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EXPLORING FOR PERSEA IN COSTA RICA

G. A. Zentmyer
Plant Pathologist and Professor, Department of Plant Pathology, University of California, Riverside
E. Schieber
Plant Pathologist, Antigua, Guatemala, Central America

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More than 40 years ago Wilson Popenoe wrote "Costa Rica has been so much botanized . . ." This is certainly true, compared with other countries in Central America. Much has been written on the botany of Costa Rica and extensive plant collections have been made over the past 50 or 60 years. Two herbaria contain good collections from various parts of the country; one of these herbaria is at the Museo Nacional in San Jose, the other is at the University of Costa Rica.

One of the early publications on avocado in Costa Rica is that of Wilson Popenoe in the 1935 California Avocado Society Yearbook, in which he described the wild avocado of San Isidro. Dr. Popenoe maintained his interest in this strange collection (see below) for many years, and considered it a very unusual form, combining some of the characteristics of the Guatemalan and the Mexican races.

The first author of this article has traveled extensively in Costa Rica since 1952, making many collections of avocado varieties and related species of *Persea* in the search for resistance to Phytophthora root rot (5, 6). Recently both authors have traveled together in this country, covering particularly some of the cloud forests on the volcanic slopes.

Alexander Skutch in his recent book "A Naturalist in Costa Rica" (4) described some interesting aspects of the ecology of various regions of the country. A world authority in the field, Dr. L. R. Holdridge, has carried out many important ecological and botanical studies in Costa Rica over the past 25 years.

Costa Rica is a small country, with 23,000 square miles of territory; it is estimated that three-quarters of the country is covered with vast forests (4). Skutch presents an excellent description of Costa Rica 40 years ago, as follows:

> "In the mid-1930's, Costa Rica was still largely unspoiled. Its population of less than half a million people, mostly European descent, was concentrated in the narrow Meseta Central or central plateau, and along the railroads leading down from the capital, San Jose, to Puerto Limon on the Caribbean Sea and Puntarenas on the Pacific Ocean. Paved roads, passable at all seasons, extended hardly 20 miles on either side of the railroads and only in the highlands. Beyond this narrow strip of intensive cultivation were small

settlements, connected by rough trails threading the vast forests . . ."

In modern Costa Rica there are good highways, even extending up to Volcan Irazu, so it is not necessary to take the train as in the early days. However, if you hunt for wild avocados on the slopes of some of the volcanoes such as Volcan Barba or Volcan Turrialba, you must travel in a jeep. The modern Panamerican highway to Panama passes another botanically interesting region of the Talamanca and San Isidro del General.

Persea schiedeana

In Costa Rica there are many trees of *Persea schiedeana,* known in this country as "Jas." We have encountered several centers of this species, including those near Cartago, on Volcan Irazu, in the Cerro de la Carpinteria, and in La Palma; there are also numerous scattered trees in many parts of Costa Rica. The fruit type of "Jas" in Costa Rica is usually different than in Mexico and Guatemala, where the *P. schiedeana* fruit is usually elongate, with a long neck. In Costa Rica, fruit of this species is usually much smaller than in the other countries, and oval or nearly round.

Some old *P. schiedeana* trees in Costa Rica are very large, reaching 20 to 25 meters in height. Leaves are characteristically large, elliptic to obovate with prominent brownish pubescence on the lower surface. "Jas" fruit are sold in the markets in Cartago and Costa Rica; the flesh has a greyish-brown color and a unique flavor. There is apparently considerable demand for them and "Jas" fruit sell for nearly the same price as the local avocado varieties. There are many trees of this species on the slopes of Irazu volcano, above Cartago, and also in the mountains south of Cartago. Over the years we have made a number of collections of this species from Costa Rica, as well as from Mexico and Guatemala.

Persea caerulea

This species of *Persea* is quite different from *P. schiedeana* and from the typical avocado (P. *americana).* It is characterized by small, purplish fruit about the size of a pea, with very little flesh, and by the smooth, elongate leaves. This species is found as an occasional specimen in the highlands of Costa Rica, such as in the San Ramon region and in the Cerro de la Carpinteria. Trees are not usually very large, and range in height from 8 to 12 meters.

Zentmyer made collections of this species in Costa Rica in the 1950's (5, 6); at that time it was classified as *Persea skutchii.* With Kopp's revision of the genus *Persea* (1) these trees are now classified as *P. caerulea.*

This species, known locally as "aguacatillo" also grows along rivers in Honduras where it was collected by Zentmyer in 1952. Schieber recently found a few trees of this species in Matagalpa, Nicaragua.

Beilschmedia ovalis

This genus is related to the avocado genus, *Persea;* in Costa Rica we have collections of *B. ovalis* from San Martin, close to Volcan Barba. This species has hard, leathery leaves and ovoid fruit (see photo).

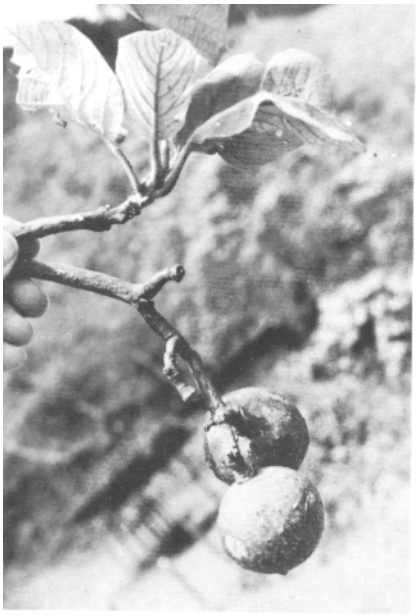
Another species of this genus, *Beilschmedia anay,* grows in Guatemala where it is known as "Anay." This is a large tree with elongated fruit resembling an avocado, quite different from *B. ovalis* in Costa Rica. Schieber has recently collected "Anay" in El Salvador also.

Aguacate from Volcan Turrialba

Early in 1975 the writers climbed part of the volcano Turrialba and found a unique wild avocado similar to Aguacate de Mico, on the slopes of the volcano above the town of Santa Cruz. In the cloud forest, of "Las Virtudes" we collected fruit and budwood of this round, hard-shelled wild avocado.

This collection on the slopes of volcano Turrialba differed from our other Aguacate de Mico collections in the smooth, rather shiny pericarp of fruit, and in the leaves that were more like "Jas" than Aguacate de Mico (see photo). The fruit from our collections averaged 6.5 centimeters in diameter, with a large, oblate seed. The collection was identified as Cr 28.

La Chonta del Guarco



Aguacate from Volcan Turrialba

Beilschmedia ovalis, Costa Rica

Wild Avocado from San Isidro

Dr. Wilson Popenoe in 1927 (2) and 1935 (3) described the "wild avocado of San Isidro, Costa Rica," which he first collected in 1920. Popenoe found this strange tree in the region of La Palma near San Isidro. This collection had a hard-shelled, round fruit, with strong anise scent. Thus this tree combined characters of the Guatemalan race, particularly the thick skin, with anise scent that is characteristic of the Mexican race.

In recent years we have searched for this tree in the region of Popenoe's original description but so far have not been successful in finding this type even with help of natives of the region. A similar collection was made by Popenoe in 1927 in Honduras. Zentmyer has obtained seed of the Honduran type from Dr. Antonio Molina, botanist at the Escuela Agricola Panamericana et Zamorano in Honduras.

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