



The National Collection of Colombia's Native Palms: A Testimony of Love for Planet Earth

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Colombian floral diversity

The nation of Colombia is a biodiversity hotspot that includes three chains of the tropical Andes and the flatlands on both sides of the mountains. It has enormous ecological and biological diversity, with about 30,000 known species of vascular plants, 6,500 of them endemic (Bernal et al., 2019). Among the reasons for this floristic richness are its geographical position and complex orography, a varied climate, and its geological history, with the Andean ranges rising to their present heights only within the past several million years.

Colombia's biodiversity and ecological stability is being eroded by its rapid rate of deforestation, with some 200,000 hectares of relatively undisturbed forest destroyed each recent year – equivalent to about one hectare of forest lost every hour (González et al., 2011)[2]! According to the Colombian Institute of Natural Sciences of the National University of Colombia, out of 30,000 Colombian native plant species, about 7,500 are subject to some category of threat of extinction (Bernal et al., 2019).

The main causes of deforestation in Colombia are:

To secure land for growing illicit crops, especially coca. The extension of agricultural lands, owing in part to inequities in land ownership. Cutting and burning large quantities of wood as fuel. Disturbance associated with mining, both legal and illegal. The expansion of urban areas.

These causes have a common factor: they are all driven by economic gain. This means that the devastation and degradation of a very biodiverse country like Colombia is taking place for the sake of economic benefits. Although the current population of about 50 million people is growing at only 0.9% per year,[3] higher living standards mean increased consumption by all sectors of society. The main consequences of this "ecocide" are: Extinction of biological species. Degradation of natural ecosystems. Climate change, exemplified by the loss of most glaciers that were active 50 years ago. Alteration of water cycles, often leading to seasonal drought. Soil loss. Impoverishment of human communities and many other damages.

In short: a real drama.

With humans continually driving the destruction of nature with large parts of the populace still living in poverty, it is certain that future generations of Colombians will not have the biological richness and relative ecological stability that we enjoy today. Among the causes are:

The absence of leaders with ethical behavior toward nature. The insufficient political awareness of the population about their environmental rights. A general lack of knowledge about what nature provides for everyone – the extent to which we depend upon it for our everyday lives.

The Holy Father Francis has said: *"The cost of the damage caused by such selfish lack of concern is much greater than the economic benefits to be obtained. Where certain species are destroyed or seriously harmed, the values involved are incalculable. We can be silent witnesses to terrible injustices if we think that we can obtain significant benefits by making the rest of humanity, present and future, pay the extremely high costs of environmental deterioration".* (Encyclical letter *Laudato si'*).

The botanical gardens of Colombia (and throughout the world) form a kind of living "Noah's Ark" for saving as much as possible of our native plant diversity. How much can we hope to accomplish before the overall destruction of nature is complete?

The answer is that Colombian people (and all those who want to help us) must work very hard to preserve as much as possible of the native Nature that we enjoy today...

The Quindío Botanical Garden, the institution that I head, is one of the gardens attempting to preserve floral diversity (Figure 16.1). It is a non-governmental and a non-profit organization, founded in 1979, located in Calarca, Quindío, Colombia, only twenty minutes from the International Airport of Armenia city. Our goals include the conservation of nature, a goal that we hope to realize by spreading a love of our natural surroundings

among all of our visitors and those who live in the surrounding communities (Figure 16.2). In doing so, we have adopted a concrete goal, the preservation of as many as possible of the palm species that grow within the borders of Colombia.

Diversity of Palms in Colombia

With 260 species, Colombia has the third highest number of palms that occur in any country and the second highest in the New World. Our native palm species amount to a tenth of the 2,600 palm species that occur globally, which indicates a very high proportion. They are distributed throughout the country, from sea level to 3,200 meters of elevation (Galeano & Bernal, 2010). Palms are important components of tropical forests in their diversity, abundance, and as critical sources of food for wildlife. Economically, they are the third most important plant family in the tropics, following the grasses and the legumes (Johnson, 1996). Among the Colombian palm species, about 80%, some 205 species, are in serious danger of extinction (Galeano & Bernal, 2010). For that reason, and because of their overall importance, the Quindío Botanical Garden decided in 1993 to build a living collection of as many species of Colombian palms as possible; our collection is now the most diverse representation of these palms globally. We bring together living plants of all palm species native to Colombia and use them as tools for education, research, and conservation. In addition, we will endeavor to reintroduce as many of our threatened species of palms as possible back into their original habitats. To accomplish these aims, we have during the past 12 years conducted 13 expeditions reaching all areas of the country, and we hope to extend this effort in the future.

The eminent Colombian Botanist Rodrigo Bernal has helped us a great deal in these efforts. Today, our collection includes 214 of the 262 species known in Colombia and all but one of the 45 native genera.

The national tree of Colombia is the Quindío wax palm, *Ceroxylon quindiuense*. It is the tallest species of palm globally, reaching 60 m in height, and it occurs up to a higher elevation than any other palm, reaching an elevation of 2,200 meters in the Andes.

The genus *Ceroxylon* was discovered by Alexander von Humboldt and Aimé Bonpland in the Andes (1801-1803). There are twelve species which occur in the mountains from Colombia to Bolivia; of these, seven occur in Colombia.

In addition to palms, we preserve in the Quindío Garden cycads, gymnosperms with divided leaves that resemble those of palms. The most diverse genus of cycads in Colombia is *Zamia*, with 23 of the 60 known species occurring in our country (Calderón et al. 2005, Esquivel 2014). These occur widely, from the seashore to more than 3,000 m of elevation. As a result, our garden, which comprises 11 *Zamia* species, has earned the honor of being a member of the Colombian *Zamia* rescue group, Conservation Action Plan 2015-2025. In doing so, we assist in our national effort to save as many as possible of these attractive plants.

Conclusion

Although modern botanical gardens were developed in Europe starting in the 1540s – originally as adjuncts to medical schools for learning and teaching about medicinal plants – they spread with European colonization to North America and throughout Asia. Thus, the Calcutta Botanical Garden was founded in 1787, with most of the other Asian gardens started by colonizers such as England and the Netherlands in the first half of the 19th century as testing grounds for plants of economic value.

In the tropics generally, where over two-thirds of the world's plant species occur, most nations did not have or form gardens until the 20th century, many of which were also initiated in a colonial context. Thus, it is relatively recently that botanical gardens in many tropical countries began to play a role in conserving the plants of their respective countries. Given the rapid rate of destruction of their floras, it is to be hoped that ways and means may be found to help in the development of botanical gardens and to promote networking between these institutions for the common good. We seem to be off to a solid start in Colombia and hope that we will be able to find means for accelerating efforts to preserve our extraordinarily rich native flora while it remains relatively intact.

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END NOTES

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[2] See also Detecciones tempranas de deforestación (last accessed on November 19, 2019).

[3] <https://www.dane.gov.co/index.php/estadisticas-por-tema/demografia-y-poblacion/censo-nacional-de-poblacion-y-vivenda-2018/cuantos-somos>