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Brahea edulis in the Wild

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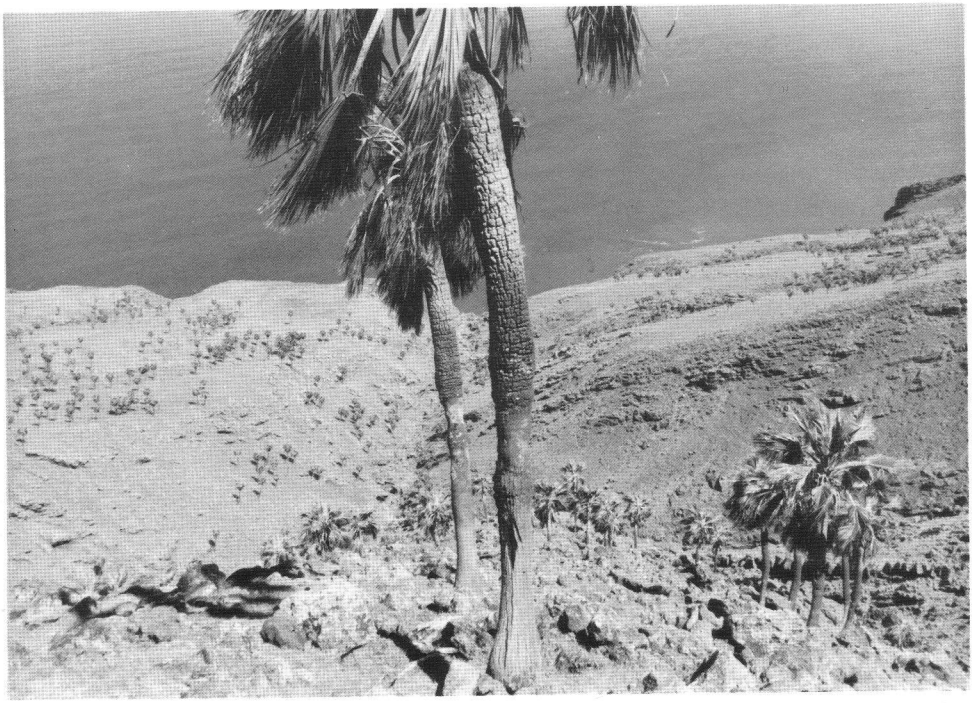
On March 27, 1988, 32 passengers and a ship's crew of eight departed from San Diego for the Mexican island, Isla Guadalupe, on the chartered sport-fishing vessel "Pacific Queen." This is believed to be the first time since 1981 that the Mexican government has permitted visitors on the island, which is a military reservation, and which is the only place on earth where the palm *Brahea edulis* grows as a native.

Isla Guadalupe is Mexico's western-most possession; it is home for perhaps 100 Mexican military personnel, abalone fishermen, and goat hunters. Located about 250 miles southwest of San Diego and about 160 miles west of Baja California, latitude 29°N, it is about 25 miles long and 7 miles wide; it is a volcanic island, estimated to be seven million years of age, which has never been attached to the North American mainland. From a deep gorge in the Pacific Ocean, it rises steeply, in places almost vertically, to a height above sea level of about 1,430 m.

How the ancestor of *Brahea edulis* ever reached Isla Guadalupe is a riddle which bothers every person who has studied this palm. The genus *Brahea* is common on the Mexican mainland and in Baja California, but the viable seeds of *Brahea* do not float, and the prevailing currents of the Pacific Ocean would take any mature *Brahea* palm which during a storm was washed into the sea, southward—rather than westward toward Isla Guadalupe. No known bird or animal or fish would have any capability or reason for carrying a *Brahea* seed from Baja California to Isla Guadalupe. The palm was on Isla Guadalupe thousands of years before any human being arrived in Baja California who might have carried it there. Nonetheless, somehow, sometime in history, a *Brahea* seed reached Isla Guadalupe. It sprouted on the inhospitable shore where it landed, and somehow managed thereafter to get its strong-hold on a steep savannah between 2 and 3 thousand feet (1,000 m) above the cliffs in the more hospitable conditions which prevail on the fog-drenched northwestern slope of the Island. There the palm prospered, and evolved into a very distinct species, *Brahea edulis*. Unaccountably, during its evolution, it developed seeds much larger than any of its mainland forebears; these seeds are covered by a layer of sweet pulp (almost in the fashion of a date), from which was derived its specific name "edulis," which means edible. But why did it develop edible sweet pulp over its seed when no known mammal ever existed on Isla Guadalupe (before around 1830) to eat that sweet pulp? And why, with no mammal existing in Isla Guadalupe which might eat the palm, did it retain sharp spines on the petioles of its young leaves?

The answers to these questions are an enigma; these questions are one reason why *Brahea edulis* is so interesting to taxonomists. Edward Palmer was the first botanist to visit Guadalupe in 1875. He identified 117 species of vascular plants, 20 of which are endemic, that is, not existing anywhere else in the world. The moister northern end of the island supports Monterey pines and cypress trees (many over 20 m tall) in large numbers at its highest



1. This photo, taken during a break in the usual fog, vividly shows the current status (April 1988) of the palm *Brahea edulis* on Isla Guadalupe, Mexico—its only native habitat. In the foreground are a few old palms with trunks badly mangled by goats. The scattered dark spots on the savannah below also are old palms, equally chewed up. All young palms and all palm seeds which drop are eaten by the goats; other plants are eaten too. About 1,100 old dying palms are the survivors of what once—before goats—was a large and healthy palm forest.

elevations in contrast to several species of lichens at its southern end which only receives about 2 cm of rain per year.

To the scientists, as well as the International Palm Society members, the trip was a great success. The seas enroute and during return were pleasantly calm, and the weather during our trip was unusually and exceptionally good. In contrast to the usually fogged-over condition, sunshine prevailed, as is evident by the photos which illustrate this article.

In 1830 on Isla Guadalupe an event occurred which has changed significantly the vegetation of the island. What happened was that an unidentified clipper ship, probably Spanish, dropped off some domestic goats, probably to provide a fresh supply of meat for future stops there. In the absence of natural enemies, these goats multiplied to the maximum ability of the island to provide forage for them. While they devastated the island's flora, one of their main forage items is the large meaty seeds of *Brahea edulis*. After the goats arrived, every last *Brahea* seed which dropped in an accessible spot was eaten and every last seed which dropped inaccessibly between rocks and there sprouted was eaten as a young seedling by the goats. Thus it is that the youngest *Brahea edulis* alive on Isla Guadalupe now is perhaps 150 years old. Since the average lifespan of a *B. edulis* is estimated to be around 180 years, the very existence of this palm on Isla Guadalupe—its one and only native habitat—is limited to perhaps thirty more years. The palms also inhabited a deep

canyon, Barracks Canyon, on the northeast side of the island. This small grove has been destroyed by the inhabitants of the islands in recent years for food and shelter material.

If the goat population on Isla Guadalupe were exterminated during the next thirty years, *Brahea edulis* would survive there by reseeding itself. Or if a goat-proof fence were built and maintained around a cluster of the palms, young palm seedlings could sprout therein and perpetuate the species in its only native habitat. But who would donate the money to build and maintain such a fence? (God forbid that goats might get trapped inside an unkept fence!) And what organization would have sufficient lobbying strength to convince the Mexican government that palms, which provide nothing but beauty, are more important than goats, which provide meat to eat?

So let us prepare for the time, during the span of our lives, when the very beautiful palm *Brahea edulis* becomes extinct in its only native habitat.
