on Lower Matecumbe, and must undoubtedly have been often visited by him on his seed planting excursions."

Another article by Curtiss was published in 1888 in the first edition of *Garden and Forest* magazine (6). He mentions the discovery of *Pseudophoenix* on Elliott and Long Keys, which are

over fifty miles distant from each other. "They might have disappeared wholly from the world but for their timely discovery by Professor Sargent and the enterprise of Messrs. Reasoner Brothers, of Manatee, in obtaining plants and seeds for cultivation."

Sargent, in this same issue of *Garden and Forest* (12), gives a more detailed account and description of the species along with a Latin diagnosis, a drawing and a photograph of the palm on Long Key. Wendland wrote the Latin description of the species after he had received ripe fruit collected by Curtiss in 1887.

Sargent in his *Silva of North America* (13) describes the palm in some detail and gives an account of its discovery, and Faxon has an excellent plate showing the structure of the fruit, etc. It is in this work that Sargent inadvertently gives Key Largo as a location for the palm instead of Long Key; this mistake is repeated in his *Manual of the Trees of North America* in 1905, and in the second edition of 1922.

*"Rediscovery" by J. K. Small
and Others*

John K. Small of the New York Botanical Garden began his explorations in southern Florida in 1901. From then until the late 1920's Small made many trips to Florida and several of them were described in the *Journal of the New York Botanical Garden*. In five of these articles he mentions *Pseudophoenix*.

In the fall of 1901 with G. V. Nash, Small spent three weeks in the Miami region with two days devoted to the Keys. His trip was reported in 1902 (14). While visiting Elliott Key, Small "rediscovered" *Pseudophoenix Sargentii*—this was fifteen years after Sargent had first seen it there. Small found only three plants—one in the center of a

pineapple field and the other two preserved near a building. Nash secured one plant that had been previously transplanted to Miami and sent it to the New York Botanical Garden. There it remained for two years in a more or less dormant condition in the greenhouse. At the end of the second year it put out new leaves and flowers. This was reported by Nash in 1903 (8). The following year, Nash described the "rarest of all the palms of Florida" in *The Palms of Florida* (9).

N. L. Britton, in his explorations of the Bahamas, visited southern Florida and the Keys in 1904. He collected on Soldier Key, Sands Key, and Elliott Key. He reports (3) finding a few old specimens of the palm on Elliott Key and presents a photograph of one of them.

Another fifteen years went by before the palm was again mentioned as being "rediscovered" on Elliott Key. Charles T. Simpson in a letter to J. K. Small tells of a visit in 1919 with Mr. Somers of Coconut Grove to Elliott Key (17). They found a young plant and three other plants on the upper end of the island a short distance through the thick scrub near the bay side. They also found a large specimen some distance up the Key.

This letter apparently inspired Small to search again for the palm on the Keys. In December 1919 (15), he visited Upper Matecumbe Key to investigate a reported occurrence of royal palm growing on this Key. It turned out that the palms were *Pseudophoenix* collected and transported from Long Key and planted as royal palms. In April, 1920 (16) he reports his find of the palm on Elliott Key in 1901 and states that probably by now (1920) "the palm apparently is nearly extinct on this island" — as a result of the extensive

pineapple cultivation in the early 1900's and the transplanting of the palm to Miami. He visited Long Key in 1920 and, inexplicably in view of later reports, was unable to find a single plant of *Pseudophoenix*. He believed that all of the 200 plants that were there in 1886 had completely disappeared as a result of transporting and selling them as royal palms. He refers again to the specimens on Upper Matecumbe Key, and mentions that a boatload of *Pseudophoenix* plants were brought over to Miami from the Bahamas and sold here as royal palms.

Small was back in south Florida in December, 1921, and January, 1922, (18) and this time investigated a report of the palm growing on the islands north of Elliott Key. On investigating Ragged Key No. 6, he found that the palm in question was *Thrinax parviflora*. Then he visited Sands Key, a small island just north of Elliott Key, with Wirth Munroe of Coconut Grove, who had found the palm on Sands Key in 1921. They saw one specimen of the palm completely surrounded by hammock growth. The trunk was 25 feet tall and was bent over above the middle as a result of crowding by a large pigeon plum tree. They were unable to find any young plants. Later in the same year, in April and May, Small made another trip to Long Key (19). This time he was successful in finding the palm forming a grove situated on a small plateau of sand protected from the ocean by a barrier ridge and a swamp. There were only about two dozen plants; some were old trees, others had just sprouted, and a few were twin palms.

There are no records of Small's visits after 1922, but Bailey (1) states that he visited Long Key and Elliott Key with Small presumably in 1925. At this

time Bailey photographed two palms on Long Key. This, then, is the last time that the palm is mentioned as growing wild in South Florida. Bailey gives Upper Matecumbe Key as a station for the palm, but this is in error for the plants were planted there as described by Small in 1919 (15). Bomhard (2) repeats Bailey's error.

The Disappearing Palm

Thus we have only three locations for this palm in Florida — Elliott Key, Long Key, and Sands Key, the latter with only one specimen, and the last written record of the palm as occurring wild was in 1925. From the very beginning after its discovery plants have been removed, especially from Long Key, and it has been the general belief in recent years that the palm has been exterminated in Florida. J. K. Small in his *Manual* in 1933, states, "The colony of several hundred individuals on Long Key . . . has been destroyed by vandals who have removed the trees and sold them as royal palms."

Curtiss in his article on the "Flora of the Florida Keys" (6), states that *Pseudophoenix Sargentii* palms "might have disappeared wholly from the world but for their timely discovery by Professor Sargent and the enterprise of Messrs. Reasoner Brothers, of Manatee, in obtaining plants and seeds for cultivation." The Reasoner brothers — Pliny Ward and Egbert Norman — had contributed to our knowledge of the plants of south Florida. They established their Royal Palm Nursery in 1883 near Manatee, Florida, offering for sale many tropical plants, including many of the native ones. They explored and collected in south Florida, and Sargent gives them credit for discovering several palms and other tropical plants. For many years the Reasoner Brothers Royal

Palm Nursery offered *Pseudophoenix* for sale.

In the Royal Palm Nursery Catalogue and Price List for the Season 1887-88, page 44, *Pseudophoenix Sargentii* is described as follows: "Florida's newly discovered palm. Discovered in the summer [*sic*] of '86 on Elliott Key, by Prof. Sargent, of England [*sic*], and named (as it was sufficiently distinct to constitute both a new species and a new genus) in honor of the latter, by Professor Wendlandt, of Germany. It is known nowhere else in the world, and in but two small groves on the Keys—containing in all not over two hundred specimens. It is a half-dwarf species, never exceeding 20 feet in height. The palm is pinnate-leaved, and somewhat resembles some species of *Phoenix*. The leaf-stalks drop off as soon as the leaves die, leaving a free, clean-looking trunk, the upper part marked with alternate rings of green and brown. Perhaps the rarest Palm in cultivation, and destined to be so for years—as the trees rarely perfect from seeds." The plants sold for \$25, \$50, and \$100 each! On the back cover of the catalogue is a drawing made directly from a photograph of a lone tree on Long Key. The statement under the photograph reads: "From the owners of these unique and rare palms, recently found on Long Key (Messrs. T. A. and E. A. Hine, of New York), we have obtained control of the few plants small enough to be handled, the only procurable plants of this species known to be in existence, which have been potted and are now offered for sale."

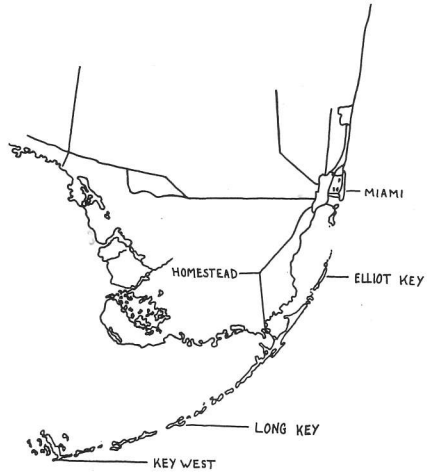
It is quite possible, then, that shortly after 1886 the palms began to disappear from Long Key. When Small and Nash were in Miami in 1901, they reported observing specimens of the palm growing on the grounds of the Royal Palm

Hotel. Small (15) states that "Ten tall specimens were removed from Elliott Key in 1897 to Miami and planted." By 1920, Small says that only two of the ten plants at the Royal Palm Hotel were left. Before 1920 a number of specimens had been transplanted to Upper Matecumbe Key.

In the 1920's *Pseudophoenix* was frequently seen as an ornamental palm in south Florida. The plants undoubtedly were ones transplanted from Elliott and Long Keys or purchased from the Reasoner's Nursery. According to Small (16) plants were also brought over from the Bahamas to Miami and sold as royal palms. Many of these plants have long since disappeared from cultivation — they died of old age, were attacked by a fungus, or were removed from parks and old homesteads to make way for new buildings and roads. So today *Pseudophoenix* is not commonly seen in south Florida except in botanical gardens and special collections.

Pseudophoenix on Elliott Key "Rediscovered"

Elliott Key, being about eight miles long and scarcely one mile wide, is the second largest of the Florida Keys; it runs somewhat NE-SW and it marks the outer edge of Biscayne Bay opposite Homestead (Figure 12). Before the turn of the century there were several pineapple plantations on the island; yet at this time, as well as today, the Key was relatively uninhabited. It is covered mostly with a dense hammock of West Indian trees and shrubs growing on coral rock. It is one of the few remaining "wild" regions of south Florida (outside of the Everglades) which has not yet been taken over for cultivation or residential areas. There are no roads to the island; it is accessible only by boat.



12. Map of southern Florida showing the location of Elliott Key and Long Key.

On December 10, 1950, the senior writer and members of the Gifford Society of Tropical Botany of the University of Miami made a trip to Elliott Key to collect plants and to investigate a report that royal palms were growing wild in a dense hammock. These royal palms were found to be well established *Pseudophoenix Sargentii*. There were about 20 plants growing in a dense hammock on the upper end of the Key bordering a road which runs the length of the island, and about 900 feet from the Bay side. Three sizes or ages of plants were found. The oldest and tallest specimen was a solitary tree some distance away from the others at the edge of a clearing. It was estimated to be about 20 to 25 feet tall and one foot in diameter above the base and was probably more than 50 years old. The other plants were all growing in one area approximately 300 feet square in the dense hammock of buttonwood, *Eugenia*, mahogany, prince wood, and other West Indian trees. Two sizes were noted here: 1) plants with trunks about 10 to 12 feet tall and 6 to 8 inches in



13. *Pseudophoenix Sargentii* on Elliott Key. Photograph taken by Mr. Charles Steffani, Jr., December 10, 1950. This plant was growing at the edge of the hammock in the clearing made when the Elliott Key road was being constructed. The edge of the road is visible in the foreground. Notice the conspicuously swollen base of the trunk and the prominent rings set far apart. The trunk of this palm is estimated to be ten feet tall and six to eight inches in diameter above the base and the plant is probably 25 to 30 years old. 14. The same palm as in 13 but photographed eight years later, April 25, 1958, by Stanley Kiem.

diameter above the base and probably about 25 to 30 years old (Figure 13); 2) young plants with hardly any trunk showing above the surface of the ground and probably about 10 to 12 years old. In all cases the trunks were straight except for the enlarged base next to the ground; the conspicuous bulges often found in this species, brought about either by age or climatic conditions, were absent.

No seedlings were found and no plants were under ten years old. Nevertheless, there were periods when seeds were capable of germinating as shown by the different age groups. We do not know if this is the same area where

the palm was originally found in 1886, but it is believed that the plants found in 1950 were ones that came from seed since the original plants were discovered, as it is felt that none of the palms could have been over 60 or 70 years old. One factor in accounting for the lack of seedlings could be that raccoons, rats, and black squirrels prevalent on the island eat the fruits; in some years these animals may be scarce and the seeds then are able to germinate. It is also possible that in certain years non-viable seeds are produced.

That the palms were still present eight years later, was shown by the junior authors who, on April 26, 1958,

made a trip to Elliott Key and found by careful count 28 palms (Figure 14). The area was plotted on a map and was found to be the same as the one explored in 1950. They also noted the different age groups and reported that no seedlings were found and no specimens appeared to be less than 15 years old. They also found evidences of at least 17 very large specimens that were represented by stumps consisting only of a high mound of roots on top of the coral rock. The diameter of some of these stumps was 2 to 3 feet, indicating that these palms had been very old plants before they died.

Pseudophoenix on Long Key
"Rediscovered"

One of the peculiar features of the "grove" of palms on Long Key, as shown in the photograph Commodore Munroe took in 1886 (Figure 11), is that these plants appear to be growing in rows as they would be if some one planted them in this manner. This has led several of us to speculate on the idea that perhaps the palms were actually planted on Long Key, having been brought over from the Bahamas by some early settler, perhaps in the 1860's. However, the photograph represents only a small portion of the "grove" and it is possible that the plants could have grown in this manner since the 150 or 200 palms were growing very close together in this small area. Moreover, the photograph Sargent took and used in his article in 1888 (12) does not show the palms in rows. It is also significant that not one writer who has observed the palms on Long Key mentions this peculiar feature. Therefore, even though it is difficult to explain why these palms appear to be in rows, the writers conclude that the palms on Long Key are a definite feature of our native flora.

Long Key, about 50 miles southwest of Elliott Key, is shaped like a Y with the right branch forming a peninsula running east and west (see map). This area is uninhabited and no roads lead into it. It is covered with typical scrub-like vegetation with some coconuts and casuarina along the shore and considerable mangrove in low areas. The soil, unlike that of Elliott Key, is sandy and composed of minute broken shells. Toward the eastern or upper end the peninsula makes a decided turn, running more NE-SW. The writers visited this area on September 5, 1958, by boat and went in about one fourth mile from the point where the shore turns. In this area, which was the same location as described by Reasoner, Sargent, and Small, *Pseudophoenix* was found.

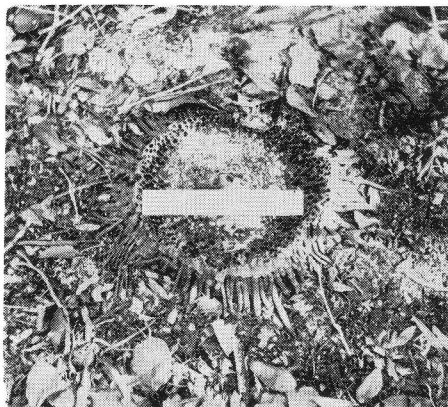
The plateau where the palms were growing was about 150 to 200 feet from the shore, separated from the sand ridge by a slough bordered by black mangrove. The vegetation is scrublike, consisting of *Eugenia*, *Pithecellobium*, *Pisonia*, *Rhacoma*, *Ximania*, *Metopium*, and *Genipa*.

In an area about 40 feet wide and 60 to 80 feet long, we found three very old specimens of *Pseudophoenix* and evidences of many more. The three plants were 7, 8 and 12 feet tall, respectively, and consisted of 187, 199, and 248 leaf scars. Two plants were leaning and one was erect. The tallest one projected its crown above the vegetation of the surrounding plants. This palm had no swollen area except for being uniformly thick from the base to about five feet and from there to the crown the trunk was quite narrow. The other two palms had definite swollen areas above the base and from there to the crown the trunk was narrow. (Figure 15) The lower thicker portion of the trunks had

leaf scars 3 to 4 inches apart, indicating good growth for 20 to 25 years; the remaining growth with numerous leaf scars set very close together indicates slow growth for many years. In all probability these three plants were part of the original grove discovered in 1886



15. *Pseudophoenix Sargentii* on Long Key, one of the three remaining specimens with R. W. Read at the side. Photograph by Stanley Kiem, September 5, 1958.



16. Stump of a *Pseudophoenix* on Long Key. A six-inch rule suggests the size. Photograph by Stanley Kiem, September 5, 1958.

as we estimate them to be 80 to 100 years old.

No seedlings were seen and there was no evidence that any had been produced recently. However, these palms have reproduced themselves in the past as Small records in 1922 that he found seedlings, young plants, and even twin plants. It is quite likely that since that time the younger plants have been removed or were killed off by various causes.

Here also many stumps were found (Figure 16); 24 were counted in a small area and there could have been three to four times that many in the entire area. It is significant that none of the stumps appeared to be in rows. These palms had been dead for many years as only a flat mound of black, hollow tubelike roots was left. Hurricanes, salt, old age, diseases, etc., have taken their toll. But the interesting fact here is that not all of the palms had been removed by nurserymen and vandals—many have disappeared by natural causes.

It should be pointed out that any palm collector desiring specimens of *Pseudophoenix* would do well to find one already in cultivation. The three

specimens on Long Key are suffering from old age; the trunks are covered with lichens and blackened by sap which has oozed out from the numerous holes made by birds, probably woodpeckers. They are not handsome specimens and transplanting would probably kill them. The palms on Elliott Key would prove very difficult to transplant as these plants are growing in solid rock. There are palms in cultivation resulting from the United States Department of Agriculture distribution of seedlings in the 1930's and Fairchild Tropical Garden has also distributed plants. There are still a number of mature specimens in cultivation, especially in Miami, Key Largo, and Key West, which produce seed regularly. In some cases, as in Key West, small seedlings are found under the palms. Many seedlings are being grown in order to preserve the palm as an ornamental and it is being offered by several nurseries.

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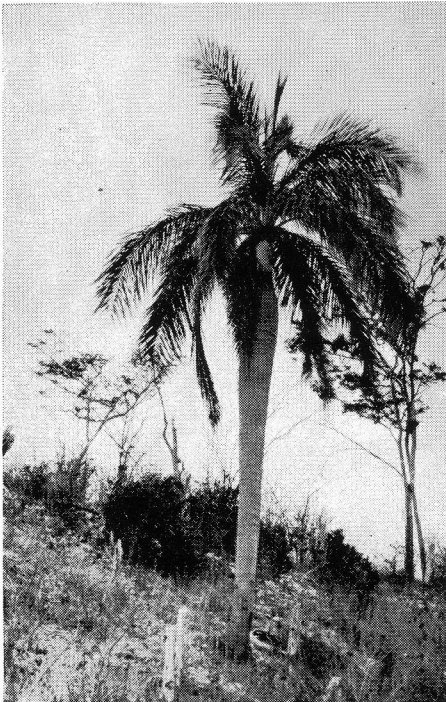
II. PSEUDOPHOENIX SPECIES IN CULTIVATION

Three species of *Pseudophoenix* can be found in cultivation in Florida in botanical gardens, private collections and occasionally as single specimens in yards and public places. They are *P. Sargentii*, *P. vinifera*, and *P. saonae*.

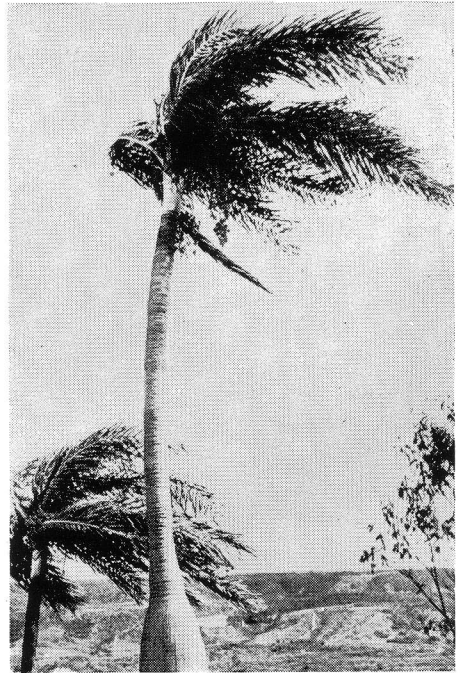
Pseudophoenix Sargentii Wendland, is native to the Florida Keys, Bahamas, and is also recorded for Cuba and Hispaniola. It is possible that some of the original plants from Elliott and Long Keys are in cultivation, but it is more likely that most plants seen today represent second and third generations. The U.S.D.A. Plant Introduction Garden in Miami distributed plants from two accessions: P. I. 97823, the seed collected by G. G. Albury, at the request of Dr.

David Fairchild, on Cat Island, Bahamas, March 21, 1932, and offered for distribution in 1933; P. I. 96488, the seed collected from a tree in the yard of Mrs. Edward George, Nassau, Bahamas, by David Fairchild, January 10, 1932, and the seedlings distributed in 1935. A group of plants at Fairchild Tropical Garden in Miami are from seeds sent by Brother Leon in 1939 from Cuba. Some specimens in cultivation were also obtained from the Royal Palm Nursery in Oneco, Florida; as late as 1938 this nursery was offering the palm for sale under the name of *P. vinifera*.

Pseudophoenix vinifera, Beccari (*P. insignis*, Cook, *P. linearis*, Cook), is



17. A fruiting tree of *Pseudophoenix vinifera* at Poteau, Haiti. Photograph by L. H. Bailey courtesy of the L. H. Bailey Hortorium.



18. Old trees of *Pseudophoenix vinifera* on the dry hills at Los Quemados, Dominican Republic. A constant wind beats the leaves and bends the slender trunk. From a color transparency by R. W. Read.

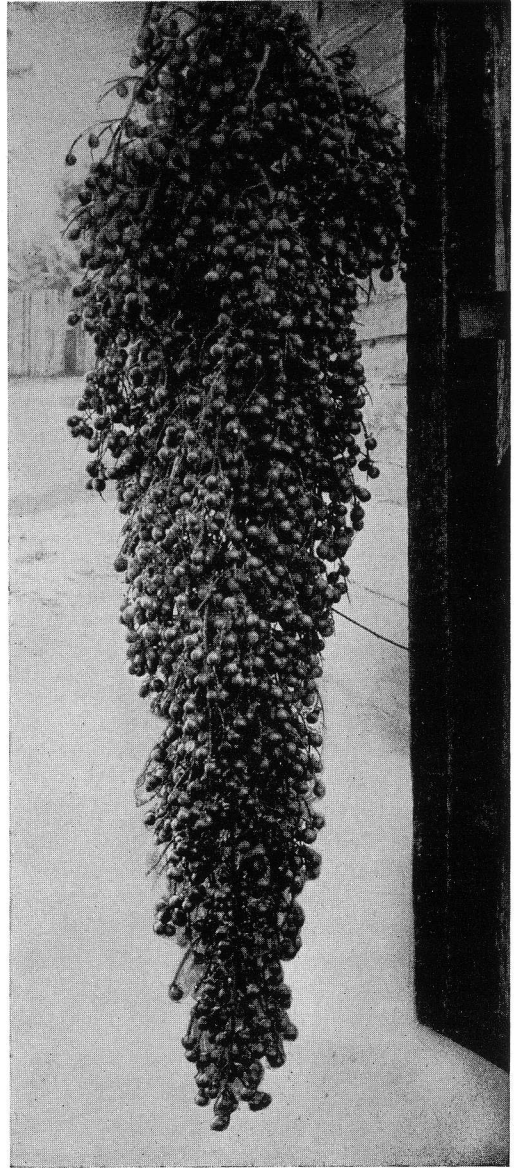
native to Haiti and Santo Domingo. O. F. Cook collected seeds of this species in Haiti in 1923, as *P. insignis*. Some of the seeds were sent to the Plant Introduction Garden in Miami the same year and plants were set in the field in 1929. Cook, in July, 1931, sent three seedlings to the Plant Introduction Garden, the plants having been grown in Washington, D. C. Other plants were set in the field at the Plant Introduction Garden in 1930 and 1932. In December, 1951, all these *P. vinifera* plants from Cook's original seed were given the P. I. number 198875, and in the spring of 1952 seedlings from these original plants growing at Chapman Field Introduction Garden in Miami were offered for distribution. The best collection of mature plants of *P. vinifera* is at the Plant Introduction Station in Miami. There are also a few large plants in South Florida which were offered by Cook and others in the late 1920's and early 1930's to cooperators, but these plants were distributed without a P. I. number.

Pseudophoenix saonae, Cook. Plants were distributed by the U.S.D.A. in 1935 and 1937, as P. I. 96487. The seeds were collected by Mr. Harold F. Loomis, January 20, 1932, on the island of Saona, Dominican Republic, the only known locality for this species.

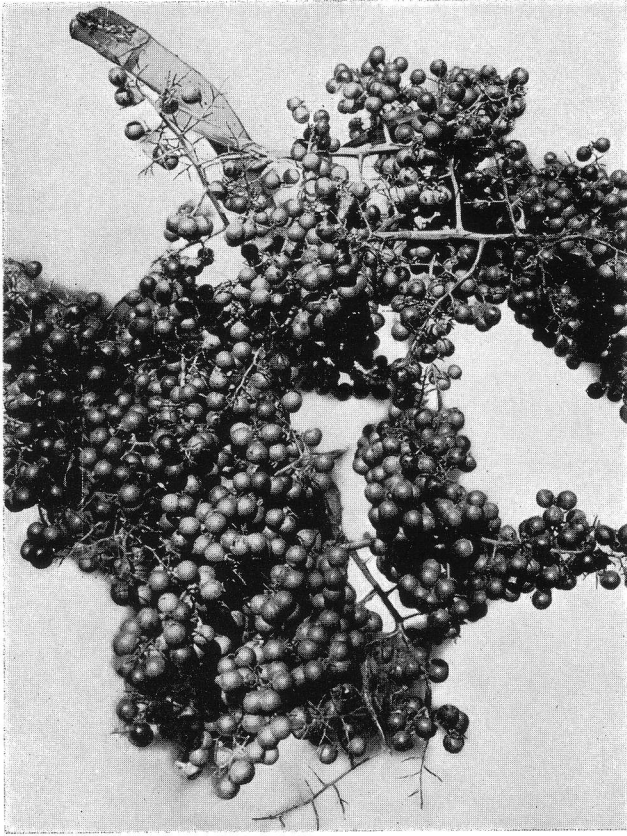
The identification of *P. Sargentii* and *P. vinifera* is not difficult. The distinguishing characteristics of the two species are summarized in the table. *P. vinifera* is by far a much more attractive palm (Figures 17, 18, 19); it is faster growing, the trunk is taller and thicker, the leaves are larger and much longer, the leaflets are less stiff and tend to droop like a royal palm; the inflorescence is much longer and drooping, and the fruit is much larger.

Plants of both species when grown in the shade produce quite a different

aspect from those grown in the sun. *P. Sargentii* in the shade will be faster growing, become taller, the leaves larger



19. Fruit cluster of *Pseudophoenix vinifera*, hung in a gateway for photographing; about 6½ feet long. Barahona, Dominican Republic. Photograph by L. H. Bailey, reproduced from *Gentes Herbarum* 4: 278, fig. 179. 1939.



20. The broad divaricate fruit cluster of *Pseudophoenix Sargentii*. Photography by L. H. Bailey, reproduced from *Gentes Herbarum* 4: 282, fig. 183 1939.

and the leaflets less stiff and more flexible, and the bulges in the trunk will usually be absent, except that in some individuals the base of the trunk may be swollen. Specimens in the sun will have a much shorter and thicker trunk and often appear dwarfed, and the bulges may or may not be present; if present, they generally are at the middle or below and result from transplanting or ecological conditions. In old age the specimens will often display a bottle-like neck. *P. vinifera* grown in the shade will produce a thick, straight trunk. In old age, the upper part of the trunk will often have a bottle-like neck as in *P. Sargentii*. Plants in full sun, and especially if growing in poor soil, will be

somewhat dwarfed and quite often show bulges at the middle or above.

P. saonae is very similar to *P. Sargentii* and the two species are almost impossible to separate in the younger stages; they both show the same habit and slow growth. According to Mr. H. F. Loomis, mature plants of *P. saonae* usually have the older leaves less arched, being more erect or horizontal but not arching downward, and the flowering cluster is longer and drooping and projects below the leaves. In *P. Sargentii* on the other hand, the older leaves eventually are arching outward and downward, and the flower cluster (Figure 20) is held more or less among the leaves until sometimes the heavy fruiting cluster will cause it to droop downward.

The Main Distinguishing Characteristics of *Pseudophoenix Sargentii* and *P. vinifera*

P. SARGENTII

P. VINIFERA

Slow growing.

Much faster growing.

Trunk thinner, becoming 10-12 inches in diameter, rarely larger, usually smaller; plants in shade with taller slender trunk; plants in sun flowering when only 3 feet high, giving the aspect of a dwarf palm.

Trunk becoming over 12 inches in diameter, sometimes if bulged becoming almost 2 feet through; plants in shade taller growing.

Leaves generally stiff, spreading or arching, but hardly drooping; becoming 6-8 feet long, often only 3 feet long; plants in shade with longer leaves and less stiff pinnae.

Leaves 9-12 feet long or longer, gracefully arching and drooping.

Pinnae straight, sometimes more or less erect, rarely slightly drooping.

Pinnae longer and more drooping.

Petioles just below leaflets only 2-3 inches in diameter.

Petioles thicker and wider, 3½-6 inches in diameter.

Inflorescences short, usually as long as broad, sometimes longer, but much shorter than the leaves, to 3 feet long (Figure 20).

Inflorescence longer, 2-3 times longer than broad, to 6 feet long. (Figure 19).

Branches of the inflorescence standing at right angles to the main axis.

Branches of the inflorescence all pointing downward.

Fruit 1.5 cm. (½ inch) long and wide, in two- and three-lobed fruit to 2.5 cm. (1 inch) wide.

Fruit 2.5 cm. (one inch) long and wide; in two- and three-lobed fruit to 4 cm. (1½ inches) wide.

PALM CULTURE

Continued from page 17

County Parks Department who, together, contributed much of the information contained in this paper.

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