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Phoenix canariensis in the Wild

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ABSTRACT

Phoenix canariensis is one of the most grown and appreciated ornamental trees of the world. Its native habitat, the Canary Islands, is renowned for its richness in climatic diversity and its endemic flora. This *Phoenix* apparently did not radiate, as did many other plants, but succeeded in colonizing many different ecological niches. In each of these environments, it grows associated with different ecological communities and often shows an astonishing diversity of epiphytes on its fibrous trunks. The wild populations suffered a dramatic decrease during the early centuries of the Spanish colonization of the islands, which started at the end of the 15th century. Today *P. canariensis* is sparsely and unevenly distributed on all the seven islands and the conservation status is different on each of them. The main threat seems to be hybridization with *P. dactylifera*.

RESUMEN

Phoenix canariensis es uno de los árboles ornamentales más plantados y apreciados del mundo. Su hábitat de procedencia, las Islas Canarias, es conocido por su riqueza en diversidad climática y su flora endémica. Esta especie de *Phoenix* aparentemente no sufrió radiación, como pasó a muchas otras plantas, pero tuvo éxito en colonizar muchos nichos ecológicos diferentes. En cada uno de estos medios, crece en asociación con diferentes comunidades ecológicas y a menudo posee una asombrosa diversidad de plantas epifitas en sus troncos fibrosos. Las poblaciones naturales sufrieron una reducción impresionante durante los primeros siglos de la colonización de las islas, a finales del siglo XV. Hoy día, *P. canariensis* se encuentra distribuida de manera esparcida y no uniformemente en todas las siete islas y el estado de conservación es diferente en cada una de estas. El peligro principal parece ser la hibridación con *P. dactylifera*.

A Softer Palm for a Softer Climate

The origin of *Phoenix canariensis* is not well documented. During the Tertiary, when many tropical species that were occupying the Mediterranean area undertook a huge and slow migration to the south because of the cooler weather, the Canary Islands remained floristically isolated (Bramwell in Kunkel 1976) as Northern Africa became a desert. A *Phoenix* has probably taken part in this migration, but we do not know if the *Phoenix* that migrated in the Ter-

tiary was a *P. canariensis* or a parent species that afterwards evolved into the modern Canary palm.

These islands have by far a more even climate than Northern Africa, with abundant humidity from mist and richer soils. This suggests speciation from an ancestor similar to *Phoenix dactylifera* (or perhaps *P. sylvestris*), to the less xeromorphic *P. canariensis*.

The Different Ecological Communities and Associations

In present times *Phoenix canariensis* is sparsely and unevenly distributed on all the islands of the Canaries. It is very scarce on the two drier eastern islands of Lanzarote and Fuerteventura and on the other islands it grows at lower altitudes in the northern section of the islands, where it forms part of the *bosque termófilo*, a mediterranean subxeric (slightly dry) area, which has now been mostly substituted by banana cultivation, hotels, and beautiful gardens with ravenalas, scheffleras, and other exotics.

If the *bosque termófilo* is almost gone (a good area survives in Los Silos, Tenerife), there are some other ecological communities, known as "palmerales," that have *P. canariensis* as a dominant species, often associated with *Juniperus phoenicea* and/or *Dracaena draco* (dragon tree). Modern palmerales are usually very disturbed areas cultivated with exotic crops, where the reproduction of the palm is directly or indirectly helped by man's presence.

P. canariensis may also contribute to another ecological community called *laurisilva*. *Laurisilva* is a sort of subtropical cloud forest endemic to the Canary Islands, Madeira, and the Azores, mostly composed of trees of the Lauraceae family and other "laurifolious" trees. It is unusual to see wild palms growing in this environment but when it happens they take on a more "plumose" appearance as in the population observed in the lower range of the forest near Teno, Tenerife.



1. Hermigua (La Gomera); Huge specimens of *Phoenix canariensis* growing along a stone wall in a terraced field (Photo: C. Simón). 2. *P. canariensis* overlooking the Atlantic Ocean in Taguluche (La Gomera), in the foreground, the roof of a typical rural house (Photo: G. Orlando). 3. Presa de la Encantadora (La Gomera); a water storage basin surrounded by palms that are periodically flooded (Photo: G. Orlando). 6. Possibly an individual of so-called *Phoenix atlantica*, a branching plant with leaves only 1.5 m long, in Puerto de La Cruz (Tenerife), along the Carretera General. The palm behind is *P. dactylifera* (Photo: C. Morici).



4. Palms growing below the *Laurus* cloud forest, between Madre del Agua and Los Silos, Tenerife. Photo: G. Orlando. 5. A trunk loaded with epiphytes in the historical palm avenue named Camino Largo, in La Laguna (Tenerife); the large plant in flower is *Sonchus acaulis* (Photo: C. Morici).

The palms are found growing on a wide variety of soils, all of volcanic origin and usually fertile. *P. canariensis* has an extensive root system, which allows these palms to explore the surrounding earth to find subterranean water even at long distances. In the Canary Islands, *Phoenix* trees that grow in subxeric areas show themselves to be resistant to temporary swamping of the soil caused by sudden rains. Rivas-Martinez et al. (1993) explain that other trees and shrubs, with typical root systems, which could act as competitor species do not get established in those sites as they cannot resist asphyxia caused by the waterlogged soil.

The wide distribution of the palm on the island is reported and discussed by many authors and

some give specific locations of most palmerales (Bravo 1964, Montesinos-Barrera 1979, Barquín-Diez and Voggenreiter 1988, Bramwell and Bramwell, 1990, Anonymous 1992).

This is why the *palmera canaria* is one of the most grown palm trees throughout the world. It tolerates cold and warmth, drought and floods, shade and sun, and salt spray as well as mountain climate.

Epiphytic Life on *P. canariensis*

Those *P. canariensis* growing in humid environments, often host on their trunks many endemic epiphytic plants, that add ornamental value to their already beautiful stems. I wish to mention that the Canary Islands palm has the

most fibrous and stout trunk in its genus, and I suppose it is the only *Phoenix* species that can host in its habitat such a spectacular mass of epiphytes on a single specimen. The astonishing diversity of epiphytes that can be found growing within the fibers of these spongy trunks is most unusual for nontropical zones: *Sonchus congestus* (a yellow-flowered member of Asteraceae), the majestic *Sonchus acaulis*, with rosettes up to 1 m in diameter, the succulent *Aeonium urbicum* and *A. ciliatum* (Crassulaceae); and the small creeping ferns *Polypodium cambricum* subsp. *macaronesticum* and *Davallia canariensis*. All these plants show mechanisms to withstand summer drought: the aeoniums are true succulents, the ferns shed their leaves in summer, and the Asteraceae lose a large part of their rosettes and wrap themselves inside their old dry leaves. Also other less unusual nonendemic species may be found on the trunks, such as the annual *Fumaria officinalis*, the tuberous *Umbilicus horizontalis* (Crassulaceae), and the South African weedy bulb *Oxalis pes-caprae* and some others.

In 1982 observations were carried out (Haroun and Die 1982) on epiphytes that were growing on *Phoenix* trunks of the historic palm avenue of Camino Largo, in La Laguna (Tenerife), at 600 m a.s.l. The authors recorded 31 species, but most of them were introduced exotics and some were nonepiphytic species exceptionally found growing on palms, such as *Erica* sp. and *Opuntia* sp. One interesting datum from this work is that 32.25% of these species were zoochorous ones (animal-borne seed dispersal) and 67.75% anemochorous (wind dispersed).

The Different Islands

... toda la isla era un jardín, toda poblada de palmas, porque de un lugar que llaman Tamarasaite, quitamos más de sesenta mil palmitos i de otras partes infinitas. . .

Pedro Gomez Escudero

A description of the island of Tenerife of the 16th century said: ". . . the northern side of the island is completely covered by enchanting forests of palms and dragon trees." In 1417, another writer, Pedro Gomez Escudero, said about Gran Canaria: ". . . the whole island was a garden, all populated by palms, because we took away from a place they call Tamarasaite more than sixty thousand palm trees . . ." (cited in Padrón 1978).

In 1997 Tamarasaite is called Tamaraceite and is a peripheral part of the city of Las Palmas with its population of half a million people. Today the palm situation in the Canaries is not so enchanting, but still deserves attention.

La Gomera

The most interesting island of all for palms is La Gomera: thousands of *P. canariensis* live in the most diverse landscapes, from desert to waterfalls, showing every possible aspect that this mighty palm can assume. *La palmera* is extremely respected by the islanders, *los gomeros*, because it is still a source of *guarapo*, palm honey. This tasty product is regularly hand-extracted from incisions made in the apical bud without killing the palm and then sold in the island's markets. One of the most beautiful *palmerales* of all the seven islands is found in the majestic scenery of Valle Gran Rey: a canyon with 700-m high vertical dry cliffs of volcanic lava, which hang above the very humid terraced floor, intensively cultivated with bananas (*Musa* 'Dwarf Cavendish'), *Arundo donax*, and *P. canariensis*.

The valley is entirely free of *P. dactylifera*. The only exotic palms are a few washingtonias and *Roystonea* sp. The entire island is a biosphere reserve and Valle Gran Rey is its pearl. It is not possible to build even a small wall without using local techniques and styles.

Gran Canaria

In Gran Canaria the environmental deterioration caused by man during the last centuries reduced the wild palm population to small isolated stands.

The *palmeral* of Maspalomas is quite small and disturbed, but still needs mention for the beautiful landscape that surrounds it—a huge plain covered with Sahara-desert-like dunes of fair sand, the Oasis de Maspalomas. The true *palmeral* now belongs to a hotel, and has been "enriched" by planting a lawn and adding many *P. dactylifera*. Fortunately the sand dunes are now a nature reserve and include some scattered palm groves, growing in wild conditions within a curious sand-loving, xerophytic vegetation of Mediterranean origin—a mostly thornless scrub with *Tamarix* as the dominant shrub.

During the last few years a high number of young *P. canariensis* (I estimate about 40,000) have been planted all over the island, along roads and in abandoned fields that cover so

much of the land since tourism developed and offered a better life to most of the population. These plants are just starting to develop trunks, but represent a marvelous promise for the landscape of the island and the local fauna, which could start again to feed on wild dates.

The Eastern Islands

Lanzarote and Fuerteventura, due to their lower altitude and closeness to Africa, show a much more arid landscape. They were once partially covered by the endemic Lauraceae forest, but since the end of the Tertiary they have been thoroughly affected by the climatic change suffered by Africa and the subsequent desertification process. The forest has disappeared totally and the only arborescent vegetation now present in these islands are the small stands of *Phoenix*. (A. Machado in Kunkel 1976).

Nature alone has probably not been the only cause of forest loss in the eastern islands. In 1590 the Italian traveller Leonardo Torriani reported in Fuerteventura the existence of 100 large herbivores per square kilometer; a total of 139,000 beasts, of which there were 4,000 camels and 60,000 goats and sheep (Torriani 1978). If any tree would have survived the climatic deterioration, it would surely have disappeared in that zoo!

The palm stands of these islands are much less charming than those of La Gomera but are

anyway peculiar, due to their adaptation to aridity and association with the shrubs *Tamarix africana* and *T. canariensis*.

Exotic Phoenix Species in Tenerife

On the largest island, Tenerife, there are hundreds of *P. dactylifera*. Most of them are grown in the lowlands of the southwestern part of the island, an area that has probably never been home to *P. canariensis* because of its dryness. Indeed, the true date palm apparently grows there better than the native *Phoenix*. Most of the "aliens" actually existing have been imported as adult specimens some 15–20 years ago mostly from Elche, the "date city" of southeastern Spain, to line roads of the then new tourist areas. Nevertheless, small populations of date palms have been present on the islands since time immemorial, maybe prehistory (Schmid in Kunkel 1976), and became locally naturalized in some small areas of Tenerife, Gran Canaria, Fuerteventura, and Lanzarote. Date palms were so integrated in the Canaries that the well-known *Enciclopedia Espasa* reported the existence of only 30 "not-well-identified" date palm varieties in the Elche area and, in the Canaries, 15 varieties of the "Berbería" type (Anonymous 1970).

A few old specimens of *Phoenix rupicola* grow on the island. Two plants are found in the small square of Icod de Los Vinos (Northern Coast), where they usually pass unnoticed because of

Left

Bactris pliniana Granv. & Henderson

This medium sized, cespitose palm is not very common but can be locally frequent. It is found in the Guianas, the Amazon region of Brazil (Amapá, Pará, Amazonas, Acre), and parts of Peru (Loreto). It always grows in swampy places and along small streams in forest understory. The species was described in 1994 and named in honor of Dr. Plinio Sist, a botanist who worked on palm dynamics and regeneration in French Guiana from 1985 to 1987. The leaves are usually pinnate, with broad, sigmoid, long acuminate leaflets, arranged in clusters along the leaf rachis. A very rare form with entire leaves, here photographed in the lower Oyapock basin, has been observed in two places in French Guiana, one in the Southwest, the other in the Northeast. The inflorescences are infrafoliar with a persistent peduncular bract densely covered with dark brown, soft hairs, intermixed with yellowish hairs. Like the other *Bactris* species of the PIRANGA group, the fruits are bright orange when ripe and densely spinulose.—Jean-Jacques de Granville

Right

Kentiopsis magnifica (H.E. Moore) Pintaud & Hodel

In a few palms leaves when just unfolding are red, the actual shade of red varying according to the species. The newly emerging leaf of *Kentiopsis magnifica*, shown here photographed by Jean-Christophe Pintaud at 500 m on Col d'Amos in New Caledonia, is one of the most brilliant. Formerly this palm was known as *Mackeeea magnifica*, having been named by Dr. H. E. Moore in honor of Dr. Hugh S. MacKee and his wife, Margaret E. MacKee, who for many years collected palms and other plants in New Caledonia. Recent field work by J.C. Pintaud and Don Hodel has revealed intermediates between the former *Mackeeea* and *Kentiopsis* and this palm, one of the largest and most elegant in New Caledonia, is now a species of *Kentiopsis*. For more on these stately New Caledonian endemics, see the last issue of *Principes*, Vol. 42 (1), p. 32.—Natalie Uhl

the notable presence of the very famous crested *Livistona chinensis* ssp. *chinensis* with eight heads, and the ancient dragon tree, a *Dracena draco*, thought to be around 2000 years old. More *P. rupicola* can be seen in old gardens of Santa Cruz and other historical settlements.

Many *P. roebelenii* have appeared as ornamentals in the last few decades but, luckily, *P. reclinata* is almost unknown, except in the Botanical Garden of La Orotava, where other less common species, such as *P. theophrasti*, are grown.

Last year, a few other exotic *Phoenix* spp. have been unwillingly imported for the new Palmetum of Santa Cruz.

The Doubtful *Phoenix atlantica*

In the southern portions of the islands another *Phoenix* species may have existed rather than *P. canariensis*: *P. atlantica* A. Chev., a taxon of very doubtful status, whose common name is *Palma Berberisca*. The peculiarities of the "atlantic" species, closely related to *P. dactylifera*, are the shorter, stiffer leaves and a curious habit of producing new shoots directly from the crown of leaves instead of from the base of the trunk, therefore resulting in irregularly branched palm trees (Kunkel and Kunkel 1974). *Phoenix atlantica* was reported from all the Macaronesian archipelagos, Canarias, Cabo Verde, and Madeira, but nowadays specimens in Canary Islands, if they exist, are too much mixed with common dactyliferas to be easily identified and studied. Moreover, most branched palm trees have been collected and planted in streets, parks, and road intersections.

The Problem of Hybridization

Phoenix spp. are well known for their tendency to cross very easily. Large species, such as *P. dactylifera*, are very well "built" for wind pollination; their pollen is said to be able to travel for many kilometers and with all this profusion of exotic *Phoenix* spp. on the islands, the genetic contamination of native *Phoenix* with pollen of imported species is a problem. Some studies on the structure of hybrid populations have been undertaken at the University of Las Palmas de Gran Canaria (Santana-Santana et al., in press) and a ban has been enforced to prevent importations of exotic *Phoenix* spp.

Crosses between the *palmera canaria* and the *palmera datilera* are very hard to detect at their young stage, because canariensis-green leaves

are usually dominant over the dactylifera-blue ones. Hybrid plants reveal their origin just at the adult stage when they start to produce a trunk thinner than normal, leaves appear more rigid, and fruits turn out to be red and fleshy. A fully variable collection of hybrids is grown at the Casino Taoro Gardens in Puerto de La Cruz, Tenerife. It is difficult to tell the parents by looking at a single plant as many of them are probably second-generation hybrids, but all the plants grown may come from a mix of *P. canariensis*, *P. dactylifera*, and *P. rupicola*.

Smaller *Phoenix* species, such as *P. roebelenii*, represent a lesser danger as pollen producers. Their pollen is not able to cruise long distances because of their low height and inflorescence structure, which seems to be zoophilous rather than anemophilous.

Nowadays the number of wild palms in the Canaries is evidently growing. In the last 20 years, since many of the fields had been abandoned, palms started to recolonize naturally some of the valley bottoms from which they had been eradicated centuries before. In most cases, all the new palms, all of similar age, originated from a few tall mother plants, which are still in place.

In some places, as observed in the valley of San Andrés, where some of the mother plants were *P. dactylifera*, many of the new palms are hybrids, so we are in the dangerous situation of encountering the first wild hybrid populations.

Fortunately, the native palms abundantly exceed the aliens by number. Minor efforts are being made to conserve the species: many streets are being lined with pure "canariensis." *Los Canarios*, the inhabitants, are very cooperative people from an ecological point of view and are starting to realize how big the problem is. Sadly some nurserymen are illegally importing exotic *Phoenix* spp. among other palms from places as far away as Cuba, and some others are planting thousands of locally produced seeds of *P. rupicola*. "¡Es para la península!" (Mainland Spain), they say, but I am sure that a few plants will not leave the island as the temptation to keep one (Just one, come on!) is too big. Luckily in the island of La Gomera, *la palmera canaria* is almost safe.

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I also wish to dedicate this paper to my late grandfather Tullio, who planted, 25 years ago, a small *P. canariensis* in what later became my garden in Sicily. Thanks to him I grew up playing with spines, leaflets, and dates, and this may have played a role in the development of my passion for palms.

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