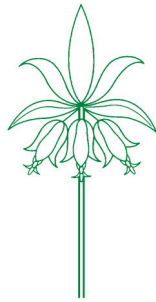


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Hunt Institute for Botanical Documentation
Carnegie Mellon University
5th Floor, Hunt Library
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: <http://www.huntbotanical.org>
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Abstract

At the end of his fifth voyage to Cuba, Brother Marie-Victorin made an expedition to Haiti and Puerto Rico between late April and early May 1942. This expedition resulted in two publications that were written in French and focused on Haiti and Puerto Rico, respectively. Herein, we provide commentaries and an English translation of Marie-Victorin's paper on Haiti. We also catalogue the collection of 31 photographs that were taken by him during this visit. They were printed on paper or on glass plates and are housed at the Division de la Gestion de Documents et des Archives (Université de Montréal). This was the second trip by Marie-Victorin to this Antillean country, during which he explored the area of the Morne des Commissaires (Chaîne de la Selle mountain range) in southern Haiti. The pine forest (*Pinus occidentalis* Sw.) was the main botanical target of this expedition. His account includes details pertinent to ethnobotany, invasive plants, Caribbean phytogeography, plant ecology, and vegetation structure, as well as comparisons to the temperate pine forests of Canada. Supplementary documents related to our contribution are available online (<https://archive.org/details/le-naturaliste-canadien-marie-victorin-in-haiti-HUNTIA/page/258/mode/2up>).

Rezime

Aprè senkyèm vwayaj Frè Marie-Victorin nan Kiba, li fè yon vwayaj ak yon delegasyon nan Ayiti ak Pòtoriko, ant fen mwa avril ak kòmansman mwa me, nan lane 1942. Vwayaj sa a bay kòm rezilta de publikasyon an franse: youn konsantre sou Ayiti, lòt la konsantre sou Pòtoriko. Nan papye sa a, nou prezante kòmantè nou sou publikasyon Marie-Victorin konsènan Ayiti a, ansanm ak tradiksyon ni an panyòl ni ann angle travay sa a. Anplis de sa nou fè yon katalòg ak yon koleksyon 31 foto Frè Marie-Victorin te pran pandan vwayaj li a. Foto sa yo te enprime swa sou papye swa sou plak an vè, epi yo konsève yo nan Division de la Gestion de Documents et des Archives (Université de Montréal). Se te dezyèm vwayaj Marie-Victorin te fè nan peyi Karayib sa a, kote li te eksplòre zòn Mòn Komisè (Mòn Lasèl), nan sidès Ayiti. Prensipal enterè vwayaj eksplorasyon sa a se te Forè ki gen pye pen (*Pinus occidentalis* Sw.) Rapò li ekri a gen plizyè detay enpòtan sou etnobotani, sou sèten plant.

Introduction

Brother Marie-Victorin (Joseph Louis Conrad Kirouac, 1885–1944) was a Canadian botanist well known for his contributions to

International Center for Tropical Botany; Department of Biological Sciences; and Kimberly Green Latin American and Caribbean Center, Florida International University, Miami, FL 33199 USA; Fairchild Tropical Botanic Garden, Miami, FL 33156 USA. Email: ortegaj@fiu.edu [JFO]

Kimberly Green Latin American and Caribbean Center and Department of Modern Languages, Florida International University, Miami, FL 33199 USA [NA]

Kimberly Green Latin American and Caribbean Center, Florida International University, Miami, FL 33199 USA [LP]

International Center for Tropical Botany and Department of Biological Sciences, Florida International University, Miami, FL 33199 USA [RA, SZ]

Jardin Botanique des Cayes, Les Cayes, Haiti [WC]

Jardín Botánico Nacional, Avenida República de Argentina, Santo Domingo, Dominican Republic [BP]

Institut de Recherche en Biologie Végétale de l'Université de Montréal, 4101 rue Sherbrooke Est, Montréal, QC H1X 2B2, Canada [GH, LB]

Fairchild Tropical Botanic Garden, Miami, FL 33156 USA [BJ]

the flora of Quebec and Cuba (Gagnon 1944). Marie-Victorin began his botanical career in Quebec, but after completing his major floristic account of the province (Marie-Victorin 1935), he continued his studies in the West Indies, which gave him new trajectories as a botanist. Marie-Victorin was an accomplished researcher and professor at the University of Montreal, but his interest in phytogeography was not contained by provincial or even national boundaries. Marie-Victorin was also a diarist and avid photographer, documenting his botanical travels with copious notes and photographs. He made investigative trips to Europe, the Middle East, Africa and the Caribbean region in an effort to better understand plant distributions, ecological associations and phylogenetic relationships. One such trip was to Hispaniola in 1938, followed by a visit to Cuba at the invitation of fellow botanist Brother León (Joseph Sylvestre Sauget 1871–1955). This was the first of seven visits that Marie-Victorin made to Cuba between 1938 and 1944 (Bouchard 2007; Berazaín Iturralde et al. 2014). It is noteworthy that during two of his trips to Cuba, Marie-Victorin took the opportunity to travel to other Caribbean islands. He visited Jamaica and Trinidad [during his fourth voyage in 1941 (Rumilly 1949, p. 365)] and Haiti and Puerto Rico [during his fifth voyage in 1942 (Marie-Victorin 1944, 1944–1945; Rumilly 1949, pp. 378–379)].

Brothers Marie-Victorin and León were members of the Brothers of La Salle, a Catholic teaching order focused on elementary to post-secondary education (Beaudet 1985; Méndez Santos 2016; Francisco-Ortega et al. 2016). Both shared a passion for plants that led to a long, productive collaboration on the flora of Cuba (e.g., Marie-Victorin and León 1942, 1944a, b, 1956; Marie-Victorin 1948). Marie-Victorin suffered from poor health and chronic respiratory problems that became worse with age, and the cold, wet winters of Canada

did not help his ever-worsening condition (Gingras 1985, 2004). During his trips to the West Indies Marie-Victorin found an ideal environment that served both his health and his endless botanical curiosity. The trips also afforded him the unique opportunity to be surrounded by and work alongside his dear friend and colleague, Brother León, and other brothers of La Salle who were working with Cuban plants (Bouchard 2007, pp. 17–19). Because Marie-Victorin inherited a significant fortune from his father, who died in 1921, he had the necessary resources to travel extensively in the West Indies during the winter (Bouchard 2007, pp. 17–19).

Brother Marie-Victorin in Hispaniola

Before Marie-Victorin worked in Cuba, there was Hispaniola, the second largest island of the West Indies and one rich in botanical diversity. During his first voyage to Haiti (December 1937–January 1938), he made a very short side trip to Santo Domingo, the capital city of the Dominican Republic, mostly to visit other members of the La Salle Brothers. During this trip, his first expedition to the West Indies, Marie-Victorin kept a travelogue and took many photographs that have been studied by André et al. (2020).

His second visit to Hispaniola, and more specifically to Haiti, from the last week of April through the first week of May of 1942, is the subject of this paper. We do not have the actual dates of this visit as Marie-Victorin's travel diary was lost during the flight from Haiti to Puerto Rico (Marie-Victorin 1943a, b; Santiago-Valentín et al. 2016). According to Marie-Victorin's account, it appears as though his diary was confiscated by Haitian authorities in customs.

Marie-Victorin's (1943a, b) description of this trip to Haiti was entitled, "Les hautes pinèdes d'Haïti" (The high-elevation pine forests of Haiti). This paper was published

twice, in two different journals, and this was one of the last works produced by Marie-Victorin before he died in a tragic car accident in Canada on 15 July 1944 (Gagnon 1944). This publication was 14 pages long and had a total of 12 figures with field photographs. His original article, just as it was published by Marie-Victorin (1943a), is available as an Online Supplementary Document (<https://archive.org/details/le-naturaliste-canadien-marie-victorin-in-haiti-HUNTIA/page/258/mode/2up>).

As part of this contribution, we present an English translation of Marie-Victorin's (1943a, b) account of his second trip to Haiti (Appendix), along with commentary,

context and updated botanical nomenclature. During our research, we studied photos and documents pertinent to Marie-Victorin's two trips to Haiti. In the Division de la Gestion de Documents et des Archives (Université de Montréal) we found more than 315 photos from these two trips that were reproduced on paper or printed on glass plates. The paper-printed photos are either arranged in an unpublished album (entitled "Voyage en L'île d'Hispaniola 1938 et 1942") with a total of 96 pages (Fig. I.1) or mounted on 33 loose large sheets of cardboard. The photos on the loose cardboard sheets are from the 1938 expedition only. The first 80 pages of the unpublished album are devoted to his first visit, whereas

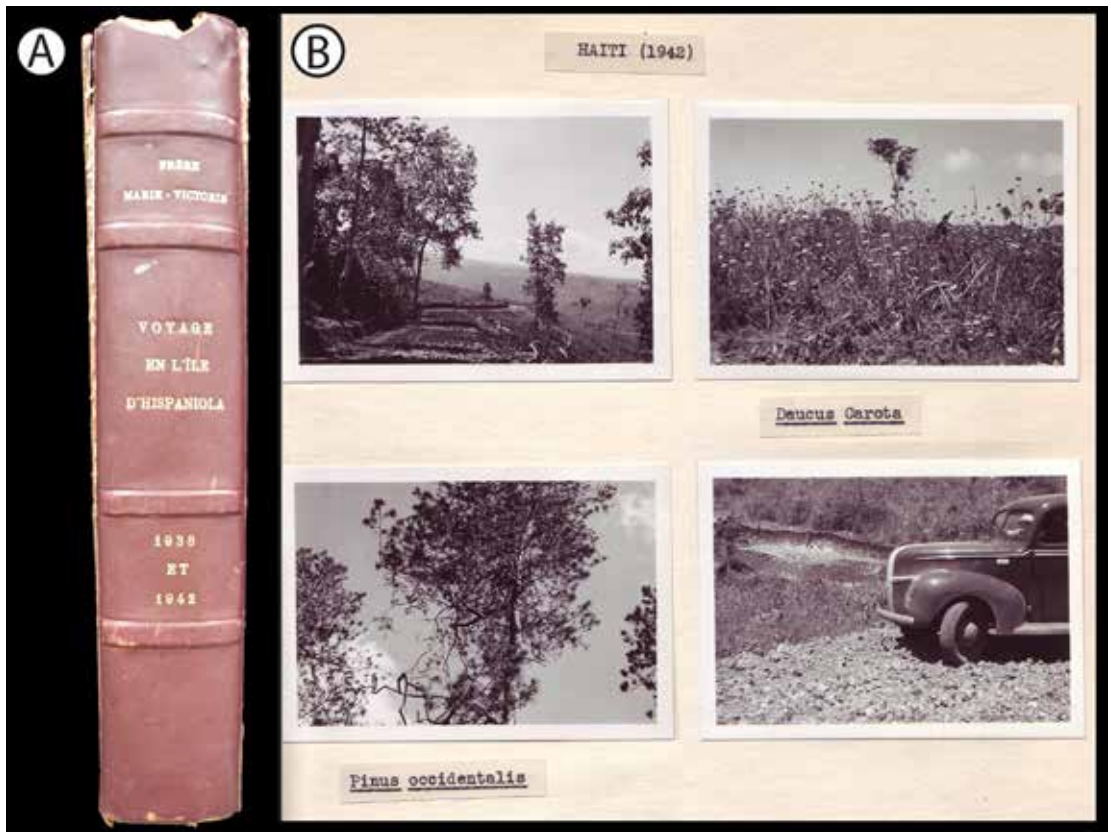


Figure I.1. Photographic album for the two trips that Marie-Victorin made to Haiti (1938 and 1942). **A.** Spine of album. **B.** Page 95 showing photos taken during the second trip. Copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).

the last 15 are from the 1942 trip. There are a total of 31 different photos from the second expedition, 10 of which were reproduced both as paper prints and glass slides. During our visit to the archives of the University of Montreal, we could not locate four of the

photos that were published (Figs. 1, 4, 5 and 12) in Marie-Victorin’s (1943a, b) description of his 1942 trip (Tab. 1). A full catalogue and study for the photos that were taken during the 1938 trip is the subject of another publication by André et al. (2020).

Table 1. Catalogue of photographs taken by Marie-Victorin during his second trip to Haiti (1942). Table entries are arranged according to album page numbers.

Photo description ^a	Black and white photo mounted on album. Page number / location on page	Color plate number	Publication reference
General view of Port-au-Prince ^b	82		
Detail of <i>Roystonea borinquena</i> ^c	83 / left; 91 / left		
Individual of <i>R. borinquena</i> ^c	83 / right; 91 / right		
Stand of <i>Pinus occidentalis</i> and <i>Lycopodium clavatum</i> ^d	84 / top; 85 / top right	12683	
Stand of <i>P. occidentalis</i>	84 / bottom; 85 / bottom left		
Stand of <i>P. occidentalis</i>	85 / top left		
Stand of <i>P. occidentalis</i>	85 / middle right		
Logging of <i>P. occidentalis</i>	85 / bottom right		
Stand of <i>P. occidentalis</i>	86 / top		Fig. 6 (Marie-Victorin 1943a, b; this contribution)
Stand of <i>P. occidentalis</i>	86 / bottom left;	12678	
Logging of <i>P. occidentalis</i>	86 / bottom right; 87 / bottom		
<i>P. occidentalis</i> and <i>Arceuthobium bicarinatum</i>	87 / top; 88 / top left	12680	Fig. 11 (Marie-Victorin 1943a, b; this contribution)
Stand of <i>P. occidentalis</i>	88 / top right		
Logging of <i>P. occidentalis</i>	88 / bottom left; 96 / bottom	12679	Fig. 7 (Marie-Victorin 1943a, b; this contribution)
Stand of <i>P. occidentalis</i>	88 / bottom right		
Individual of <i>Schefflera tremula</i> ^e	89 / top left		
Individual of <i>S. tremula</i> ^e	89 / top right		Fig. 8 (Marie-Victorin 1943a, b; this contribution)
Individual of <i>Oreopanax capitatus</i> ^f	89 / bottom left	12687	Fig. 9 (Marie-Victorin 1943a, b; this contribution)
Individual of <i>Oreopanax capitatus</i> ^f	89 / bottom right	12686	
Unknown person standing close to individual of <i>Lobelia assurgens</i>	90 / top; 91 / right		

Photo description ^a	Black and white photo mounted on album. Page number / location on page	Color plate number	Publication reference
Individual of <i>L. assurgens</i>	90 / bottom; 91 / left	12681	Fig. 10 (Marie-Victorin 1943a, b; this contribution)
Individual of <i>Coccothrinax scoparia</i>	93 / left; 94 / top	12684	Fig. 2 (Marie-Victorin 1943a, b; this contribution)
Landscape with individual of <i>C. scoparia</i>	93 / top right; 94 / bottom		Fig. 3 (Marie-Victorin 1943a, b; this contribution)
Two people carrying leaves of <i>C. scoparia</i>	92; 93 / bottom right	12685	
Landscape	95 / top left		
Stand of <i>Daucus carota</i>	95 / top right; 96 / top	12682	
Individual of <i>P. occidentalis</i>	95 / bottom left		
Car and landscape	95 / bottom right		
Landscape with <i>Prosopis juliflora</i> in Cul-de-Sac area			Fig. 1 (Marie-Victorin 1943a, b; this contribution)
Structural frame for countryside hut made of <i>P. juliflora</i>			Fig. 4 (Marie-Victorin 1943a, b; this contribution)
Countryside hut made of <i>P. juliflora</i>			Fig. 5 (Marie-Victorin 1943a, b; this contribution)
Landscape showing corn bundles hanging on trees			Fig. 12 (Marie-Victorin 1943a, b; this contribution)

^aSee full scientific names, including authorities and plant families in Table 2.

^bThis is a postcard and not a photo that was taken by Marie-Victorin.

^cIdentified as *R. hispaniolana* L. H. Bailey by Marie-Victorin.

^dIdentified as *Lycopodium clavatum* var. *laurentianum* by Marie-Victorin.

^eIdentified as *Didymopanax tremulus* by Marie-Victorin.

^fIdentified as *Dendropanax* sp. (Araliaceae) by Marie-Victorin.

During his second stay in Haiti, Marie-Victorin was accompanied by the famous American tropical ecologist Leslie R. Holdridge (1907–1999), the author of an ecosystem classification system known as the Holdridge Life Zones System (Holdridge 1967). Holdridge also engaged in research in Haiti (Jiménez Saa 2005), and, therefore, it seems that he was already in-country at the time of Marie-Victorin's trip in 1942. This expedition focused on southern Haiti and particularly targeted the pine forests found within the Chaîne de la Selle, a mountain chain that extends to the Dominican Republic's Sierra de Baoruco, where the

Hispaniola-endemic *Pinus occidentalis* is the dominant species.

Upon his initial arrival in Port-au-Prince, Haiti, Marie-Victorin travelled across the lowlands of the Cul-de-Sac Plain (Fig. I.2), where he highlighted the xerophytic nature of the area, characterized by a predominance of cacti (including the Hispaniola endemic *Leuenbergeria portulacifolia*, Fig. I.3) and saline lakes. Among the most common species found in this area was the native legume *Prosopis juliflora* (Fig. I.4, see Fig. 1). As Marie-Victorin left the dry lowlands and started travelling towards the pine forests of the Morne des Commissaires, he reported

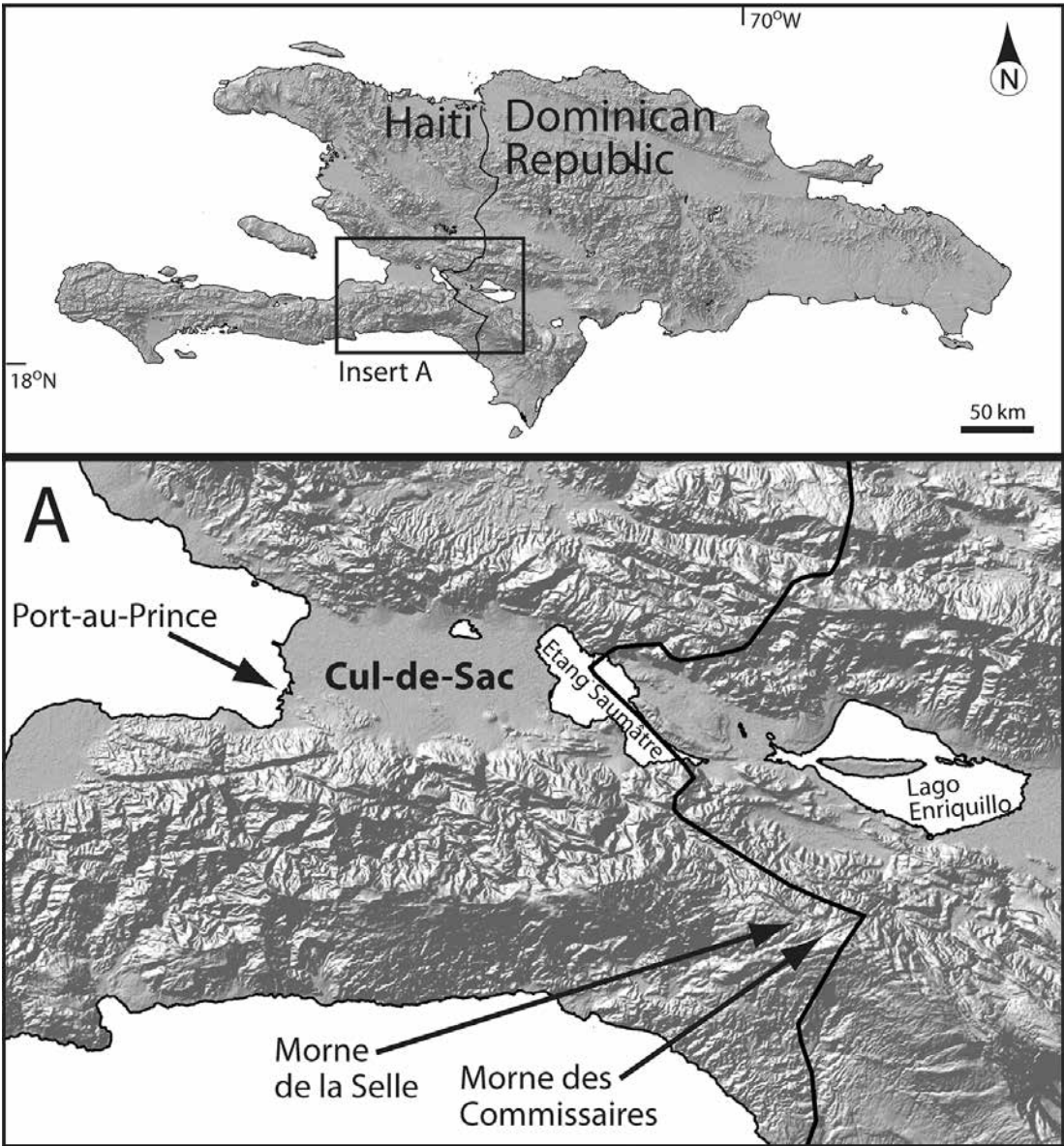


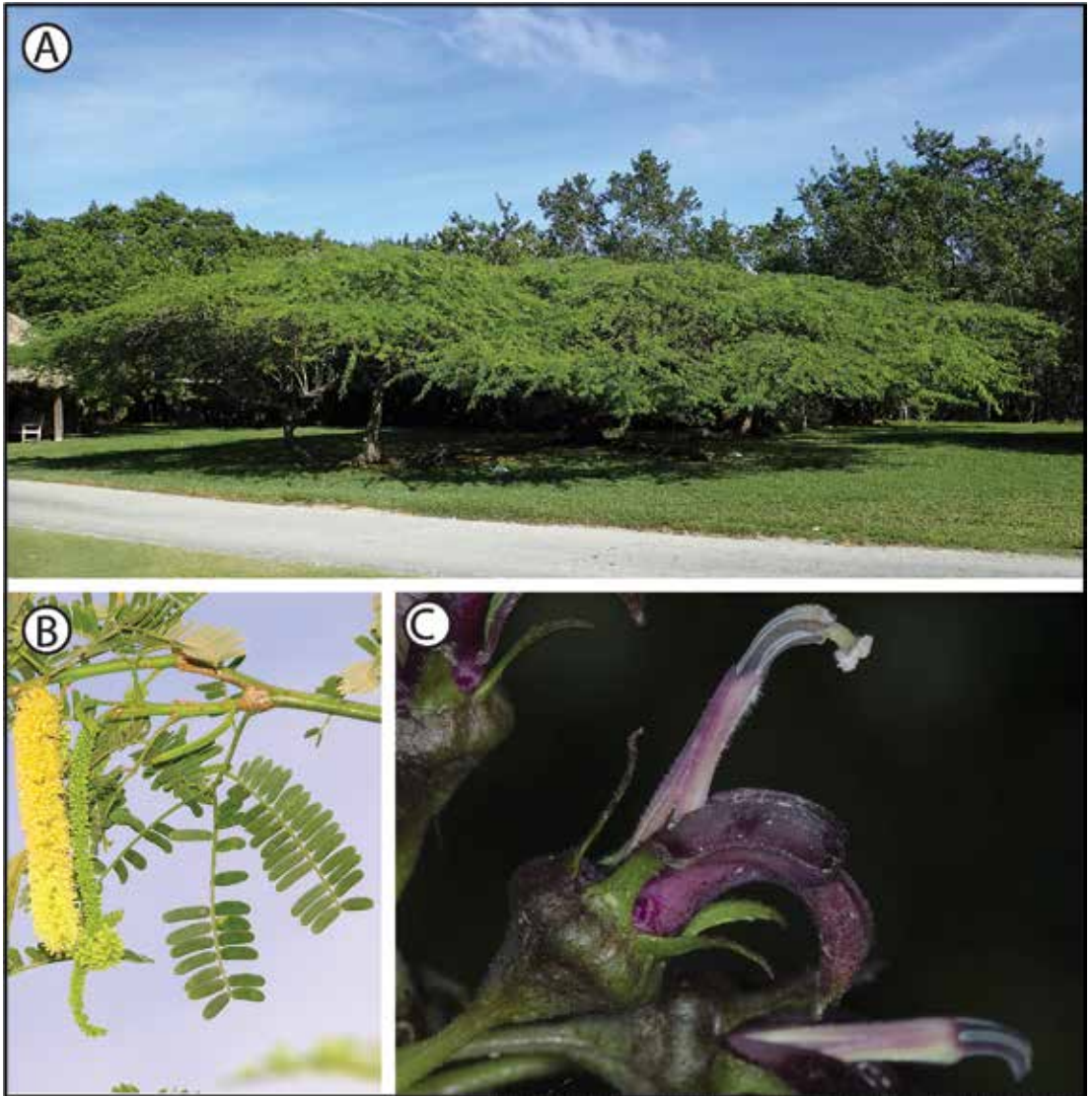
Figure I.2. Above, Area of Haiti that was visited by Marie-Victorin in 1942.

Figure I.3. Right, Plants whose black and white photos were presented in Marie-Victorin's (1943a, b) work on his second visit to Haiti. **A.** Individual of *Prosopis juliflora* (Sw.) DC. (Fabaceae) growing in the living collections of Fairchild Tropical Botanic Garden (see photo published by Marie-Victorin in Fig. 1). **B.** Detail of plant of *P. juliflora* in habitat in the Dominican Republic (see photo published by Marie-Victorin in Fig. 1). **C.** Detail of flower of the Hispaniola endemic *Lobelia assurgens* L. (Campanulaceae) in habitat in Haiti (see photo published by Marie-Victorin in Fig. 10). Photo credits: A (B. Jestrow), B (F. Jiménez) and C (J. Clark).

changes in vegetation, i.e., the appearance of *Plumeria* (Apocynaceae), *Cecropia peltata* and individuals of a palm species that he identified as *Coccothrinax scoparia* (see Figs. I.3, 2). Marie-Victorin made observations and took photographs related to the ethnobotanical use of this palm to make brooms (see Figs. I.3, 3), and also how *P. juliflora* provided the material necessary to build the basic framework of

rudimentary mud houses (Fig. I.5, see Figs. 4–5).

The last section of Marie-Victorin's publication was devoted to the pine forest. He noted the floristic similarities between this forest in Haiti and those found in Canada, as the Morne des Commissaires was located at a high elevation (~2600 m) and thus, at lower temperatures than lowland forests of



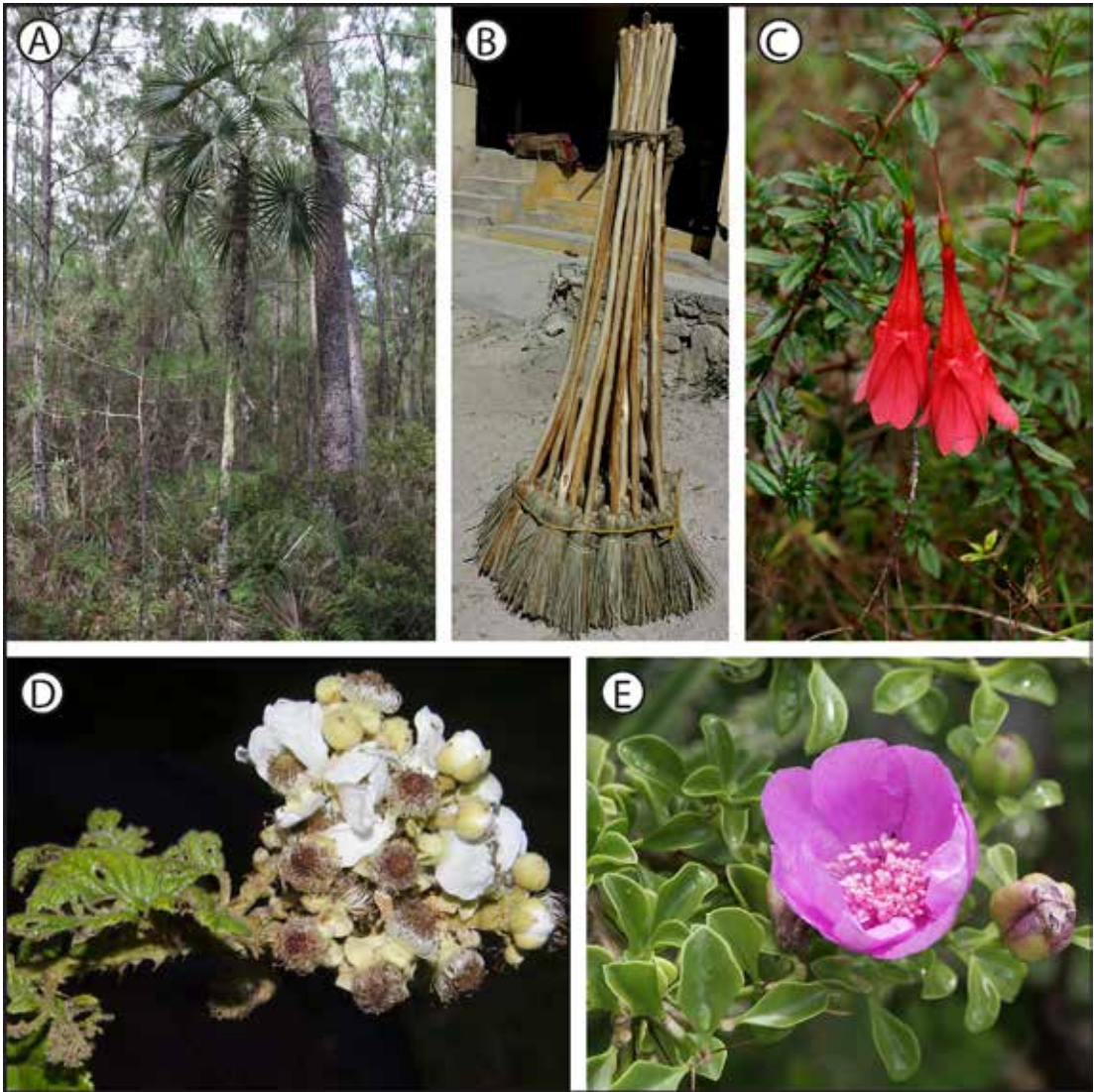
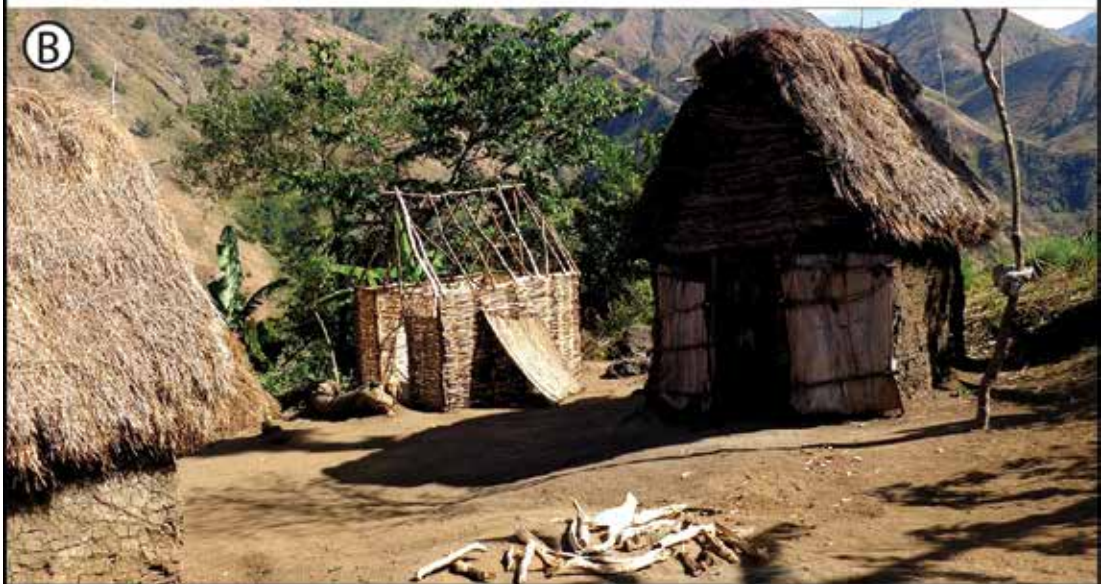


Figure I.4. *Above*, Hispaniola endemic plants and ethnobotanical practices mentioned or photographed by Marie-Victorin (1943a, b) during his second visit to Haiti. **A.** Individual of *Coccothrinax scoparia* Becc. in Pedernales, Parque Nacional Jaragua, Dominican Republic. **B.** Brooms made of palm leaves, for sale in Port-au-Prince. **C.** *Fuchsia pringsheimii* Urb. (Onagraceae) in Parque Nacional Valle Nuevo, Dominican Republic. **D.** *Rubus selleanus* Helwig (Rosaceae) in southern Haiti. **E.** *Leuenbergeria portulacifolia* (L.) Lodé (Cactaceae) growing in the living collections of Fairchild Tropical Botanic Garden. Photo credits: A (P. Craft), B (M. R. Laurent-Estéus), C (S. Zona), D (J. Clark) and E (S. Zona).

Figure I.5. *Right*, Haitian mud houses in Kenscoff Mountains, District of Port-au-Prince, Western Department, Haiti (see photo published by Marie-Victorin in Figs. 4–5). **A.** Covering of house with mud plaster. **B.** General view of a mud house settlement. Notice the unfinished hut’s main frame structure made of tree branches. Photo credit: K. Bultje through Coram Deo, Mission of T.E.A.R.S. (<http://www.missionoftears.ca/coram-deo-home.php>).



Haiti. These phytogeographical comparisons mostly focused on the understory communities and highlighted the presence of *Lycopodium clavatum*, *Pteridium caudatum*, the Hispaniola endemic *Rubus selleanus* (see Fig. I.3), and the non-native *Fragaria vesca*. Marie-Victorin had a particular interest in *Lycopodium*, as he had previously published on this genus as it also occurs in Quebec (Marie-Victorin 1925).

In addition, he recorded the presence of the Hispaniola endemics *Schefflera tremula* (Fig. I.6, see Fig. 8), *Fuchsia pringsheimii* (see Fig. I.3) and *Arceuthobium bicarinatum* (see Figs. I.6, 11). *Arceuthobium* species (dwarf mistletoes) are parasites on conifers, and Marie-Victorin was familiar with the genus as it also occurs in eastern Canada. The Caribbean Island endemic *Lobelia assurgens* (see Figs. I.3, 10) and the natives *Didymopanax morototoni* and *Oreopanax capitatus* (see Figs. I.6, 9) were also reported by Marie-Victorin. The presence of weeds from the Old World (i.e., *Daucus carota*, *Taraxacum officinale* and *Verbascum thapsus*) was also noted, and Marie-Victorin suggested that they might have been accidentally introduced by French troops who found shelter in the mountains during the Haitian revolution, which eventually resulted in the independence of Haiti in 1804 (Girard 2011). Marie-Victorin mentioned cultivated millet and corn and noticed that farmers hung bundles of corn cobs from tree branches to avoid predation by animals (see Fig. 12), a practice still employed by Haitian farmers today (Fig. I.7).

Acknowledgments

We dedicate this study to José Garrigó in recognition for his long-time commitment and support for the mission of Fairchild Tropical Botanic Garden. This is contribution 340 from the Tropical Biology Program of Florida International University (FIU). The College of Arts, Sciences and Education of FIU and the University of Montreal supported a research visit made by JFO to the University of Montreal and Montreal Botanical Garden in 2015. The FIU Kimberly Green Latin American and

Caribbean Center sponsored research visits made by LP and NA to the University of Montreal in 2016. Our gratitude to Monique Voyer and Diane Baillargeon from Division de la Gestion de Documents et des Archives (Université de Montréal) for their help during the archival research. Thanks are due to Michel Lepage for facilitating permission from the Société Provancher d'Histoire Naturelle du Canada to have an original copy of the article that Marie-Victorin published in *Le Naturaliste Canadien* in 1943 posted online. Walter Judd and T. Zannoni helped to locate relevant bibliographic information.

Appendix. English translation of “Les hautes pinèdes d’Haïti”

Translation details

Our translated version of Marie-Victorin’s (1943a, b) publication follows the full content and insights that were published by him. Our objective is to give the reader a full account of the main activities and botanical perspectives that he had during his second trip to Haiti. We use footnotes to provide our comments on Marie-Victorin’s publication. In very few instances, we also use brackets “{ }” to insert additional comments in the actual translated text. We do not use square brackets “[]” as Marie-Victorin often did in his original text. A few of the scientific names found in Marie-Victorin’s publication are misspelled, as are some names of the authors who published these taxa. However, our translation reflects the correct scientific names. The reader will find these names, as published by Marie-Victorin (1943a, b), in Table 2. This table also provides the current accepted names for those reported by Marie-Victorin’s (1943a, b) work. As a working taxonomy we have followed Hawksworth and Wiens (1996), Zona (1996), Qian and Klinka (1998), Thomson and Alonso-Amelot (2002), Nickrent et al. (2004), Thomson (2004), Berg et al. (2005), Thomson et al. (2005), Axelrod (2011), Acevedo-Rodríguez and Strong (2012) and Lodé (2012).

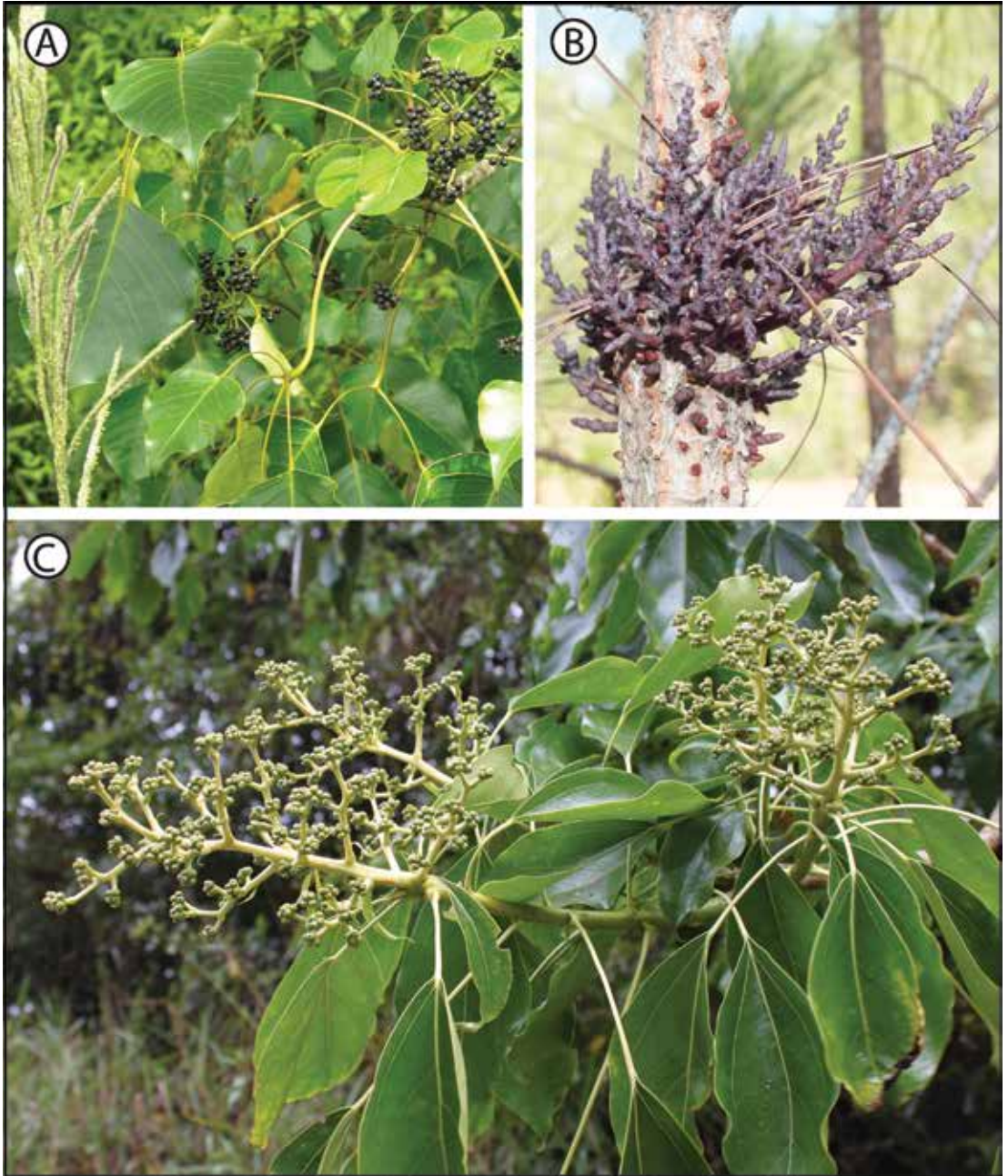


Figure I.6. Plants whose black and white photos were presented in Marie-Victorin's (1943a, b) work on his second visit to Haiti. **A.** Branch with mature fruits of an individual of *Schefflera tremula* (Krug & Urb.) Alain (Araliaceae; see photo published by Marie-Victorin in Fig. 8). **B.** Plant of *Arceuthobium bicarinatum* Urb. (see photo published by Marie-Victorin in Fig. 11). **C.** Branch with immature fruits of an individual of *Oreopanax capitatus* (Jacq.) Decne. & Planch. (Araliaceae; see photo published by Marie-Victorin in Fig. 9). All photos were taken in habitat in the Dominican Republic. Photo credits: A, C (F. Jiménez) and B (M. Caraballo).



Table 2. Species cited in “Les hautes pinèdes d’Haïti” (Marie-Victorin 1943a, b). Text inside brackets lists taxa and author names as written in the original work by Marie-Victorin (1943a, b).

Names according to Brother Marie-Victorin	Current accepted name	Family	Geographical distribution
<i>Arceuthobium bicarinatum</i> Urb. [“ <i>bicarinata</i> ”]	<i>A. bicarinatum</i>	Viscaceae	Hispaniola
<i>Cecropia peltata</i> L.	<i>C. peltata</i> is the accepted name for this species; however, it does not occur in Hispaniola and therefore it is likely that Marie-Victorin referred to <i>C. schreberiana</i> Miq. ssp. <i>schreberiana</i>	Urticaceae	<i>C. peltata</i> occurs from southern Mexico to northern South America and also in Jamaica and Trinidad. <i>C. schreberiana</i> ssp. <i>schreberiana</i> is restricted to the Lesser Antilles, Puerto Rico and Hispaniola
<i>Coccothrinax scoparia</i> Becc.	<i>C. scoparia</i>	Arecaceae	Hispaniola
<i>Daucus carota</i> L.	<i>D. carota</i>	Apiaceae	Non-native species in Hispaniola. Europe, Asia, North Africa and Macaronesia
<i>Didymopanax morototoni</i> (Aubl.) Decne. & Planch. [“ <i>Morottoni</i> ”, author: “Dene & Pl.”]	<i>Schefflera morototoni</i> (Aubl.) Maguire	Araliaceae	Greater Antilles, Lesser Antilles, Mexico, Central America and South America
<i>Didymopanax tremulus</i> Krug. & Urb. [“ <i>tremelum!</i> ”]	<i>Schefflera tremula</i> (Krug & Urb.) Alain	Araliaceae	Hispaniola
<i>Fragaria vesca</i> L.	<i>F. vesca</i>	Rosaceae	Non-native species in Hispaniola. Distribution as a native species: most of Europe, West and Central Asia, USA, Canada, Manchuria, Korea and Japan
<i>Fuchsia pringsheimii</i> Urb. [“ <i>Pringsheimii</i> ”]	<i>F. pringsheimii</i>	Onagraceae	Hispaniola
<i>Lemaireocereus hystrix</i> Britton & Rose	<i>Stenocereus fimbriatus</i> (Lam.) Lourteig.	Cactaceae	Cuba, Hispaniola, Jamaica, Puerto Rico and Virgin Islands
<i>Lobelia assurgens</i> L.	<i>L. assurgens</i> var. <i>assurgens</i>	Campanulaceae	Cuba, Hispaniola and Jamaica
<i>Lobelia assurgens</i> L. var. <i>santa-clarae</i> McVaugh	<i>L. assurgens</i> var. <i>assurgens</i>	Campanulaceae	Cuba, Hispaniola and Jamaica
<i>Lobelia assurgens</i> L. var. <i>jamaicensis</i> Urb.	<i>L. assurgens</i> var. <i>assurgens</i>	Campanulaceae	Cuba, Hispaniola and Jamaica
<i>Lycopodium clavatum</i> L.	<i>L. clavatum</i>	Lycopodiaceae	Caribbean Islands, North America, Central America, South America, Europe, Asia, Africa and Pacific Islands

Figure I.7. *Left*, Bundles of corn cobs being hung from the trunk of native trees in southern Haiti, a procedure reported by Marie-Victorin (1943a, b) during his second visit to Haiti. **A.** *Attalea crassipatha* (Mart.) Burret (Arecaceae), a Critically Endangered Haitian endemic. **B.** *Roystonea borinquena* O. F. Cook (Arecaceae), a species endemic in Hispaniola and Puerto Rico. **C.** *Pachira emarginata* A. Rich (Malvaceae), a species endemic in Cuba and Hispaniola. Photo credits: B. Jestrow.

Names according to Brother Marie-Victorin	Current accepted name	Family	Geographical distribution
<i>Lycopodium clavatum</i> L. var. <i>laurentianum</i> Vict.	<i>L. clavatum</i>	Lycopodiaceae	Caribbean Islands, North America, Central America, South America, Europe, Asia, Africa and Pacific Islands
<i>Opuntia caribaea</i> Britton & Rose [" <i>caribaea</i> "]	<i>Cylindropuntia caribaea</i> (Britton & Rose) F. M. Knuth	Cactaceae	Hispaniola, Trinidad and Venezuela, including the island of Margarita
<i>Oreopanax capitatus</i> (Jacq.) Decne. & Planch. [" <i>capitatum</i> ", author: "Dene & Pl."]	<i>O. capitatus</i>	Araliaceae	Greater Antilles, Lesser Antilles, Trinidad, Tobago, South America and North America
<i>Panicum aciculare</i> Desv. ex Poir. [author: "Desv."]	<i>Dichantherium aciculare</i> (Desv. ex Poir.) Gould & C. A. Clark var. <i>aciculare</i>	Poaceae	Bahamas, Greater Antilles, North America, Central America and South America
<i>Pereskia portulacifolia</i> (L.) DC. [" <i>Peireskia</i> ", author: "Haw."]	<i>Leuenergeria portulacifolia</i> (L.) Lodé	Cactaceae	Hispaniola
<i>Pinus cubensis</i> Griseb.	<i>P. cubensis</i>	Pinaceae	Cuba
<i>Pinus occidentalis</i> Sw.	<i>P. occidentalis</i>	Pinaceae	Hispaniola
<i>Prosopis juliflora</i> (Sw.) DC.	<i>P. juliflora</i>	Fabaceae	Bahamas, Greater Antilles, Lesser Antilles, North America, Central America and South America
<i>Pteridium aquilinum</i> (L.) Kuhn [author: "L."]	<i>P. aquilinum</i> ssp. <i>aquilinum</i>	Dennstaedtiaceae	Europe and Macaronesia
<i>Pteridium caudatum</i> (L.) Maxon	<i>P. caudatum</i>	Dennstaedtiaceae	Bermuda, Bahamas, Greater Antilles, Lesser Antilles, Florida, Mexico, Central America and northern South America
<i>Pteridium latiusculum</i> (Desv.) Maxon	<i>P. aquilinum</i> ssp. <i>latiusculum</i> (Desv.) Hultén	Dennstaedtiaceae	North America
<i>Roystonea regia</i> (Kunth) O.F.Cook [author: "(H.B.K.) Cook"]	<i>R. regia</i> ^a	Arecaceae	Cuba, Cayman Islands, Bahamas, Florida, Mexico, Belize and Honduras
<i>Rubus selleanus</i> Helwig	<i>R. selleanus</i>	Rosaceae	Hispaniola
<i>Sorghum vulgare</i> Pers.	<i>S. vulgare</i>	Poaceae	Cultivated in Hispaniola
<i>Taraxacum palustre</i> (Lyons) Symons var. <i>vulgare</i> (Lam.) Fernand [Marie-Victorin did not report any authors for this species]	<i>T. officinale</i> F. H. Wigg.	Asteraceae	Non-native species in Hispaniola. Europe and Asia
<i>Verbascum thapsus</i> L.	<i>V. thapsus</i>	Scrophulariaceae	Non-native species in Hispaniola. Europe and North Africa

^aMarie-Victorin refers to the Cuban royal palm as a species used to make huts in Cuba. The Hispaniola-native species is *Roystonea borinquena* O. F. Cook, which is also found in Puerto Rico and the Leeward Islands.

Our translation also provides reproductions of the 12 photos found in Marie-Victorin's (1943a, b) publication. The Division de la Gestion de Documents et des Archives (Université de Montréal) has the originals for the photos that were presented in Figures 2–3 and 6–11 of his publication. These original photos were used to reproduce these particular figures (they are shown in Figs. 2–3, 6–11 of this contribution). The remaining four figures were reproduced from high-resolution scans made from the hard copy paper as they were published by Marie-Victorin (1943a) in *Le Naturaliste Canadien* (they are shown in Figs. 1, 4–5, 12 of this contribution), and none of these four photos is dated or sourced in Marie-Victorin's (1943a, b) publication; however, we assume that they were taken by him during his trip to southern Haiti in 1942.

English Translation

The high-elevation pine forests of Haiti

In the spring of 1942, I had the opportunity to study plants¹ during a wonderful week in Haiti, in the company of Leslie R. Holdridge,² a young forestry engineer who is also a knowledgeable botanist.

Unfortunately, the diary containing my detailed notes and observations was lost in the plane carrying me from Haiti to Puerto-Rico, probably confiscated because of more zealous than intelligent censorship. In the absence of a detailed account, it is, however, possible for me to share some comments and photographs about the beautiful pine forest of the highlands of the Morne des Commissaires. These notes and photographs may have scientific interest, for very little has been written about the phytogeography of the island of Hispaniola. Ekman,³ who has traveled the island in all directions, did not keep a «Road Journal» and died with his rich secrets.

To reach the Morne des Commissaires, we have to cross the plain of Cul-de-Sac (Fig. 1), which is the extension of the Baie de Port-au-Prince and is a physiographic continuity that has inland saline lakes.⁴

From the point of view of a botanist, the plain of Cul-de-Sac is essentially xerophytic. The dominant plant is the mesquite [*Prosopis juliflora* (Sw.) DC.], which sometimes reaches great size, but there is also an important group of large-sized cacti, such as *Opuntia caribaea* Britton & Rose (endemic⁵), *Lemaireocereus hystrix* Britton & Rose (Greater Antilles) and *Pereskia portulacifolia* (L.) DC. (endemic⁶).



Figure 1. Plain of the Cul-de-Sac, lowland, which is the extension of the Baie de Port-au-Prince. The dominant plant is the “Bayahon” *Prosopis juliflora* {image was reproduced from high-resolution scan made from an original hard copy of Marie-Victorin's (1943a) publication. Courtesy of JFO.}



Figure 2. *Coccothrinax scoparia* Becc. (palm tree)—Palm tree whose leaves are used in Haiti to make brooms {copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).}

When leaving the plain of Cul-de-Sac to climb the first slope, the vegetation changes completely. Trumpet trees (*Cecropia peltata* L.) become abundant, as well as diverse species of *Plumeria*. Palms are not numerous, not even the *Coccothrinax*, which is found everywhere in Cuba. Here and there is a palm tree (Fig. 2; *Coccothrinax scoparia* Becc.⁷), which is used to make brooms (Fig. 3).

The relative rarity of palm trees in Haiti has its human implications, and in particular, on the construction of houses. On the island

of Cuba, the palm trees, especially the Royal palm tree [*Roystonea regia* (Humb. & Bonpl. ex Kunth) O. F. Cook],⁸ provide the materials used to build the «bohío».⁹ In Haiti, branches from various plants and dry mud are used to cover the frames of the houses (Fig. 4). A traveler will notice that the Haitian huts found in the mountains are made without the use of a plumb line (Fig. 5)!

The highlands of Haiti, at 1500 to 2000 meters, are covered by a vast forest of *Pinus occidentalis* Sw., a species generally considered to be endemic to the island of Hispaniola but also sporadically found in the mountains of eastern Cuba, along with *Pinus cubensis* Griseb.¹⁰ *Pinus occidentalis* (Fig. 6) has leaves {fascicles} with three needles, while *P. cubensis* has two needles per leaf {fascicle}.

The forest of *P. occidentalis* is impressive because of its density and the size of its pine trees (Fig. 7). Because of its geographical elevation, it resembles a Canadian forest, especially in its understory, which is rather herbaceous. A type of grass that is especially remarkable is a xerophytic *Panicum* (*P. aciculare* Desv. ex Poir.). It has acicular leaves that are stiff and prickly.

Lycopodium clavatum L. is one of the species growing at ground level, and the morph found in this forest has two long pedicellate spikes, which I described as var. *laurentianum* Vict.¹¹ {footnote reference for Marie-Victorin (1925) is inserted in original}. This lycopod forms vast clones that fructify profusely, like the ones found in the Canadian forest. There do not seem to exist any other lycopods in this forest. In this area *Pteridium caudatum* (L.) Maxon is the main species associated with *L. clavatum* var. *laurentianum*. This is a tropical vicariant of *Pteridium aquilinum* (L.) Kuhn and of *P. latiusculum* (Desv.) of temperate America.¹² We find perfect ecological parallelism between these Haitian pinewoods and the Canadian pine forests.



Figure 3. Haitians harvesting palm tree leaves {copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).}

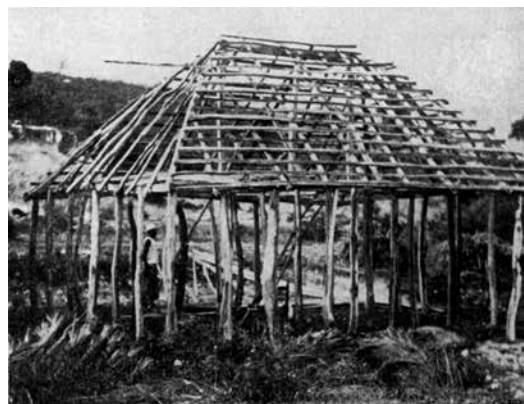


Figure 4. Frame of a Haitian hut made of *Prosopis juliflora* {image was reproduced from high-resolution scan made from original hard copy of Marie-Victorin's (1943a) publication. Courtesy of JFO.}



Figure 5. Hut in rural Haiti {image was reproduced from high-resolution scan made from original hard copy of Marie-Victorin's (1943a) publication. Courtesy of JFO.}



Figure 6. *Pinus occidentalis* forest in the Morne des Commissaires. Understory with *Pteridium caudatum*, *Lycopodium clavatum* var. *laurentianum*, *Lobelia assurgens* var. *santa-clarae*, etc. {copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).}

Another plant that contributes to the boreal appearances of this forest is the great bushy *Rubus*. *Rubus selleanus* Helwig¹³ grows anywhere in the forest where there is sunlight in the clearings and along the trails. One is equally surprised to find *Fragaria vesca* L.¹⁴ abundant in the wildest part of these heights.

Here I am not providing a review of the flora of this great forest. I am just mentioning some remarkable species that I had the chance to photograph.

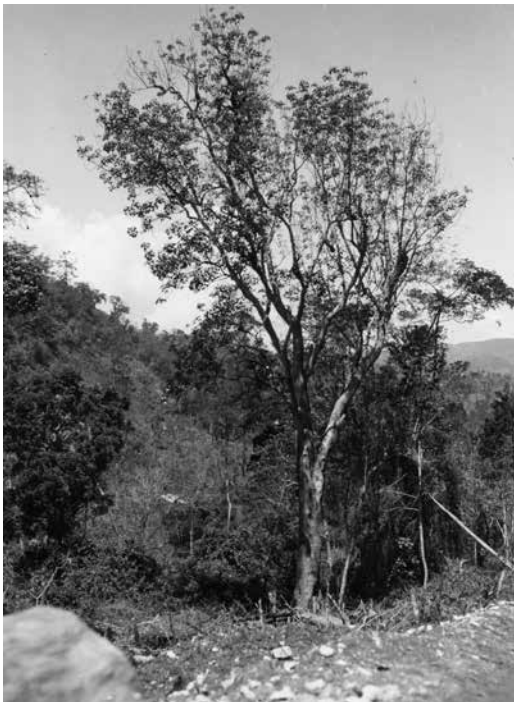
I first distinguish two arborescent Araliaceae: *Didymopanax tremulus* Krug. & Urb.,¹⁵ which hardly looks like any other plants in its family, and *Didymopanax morototoni* (Aubl.) Decne. & Planch.,¹⁶ which are found in Cuba and Hispaniola. *Didymopanax tremulus*

has leaves that resemble those of poplars,¹⁷ and they are constantly moving, like the leaves of aspens¹⁸ (Fig. 8). Despite being a heliophile, *Oreopanax capitatus* (Jacq.) Decne. & Planch.¹⁹ is a medium-sized tree that constantly spreads its branches inside the forest, across clearings and paths (Fig. 9).

The *Pinus occidentalis* forest understory contains in its flower bed, especially in this season, a species of *Fuchsia* with scarlet flowers (probably *Fuchsia pringsheimii* Urb.²⁰) and a shrubby *Lobelia* that is one or two meters in height, *Lobelia assurgens* L.,²¹ which is also found—although rarely—in Cuba and Jamaica. The plants from Haiti more closely resemble those found in Cuba (var. *santa-clarae* McVaugh) than those in Jamaica (var.



Figure 7. Above, A pile of *Pinus occidentalis* trunks that had been cut on the Morne des Commissaires {copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).}



jamaicensis Urb.). Their leaves are large and membranous, and they have densely-flowered inflorescences. The flowers are muted dark red (Fig. 10).

Pine trees in the forest of the Morne des Commissaires are often malformed because of a parasitic Loranthaceae species, which is endemic to Hispaniola, *Arceuthobium bicarinatum* Urb. (Fig. 11). Even though the pines are being parasitized, they maintain their size and produce excellent wood. Currently, the pine woods are being exploited in abundance for war purposes by «SHADA»²²

Figure 8. Left, *Didymopanax tremulus*, whose leaflets are always moving. Morne des Commissaires {copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).}



Figure 9. *Oreopanax capitatus*, Araliaceae in the pine forest of the Morne des Commissaires {copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).}

(*Société Haitiano-Américaine de Développement Agricole* [= Haitian-American Society for Agriculture Development]).

Haiti, as we know, is densely populated. A small, forgotten group of people live in the highlands between the Morne des Commissaires and the Morne de la Selle. There the botanist surprisingly encounters some bad Mediterranean weeds that thrive in soil where there is available sunlight. It is surprising to see this in the temperate climate dominating these altitudes, wild carrot (*Daucus carota* L.), common mullein (*Verbascum thapsus* L.) and common dandelion (*Taraxacum palustre* (Lyons) Symons var. *vulgare* (Lam.) Fernald)



Figure 10. *Lobelia assurgens* var. *santa-clarae* element of the pine forest of the Morne des Commissaires {copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).}

flourish. Where do these plants, which are totally absent at lower altitude, come from? It is possible they were introduced during the revolution,²³ when French troops took refuge in the mountains, perhaps taken with them as forage when they unloaded their vessels? This is an important point to elucidate, as it is not reasonable to claim that they are native plants.

In the Morne des Commissaires there are clearings that resulted from fires. In these clearings, Haitians plow the land to plant millet (*Sorghum vulgare* Pers.) and corn. Plants of *Pteridium caudatum*—whose rhizomes are always present underground and are waiting for the moment to ascend to the light—emerge



Figure 11. *Pinus occidentalis* being deformed due to parasitization by an endemic Loranthaceae of Hispaniola (*Arceuthobium bicarinatum*). Morne des Commissaires {copyright: Division de la Gestion de Documents et des Archives (Université de Montréal).}



Figure 12. The deforested highlands of the Morne des Commissaires showing a spared tree used to hang harvested bundles of corn cobs to protect them from predators {image was reproduced from high-resolution scan made from original hard copy of Marie-Victorin's (1943a) publication. Courtesy of JFO.}

quickly out of the ground, and at the same time wild carrots cover the surface of the land. The horizon is wide: here and there, a tree remains standing with bundles of corn cobs hanging from its branches, keeping them away from predators found on the tropical land (Fig. 12).

The flora of Haiti has been studied by the great botanist and explorer, E. L. Ekman,³ and, from a taxonomic point of view, by a famous German botanist, Ignatz Urban, the author of *Symbolae Antillanae* (a work of nine volumes).²⁴ There is already a *Flore d'Haiti* {footnote reference for Barker and Dardeau (1930) is inserted in original}²⁵ and an excellent catalogue for the flora of Santo Domingo {footnote reference for Moscoso (1943) is inserted in original}.²⁶ Due to its impressive mountains, the island of Hispaniola is known to have one of the most remarkable neotropical floras.

Translation notes

1. Marie-Victorin uses the word *herboriser*, which can have multiple meanings in French and refers not only to the collection of herbarium specimens but also to perform botany-related activities. It seems that Marie-Victorin did not collect any herbarium material during this trip; therefore, we have translated this word as *study plants*.
2. Leslie R. Holdridge (1907–1999) was a famous American tropical ecologist who carried out research in Haiti (see further details about Holdridge in the introductory section of this contribution).
3. Erik L. Ekman (1883–1931), a Swedish botanist, was one of the most famous and productive explorers of Caribbean plants. He collected extensively in Haiti and the Dominican Republic (Mejía et al. 2001).
4. Marie-Victorin refers to an extensive rift valley that runs from Haiti to the Dominican Republic and has two large saline lakes (Lago Enriquillo in the Dominican Republic and Étang Saumâtre in Haiti).
5. *Opuntia caribaea* is not a Caribbean endemic species, as it occurs in Hispaniola, Trinidad, Margarita (Venezuela) and mainland Venezuela.
6. *Pereskia portulacifolia* (accepted name *Leuenergeria portulacifolia*) is a species endemic to Hispaniola.

7. The palm genus *Coccothrinax* has a distribution centered in the Caribbean Islands and has not been the subject of a modern taxonomic revision. *Coccothrinax scoparia* was originally described based on plants from Haiti by Beccari (1908). However, a few authors (Riffle et al. 2012; Peguero et al. 2015) report the species only in the Dominican Republic.
8. The Hispaniolan species is *Roystonea borinquena* O. F. Cook.
9. The term *bohíos* is used in Cuba to refer to huts found in the countryside.
10. *Pinus occidentalis* is restricted to Hispaniola and does not occur in Cuba.
11. *Lycopodium clavatum* is a species with a widespread distribution in the Old and New World. *Lycopodium clavatum* var. *laurentianum* was described by Marie-Victorin (1925) but is no longer recognized as a distinct taxon of *L. clavatum* (Qian and Klinka 1998).
12. *Pteridium aquilinum* ssp. *aquilinum* does not occur in temperate America, but in Europe and the Macaronesian islands. However, *P. aquilinum* ssp. *latiusculum* (Desv.) Hultén, *P. aquilinum* ssp. *pseudocaudatum* (Clute) Hultén, and *P. aquilinum* ssp. *pubescens* (Underw.) J. A. Thomson, Mickel & K. Mehltreter reach temperate North America (Thomson et al. 2005).
13. *Rubus selleanus* is endemic to Hispaniola.
14. *Fragaria vesca* is a non-native species that also has a widespread distribution in most of Europe, West and Central Asia, United States, Canada, Manchuria, Korea and Japan.
15. *Didymopanax tremulus* is endemic to Hispaniola.
16. *Didymopanax morototoni* occurs in the Greater Antilles, the Lesser Antilles, Mexico, Central America and South America.
17. Marie-Victorin refers to species of the genus *Populus* (Salicaceae).
18. In the original, the word *Tremble* is used and can be translated as *aspen*, referring to the tree species *Populus tremuloides* (quaking aspen), a species of North America that would have been familiar to Marie-Victorin.
19. *Oreopanax capitatus* occurs in the Greater Antilles, the Lesser Antilles, Trinidad, Tobago, South America and North America.
20. *Fuchsia pringsheimii* is endemic to Hispaniola.
21. *Lobelia assurgens* is endemic to Cuba, Hispaniola and Jamaica.
22. SHADA was a Haitian government program wholly-funded by the United States (mostly by the Export-Import Bank, Washington, D.C.) that embarked on a massive national effort, under contract with the American government, to promote the plantation of rubber trees and other latex-producing plants [mostly the Madagascar endemic (Klackenberg 2001; Rodríguez-Estrella et al. 2010) *Cryptostegia grandiflora* R. Br., Apocynaceae (Fennel 1944)] and to exploit Haitian resources for the military industry during the Second World War. This program was established under the rule of Haitian President Élie Lescot (1883–1974). This program was a major failure; it was mostly active between 1941 and 1944 (Finlay 2009, pp. 165–167, 207–211; Smith 2009, pp. 44–47).
23. It seems that Marie-Victorin refers to the French troops that were sent to Haiti in 1801 to restore French rule. This French army was defeated by the Haitian revolutionaries in late 1803, and Haiti declared its independence in 1804 (Girard 2011).
24. Ignatz Urban (1848–1931) was a German botanist who worked in the Botanic Garden of Berlin. He was an authority on Caribbean plant taxonomy; however, he never visited the West Indies. Between 1898 and 1929 he published the nine volumes of *Symbolae Antillanae*, one of the most important works on Caribbean plants. Volume 8 was issued between 1920 and 1921 and focused on the island of Hispaniola (Howard 1996).
25. Henry D. Barker (1893–1993) was one of the authors of the first flora of Haiti (Anonymous 1993; Barker and Dardeau 1930). He was an American botanist who also worked for USDA and specialized in cotton (Barker and Berkley 1946). He was head of the Department of Botany of the Ecole Centrale d'Agriculture since its founding in 1924 and worked in Haiti until 1936 (Barker and Dardeau 1930, p. iv; Jiménez 1985, p. 40).
26. A Dominican Republic native, Rafael María Moscoso (1874–1951) was the first naturalist from Hispaniola to produce a comprehensive flora for the island, *Catalogus Florae Domingensis*, (Moscoso 1943). The island of Hispaniola is also known as the island of Santo Domingo (Jiménez 1976).

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