

Ecuador—A Paradise of Palms

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It would be a major endeavor to describe the many and varied species of palms growing in Ecuador. One of the smaller countries of South America, Ecuador probably has one of the most diverse palm floras in the world. The equator passes through the middle of the country, while the massive Andes divide the country into the coastal plains on one side and the extensive Amazon basin on the other. The peaks of the Andes reach up to a height of 20,000 feet (6,310 m). The climate, therefore, ranges from the hot humid tropics to the eternal ice and snow of the mountain peaks. Palms grow most luxuriantly in the tropical lowlands where most species are to be found, yet on the slopes of the Andes different palms appear, according to the elevation at which they grow. Temperature is largely determined by altitude. The largest proportion of the human population lives in the intermontane valleys of the Andes, which range in altitude from 2,200 to 3,000 m.

My work for the Ecuadorean government as technical advisor to the subtropical fruit industry in the highlands was a unique experience where I had an opportunity to visit many nearly inaccessible places, by horseback and in four wheel drive vehicles. What made it especially interesting in my case was that the climate of the highlands is very similar to the mild maritime climate of northern New Zealand where I have a fruit orchard and my palm collection. Many of the fruit-crops we grow in New Zealand had their origin in South America, such as the tamarillo (*Cyphomandra betacea*), passion fruit (*Passiflora* spp.), babaco (*Carica pentagona*) and the Cherimoya

(*Annona cherimolia*). My conclusions were that many of the palms growing in areas where these subtropical fruit trees grow will also grow in New Zealand. For some time I have been active in importing seeds of palms from South America. This is difficult as communications are erratic. In the last ten years I have visited South America on a number of occasions, the last and perhaps the most successful during June, July and August of 1988. My interest was centered on those species of palms suited to the mild subtropical climate of New Zealand. To find these, the high altitude areas in Ecuador were my happy hunting grounds.

Very little botanical information is available in Ecuador. My knowledge of South American palms is limited to a few well described species. I did not realize so many undescribed palms are still being discovered. I will attempt to make generalized descriptions of the palms I saw. I would like to thank Rodrigo Bernal, botanist at the National University of Colombia, Bogota for his assistance in the identification of some of the palms from photos I sent to him.

The palm most closely associated with the people of Ecuador is undoubtedly the "Cococumbe," or "Cumbe" for short. To the palm world it is known as *Parajubaea cocoides* (Fig. 1). The palm is most common in the cities of the highlands, growing to an altitude of more than 3,000 m. It can be seen in parks and along avenues. In country areas the Cococumbe are usually planted near large farm estates. A slender trunked pinnate-leaved palm, very graceful in form, and growing to a height

of ten meters, it bears an uncanny resemblance to the tropical coconut. The crown when open, allows screened lighting to shine through which benefits plantings underneath. The seeds are large, in husk about the size of a small peach. Each infructescence may carry as many as a hundred seeds, and each palm carries many infructescences. One will rarely find any seeds on the ground. The hard shell 3 cm in length contains a coconut-like kernel much enjoyed by the local people. Not satisfied with picking up the seeds, people often bring down the nuts by using rocks attached to strings to pull down the whole infructescence. The shell is contained in a fibrous husk, difficult to remove. The Ecuadoreans have solved this problem by feeding the seeds, husk and all to the many guinea pigs kept by the people. The husks are the favored food of the guinea pig; and in turn, the guinea pig is the favored food of the people. The seeds I collected were cleaned overnight by these useful rodents.

The "Cococumbe" is by no means common in the wild in Ecuador. I did not see any in the forests. The seeds take a long time to germinate, and small seedlings rot easily in the ground. It is perhaps unfortunate that more recently *Phoenix canariensis* has replaced the "Cococumbe" in street plantings. I was told that many of the tall "Cococumbes" planted in Quito were moved there as large trees.

Planted for the same purpose as the "Cococumbe" is the Chilean Wine Palm, *Jubaea chilensis*. Although not common, these palms may occasionally be seen in parks, particularly in the city of Ambato.

The Andean Wax Palm, *Ceroxylon* spp., Palma de cera

The term wax palm is used for all species of *Ceroxylon*. There are many spe-

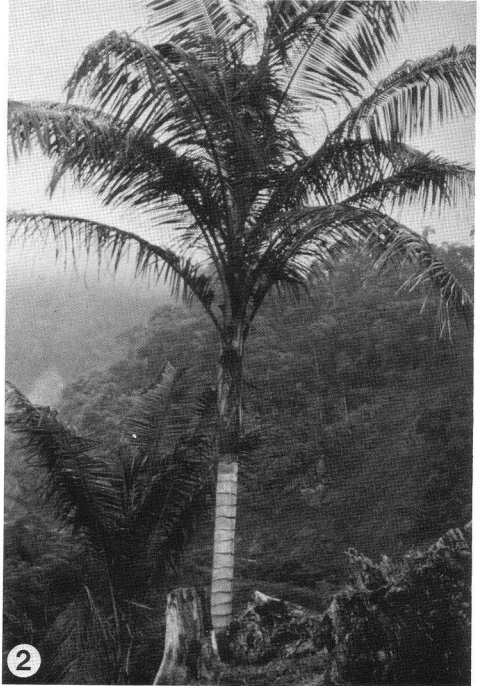
cies, all instantly recognized by their prominently ringed trunks. The pinnate leaves are variable. Some species have erect pinnae while others have drooping or unevenly spaced pinnae, giving a plumose appearance. The lower leaflet surface is usually silvery or rusty-brown in color. Nearly all *Ceroxylon* spp. are large in size, some reputed to reach a height of 60 meters. Colombia has recognized its native palm, *Ceroxylon quindiuense*, as the national tree. Although not common, this palm is being propagated at the University nurseries for planting in the streets and parks of Bogota. Some fine specimens of *Ceroxylon quindiuense* can be seen in the old parks and monasteries around town.

In Quito, Ecuador, *Ceroxylon ventricosum* is the most common species planted. When compared with *C. quindiuense*, the obvious difference is the uneven distribution of the pinnae on *C. ventricosum* as opposed to a regular, even spacing of pinnae in *C. quindiuense*.

Ceroxylon palms are quite common on both the western and eastern slopes of the Andes, ranging from 1,500 m to over 3,000 m. In most cases the palms are easy to spot since they have been spared where the native vegetation has been cleared for farming.

Perhaps the most interesting area for observing *Ceroxylons* and other native palms is in Loja province in the very south of Ecuador. Here a recently formed road winds through a mountainous area largely covered with unexplored forest. We stopped at a place we referred to as the Inca Trail where a track that was used prior to the completion of the new road still exists. The altitude at this spot is around 2,500 m and the area is often shrouded in mist and rain. Along the new road one cannot say that palms are plentiful with

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1. *Parajubaea cocoides*, typical specimen; note open crown. This palm does not tolerate strong winds. 2. *Ceroxylon* sp., Nanegalito (1,600 m), Western Andes. 3. *Ceroxylon vogelianum*, Southern Ecuador (2,500 m), Inca Trail. 4. Detail of foliage of *C. vogelianum*.



the exception of the area around the Inca Trail. On the flanks of the exposed ridge I observed three different species of *Ceroxylon* growing side by side. One, a rather slender trunked palm with plumose leaves, was identified as *C. vogelianum* (Figs. 3,4). Another *Ceroxylon* had a very upright crown, almost like a feather duster palm such as *Rhopalostylis sapida*, and regularly-spaced pinnae, arranged in an upright V. The lower surface of the leaflets was brown. A third species of equally large size had leaflets that were pendulous. Identification of the last two species could not be ascertained but a revision of the genus by Gloria Galeano of Bogotá is underway.

In the same area grew a multitude of other palms, perhaps the most interesting being a medium sized pinnate palm with a bright red crownshaft. According to Rodrigo Bernal, this is *Geonoma undata*. Several other geonomas that were smaller in stature were seen. In among the dense vegetation several *Chamaedorea* were present, one of them a palm more than 10 m high. A species of *Prestoea*, a tall, very fine-leaved palm with a smooth green-ringed trunk grew near a stream. Other palms had spiny trunks and were identified as *Aiphanes* sp.

ERRATA

Ken Foster has pointed out a mistake in the name of a garden. Hilo's Tropical Botanical Garden as mentioned in the Biennial account (Principes 34(4): 211) should have been Hawaii Tropical Botanical Garden. HTBG now has over 100 species of palms in the ground and nearly that many more waiting in containers.