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## Survey of the Venezuelan Species of Ficus

David Walter Hall

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A SURVEY OF THE VENEZUELAN  
SPECIES OF FICUS

DAVID WALTER HALL

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SURVEY OF THE VENEZUELAN SPECIES OF FIGUS

by


David Walter Hall


A thesis submitted to the faculty of  
Georgia Southern College in partial  
fulfillment of the requirements for  
the degree of Master of Science in  
Biology in the Division of Science  
and Mathematics


Georgia Southern College

1967

Approved by:

  
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Chairman of Graduate Studies in  
Biology

  
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Adviser

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ACKNOWLEDGEMENT

It is a pleasure to acknowledge the author's indebtedness to Dr. Gordon P. Dewolf, Jr., under whose direction this study was carried out and with whose patient and helpful guidance its completion was made possible. I am further indebted to Dr. Sturgis McKeever for his help with the photographs of the various species.

D.W.H.

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## INTRODUCTION

This study was undertaken to provide a circumscription of the genus *Ficus* in Venezuela. The material studied was representative of the collections that have been made throughout the country. A great portion of Venezuela is apparently unexplored botanically. With this in mind I have attempted to do as complete a study as possible with the material available while fully realizing the many limitations. This circumscription is intended as a starting point for future work, not a stopping place.

## METHODS OF PREPARATION

The material studied was obtained through the good graces of Dr. Gordon Paul DeWolf, Jr. and the National Herbarium of Venezuela. From time to time additional material was obtained from Dr. Julian A. Steyermark, a prominent collector in Venezuela, formerly Curator, Department of Botany, Field Museum of Natural History, Chicago.

The first undertaking was to determine the characters to be used. The gross vegetative characters were obtained from the literature. Of particular usefulness was The American Species of Ficus<sup>2</sup> by G. P. DeWolf, Jr. From this and other works it was apparent that a number of the commonly used vegetative characters were not useful for this genus in the Americas.

The vegetative characters that seem to be valid for the American species of *Ficus* are the following:

1. Habit--whether a tree, shrub, etc. and also its height
2. Twigs--diameter and pubescence
3. Stipules--length and to some extent persistence
4. Leaves--shape, apex, base, size, number of lateral veins, petiole and the petiole's approximate length compared with the lamina
5. Figs--position, color, shape, orifice construction, peduncle length, basal bracts number and length, pedicel length, pubescence, and diameter

The receptacle of the fig seems to be very important as a species indicator. The wall was examined microscopically in several cases, but

<sup>2</sup>Unpublished Ph.D. Thesis, University of Cambridge



because of the dried and deteriorated nature of the specimens nothing was found that could be used as an indicator of species. The flowers apparently are uniform and were not used as indicators.

The microscopic characteristics of the leaf epidermis seem to be relatively good for determining the different species. Slides were made for all the specimens studied.

The vegetative and microscopic characters to be used were listed on paper. Each herbarium sheet was then examined in detail. All surface or gross characteristics were noted and measured first. A standard 15 cm clear, plastic ruler was used in this. Upon completion of this phase, the microscopic characters were obtained.

A slide of the upper and lower leaf epidermis was made for each sheet. A small piece of a safety razor blade was obtained by breaking it with finger manipulation. The piece was then clamped in a holding tool. A leaf from the desired specimen was then placed under a binocular dissecting microscope. The microscope had an optical system with a magnification of 10-30 diameters. The bit of razor blade in the handle was used to strip a small section of the epidermis from the leaf. The holding tool was held as you would a pen.

The small piece of epidermis was placed on a standard 1 x 3 inch microscope slide. Polyvinyl alcohol was used as the mounting medium. Pieces of the epidermis were submerged in a very ample amount of the medium placed in the center of the slide. The ample amount was necessary because polyvinyl alcohol had a tendency to shrink excessively as it dries. Each piece of tissue has to be thoroughly submerged in the mounting medium and moved around to minimize the collection of air bubbles. A cover slip was added and the slide was boiled over an

alcohol lamp. The boiling had two advantages; it further reduced the number of air bubbles and aided the clearing action. The slides were examined and the characters noted on each specimen.

Microscopic characters of the leaves used in the determinations were as follows:

1. Cystoliths--presence or non-presence, and abundance
2. Sclereids--presence or non-presence, and abundance
3. Lower epidermal cells--shape
4. Stomates--position in relation to the lower epidermal cells;  
superficial or sunken
5. Tabular crystal cells--presence or non-presence
6. Druse cells--presence or non-presence, and abundance
7. Pubescence--types of hairs present

All the characters to be used having been noted, the sheets were then separated into piles of like kinds. The piles were then sifted through carefully to further distribute any sheets that were misplaced. Each pile was then examined very carefully. The slides were again viewed, for each pile separately, to ascertain if the specimens fell within species boundaries.

KEY TO THE SUBGENERA

- I Figs borne in pairs in the axils of the foliage leaves, male flower with 1 stamen, a red spot at the base of the style on the ovary of female and gall flowers. Microscopic 2-septate glandular hairs usually present on the lower surface of the lamina. ----- Urostigmae
- II Figs borne singly in the axils of the foliage leaves, male flower with 2 stamens, no spot at the base of the style on the ovary. Microscopic multicellular glandular hairs on the lower surface of the lamina. -----Pharmacomycea

KEYS TO THE SPECIES

I UROSTIGMA

1. Leaves oval, ovate, oblong, or lanceolate ----- 2  
Leaves obovate, oblanceolate, cordate, or spatulate ----- 30
2. Ostiole flush or slightly raised without an erect rim of  
receptacular tissue ----- 3  
Ostiole sunken, highly raised, or with an erect rim of  
receptacular tissue ----- 19
3. Lamina pubescent ----- 4  
Lamina not pubescent ----- 5
4. A. Thin leaves sandpapery to the touch, 1-celled stiff conical  
hairs covering leaf surfaces, leaves oval with slightly  
acuminate apex and rounded emarginate base. -----  
----- Unknown species No. 1

- B. Large leaves with somewhat star-shaped ferruginous-brown hair clusters on the lower surface, figs with short rusty matted pubescence, leaves oval to oblong. -----  
----- Unknown species No. 3
- C. Leaves with abundant, soft, short to very long hairs always on the lower surface and sometimes on the upper; figs with dense, soft, matted pubescence; leaves oval to ovate.--mollicula
- D. 1-5 septate hairs present on the lower surface of leaves, leaves ovate to oval, large urn shaped figs. -----  
----- Unknown species No. 2
5. Leaves lanceolate. ----- 6  
Leaves not lanceolate. ----- 7
6. Leaves narrowly lanceolate; base cuneate or cuneate-truncate; figs 0.4 - 0.6 cm in diameter. ----- princoides  
Leaves lanceolate; base acute, rounded-truncate, rounded; figs 0.2 - 1.8 cm in diameter. ----- citrifolia
7. Twigs 0.1 - 0.3 cm in diameter. ----- 8  
Twigs 0.3 - 0.9 cm in diameter. ----- 12
8. Figs with downy minute pubescence, stipules 3.7 - 15.3 cm long, leaves with cordate bases and with sclereids, figs 0.35 - 2.7 cm in diameter. ----- nymphaeaeifolia  
Figs not downy minute pubescent. ----- 9
9. Small oval leaves 0.6 - 2.4 cm wide X 1.6 - 4.2 cm long, stipules not over 1.0 cm long, petiole 0.2 - 0.8 cm long. -----  
----- Unknown species No. 7
- Oval or ovate leaves to 11.7 cm wide and 29.3 cm long. -----10

10. Leaves to 6.7 cm wide and 16.1 cm long. ----- 11  
 Leaves to 11.7 cm wide and 29.3 cm long. ----- citrifolia
11. Leaves oval or ovate not over 12.6 cm long, petiole  
 $1/4 - 1/21$  the length of the lamina, cystoliths present  
 on both surfaces, druse cells present only in the lower  
 surface, tabular crystal cells absent. ----- Mathewsii  
 Leaves oval to 16.1 cm long, petiole  $1/6 - 1/8$  the length  
 of the lamina, cystoliths present on only the upper surface,  
 druses present in both surfaces, tabular crystal cells  
 present. ----- aureo-brunnea
12. Leaf base cordate. ----- 13  
 Leaf base not cordate. ----- 14
13. Figs sessile (no peduncle). ----- tovarensis  
 Figs with peduncle. ----- citrifolia
14. Figs sessile (no peduncle). ----- 15  
 Figs not sessile (with peduncle). ----- 16
15. Leaf apex acuminate. ----- tovarensis  
 Leaf apex obtuse. ----- Unknown species No. 6
16. Stomates superficial. ----- 17  
 Stomates sunken. ----- 18
17. Tabular crystal cells present. ----- citrifolia  
 Tabular crystal cells absent. ----- Mathewsii
18. Lamina 1.8 - 9.9 cm wide X 4.6 - 18.5 cm long, petiole  
 to 3.8 cm long. ----- clusisefolia  
 Lamina 0.8 - 6.5 cm wide X 2.5 - 12.6 cm long, petiole  
 to 2.3 cm long. ----- Mathewsii

19. Ostiole sunken. ----- 20  
 Ostiole highly raised or with erect rim of receptacular  
 tissue surrounding it. ----- 22
20. Ostiole without any rim of receptacular tissue. ----- foveata  
 Ostiole with rim of receptacular tissue. ----- 21
21. Rim of receptacular tissue thin. ----- pertusa  
 Rim of receptacular tissue thick. ----- gomelleira
22. Ostiole highly raised. ----- 23  
 Ostiole with erect rim of receptacular tissue surrounding it. -- 25
23. Figs somewhat cylindrical or oblong, long pubescent. -----  
 ----- Unknown species No. 5  
 Figs globose or pyriform, minutely pubescent. ----- 24
24. Cystoliths on both surfaces, lower epidermal cells striated,  
 tabular crystal cells absent. ----- glandulosa  
 Cystoliths on upper surface only, lower epidermal cells  
 papillionate, tabular crystal cells present. ----- parvensis
25. Ostiole with thick, prominent surrounding ridge of  
 receptacular tissue. ----- gomelleira  
 Ostiole with thin rim of surrounding receptacular tissue. ----- 26
26. Ostiole encompassed by a plicate or 3-pointed rim of  
 surrounding receptacular tissue. ----- 27  
 Ostiole encompassed or surrounded by a circular rim of  
 receptacular tissue. ----- 28
27. Twigs with matted pubescence, figs long pubescent, lamina  
 with long multiseptate hairs. ----- trigona  
 Twigs minutely pubescent or glabrous, figs minutely  
 pubescent, lamina with no multiseptate hairs. ----- iturbei

28. Twigs 0.1 - 0.3 cm in diameter, ostiole sunken, lamina to  
6.7 cm wide and 12.8 cm long. ----- pertusa  
Twigs 0.3 - 0.6 cm in diameter, ostiole flush to slightly  
raised, lamina to 13.9 cm wide and 32.3 cm long. ----- 29
29. Stipules 0.5 - 1.6 cm long, lamina 1.3 - 13.9 cm wide  
X 2.2 - 21.1 cm long, often with long multiseptate hairs  
on the lower surface of the lamina, figs with peduncle.-- velutina  
Stipules 1.0 - 2.9 cm long, lamina 7.1 - 13.5 cm wide  
X 17.6 - 32.3 cm long, no multiseptate hairs on the  
lamina, figs without peduncle (sessile). ----- trigonata
30. Ostiole sunken, highly raised, or with thin surrounding  
rim of receptacular tissue. ----- 19  
Ostiole flush, slightly raised or without thin surrounding  
rim of receptacular tissue. ----- 31
31. Twigs 0.7 - 0.9 cm in diameter. ----- 32  
Twigs 0.1 - 0.7 cm in diameter. ----- 33
32. Apex acuminate, figs 0.6 - 1.0 cm in diameter. ----- longifolia  
Apex obtuse or acute, figs 1.4 - 2.5 cm in diameter. ----- Urbaniana
33. Figs 3.3 cm in diameter. ----- Unknown species No. 4  
Figs not over 2.7 cm in diameter. ----- 34
34. Leaves with sclereids, twigs 0.35 - 0.9 cm in diameter. ----- 35  
Leaves without sclereids, twigs 0.1 - 0.5 cm in diameter. ----- 36
35. Leaf base cordate, stipules 3.7 - 15.3 cm long. ----- nymphaeifolia  
Leaf base acute, slightly rounded or rounded; stipules  
0.4 - 2.4 cm long. ----- Urbaniana

36. Leaf base cuneate or cuneate-truncate, twigs 0.1 - 0.2  
cm in diameter. ----- prinosides
- Leaf base not cuneate or cuneate-truncate, twigs 0.1 -  
0.5 cm in diameter. ----- 37
37. Lamina with multiseptate and 1-celled conical hairs  
usually on the lower surface, twigs heavily pubescent. -- scabrida
- Lamina without multiseptate and 1-celled conical hairs,  
twigs not heavy pubescent. ----- 38
38. Lamina 0.9 - 11.7 cm wide X 2.0 - 29.3 cm long; petiole  
0.25 - 9.6 cm long, 1/2 - 1/12 the length of the lamina;  
stomates superficial. ----- citrifolia
- Lamina 0.8 - 9.9 cm wide X 1.5 - 18.5 cm long; petiole  
0.1 - 3.8 cm long, 1/4 - 1/21 the length of the lamina. ----- 39
39. Lamina 1.8 - 9.9 cm wide X 4.6 - 18.5 cm long; petiole  
0.4 - 3.8 cm long, 1/4 - 1/12 the length of the lamina;  
stomates sunken. ----- clusiifolia
- Lamina 0.8 - 6.5 cm wide X 1.5 - 12.6 cm long; petiole  
0.1 - 2.3 cm long; 1/4 - 1/21 the length of the lamina;  
stomates superficial or sunken. ----- Mathewii



## II PHARMACOSTYCEA

1. Twigs 0.1 - 0.4 cm in diameter. ----- 2  
 Twigs 0.4 - 0.6 cm in diameter. ----- 4
2. Orifice of the fig flush or slightly raised. ----- 3  
 Orifice of the fig highly raised, crateriform. ----- yauponensis
3. Twigs 0.2 - 0.45 cm in diameter, stipules 0.7 - 7.8 cm long,  
 lateral veins 8 - 20, fig very minutely pubescent,  
 peduncle 0.5 - 1.7 cm long, microscopic multicellular  
 glandular hairs with short stalks. ----- maxima  
 Twigs 0.2 - 0.6 cm in diameter, stipules 2.8 - 4.3 cm long,  
 lateral veins 16 - 30, fig glabrous, peduncle obsolete  
 to 2.4 cm long, microscopic multicellular glandular hairs  
 with long stalks. ----- insipida
4. Ostiole flush or slightly raised, long-stalked micro-  
 scopic multicellular glandular hairs on the lower  
 surface of the lamina. ----- insipida  
 Ostiole highly raised to 0.5 cm in a mammillate manner,  
 short-stalked microscopic multicellular glandular hairs  
 on the lower surface of the lamina. ----- tenduzii



*Ficus rigidifolia*  
det. Steyermark 1962

37

MINISTERIO DE AGRICULTURA Y CRÍA  
HERBARIO NACIONAL DE VENEZUELA  
*Ficus aureo-brunnea* Pitt.  
Herbarium de la Horta de Escalafón, Edo. Trujillo  
1891.

Ficus aurea-brunnea, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:78

1937.-Venezuela.

Habit not noted. Twigs 0.2 - 0.3 cm in diameter, minutely pubescent. Stipules 0.6 - 1.9 cm long. Lamina 2.0 - 6.7 cm wide X 4.1 - 16.1 cm long, oval; apex acuminate; base acute to slightly rounded; lateral veins 14 - 16. Petiole 0.7 - 2.4 cm long, 1/6 - 1/8 the length of the lamina. Figs 0.4 - 0.7 cm in diameter, globose or slightly subglobose, glabrous or minutely rusty-brown pubescent, borne among the leaves; color not noted; peduncle 0.2 - 0.4 cm long; pedicel obsolete; basal bracts 0.15 - 0.25 cm long; ostiole flush to raised.

Leaf structure: cystoliths on the upper surface only; sclereids absent; lower epidermal cells plane; stomates superficial; tabular crystal cells present on the veins beneath; druse cells present in both surfaces; pubescence absent.

Vernacular names:

None noted

Ecology:

One collection was noted to have been at 1,800 m in altitude. A collection was made from a plant growing in a dry cleft or rift. This was the only one noted.

Specimens studied:

Caracas: H. Pittier; 7133

Trujillo: Sihnee; 60

Ficus citrifolia

ARBOLES DE VENEZUELA  
 VOL. HERBARIO DE LA UNIVERSIDAD DE LOS RIOS  
 Facultad de Ciencias Forestales, Miranda, Venezuela  
 No. 13164  
*Ficus turbinata* Pittier (?)  
 Nombre vulgar: Niguerón Det. ELL  
 Estado: Mérida Municipio:  
 Localidad: Puente Real, 5 km. S. de Lagunillas  
 Tipo de bosque: Bosque tropical seco.  
 Elevación: 613 m. Diámetro: 50 cm. Altura: 12 m  
 Usos:  
 Col. Robert L. Latta, Jr.  
 Otros notas: Latex blanco. 9 mayo 1961



10

Ministerio de Agricultura y Cría  
 HERBARIO NACIONAL DE VENEZUELA

*Ficus turbinata* Pittier (?)

Núm. 37029  
 Núm. Col. 15184 C-1

trifolia



11

HERBARIO BOTANICO, CARACAS-NEW YORK BOTANICAL GARDEN  
 Botanical Exploration  
 SIERRA MATACA, ESTADO BOLIVAR, VENEZUELA  
 1 *Ficus citrifolia* Mill.  
 det. Draven  
 3 m. tall; leaves subcoriaceous, deep green above,  
 green below; pedicel and flower green; flower  
 rose.  
 exposed granitic outcrops along hills bordering  
 Toro (Rio Grande), between Rio La Reforma and Puerto Rico,  
 north of El Palmar, alt. 200-250 m.  
 December 12, 1960

Ministerio de Agricultura y Cria  
 HERBARIO NACIONAL DE VENEZUELA  
*Ficus citrifolia* Mill.  
 det. Draven  
 1963

Num 63477

citrifolia



Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA

Ficus

Selva húmeda, 25 km. E. de Los Casti-  
llos. Territorio Federal Delta Amacu-  
ro. Alt. 10 m.

Núm. 53240

Núm. Col 17688 Col

Fecha 13-7 1960

Ficus citrifolia, B. Miller, Gard. Dict. (ed. 8), no. 10, 1768

guanarensis, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:71.

1937.-Venezuela.

Tree to 18 m tall, parasitic when young. Twigs 0.1 - 0.45 cm in diameter, glabrous to minutely rusty-brown pubescent. Stipules 0.3 - 2.7 cm long. Lamina 0.9 - 11.7 cm wide X 2.0 - 29.3 cm long, oval to ovate, rarely oblanceolate or lanceolate; apex acuminate (usually quite long), a few are acute or obtuse; base acute, rounded-truncate, rounded, cordate-emarginate; lateral veins 5 - 17. Petiole 0.25 - 9.6 cm long, 1/12 - 1/2 the length of the lamina. Figs 0.2 - 1.8 (2.0 - 2.2) cm in diameter (the ones below 0.6 cm are believed to be so as a result of immaturity or shrinking due to drying), globose or depressed-globose (top-shaped), glabrous to minutely pubescent, borne among the leaves; color pale or rich green with pale brown or gray-green spots turning dull red to crimsoned or reddish; peduncle 0.1 - 0.9 cm long; pedicel obsolete to 0.05 cm; basal bracts 0.05 - 0.3 cm long; ostiole flush to raised.

Leaf structure: cystoliths present on both surfaces but usually few to lacking on the upper surfaces; sclereids absent; lower epidermal cells plane sometimes with striations radiating out from the guard cells; stomates superficial; tabular crystal cells generally present on the veins beneath; druse cells generally present; pubescence of 2-septate glandular hairs on the lower surface and in one case on the upper surface.

Vernacular names:

"Lechero," "Sio," "higuito," "Matapalo," "Palomato," "Higo," "Ubito," and "higuerote."

Ecology:

Occurs from 10 - 1,500 m in altitude. This species is widespread, seemingly occurring throughout Venezuela. It seems to be found in woodlands, savannas, and around granitic outcrops. It occurs in cloud forests and in arid xerophytic regions.

Specimens studied:

Ansoat: H. Pittier, 14313

Anzoategui: J. A. Steyermark; 61210

Bolivar: E. P. Killip; 37263

J. A. Steyermark; 87981, 88857

Williams; 11453, 12920

Carabobo: J. A. Steyermark and Cora Steyermark; 95437

Caracas: L. Aristeguieta; 4295

H. Pittier; 7103, 9631

Delta Amacuro: E. L. Little, Jr.; 17688

J. A. Steyermark; 87155, 87329-A

Distrito Federal: H. Pittier; 12273, 12277

Falcons: Croizat; 181

J. A. Steyermark and August Braun; 94587, 94629

Guarico: H. Pittier; 12521

Laguaira: Tamayo; 1120

Los Canos, rio Caris: H. Pittier; 14467

Merida: E. L. Little; 16296

E. L. Little, Jr.; 15164

Miranda: H. Pittier; 12442, 13058

Paraguana: Tamayo; 970

Piritu: T. Lasser and E. Foldats; 3212



Portuguesa: H. Pittier, 12077  
Sucre: J. A. Steyermark; 62782, 62799  
Trujillo: Dr. Christ; 54, 57, 58  
    E. Delgado; 354  
    H. Pittier; 10706, 10868, 13297  
    J. A. Steyermark; 55841  
    Tamayo; 1830, 1847, 1912  
Urdaneta: Dr. Christ; 55  
Valencia: H. Pittier; 8817  
valle de Puerto La Cruz: H. Pittier; 9222  
Yaracuy: H. Pittier; 13073  
Zulia: H. Pittier; 10497

Ficus clusiaefolia



17

HOLOTIPO DE  
*Ficus myriasycea* Pittier.  
 Bol. Soc. Venez. Cien. Nat. 4, n°. 30:75, fig.  
 1937. -Venezuela.

*Ficus myriasycea* Pittier. tipo  
 Mayo 2, 1925

HERBARIO DEL MUSEO COMERCIAL DE VENEZUELA  
 tipo

*Ficus vorstehiana* Miq.  
 Matapalo  
 Carnao, D. F. on las orillas rocosas del río, cerca  
 de la playa, en el camino hacia...  
 Núm. 388  
 Núm. Col. 11924 Col. H. PITTIER Fecha Nov. 4 . 1925

Ministerio de Agricultura y Cría  
 HERBARIO NACIONAL DE VENEZUELA  
*Ficus myriasycea* Pittier TIPO.

Núm. 388  
 Núm. Col 11924 Col H. Pittier Fecha 4 nov. 1925

Ficus clusiaefolia, Schott ex Sprengel, Syst. Veg. (ed. 16), iv (app.):

169, 1827 non Urostigma clusiaefolium (Schott ex Sprengel)

Miquel, in Hooker, London Journ. Bot., vi:543 (no. 50), 1847,

et in Martius, F. Bras., iv(1):102, 1852.

Myriasycea, Pittier, Bol. Soc. Venez. Cien. 4, n<sup>o</sup>. 30:75, fig.

1937.-Venezuela.

Tree to 15 m tall. Twigs 0.2 - 0.5 cm in diameter, minutely pubescent or glabrous. Stipules 0.3 - 1.4 cm long. Lamina 1.8 - 9.9 cm wide x 4.6 - 18.5 cm long, oval, tending to spatulate, or spatulate; apex mostly acuminate, a few obtuse; base acute or slightly rounded; lateral veins 7 - 19. Petiole 0.4 - 3.8 cm long, 1/4 - 1/12 the length of the lamina. Figs 0.3 - 1.0 cm in diameter, subglobose or globose, glabrous or scattered rusty brown pubescence, borne among the leaves; color not noted; peduncle 0.1 - 0.6 cm long; pedicel obsolete; basal bracts 0.1 - 0.5 cm long; ostiole raised.

Leaf structure: cystoliths occur on both surfaces but are scarce; sclereids absent; lower epidermal cells plane; stomates sunken; tabular crystal cells absent; druse cells absent; pubescence of 2-septate glandular hairs on the lower surface of some of the leaves.

Vernacular names:

Lechero, "Chio," "Seraurai," and Mata palo.

Ecology:

This species is found from 560 - 1,200 m in altitude. The only note I have concerning the habitat is that one of the trees was found on a dry steep slope.

## Specimens studied:

Aragua: H. Pittier; 12551

Williams; 10213

Barinas: Bernardi; 3299

Bolivar: L. Aristeguieta; 2258

Carabobo: H. Pittier; 8706

Distrito Federal: H. Pittier; 11924

Illegible label: Delgado; 645

F. Tamayo; 2988

Lara: Tamayo; 3901

Miranda: A. L. Bernardi; 5715

Paragua: Cardona; 2499

Trujillo: Dr. Christ; 48

Valencia: Vareschi and ? ; 1916

Ficus foveata

PLANTS OF VENEZUELA

State of Anzoátegui: forested rocky slopes along Río Querecual,  
thrust of Bergantin, altitude 600 meters.  
LIAN A. STEYERMARK

MARCH 11, 1958



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Ministerio de Agricultura y Cria  
HERBARIO NACIONAL DE VENEZUELA

Ficus

N.o.: "Niguerote"  
Arbol de 15 m. de alto

Núm.

Ficus foveata, Pittier, Bol. Soc. Venezolana Cienc. Nat. 8:258. 1943

(F. foveolata, Pittier, non Wall.)

Tree to 17 m tall. Twigs 0.25 - 0.5 cm in diameter, mostly glabrous, a few with scattered, minute, rusty-brown pubescence. Stipules 1.0 - 1.6 cm long. Lamina 5.3 - 9.0 cm wide X 6.3 - 20.0 cm long, oval--somewhat oblong to ovate; apex acuminate sometimes slightly so; base rounded or cordate; lateral veins 8 - 10. Petiole 2.2 - 6.4 cm long, 1/7 - 1/2 the length of the lamina. Figs 1.3 - 1.9 cm in diameter, globose, glabrous, borne among the leaves; color pale or rich green; peduncle 0.4 - 0.9 cm long; pedicel none to 0.1 cm long; basal bracts 0.2 - 0.35 cm long; ostiole sunken or recessed.

Leaf structure: cystaliths present on both surfaces; sclereids absent; lower epidermal cells plane; stomates superficial; tabular crystal cells present on the veins beneath; druse cells present in lower surface, sometimes present in upper surface; pubescence absent or occasionally a few 2-septate glandular hairs present on the lower surface.

Vernacular names:

"Higuerote," and "Figueron."

Ecology:

Apparently this species is found growing up to 500 m in altitude on forested rocky slopes. Information about this species is somewhat brief.

Specimens studied:

Anzoategui: J. A. Steyermark; 61496

Paraguana: Tamayo; 818, 968

Ficus glandulosa



*Ficus glandulosa* Standl  
*del Bayamón - No. 54*

18

HERBARIO DEL MUSEO COMERCIAL DE VENEZUELA

*Ficus expansa* Pittier

El Paují, carretera nueva a La Guaira, D.F.

Núm. 337

Núm. Col. 12421 Col. H. PITTIER Fecha AGO. 7 192

Ministerio de Agricultura y Cría  
 HERBARIO NACIONAL DE VENEZUELA  
*Ficus expansa* Pittier

*F. glandulosa* Standl

337

Núm.

Núm. Col. 12421 Col. H. Pittier Fecha 7 agto. 19

Ficus glandulosa, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:70.

1937.-Venezuela.

Habit not noted. Twigs 0.1 - 0.25 cm in diameter, glabrous or minutely pubescent. Stipules 0.35 - 2.5 cm long. Lamina 3.8 - 9.8 cm wide X 11.1 - 28.7 cm long, oval or ovate; apex acuminate; base acute or rounded; lateral veins 10 - 17. Petiole 1.8 - 8.4 cm long, 1/3 - 1/6 the length of the lamina. Figs 0.9 - 1.1 cm in diameter, somewhat globose, very minute pubescence, borne among the leaves; color not noted; peduncle 0.1 - 0.3 cm long; pedicel obsolete; basal bracts 0.2 - 0.4 cm long; ostiole raised approximately 0.1 cm.

Leaf structure: cystoliths present on both surfaces; sclereids absent; lower epidermal cells striated; stomates superficial; tabular crystal cells absent; druse cells present, usually on both surfaces; pubescence of abundant 2-septate glandular hairs on the lower surface.

Vernacular name:

Chuaa.

Ecology:

Only one sheet had any information. This was that the plant had been collected at sea level on a river or stream border.

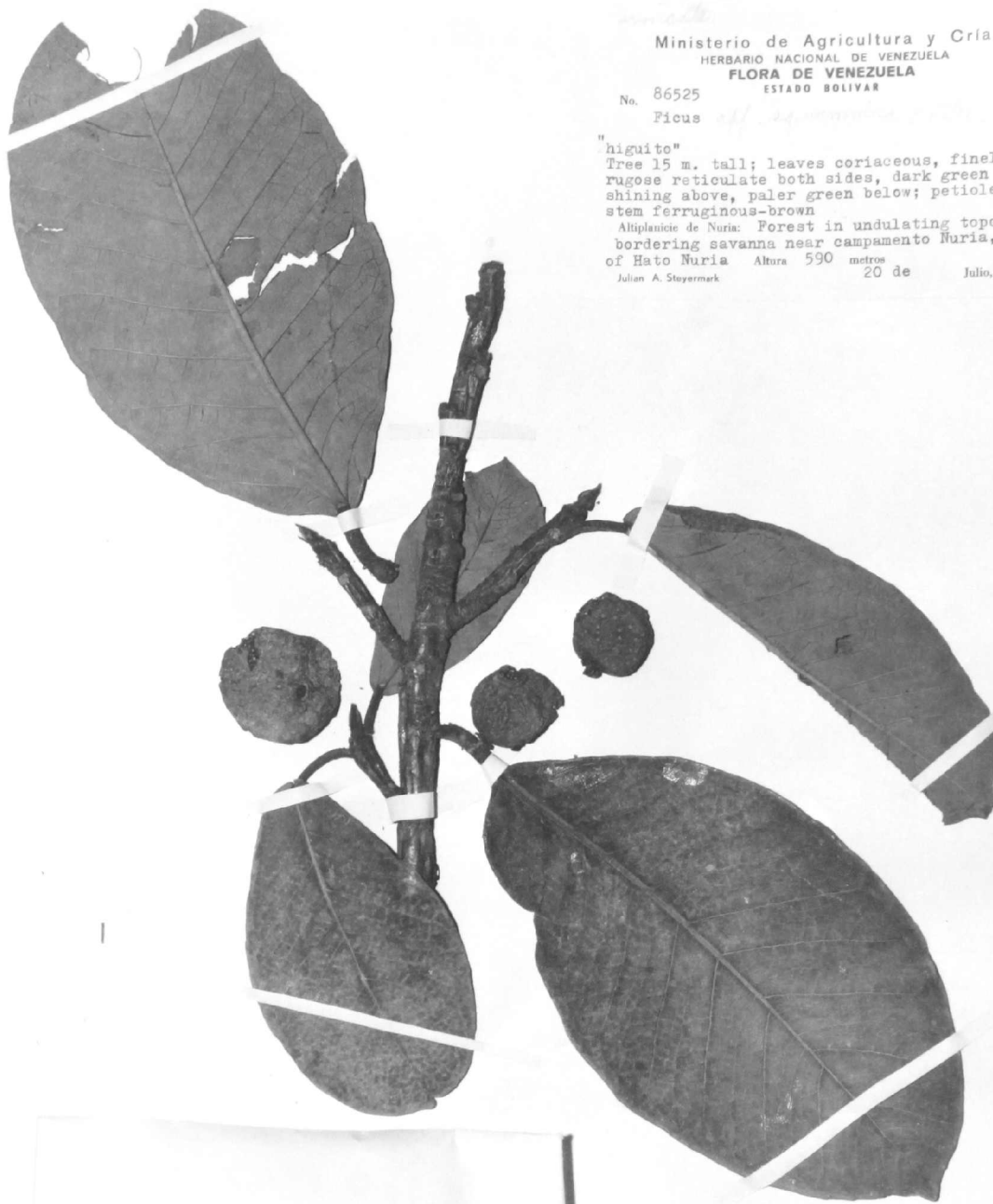
Specimens studied:

Aragua: H. Pittier; 12186

Distrito Federal: H. Pittier; 12421

LaGuaira: H. Pittier; in VEN



Ficus gommelleira

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA  
FLORA DE VENEZUELA  
ESTADO BOLIVAR

No. 86525

Ficus

"higuito"

Tree 15 m. tall; leaves coriaceous, finely rugose reticulate both sides, dark green and shining above, paler green below; petioles stem ferruginous-brown

Altiplano de Nuria: Forest in undulating topogr bordering savanna near campamento Nuria, e of Hato Nuria. Altura 590 metros

Julian A. Steyermark

20 de

Julio, 196

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA

Ficus gomelleira, Kunth et Bouche, Ind. Sem. Hort. Berol., 18, 1846.

Tree to 15 m tall. Twigs 0.35 - 0.4 cm in diameter, pubescent. Stipules 0.6 - 1.2 cm long. Lamina 3.8 - 9.4 cm wide X 6.7 - 16.7 cm long, broadly oval; apex rounded or acuminate; base rounded and slightly emarginate; lateral veins 8 - 12. Petiole 1.3 - 2.2 cm long, 1/5 - 2/15 the length of the lamina. Figs 2.3 - 3.0 cm in diameter, globose, glabrous, how borne not in evidence; color not noted; peduncle 0.2 - 0.45 cm long; basal bracts  $\approx$  0.3 cm long; ostiole plane with the surface and with a surrounding rim of tissue which is fairly substantial.

Leaf structure: cystaliths not present on this specimen; sclereids abundant on upper surface; lower epidermal cells plane or plicate; stomates superficial or slightly sunken; druse cells absent; tabular crystal cells absent; pubescence of 1-celled short conical hairs on the veins of the lower surface.

Vernacular name:

"higuito."

Ecology:

The only specimen studied was found at 590 m in altitude growing in a forest in undulating topography bordering a savanna.

Specimen studied:

Bolivar: J. A. Steyermark, 86525

Ficus insipida



34

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA

*Ficus*

Arbol de unos 15 m de alto, corteza gris, lenticelas  
puntiadas de color rojo oscuro brillante. Hojas ovadas  
de 10-15 cm de largo y 5-7 cm de ancho, base  
de la hoja un poco truncada o emarginada. Frutos verdes  
superiores y inferiores son los mismos. Lm. T. 10-15

*Ficus insipida* Willd.

insipida

35

Ministerio de Agricultura y Cria  
HERBARIO NACIONAL DE VENEZUELA

Ficus

DISTRITO FEDERAL: upper cloud forest belt  
along road between "Portachuelo" and  
Colonia Tevar-Junquito road, 1-2 mi. below  
junction of Junquito-Colonia Tevar road,  
alt. 2000-3200 m.

Tree 8 m. tall; latex white, abundant;  
leaves coriaceous, dark green above, pale  
green below; fruit globose, white pubes.,  
7 cm. broad, 6 cm. high

Ficus insipida, Willdenow, Sp. Pl. (ed. h), iv(2):1143 (no. 40), 1806.

longistipula, Pittier, Bol. Soc. Venez. Cienc. Nat. 4, n<sup>o</sup>. 30:53.

1937.-Venezuela. Pittier, l.c. 30:53.

Tree to 40 m tall. Twigs 0.2 - 0.6 cm in diameter, glabrous or minutely pubescent. Stipules 2.8 - 4.3 cm long. Lamina 2.0 - 9.8 cm wide X 6.0 - 25.0 cm long, oval or oblanceolate; apex mostly acuminate, a few acute or obtuse; base acute or rounded; lateral veins 16 - 30. Petiole 0.9 - 4.9 cm long, 1/3 - 1/17 the length of the lamina. Figs 0.7 - 5.5 cm (7.0 cm) in diameter, globose or pyriform, glabrous, borne among the leaves; color pale green with maroon spots, turning violet when ripe; peduncle obsolete to 2.4 cm long; pedicel obsolete to 0.7 cm long; basal bracts 0.1 - 0.2 cm long; ostiole flush to raised.

Leaf structure: cystoliths usually present on both surfaces; sclereids absent; lower epidermal cells plane; stomates superficial, slightly sunken, or sunken; tabular crystal cells absent; druse cells may be present in both surfaces; pubescence of long stalked, multicellular, glandular hairs on both surfaces, often lacking on the upper surface.

Vernacular names:

"Higueron," matapalo, and "Figuirete."

Ecology:

This species is found from 100 - 2,200 m in altitude. It has been collected in rainy, in upper cloud, and in rich forests.

Specimens studied:

Aragua: H. Pittier; 12568

Bolivar: J. A. Steyermark, Bassett Maguire, and C. K. Maguire;

Distrito Federal: G. Agostini, M. Farinas, E. Castellanos, and  
T. Cobo; 78

Croizat; in VEN

Mario Farinas and J. A. Steyermark; 90965

Tamayo; 1225

Merida: Bernardi; 1890

E. L. Little; 15845

Miranda: J. A. Steyermark; 91618

No location: Delgado; 167

Orituco: L. Aristeguieta; 840

Papelon: E. Delgado; 121

Trujillo: Dr. Christ; 51

Zulia: E. Medina; 808

Ficus iturbei

HOLOTIPO DE  
Ficus interfecta Pittier,  
Bol. Soc. Venezolana Cienc. Nat. 7:133.  
1941.-Venezuela.



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MINISTERIO DE AGRICULTURA Y CRIA  
HERBARIO NACIONAL DE VENEZUELA  
*Ficus interfecta* Pittier sp.n. *Lipo*  
*Entre Calabozo y El Resto, Guárico, parasitaria*  
*sobre *Copernicia tolorum*.*  
Núm. 359  
Núm. Col. 14746 Col. H. Pittier Fecha Febrero 26, 19

Ficus iturbei, Pittier, Bol. Soc. Venez. Cienc. Nat. 4, n°. 30:68.

This 1937.-Venezuela. found between 2300 and 2500 m. alt.

Only one intersector, Pittier, Bol. Soc. Venezolana Cienc. Nat. 7:133.

temperate 1941.-Venezuela.

Specimens: perez-orbelaezii, Dugand, Caldasia, 4, n°. 4:60, fig. 10.

1942.-Colombia

Tree to 20 m tall, starts as a parasite. Twigs 0.2 - 0.4 cm in diameter, minutely pubescent or glabrous. Stipules 0.6 - 4.0 cm long. Lamina 1.5 - 8.7 cm wide X 3.9 - 18.3 cm long, oblong or usually oval; apex slightly acuminate or obtuse (rarely acute); base rounded or slightly cordate; lateral veins 5 - 12. Petiole 0.5 - 4.4 cm long, 1/4 - 1/8 the length of the lamina. Figs 0.6 - 2.0 cm (2.5 - 3.0 cm) in diameter, globose, minutely pubescent, borne among the leaves; color not noted; peduncle obsolete - 0.8 cm long; pedicel obsolete; basal bracts 0.2 - 0.6 cm long; ostiole raised and enclosed within a plicate rim of thin receptacular tissue.

Leaf structure: cystoliths present on both surfaces, usually fewer in the lower surface; sclereids absent; lower epidermal cells usually plane; stomata superficial or sunken (occur on some leaf); tabular crystal cells absent; druse cells occasionally present in the lower surface; pubescence of 2-septate glandular hairs on the lower surface, short conical hairs which may be on both surfaces, or entirely lacking.

Vernacular names:

matapalo, and Higueron.



**Ecology:**

This plant has been found between 230 m and 1750 m in altitude. Only one specimen had a habitat notation. It was found in a hot-temperate region.

**Specimens studied:**

Anzoategui: H. Pittier; 14316, 14465

El Tigre: V. Varcyhi; 6419

Fusagasuga: E. Perez-Arbelaes; 10092

Guarico: H. Pittier; 12319, 14746

Quassipati: Cardona; 2108

Ficus longifolia



3

THE NEW YORK BOTANICAL GARDEN VENEZUELAN EXPEDITION 1955  
PLANTS OF VENEZUELA  
TERRITORIO DELTA AMACURO

NO. 319

*Ficus esballina* Standl.  
Dupl. det. J. Menachino 1955  
Tree 7 m. Fruit red. "Lechero". Occasional along  
Rio Cuyubini 1-10 km. above mouth, Dto. Amacuro.

Ministerio de Agricultura  
HERBARIO NACIONAL DE VENEZUELA

*Ficus esballina* Standl.

Núm. 38716

Núm. Col

Col

Fecha

ELEVATION: SEA LEVEL

JOHN J. WURDACK

APRIL 11, 1955

Ficus longifolia, Schott ex Sprengel, Syst. Veg. (ed. 16), iv(add.):409,  
1827.

Epiphytic shrub or tree to 20 m. Twigs 0.7 - 0.9 cm in diameter.  
Stipules 1.2 - 3.5 cm long. Lamina 4.9 - 11.0 cm wide x 17.7 - 39.6 cm  
long; apex acuminate; base cuneate or acute; lateral veins 17 - 24.  
Petiole 1.0 - 2.9 cm long, 1/11 - 1/28 the length of the lamina. Figs  
0.6 - 1.0 cm in diameter, globose, glabrous or minutely puberulent,  
borne on short shoots among and usually behind the leaves; color salmon-  
buff turning red; peduncle 0.2 - 0.7 cm long; basal bracts 0.15 - 0.3 cm  
long; ostiole flush to raised.

Leaf structure: cystoliths on both surfaces; sclereids abundant on  
both surfaces; stomates sunken; tabular crystal cells absent; druse cells  
a few present on lower surface; pubescence absent.

Vernacular name:

"lechero."

Ecology:

Found from the wet cloud forests at 600 m in the Altiplanicie de  
Nuria down to the mouth of the Rio Cuyubini at sea level in Delta  
Amacuro.

Specimens studied:

Estado Bolivar: E. L. Little, Jr.; 17643

J. A. Steyermark; 88513

Tamatama: Williams; 15260

Territorio Delta Amacuro: J. A. Steyermark; 87315

J. J. Wurdack; 319

Ficus Mathewsii

Ministerio de Agricultura y Cria  
HERBARIO NACIONAL DE VENEZUELA

*Ficus*

Planta liosa de ramas flexuosas,  
sems. tupidna. Margines, Carto  
Pialito, a unos 30 Km. N.E.  
de Calabozo. Edo. Guano.

Nim

Mathewii

29

HERBARIO BOTANICO, CARACAS-NEW YORK BOTANICAL GARDEN  
 02 Expedition of the Alto Rio Coyumi  
 ESTADO BOLIVAR, VENEZUELA  
 Ficus

11 tree, fruit red, Quebrada Pitón, alt.  
 3, Cerro Pitón, Cordillera Epicara.

September 9-11.

Ministerio de Agricultura y Cria  
 HERBARIO NACIONAL DE VENEZUELA

Mathewsii

NEW YORK BOTANICAL GARDEN—CHICAGO NATURAL HISTORY  
MUSEUM EXPEDITION  
Chimantá Massif  
Aáparaman-tepui  
Estado Bolívar, Venezuela

No. 1128  
Ficus

tree 25 m. tall by 50 cm. D.B.H.; fruit  
red-tinged with greenish-yellow maculations

rare

Southeast-facing forested slopes below escarpment

Julian A. Steyermark altitude 1880-1955 meters  
John J. Wurdack February 26, 1955

Herbarium of Chicago Natural History Museum and The New York Botanical Garden

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA



Mathewsii

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HERBARIO DEL MUSEO COMERCIAL DE VENEZUELA

*Ficus obovata* Pittier, sp. n.  
 M.v. Higuerón  
 Alrededores de Esouque, Trujillo.

Núm.

Núm. Col. 13128 Col. H. PITTIER Fecha Enero 10,

Ministerio de Agricultura y Cría  
 HERBARIO NACIONAL DE VENEZUELA

*Ficus obovata* Pittier TIPO.

HOLOTIPO DE  
*Ficus obovata* Pittier.

Bol. Soc. Venez. Cien. Nat. 4, n°. 30:77.  
 1937. - Venezuela.

Núm. 363



Mathewsii

ARBOLES DE VENEZUELA  
DEL HERBARIO DE LA UNIVERSIDAD DE LOS ANDES  
Facultad de Ciencias Forestales, Mérida, Venezuela

15438

*Ficus oerstediana* Mig. (?)

Nombre vulgar: matapalo menudo Det. ELL. Fittier  
Lugar: ARAGUA ~~MICHOACÁN~~ Parque Nac. Horri  
Localidad: Carretera S. del hotel, Rancho Grande  
Tipo de bosque: Selva subtropical húmeda.

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA

*Ficus oerstediana* Mig. C.

Ficus Mathewsii, (Miquel) Miquel, Ann. Mus. Bot. Lugd.-Bat., 111:298

(no. 55), 1867 (Urostigma in Hooker, Lond. Journ. Bot.,  
vi:549, 1847)

maroana, Pittier, Bol. Soc. Ven. Cienc. Nat. 9:120. 1944.-  
Venezuela.

Maitin, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:73.  
1937.-Venezuela.

ovalifolia, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:73,  
fig. 1937.-Venezuela.

obovata, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:77.  
1937.-Venezuela.

Tree to 35 m tall. Twigs 0.1 - 0.5 cm in diameter, glabrous to minutely pubescent. Stipules 0.2 - 2.6 cm long. Lamina 0.8 - 6.5 cm wide X 1.5 - 12.6 cm long; oval, oboval, ovate, obovate, or oblanceolate; apex obtuse, acuminate, or sometimes acute; base acute, somewhat rounded, rounded, and occasionally oblique; lateral veins 5 - 27. Petiole 0.1 - 2.3 cm long, 1/4 - 1/21 the length of the lamina. Figs 0.2 - 1.0 cm in diameter; globose, subglobose, or slightly pyriform; glabrous to small or minute rusty-brown pubescence; borne among the leaves or on short shoots behind the leaves; color pale green, red, red-tinged, dull maroon with greenish-yellow or yellowish maculations, crimson, dull yellow with rose, or orange; peduncle obsolete - 0.5 cm long; pedicel obsolete to rarely 0.05 cm long; basal bracts 0.05 - 0.3 cm long; ostiole flush, slightly raised, or raised.

Leaf structure: cystoliths present on both surfaces, often few or lacking on the lower surface; sclereids absent; lower epidermal cells plane; stomates superficial, slightly sunken, or sunken; tabular crystal

cells absent or occasionally present on the veins beneath; druse cells usually present in the lower surface; pubescence of 2-septate glandular hairs usually present on the lower surface.

Vernacular names:

matapalo, "Mato-palo," caniba, umape, "higuito," maitin, matapalo memudo, Higueron, Uvo chipio, and Chuaro.

Ecology:

This species ranges in altitude from 10 - 2,500 m in altitude. The trees may be found growing in cloud or humid forests, in dense primary forests, in evergreen forests, in building lots, on meadowy or forested slopes, by the roadside, in a rolling forest, in temperate forests, by south-facing igneous rock outcrop on a hill, and in living hedges or fences.

Specimens studied:

Anzoategui: J. A. Steyermark; 61377

Apure: V. Badillo; 1371

M. Ramis; 1584

Velez; 2660

Aragua: E. L. Little; 15438

Avila: Delgado; 161

Bolivar: Bassett Maguire, J. A. Steyermark, and Celia K. Maguire;  
53702

J. A. Steyermark; 59619, 59856, 86689, 89295, 93210

J. A. Steyermark and John J. Wardack; 1128

Carabobo: J. A. Steyermark and Cora Steyermark; 95330

Delta Amacuro: E. L. Little; 17689

Distrito Federal: Croizat; 18

H. Pittier; 9865, 13005

F. Tamayo; 3880

Gusania: Williams; 14427

Guarico: L. Aristeguieta; 4583

Tamayo; 4006

Karansyin: Lasser; 1832, 1941

Merida: Gehriger; 450

E. L. Little; 15137, 15500

Felipe Mates; BAIL-30

Miranda: L. Aristeguieta; 3016

J. A. Steyermark; 90900

Monagas: J. J. Buza; Bu/405 - 7605

J. A. Steyermark; 61813

No location: Delgado; 241

Rancho Grande Parque Nacional: Williams; 9982

San Antonio: Williams; 15081

Sucre: F. Tamayo; 2765

Tamatama: Williams; 15237

Trujillo: H. Pittier; 13128, 13162

Sibnee; 61

#### Discussion:

This group possibly contains two or more species. Extensive work and thought has failed to produce any clear lines of distinction so they must be grouped together for the present.

Ficus maxima

Tree  
Ficus

Tree 15 m. tall; leaves subcoriaceous-chartaceous,  
dorsal green above, paler dull green below; fruit  
green, subglobose, 2 cm. long, 2 cm. broad.

Collected by S. G. Smith, La Manzanita and Puerta Miranda,  
Barquisimé, alt. 80-100 m.  
23-24 November 1960.  
Supported in part by grants from The Herbert Spencer, the National Science Founda-  
tion, and the British Council.



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Ministerio de Agricultura y Cria  
HERBARIO NACIONAL DE VENEZUELA

*Ficus radula* Willd.  
cit Green, 1965

Num. Herb.

Num. P.P.

Cole.

Det.

Loc.

Ficus maxima, P. Miller, Gard. Dict. (ed. 8): (no. 6), 1768.

Tree to 25 m tall. Twigs 0.2 - 0.45 cm in diameter, glabrous or pubescent. Stipules 0.7 - 7.8 cm long. Lamina 2.1 - 11.0 cm wide X 5.0 - 23.8 cm long, oval or somewhat spatulate; apex acuminate; base mostly acute, a few somewhat rounded; lateral veins 8 - 20. Petiole 0.5 - 7.7 cm long, 1/3 - 1/25 the length of the lamina. Figs 0.8 - 2.2 cm in diameter; somewhat pyriform, subglobose or globose; very minutely pubescent; borne among the leaves; color green; peduncle 0.5 - 1.7 cm long; pedicel obsolete to 0.3 cm long; basal bracts 0.05 - 0.6 cm long; ostiole slightly raised or flush. H. Pittier; 10958

Leaf structure: cystoliths present on both surfaces; sclereids absent; lower epidermal cells mostly plane a few striated around cystoliths; stomates flush, slightly sunken, or sunken; tabular crystal cells occasionally present on the veins beneath; druse cells present on both surfaces, usually abundantly so; pubescence of multicellular glandular hairs on the lower surface and very rarely on the upper surface; 1-celled, conical hairs project from the cystoliths of both surfaces, these are also more prevalent on the lower surface.

Vernacular names:

"Matapalo," "higuite," and Matapalo-Copey.

Ecology:

This tree occurs from 65 - 1,500 m in altitude. It apparently grows in rain, cloud, or tall forests.

Specimens studied:

Aragua: H. Pittier; 14036

H. Pittier and M. Nakichenovich; 15648

Barinas: Bernardi; 1178



Ficus mollicula



8

HOLOTIPO DE  
Ficus mollicula Pittier.  
 Bol. Soc. Venez. Cienc. Nat. 7:134.  
 1941. - Venezuela.

MINISTERIO DE AGRICULTURA Y CRIA  
 HERBARIO NACIONAL DE VENEZUELA  
*Ficus mollicula Pittier* 361  
 No. Matapala...  
 Coll. húmedo, espeso de las laderas graníticas, en altura 300-  
 400 m. cerca de... Puerto Ayacucho, alt. 95 m.  
 Olt. Quintero  
 Núm. 361  
 Núm. Col. 13, 145 Col. Williams Fecha Mayo 27 1941



Ficus mollicula, Pittier, Bol. Soc. Venez. Cienc. Nat. 7:134. 1941.-

Apure, Venezuela. 1941

Paratigrensis, Pittier, Bol. Soc. Vene. Cienc. Nat. 7:135. 1941.-

Venezuela. 1941

Tree 3 - 5 m tall. Twigs 0.15 - 0.25 cm in diameter, pubescent. Stipules 0.3 - 0.6 cm long. Lamina 0.6 - 6.2 cm wide X 1.0 - 9.5 cm long, oval to ovate; apex acuminate to acute; base acute to slightly rounded or even cordate, sometimes tending to be slightly oblique; lateral veins 5 - 12. Petiole 0.4 - 1.6 cm long, 1/9 - 1/4 the length of the lamina. Figs 0.3 - 0.8 cm in diameter, globose, dense soft matted pubescence, borne among the leaves; color not noted; peduncle obsolete; pedicel obsolete; basal bracts to 1 cm long; ostiole flush to slightly raised.

Leaf structure: cystoliths none observed to be present; sclereids absent; lower epidermal cells plane; stomates superficial; tabular crystal cells absent; druse cells absent; pubescence of abundant short to very long apparently single celled hairs on the lower surface; the upper surface may or may not have abundant, medium to long thin walled, apparently unicellular and multiseptate hairs; also the upper surface may have some short, conical, one-celled hairs.

Vernacular name:

Matapalo.

Ecology:

This species apparently is found from 95 - 500 m in altitude around granite places usually at the brow of a hill.

Specimens studied:

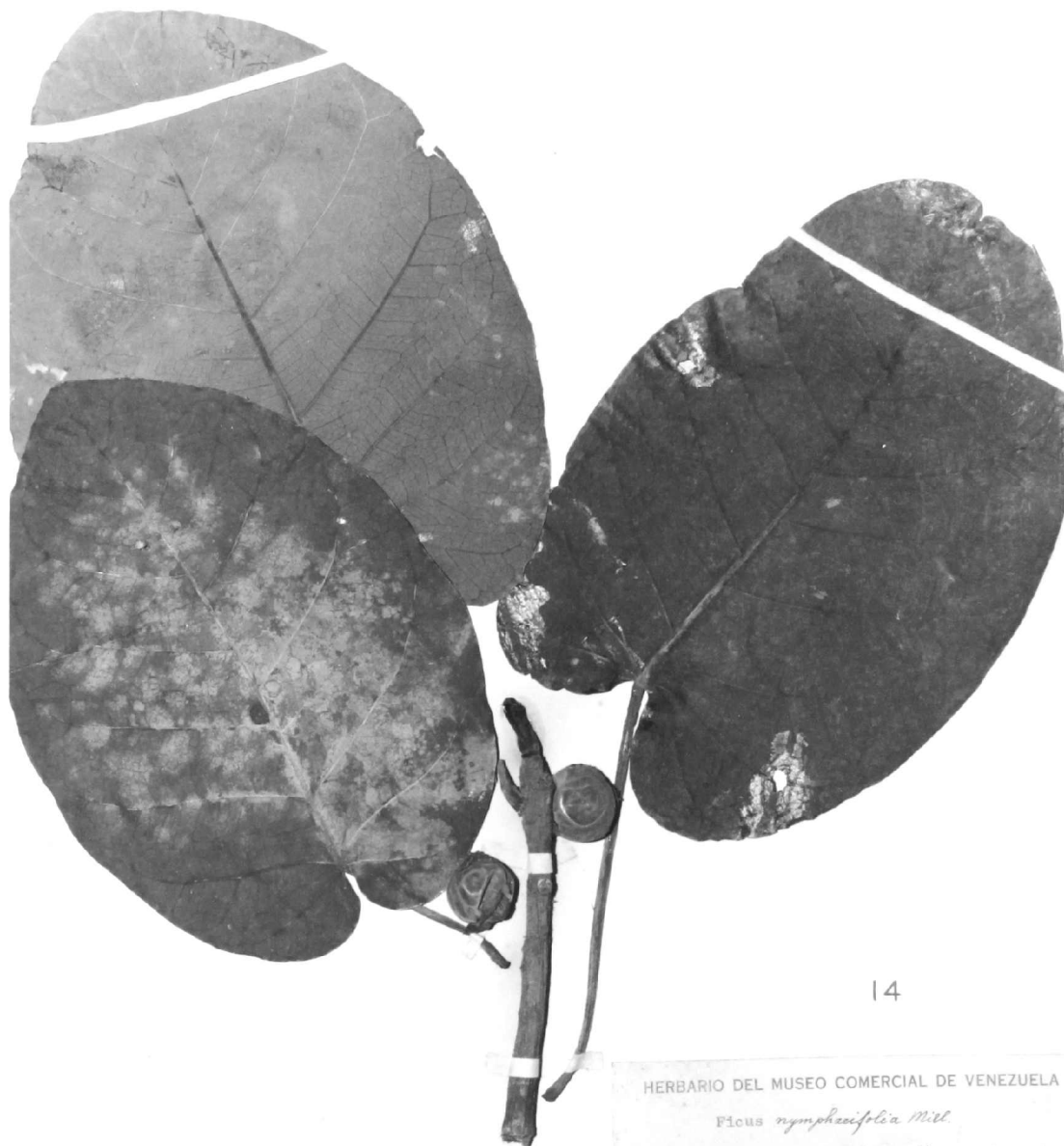
Alto Orinoco: Williams; 13145

Ansoategui: J. A. Steyermark; 61467

Apure: Velez; 2641

Bolivar: Velez; 2331

Williams; 13347

Ficus nymphaeifolia

14

HERBARIO DEL MUSEO COMERCIAL DE VENEZUELA

*Ficus nymphaeifolia* Mill.Las Trincheras (Ril 16) carretera de  
Caracas a la Guaira.

Núm. 367

Núm. Col. 10313 Col. H. Pittier Fecha Mayo 3, 1928

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA  
*Ficus nymphaeifolia* Mill.

Núm. 367

Núm. Col. 10313 Col. H. Pittier Fecha Mayo 3, 1928

Ficus nymphaeaeifolia, P. Millier, Gardner's Dictionary (ed. 8), no. 9,  
1768.

Tree to 15 m tall. Twigs 0.35 - 0.7 cm in diameter, glabrous to minutely pubescent. Stipules 3.7 - 15.3 cm long. Lamina 7.6 - 17.4 cm wide X 11.0 - 24.8 cm long, cordate, obovate or oval; apex obtuse or acuminate sometimes slightly so; base cordate; lateral veins 7 - 13. Petiole 3.7 - 15.3 cm long, 1/4 - 1/2 the length of the lamina. Figs 0.35 - 2.7 cm in diameter (usually above 1.0 cm in diameter), globose or transversely elliptical, downy minute pubescence, borne among the leaves; color green; peduncle obsolete to 0.15 cm long; pedicel obsolete; basal bracts 0.2 - 1.5 cm long; ostiole raised.

Leaf structure: cystoliths present on lower surface, sometimes on upper; sclereids abundant in upper surface, few in lower; lower epidermal cells irregularly shaped; stomates superficial; tabular crystal cells rarely present on the veins beneath; druse cells usually abundant in lower surface, few in upper; pubescence of 2-septate glandular hairs on the lower surface.

Vernacular names:

"Higuerote," and Mata palo.

Ecology:

This species is found from 100 - 1,300 m in altitude. Only one note was made of the habitat on these specimens, and it was to the effect that the specimen was found in a dense humid forest.

Specimens studied:

Bolivar: J. J. Wurdack and F. W. Wright; 407

Caracas: H. Pittier; 7428, 10313, 12405

Williams; 10663

Delta Amacuro: Carlos Blanco; 251

Distrito Federal: H. Pittier; 12175

J. A. Steyermark; 92099

El Limon: H. Pittier; 9231

El Palmar: F. Cardona; 2115

Miranda: A. L. Bernardi; 5922

Monagas: J. A. Steyermark; 62241

Sucre: J. A. Steyermark and Octavio Agostini; 91265

Ficus paraensis

HERBARIOS DE LA UNIVERSIDAD DE LOS ANDES  
Facultad de Ciencias Forestales, Venezuela  
10-5  
Ficus

Nombre vulgar: Matacero Det.  
País: Bolivia  
Cada: Sta. Elena- Carretera Panamericana  
Elevación: Selva pluvial  
Altura: 100 m Diámetro: 7 cm Altura: m  
Lácteos: Látex blanco.

Recolectado el: 5 noviembre 1953



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Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA

Núm. \_\_\_\_\_  
Num. Col. \_\_\_\_\_ Col. \_\_\_\_\_ Fecha: \_\_\_\_\_

Ficus paraensis, (Miquel) Miquel, Ann. Mus. Bot. Lugd.-Bat., 111:298

Boliv (no. 49), 1867 (Urostigma in Hooker, Lond. Journ. Bot.,

Casiqui: 534 (no. 128), 1847?

D. hydrophila, Pittier, Bol. Soc. Venez. Cienc. Nat. 8:259. 1943.-

María Venezuela. Little; 16208

Tree to 15 m tall, epiphytic at start. Twigs 0.2 - 0.6 cm in diameter, minutely pubescent. Stipules 1.3 - 1.7 cm long. Lamina 1.2 - 8.0 cm wide X 3.1 - 22.9 cm long; oval, sometimes tending to be oblanceolate or oblong; apex usually long acuminate; base acute or rounded; lateral veins 6 - 25. Petiole 0.3 - 4.8 cm long, 1/4 - 1/10 the length of the lamina. Figs 0.5 - 1.9 cm in diameter, globose (sometimes squatly so) or pyriform, minutely pubescent, borne among the leaves; color pale green; peduncle obsolete - 0.2 cm long; pedicel obsolete; basal bracts 0.1 - 0.4 cm long; ostiole raised, may be up to 0.3 cm high.

Leaf structure: cystoliths on upper surface only; sclereids absent; lower epidermal cells peppillionate; stomates superficial or very slightly sunken; tabular crystal cells present on the veins beneath; druse cells occasionally present in the upper surface; pubescence of generally long 2-septate glandular hairs.

Vernacular names:

Matapalo, and Higueroche.

Ecology:

This tree has been collected from 65 - 1,220 m in altitude growing in dense, easily inundated, rain, and high forests.

Specimens studied:

Alto Orinoco: Williams; 15201

Anzoategui: J. A. Steyermark; 61160  
Bolivar: J. A. Steyermark; 60794  
Casiquiare: Williams; 15622  
Delta Amacuro: J. A. Steyermark; 87266  
Merida: E. L. Little; 16208  
          E. L. Little, Jr.; 15825  
No location: J. A. Steyermark; in VEN  
              F. Tamayo; 3077



Ficus pertusa

6

61497 PLANTS OF VENEZUELA

"higuerote"  
 Tree 40 feet tall; leaves firmly  
 membranaceous, deep green above, dull  
 green below; fruit pyriform, 8-10 mm.  
 high, 1 cm. in diameter, olive green  
 turning yellow-buff with dull brick  
 spots.

State of Anzoategui; forested rocky slopes along Rio Querec  
 southwest of Bergantin, altitude 500 meters.  
 JULIAN A. STEYERMARK MARCH 14, 1957

Ministerio de Agricultura y Cria  
 HERBARIO NACIONAL DE VENEZUELA

Num. 61497  
 Num. 61497 JULIAN A. STEYERMARK

Ficus pertusa, L.f., Supplementum Plantarum, 1:42, 1781.

Bopalucida, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:69.

1937.-Venezuela.

Tree to 28 m tall, starts as a strangler. Twigs 0.1 - 0.3 cm in diameter, glabrous to minutely pubescent. Stipules 0.25 - 1.3 cm long. Lamina 0.5 - 6.7 cm wide X 0.8 - 12.8 cm long, oval to oblanceolate (sometimes narrowly so); apex mostly acuminate with a few being obtuse; base acute to rounded; lateral veins 8 - 25. Petiole 0.2 - 2.2 cm long, 1/2 - 1/21 the length of the lamina. Figs 0.3 - 1.4 cm in diameter, globose to somewhat pyriform, glabrous, on current growth borne among and just below the leaves; color pale olive green turning yellow-buff with dull brick spots; peduncle 0.15 - 1.0 cm long; pedicel obsolete; basal bracts 0.1 - 0.2 cm long; ostiole mostly sunken with a thin rim of receptacular tissue surrounding it, a few are slightly raised with what appears to be a slight rim of tissue surrounding them.

Leaf structure: cystoliths present on both surfaces; sclereids absent; lower epidermal cells mostly plane sometimes somewhat striated; stomates superficial; tabular crystal cells may or may not be present on the veins beneath; druse cells are usually present in both surfaces; pubescence is absent.

Vernacular names:

"Matapalo," "Higuerote," Uvito, and Lechero blanco.

Ecology:

It apparently occurs in rainy forests with rocky to fertile soil from 100 - 950 m. It is quite common around Caracas.

Specimens studied:

Anzoategui: J. A. Steyermark; 91929

- Between Bolivar and Delta Amacuro: F. J. Breteler; 3828
- Bolivar: Carlos Blanco; 571  
Williams; 72860
- Carabobo: Alstan; 370, Williams; 10997  
J. A. Steyermark; 94311
- Caracas: L. Aristeguieta; 4294  
H. Pittier; 7006, 7030, 7102, 7104, 9185, 9666, 9667,  
11526
- Distrito Federal: H. Pittier; 13491  
J. A. Steyermark; 91929
- Falcon: Dr. Christ; 56
- Guarico: H. Pittier, 12324
- Guayana: F. Cardona; 375
- Merida: Bernardi; 1942  
H. Pittier, 12770
- Miranda: H. Pittier; 9270
- Sucre: V. Vareschi; 3918
- Tachira: E. L. Little; 16118
- Trujillo: Dr. Christ; 53

Ficus princoides

Botanical Expedition  
 ALTOPIANO DEL LA CUMBRE, GUAYANA  
 87720  
 Ficus

Tree 25 m. tall; leaves subcoriaceous, deep green above, paler dull green below; fruiting receptacle green, axillary, pedicels.

Ran forest, between La Margotta and Puerta Miranda.  
 Bar Aimé, alt. 30-100 m.

Jakob A. Steyermark 23-24, November 1950  
 Herbarium specimen of part of *Ficus princoides*. For the Institute Botanicum, The National Science Foundation and The New York Botanical Garden.



Ministerio de Agricultura y Cría  
 HERBARIO NACIONAL DE VENEZUELA

*Ficus princoides* HBK. ex Willd.  
 det. Swin., 1963

Num. 63464

Num. Col. Col.

Ficus prinoides, H et B ex Willdenow, Species Plantarum, (ed. 4),

Albiv(2):1149 (no. 59), 1806. ~~Stagnum~~; 28533

Tree to 15 m tall. Twigs 0.1 - 0.2 cm in diameter, often minutely pubescent sometimes glabrous. Stipules 0.4 - 1.0 cm long. Lamina 0.55 - 3.0 cm wide X 1.2 - 8.6 cm long, a few oval or linear mostly lanceolate to oblanceolate sometimes narrowly so; apex mostly acuminate, a few obtuse or acute; base usually cuneate or cuneate-truncate, a few slightly rounded; lateral veins 9 - 22. Petiole 0.3 - 1.5 cm long, 1/4 - 1/17 the length of the lamina. Figs 0.2 - 0.55 cm in diameter, globose, glabrous, borne among the leaves; color green or dull yellow with magenta red dots; peduncle 0.2 - 0.5 cm long; pedicel obsolete; basal bracts 0.05 - 0.15 cm long; ostiole slightly raised.

Leaf structure: cystoliths few on upper surface generally abundant on the lower surface; sclereids absent; lower epidermal cells plane and somewhat striated around the guard cells; stomates superficial; tabular crystal cells present on the veins beneath; druse cells present in both surfaces, generally abundant in the lower; pubescence of few conical one-celled hairs sometimes present on upper surface.

Vernacular name:

Matapalo.

Ecology:

This species apparently occurs in rain forest, or in inundated areas and in dry areas and rocky open slopes from 80 - 950 m in altitude. The plants in the drier areas seem to have much wider leaves tending more toward lanceolate to oval.

**Specimens studied:**

Altiplanicie de Nuria: J. A. Steyermark; 88633

Between La Margarita and Puerto Miranda; J. A. Steyermark; 87720

Delta Amacuro: J. A. Steyermark; 87508, 87743

Miranda: H. Pittier; 7605

Monagas: J. A. Steyermark; 61779

Orinoco Delta: H. M. Curran; 1288

Zulia: L. Aristeguieta; 4957

Ficus scabrida



26

6967 Ficus scabrida Pittier  
Det.: H.Y. Sanjwith  
KEW, VII. 1959.

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*Ficus scabrida* Pittier

Modelo No. 1  
**UNIVERSIDAD DE LOS ANDES**  
FACULTAD DE CIENCIAS FORESTALES-HERBARIO  
MÉRIDA-VENEZUELA

No. Herbario     8    

Herbario de la Universidad de los Andes  
MÉRIDA-VENEZUELA

Ficus scabrida, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:68.

Genus 1937.-Venezuela: 118

Tree to 8 m tall. Twigs 0.2 - 0.4 cm in diameter, heavily pubescent.

Stipules 0.5 - 0.9 cm long. Lamina 1.4 - 6.9 cm wide X 2.4 - 14.0 cm long, obovate to slightly spatulate or oval; apex acuminate or obtuse; base rounded, some tending to be cordate; lateral veins 5 - 9. Petiole 0.3 - 2.0 cm long, 1/16 - 1/6 the length of the lamina. Figs 0.6 - 1.1 cm in diameter, globose or a little pyriform, stiff and somewhat long pubescence, borne among the leaves; color fulvous-brown - olive green; peduncle 0.15 - 0.55 cm long; pedicel obsolete; basal bracts 0.1 - 0.2 cm long; ostiole flush to very slightly raised.

Leaf structure: cystoliths not present; sclereids absent, lower epidermal cells somewhat plicate; stomates superficial; tabular crystal cells absent; druse cells usually present, may be on both surfaces; pubescence of multiseptate, 1-celled conical, and 2-septate glandular hairs on both surfaces, usually few on the upper surface.

Vernacular names:

"matapalo," and higueroa.

Ecology:

This species is noted to have been found from 90 - 300 m in altitude in tall or inundated forests and at a riverside.

Specimens studied:

Bolivar: J. A. Steyermark; 86616

J. A. Steyermark, Bassett Maguire, and Celia K. Maguire;

L6995

Carabobo: H. Pittier; 14154

Delta Amacuro: J. A. Steyermark; 87507



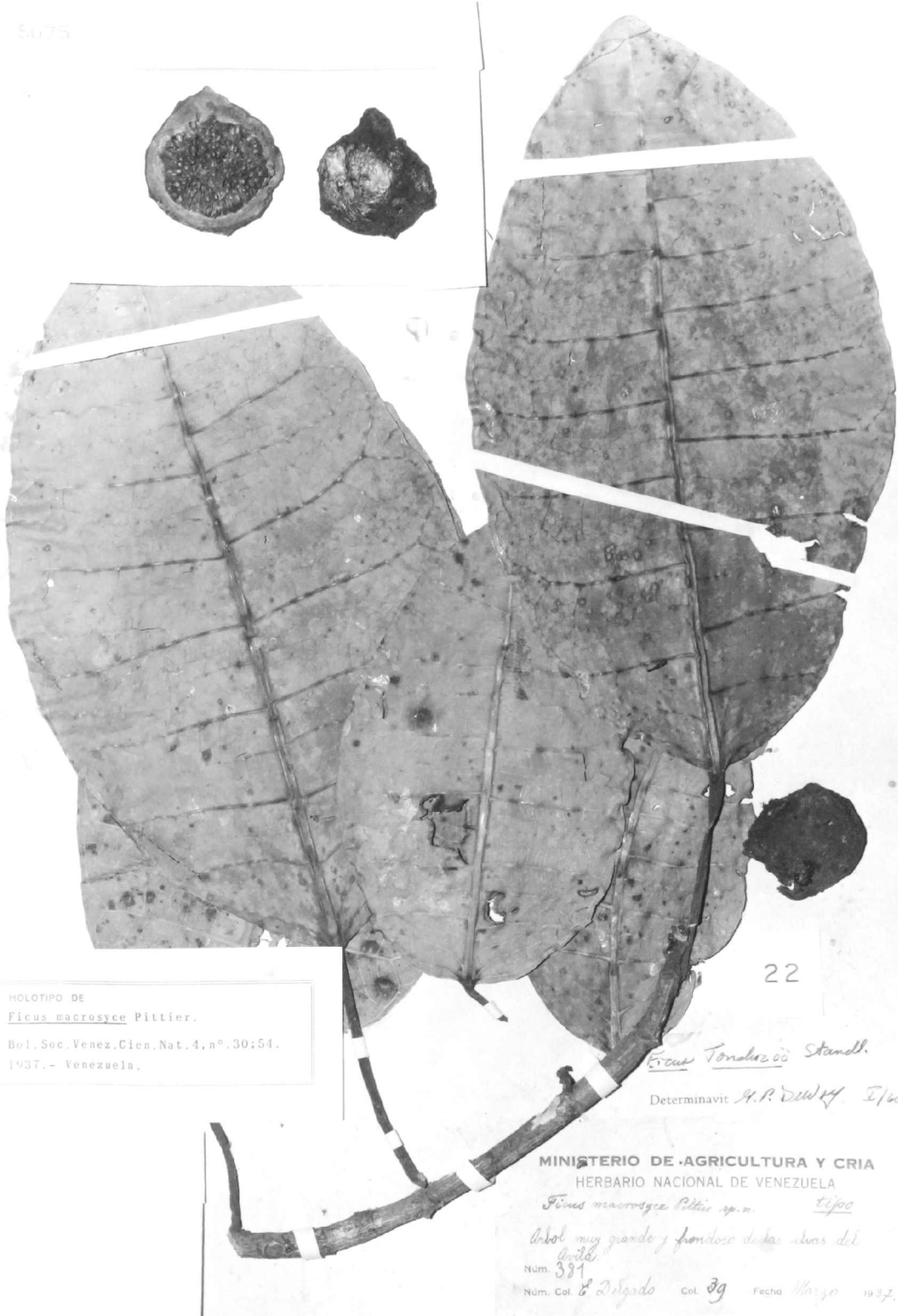
Lara: Dr. Christ; 49

Ocumare: E. Delgado; 118

Yaracuy: A. L. Bernardi; 6967

Ficus tonduzii

5075



HOLOTIPO DE  
*Ficus macrocyce* Pittier.  
 Bol. Soc. Venez. Cien. Nat. 4. n°. 30:54.  
 1937.- Venezuela.

22

*Ficus Tonduzii* Standl.  
 Determinavit A.P. Dewey. 5/60

MINISTERIO DE AGRICULTURA Y CRIA  
 HERBARIO NACIONAL DE VENEZUELA

*Ficus macrocyce* Pittier sp.n. tipo  
 Arbol muy grande y frondoso de las áreas del  
 Guila  
 Num. 381  
 Num. Col. 8. D. S. Col. 89 Fecha Marzo 1937.

Ficus Tonduzii, Standley in Contrib. U. S. Nat. Herb. 20:8 (1917).

macrocyce, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:54.

1937.-Venezuela.

Tree to 25 m tall. Twigs 0.4 - 0.6 cm in diameter, glabrous.

Stipules 2.0 - 3.5 cm long. Lamina 7.5 - 19.5 cm wide X 14.5 - 33.7 cm long, ovate or oval; apex acuminate or obtuse; base truncate or rounded (occasionally acute); lateral veins 12 - 14. Petiole 1.5 - 7.8 cm long, 1/3 - 1/7 the length of the lamina. Figs 2.4 - 4.3 cm in diameter; globose; short, stiff pubescence; none attached to plants; color not noted; peduncle  $\pm$  1.2 cm long; pedicel not noted (figs in poor condition on observed specimens); basal bracts not observed on these specimens; ostiole highly raised--to 0.5 cm long.

Leaf structure: cystoliths present on both surfaces; sclereids absent; lower epidermal cells plane; stomates superficial or slightly sunken; tabular crystal cells usually present on the veins beneath; druse cells usually present on both surfaces, quite often in abundance; pubescence of multicellular glandular hairs on the lower surface (rarely on the upper surface) and 1-celled conical hairs from the cystoliths on the lower surface.

Vernacular name:

higueron.

Ecology:

These specimens were recorded as being from 1,000 - 1,500 m in altitude and were growing in cloud or wet sub-tropical forests.

Specimens studied:

Aragua: H. Pittier and M. Nakichenovich; 15419

Caracas: E. Pittier; 40

Merida: E. L. Little, Jr.; 15373

No location: E. Delgado; 39

Rancho Grande Parque Nacional: Williams; 9986

Trujillo: Dr. Christ; 52

Ficus towarensis



20

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA  
*Ficus towarensis* Pittier  
det. E. A. Steyermark  
Cerro Calumán, Jorua, 3/1/51  
Cragson  
Núm. 10000

Ficus tovarensis, Pittier, Bol. Soc. Venez. Cienc. Nat. 4, n<sup>o</sup>. 30:57.

1937.-Venezuela.; 3471-29

Tree to 15 m tall. Twigs 0.3 - 0.6 cm in diameter. pubescent. Stipules 1.1 - 4.0 cm long, persistent. Lamina 4.5 - 9.3 cm wide X 8.8 - 19.3 cm long, oval sometimes somewhat oblong or ovate; apex acuminate; base rounded, cordate slightly emarginate; lateral veins 10 - 16. Petiole 1.2 - 3.0 cm long, 1/10 - 1/4 the length of the lamina. Figs 0.6 - 1.6 cm in diameter, transversely elliptical, glabrous to sparse minute pubescence, borne among the leaves; color green; peduncle obsolete; pedicel obsolete; basal bracts 0.2 - 0.45 cm long; ostiole flush to raised (usually only slightly so).

Leaf structure: cystoliths present on both surfaces; sclereids absent; lower epidermal cells plane; stomates superficial; tabular crystal cells present on the veins beneath; druse cells occasionally present, may be on both surfaces; pubescence of 2-septate glandular hairs mainly on the lower surface, multiseptate hairs on lower surface of some plants, occasional leaves with short conical 1-celled hairs.

Vernacular names:

higueron, and Minchon.

Ecology:

This tree is found from 1,500 to 2,200 m in altitude growing in temperate forests.

Specimens studied:

Aragua: Herbig and Veraschi; 7522b

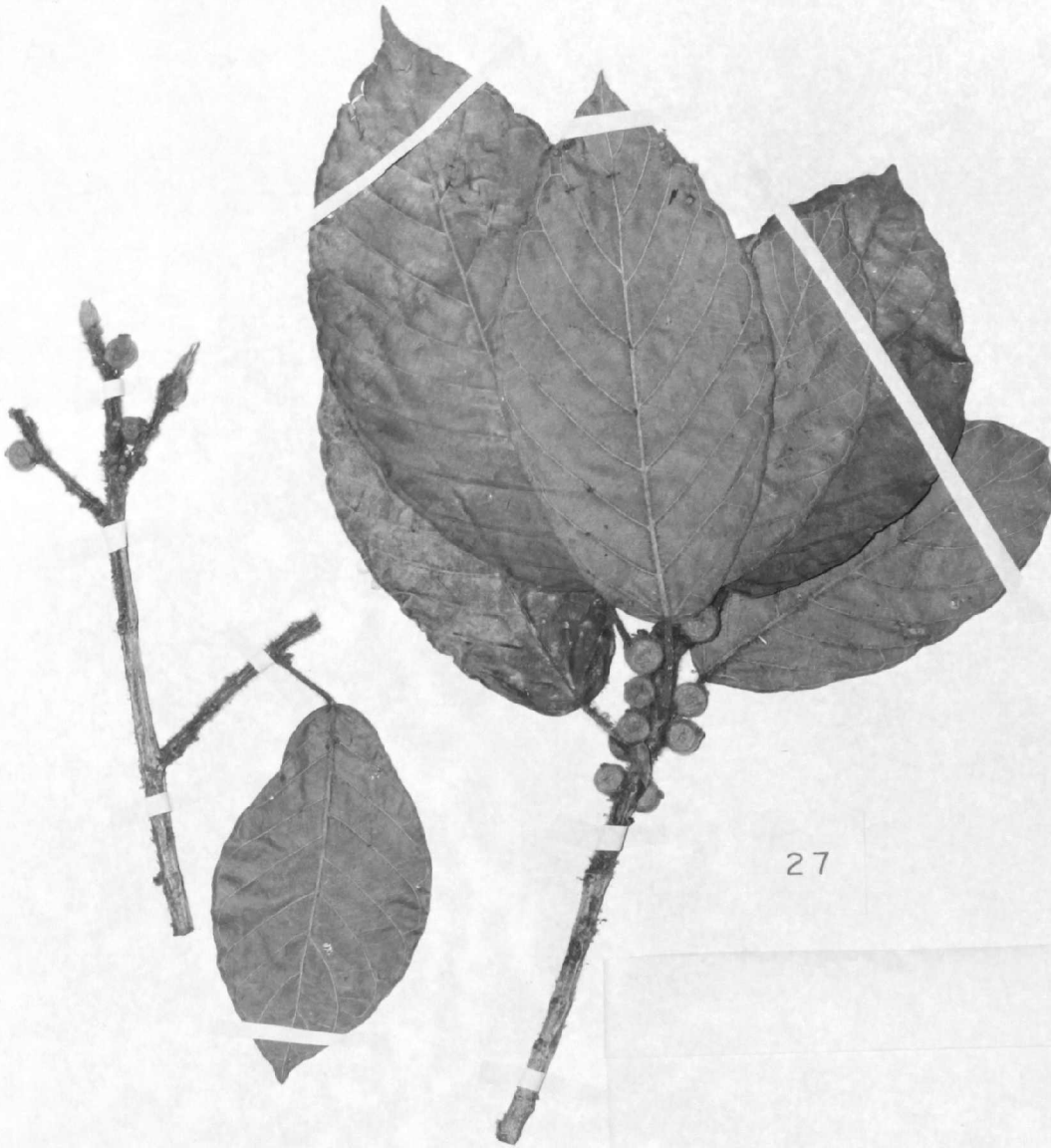
M. Pittier; 10019

El Junquito: Lesser; 1065

Merida: L. Aristeguieta; 5230

Felipe Matos; BAIL-29

E. L. Little; 15217

Ficus trigona

HERBARIO BOTANICO, CARACAS-NEW YORK BOTANICAL GARDEN  
 Exploration of the Alto Rio Urci  
 ESTADO BOLIVAR, VENEZUELA

Ficus

shrub to 2 m, leaves silvery green beneath, prominent nerves, stems ferruginous pubescent, fruit pale green, at base of west-facing escarpment, Cerro Urci, Rio Urci.

September 13,  
 Rio Urci

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Núñez



Ficus trigona, L.f., Supplementum Plantarum. . . , 1441, 1781.

Shrub or tree to 15 m tall. Twigs 0.2 - 0.4 cm in diameter, matted pubescent. Stipules 0.9 - 3.1 cm long. Lamina 2.3 - 8.6 cm wide X 4.8 - 16.4 cm long, oval; apex acuminate; base rounded, slightly oblique; lateral veins 8 - 11. Petiole 0.8 - 3.8 cm long, 1/4 - 1/10 the length of the lamina. Figs 0.6 - 1.0 cm in diameter, globose, long pubescent, borne among the leaves; color pale olive green; peduncle obsolete to 0.1 cm long; pedicel obsolete to .05 cm long; basal bracts 0.1 - 0.2 cm long; ostiole raised with a thin, three-pointed arrangement of receptacular tissue encompassing it.

Leaf structure: cystoliths present on the upper surface; sclereids absent; lower epidermal cells plane or striated around the stomates; stomates superficial; tabular crystal cells present on the veins beneath; druse cells present on the lower surface; pubescence of long multiseptate hairs and 2-septate glandular hairs.

Vernacular names:

none noted.

Ecology:

This plant is found from 80 - 350 m in altitude. It has been collected in rain forests and at the base of a west-facing escarpment.

Specimens studied:

Bolivar: Delgado; 466

Bassett Maguire, J. A. Steyermark, and Celia K. Maguire;

53813

J. A. Steyermark; 88644

Delta Amacuro: J. A. Steyermark; 87759

Ficus trigonata

25

HERBARIO DEL MUSEO COMERCIAL DE VENEZUELA

Ficus

Cerca de Poya, Guárico.

Núm. 479

Núm. Col. 12523 Col. H. PITTIER Fecha Sept. 11, 1927

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Ficus

Núm. 479

Ficus trigonata, L., Fl. Surinam:17, 1775

Ernstiana, Pittier, Bol. Soc. Venez. Cien. Nat. 4, n<sup>o</sup>. 30:55.

1937.-Venezuela.

Habit not noted. Twigs 0.3 - 0.5 cm in diameter, glabrous or minutely to long pubescent. Stipules 1.0 - 2.9 cm long. Lamina 7.1 - 13.5 cm wide X 17.6 - 32.3 cm long, oval or ovate; apex obtuse or acuminate; base rounded or acute; lateral veins 9 - 15. Petiole 3.0 - 7.5 cm long, 1/7 - 1/4 the length of the lamina. Figs  $\pm$ 1.7 cm in diameter, globose, minutely pubescent, borne among the leaves; color not noted; peduncle obsolete; pedicel obsolete; basal bracts  $\pm$ 0.2 cm long; ostiole slightly raised in a slight rim of receptacular tissue.

Leaf structure: cystoliths present on both surfaces, but generally few or lacking on the lower surface; sclereids absent; lower epidermal cells generally plain, few striated around the guard cells; stomates superficial; tabular crystal cells absent; druse cells may be present on both surfaces; pubescence of 1-celled conical hairs on the lower surface and occasionally on the upper surface; 2-septate glandular hairs may be present on the lower surface.

Vernacular name:

none noted.

Ecology:

not noted.

Specimens studied:

Guarico: H. Pittier; 12522, 12523

La Guaira: H. Pittier; 12419, in VEN 4873h

Ficus Urbaniana



ARBOLES DE VENEZUELA  
 DEL HERBARIO DE LA UNIVERSIDAD DE LOS ANDES  
 Facultad de Ciencias Forestales, Mérida, Venezuela

No. 15163  
*Ficus urbaniana* Warb.  
 Nombre vulgar: Dba. ELL  
 Estado: Mérida Municipio:  
 Localidad: Tovar, por la carretera.  
 Tipo de bosque:  
 Elevación: 2100 m. Diámetro: 50 cm. Altura: 12 m.  
 Usos:  
 Col. Eibert L. Jatto de  
 Otros datos: L. Tex Blanco. 9 mayo 1963

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*Ficus urbaniana* Warb.

Núm. 37028  
 Núm. Col/15163 Col. Fecha mayo 2 1963  
 G. B. Little Jr.

Ficus Urbaniana, Warb. in Urb. Symb. Ontill. iii. 459.-Ind. occ.

pascuorum, Pittier, Bol. Soc. Venez. Cienc. Nat. 4, n<sup>o</sup>. 30:54.

1937.-Venezuela.

Tree to 20 m tall, may start as an epiphyte. Twigs 0.4 - 0.9 cm in diameter, glabrous or minutely pubescent. Stipules 0.4 - 2.4 cm long. Lamina 4.0 - 16.2 cm wide X 7.5 - 29.3 cm long; oval, slightly spatulate or obovate; apex obtuse to acute, a few slightly acuminate; base acute, slightly rounded or rounded, slightly truncate, and occasionally slightly inequilateral; lateral veins 7 - 13. Petiole 1.3 - 6.9 cm long, 1/4 - 1/13 the length of the lamina. Figs 1.4 - 2.5 cm in diameter (from 0.6 cm upwards when immature), globose to transversely elliptical or depressed globose, very minute and scattered to dense pubescence, borne among the leaves; color turning dark purple with pale green below or yellowish; peduncle obsolete to 0.6 cm long; pedicel obsolete; basal bracts 0.3 - 1.6 cm long; ostiole raised.

Leaf structure: cystoliths present on both surfaces less common on the lower; sclereids abundant on the upper surface, usually few on the lower surface; lower epidermal cells plane; stomates flush, slightly sunken or sunken; tabular crystal cells usually present on the veins beneath; druse cells present in both surfaces, usually abundant in the lower surface, scarce in the upper surface; pubescence of usually abundant 2-septate glandular hairs on the lower surface.

Vernacular names:

matapalo, Higos, Higueron, and Higuero.

Ecology:

Very little mention is made of this. It seems to be found from 90 -

1,200 m in altitude and in inundated or rainy forests. It also appears to be cultivated.

Specimens studied:

- Aragua: H. Pittier; 1231h  
Barinas: L. Bernardi; 3325  
Carabobo: H. Pittier; 8796, 12110  
Caracas: H. Pittier; 7057, 9669, 10419, 12280  
Delta Amacuro: J. A. Steyermark; 8748h  
Distrito Federal: Croizat; 130  
H. Pittier; 12276, 1257h  
Guarico: H. Pittier; 12533  
Merida: E. L. Little; 15163  
E. L. Little, Jr.; 15851  
H. Pittier; 12782  
Miranda: H. Pittier; 12536  
Sucre: L. Aristeguieta and G. Agostini; 4761  
Trujillo: Dr. Christ; 47  
Zulia: Lasser; 2463  
Julio Ilescarboura; 65

Ficus velutina



2

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HERBARIO NACIONAL DE VENEZUELA

*Ficus velutina* Willd.  
at *F. velutina* L.

Núm. 10000

Ficus velutina, H. and B. ex Willdenow, Sp. Pl. (ed. L), iv(2):1111

Botan. (no. 34), 1805. Le Guairol: L. Piller: 57

Tree 8 - 12 m tall. Twigs 0.3 - 0.6 cm in diameter, glabrous or pubescent. Stipules 0.5 - 1.6 cm long. Lamina 1.3 - 13.9 cm wide X 2.2 - 21.1 cm long, oval to ovate and sometimes slightly obovate; apex acute, slightly acuminate or obtuse; base rounded and sometimes emarginate; lateral veins 6 - 12. Petiole 0.3 - 3.9 cm long, 1/3 - 1/4 the length of the lamina. Figs 0.6 - 1.8 cm in diameter usually pyriform but occasionally globose; color deep green; peduncle 0.1 - 1.0 cm long; basal bracts 0.1 - 0.4 cm long; pedicel obsolete to 0.2 cm long; ostiole flush to slightly raised with a thin erect rim of receptacular tissue surrounding it.

Leaf structure: cystoliths present on the upper surface, few or usually absent on the lower surface; sclereids absent; lower epidermal cells somewhat plicate; stomates superficial occasionally slightly sunken; druse cells present in upper surface; tabular crystal cells are occasionally present in the veins of the lower surface; pubescence ranges from none to long multiseptate hairs, 1-celled conical hairs and 2-septate glandular hairs on the lower surface, and a few scattered 1-celled conical hairs are sometimes present on the upper surface.

Vernacular names:

Higuito, Murcielaguero, Araguato, and Higuero.

Ecology:

This species is found from 1,000 - 1,800 m in altitude. Only two habitats are noted: a moist virgin forest and the inclination of a cleft in the ground.



## Specimens studied:

Between Caracas and La Guaira: H. Pittier; 9173

Caracas: H. Pittier; 7852, 9561, 9645

Distrito Federal: Delgado; 442

J. A. Steyermark and Mario Farinas; 90951

Williams; 9922

La Guaira: S. Bonsanto; 11530

Los Venados: L. Aristeguieta; 817

Merida: H. Pittier; 12738

Miranda: Croizat; 135

L. Aristeguieta; 3030, 5509

No location: Delgado; 168

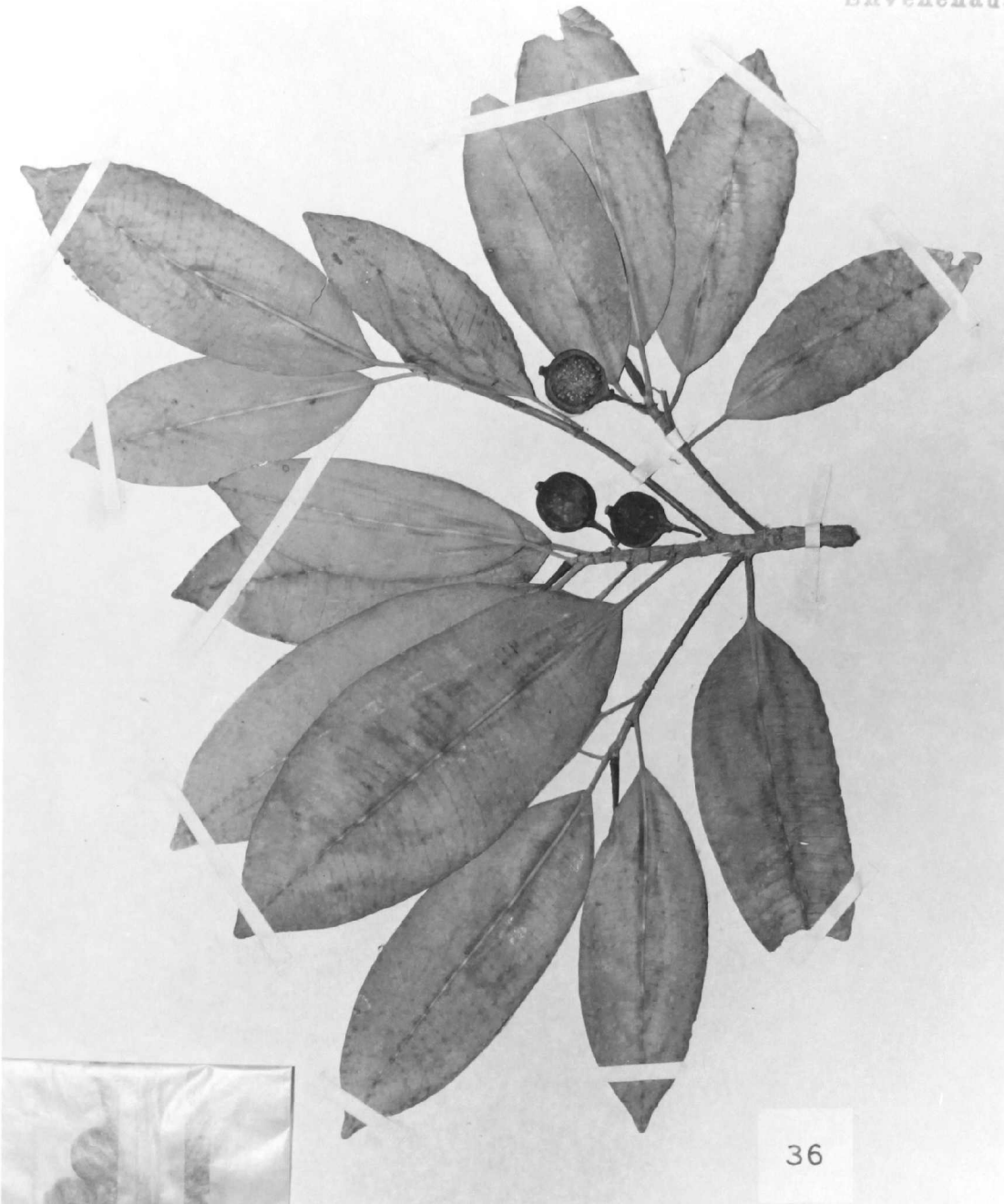
H. Pittier; in VEN 473

Trujillo: H. Pittier; 10740

Sihnee; 62

Ficus yaponensis

Envenenada



MINISTERIO DE AGRICULTURA Y CRIA  
DIRECCION FORESTAL  
DIVISION DE REPOBLACION FORESTAL

*Ficus*  
*yaponensis*

Ficus yaponensis, Desvaux, Ann. Sci. Nat. (Ser. II), xviii:310-311,  
1842.

Tree to 20 m tall. Twigs 0.1 - 0.3 cm in diameter, glabrous.  
Stipules 1.6 - 9.0 cm long, persistent. Lamina 1.2 - 8.6 cm wide X  
6.0 - 27.2 cm long, oblanceolate; apex acuminate, rarely acute; base  
acute; lateral veins 20 - 42. Petiole 0.3 - 3.9 cm long, 1/4 - 1/12 the  
length of the lamina. Figs 0.7 - 1.8 cm (2.5 cm) in diameter, globose  
to somewhat pyriform, glabrous or occasionally minutely pubescent,  
borne among the leaves; color rich green with pale green spots;  
peduncle 0.2 - 1.1 cm long; pedicel obsolete to 0.6 cm long; basal bracts  
to 0.1 cm long; ostiole crateriform to 0.4 cm high.

Leaf structure: cystoliths present on both surfaces, those present  
on the lower surface sometimes having conical hairs projecting from  
them; sclereids absent; lower epidermal cells plane; stomates super-  
ficial; tabular crystal cells absent; druse cells present in both sur-  
faces though usually lacking in the upper surface; pubescence of short  
stalked, multicellular, glandular hairs.

Vernacular names:

higuerote, and "Lechero blanco."

Ecology:

This species is found from 450 - 1,600 m in altitude. It has been  
collected in secondary subtropical forests, in tropical rainy forests,  
at the margin of the mouth of a river, on forested mountain slopes, in  
evergreen forests, and cultivated in a garden.

Specimens studied:

Ansoategui: J. A. Steyermark; 61710

Aragua: E. L. Little, Jr.; 15450

Carabobo: J. A. Steyermark and Cora Steyermark; 95436  
Caracas: Croizat; 734  
H. Pittier; 7750  
Dr. E. Tejera; S/M  
Chorros: F. Tamayo; 438  
Merida: E. L. Little; 15185, 15878  
Miranda: A. L. Bernardi; 5817  
Monagas: J. A. Steyermark; 61955  
No location: Dr. Basalo; in VEN 350  
H. Pittier; in VEN  
Trujillo: H. Pittier; 13328  
Yaracuy: L. Aristeguieta; 4291

species No. 1



4

*Ficus spicata* (L.) Sw.  
at Caracas, Venezuela  
60710

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA

*Ficus*

*spicata*, con frutos  
Región Guayana Francesa, Sur  
norte, Edo. Apure.

Núm. 42486

Núm. Col. 154 Co. 6, 7, 11, fecha 16. 12. 1957

Unknown species No. 1

Tree to 20 m tall. Twigs 0.1 - 0.2 cm in diameter, pubescent. Stipules 0.5 - 0.7 cm long. Lamina 1.2 - 5.6 cm wide X 2.8 - 8.8 cm long, oval; apex slightly acuminate; base rounded and emarginate; lateral veins 5 - 10. Petiole 0.5 - 1.8 cm long  $1/5 - 1/7$  the length of the lamina. Figs 0.4 - 0.65 cm in diameter, globose, glabrous to minutely pubescent, borne among the leaves; color reddish; peduncle obsolete to 0.05 cm long; pedicel none; basal bracts to 0.1 cm long; ostiole raised slightly.

Leaf structure: cystoliths present in both surfaces; sclereids absent; lower epidermal cells plane; stomates superficial; tabular crystal cells absent; druse cells present, abundant on lower surface; pubescence of short, one-celled, thick-walled, stiff, conical hairs on both surfaces and a few two-celled glandular hairs on the lower surface.

Vernacular name:

"matapalo."

Ecology:

The only note made of this was that Little recorded it as found in a forest at approximately 120 m in altitude.

Specimens studied:

Apure: M. Ramis; 1454

Barinas: E. L. Little, Jr.; 15111

species No. 2



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HERBARIO DEL MUSEO COMERCIAL DE VENEZUELA

*Ficus pumila* L.*Regener. Guayana, 1300 m., en ruinas de la casa*

Núm. —

Núm. Col. 13860 Col. H. PITTIER Fecha Mayo 1936.

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA*Ficus pumila* L.

Núm. 426

Núm. Col. 13660 Col. H. Pittier Fecha Mayo 1936

Unknown species No. 2

Habit not noted. Twigs 0.3 - 0.4 cm in diameter, pubescent. Stipules 0.9 - 1.4 cm long. Lamina 2.6 - 5.1 cm wide X 3.8 - 10.4 cm long, usually ovate to oval; apex acute to slightly acuminate; base slightly cordate, or rounded and emarginate sometimes tending to be slightly oblique; lateral veins 6 - 7. Petiole 0.6 - 1.5 cm long,  $1/5 - 2/19$  the length of the lamina. Figs 2.0 - 3.1 cm in diameter, pyriform or urn shaped, long haired pubescence tending to be tufted around the orifice, the position is not noted; color not noted; peduncle 0.4 - 0.9 cm long; pedicel 0.6 - 0.8 cm long; basal bracts are not evident in the examined specimens; ostiole raised.

Leaf structure: cystoliths not present; sclereids absent; lower epidermal cells plane; stomates probably sunken; tabular crystal cells abundant on the veins of both surfaces; druse cells sometimes present in upper surface; pubescence of 1 - 5 septate medium length conical hairs present on the lower surface.

Vernacular names:

not noted.

Ecology:

This species may be cultivated on the walls of a house. Altitude was noted on only one of two specimens and it was found at 930 m.

Specimens studied:

Distrito Federal: Croizat, 167

Ingomar (Turmerito): H. Pittier, 13660



Unknown species No. 3



EXPEDICION ALTO PARAGUA  
de la Universidad Central de Venezuela y del Instituto Botánico, MAC  
ESTADO BOLIVAR, VENEZUELA

No. 90401

*Ficus* sp.

Tree 10 m. tall; leaves coriaceous, dark green above, ferruginous-brown below; flowers globose, pale green with fulvous; petiole pale green speckled brown; bud scale ferruginous brown.

Along south side of river

Serra Ichón: cercanías del Salto María Espuma (Salto Ichón) del río Ichón, base de la sierra de Ichón, tributario del río Paragua, Lat. 4° 46'; Long. 63° 18'.

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HERBARIO NACIONAL DE VENEZUELA

*Ficus* sp.

(not matched at U.S. Nat. Herb.)  
Det. M. B. ...  
1964

Núm.

## Unknown species No. 3

Tree to 10 m tall. Twigs 0.4 - 0.5 cm in diameter, glabrous to short dense pubescence. Stipules to 1.1 cm long. Lamina 3.3 - 12.8 cm wide X 8.5 - 31.0 cm long, oval to oblong; apex acuminate; base rounded to almost acute; lateral veins 11 - 20. Petiole 1.6 - 10.0 cm long 1/3 - 1/5 the length of the lamina. Figs 0.7 - 0.8 cm in diameter, globose, short rusty matted pubescence, borne among the leaves; color pale green; peduncle 0.05 - 0.1 cm long; pedicel obsolete; basal bracts 0.2 - 0.3 cm long; ostiole flush with surface.

Leaf structure: cystoliths few in upper surface; sclereids absent; lower epidermal cells plane; stomates superficial to very slightly sunken; tabular crystal cells absent; druse cells absent; pubescence of somewhat star-shaped ferruginous-brown clusters on the lower surface.

Vernacular name:

Matapalo.

Ecology:

It seems to be found where there is a plentiful water supply such as a rainy forest or along a river. The two specimens studied were found at an altitude of 500 m.

Specimens studied:

Bolivar: J. A. Steyermark; 90401

Territoria Federal Delta Amacuro: Luis Marciano Berti; 445

known species No. 4



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MINISTERIO DE AGRICULTURA Y CRIA  
 DIRECCION FORESTAL  
 SECCION DE REFORESTACION

*Arceuthobium*  
 No. 473 COL. *...* FECHA 7

Unknown species No. 4

Habit not noted. Twigs 0.3 cm in diameter, pubescent. Stipules 0.5 - 0.6 cm long. Lamina 1.6 - 4.4 cm wide X 3.6 - 13.5 cm long, oblanceolate; apex obtuse or acuminate; base acute; lateral veins 10 - 16. Petiole 1.2 - 3.4 cm long, 1/3 - 1/4 the length of the lamina. Figs approximately 3.3 cm in diameter, shape not noted, glabrous, position not noted; color not noted; peduncle not noted or in evidence; pedicel probably obsolete; basal bracts approximately 0.3 cm long; ostiole insufficient evidence.

Leaf structure: cystoliths not present; sclereids absent; lower epidermal cells plane; stomates sunken; tabular crystal cells absent; druse cells absent; pubescence absent.

Vernacular name:

not noted.

Ecology:

not noted.

Specimens studied:

Unable to translate: E. Delgado, 473

own species No. 5



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ARBOLES DE VENEZUELA  
 HERBARIO DE LA UNIVERSIDAD DE CAROLINA DE  
 DURHAM, EN EL INSTITUTO VENEZOLANO DE INVESTIGACIONES CIENTÍFICAS

1  
 P. P. 111  
 No. 111  
 Municipio, Sta. Fe, Estado  
 Lara, en el camino al queso, sobre sec.  
 que forma embudo en el queso, a una altura de  
 1000 m. Diámetro 30 cm. Altura 15 m.  
 col. L. 1111, No. Fecha: 27 Jul. 1971  
 Látex blanco, ligeros verdes.

Ministerio de Agricultura y Cría  
 HERBARIO NACIONAL DE VENEZUELA

Núm. 1111  
 Núm. Col. 1111 Col. Fecha:

Unknown species No. 5 (Synonym: *H. pittieri* and *H. haldanensis*)

Tree to 20 m tall, parasitic when young. Twigs 0.45 - 0.6 cm in diameter, pubescent or glabrous. Stipules 0.7 - 3.3 cm long. Lamina 3.6 - 13.9 cm wide X 6.3 - 24.0 cm long, oval or obovate; apex acuminate; base cordate or rounded; lateral veins 7 - 18. Petiole 1.7 - 7.3 cm long, 1/3 - 1/6 the length of the lamina. Figs 0.6 - 1.8 cm in diameter; globose, somewhat cylindrical or oblong; long pubescent; borne among the leaves; color green; peduncle obsolete; pedicel obsolete; basal bracts 0.4 - 1.2 cm long; ostiole well raised.

Leaf structure: cystoliths present on both surfaces, generally few on the upper surface; sclereids absent; lower epidermal cells plane; stomates superficial; tabular crystal cells usually present on the veins beneath; druse cells present on both surfaces; pubescence of 2-septate glandular hairs on both surfaces, rarely on upper surface; occasionally there are multiseptate hairs on the lower surface.

Vernacular names:

"Higuerote," and higueron.

Ecology:

This species ranges from 700 - 1,800 m in altitude. It apparently grows on south-facing steep slopes in temperate forests or in subtropical rain forests of secondary growth. One specimen was collected below limestone bluffs.

Specimens studied:

Anzoategui: J. A. Steyermark; 61573

Barinas: E. L. Little, Jr.; 15371

Merida: E. L. Little, 15773

Monagas: J. A. Steyermark; 61879

Parque Nacional Chragua: H. Pittier and M. Nakichenovich; 15442

Sucre: Marvin Rabe and J. A. Stayermark; 96327

Unknown species No. 6



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HERBARIO NACIONAL DE VENEZUELA

*Orb. Bol. de Bot. (1914) vol. 1, p. 116, f. 116  
consp. p. 116, f. 116*

Núm. \_\_\_\_\_  
Núm. Col. 2027 Col. \_\_\_\_\_ Fecha \_\_\_\_\_ 19\_\_



## Unknown species No. 6

Tree to 20 m tall. Twigs 0.3 - 0.8 cm in diameter, glabrous. Stipules 0.9 - 2.9 cm long. Lamina 2.3 - 10.1 cm wide X 4.5 - 22.0 cm long, oval or oblique; apex obtuse; base oblique, acute, or slightly rounded; lateral veins 7 - 12. Petiole 0.4 - 1.3 cm long, 1/9 - 1/38 the length of the lamina. Figs 0.85 - 1.7 (2.0) cm in diameter; transversely elliptical, obovoid-subglobose; glabrous or covered with small, rusty-brown pubescence; borne among the leaves; color pale olive green with paler-yellow spots; peduncle obsolete; pedicel obsolete; basal bracts 0.3 - 0.6 cm long; ostiole raised.

Leaf structure: cystoliths present on both surfaces though sometimes few in number; sclereids absent; lower epidermal cells plicate; stomates superficial to slightly sunken; tabular crystal cells absent; druse cells often present on the lower surface, only occasionally present on the upper surface; pubescence of 2-septate glandular hairs on the lower surface.

## Vernacular name:

none noted.

## Ecology:

This species seems to be located between 1,100 and 1,800 m in altitude. Only one sheet studied had a habitat noted. It was collected in a dwarf forest. All the specimens studied were from Bolivar.

## Specimens studied:

Bolivar: Cardona; 2621

J. A. Steyermark; 13530, 75161

J. A. Steyermark and Sven Nilsson, 383

Unknown species No. 7



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60091 PLANTS OF VENEZUELA

State of Dolívar, Sororopán-tepuí, altitude 2225-2255 meters  
JULIAN A. STEYERMARK NOVEMBER 13

Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA

*Ficus*  
*Arbol de 15 m. de alt.*

Núm. 35932

Núm. Col. 60091 Col. *J. A. Steyermark* Fecha *nov. 13*

## Unknown species No. 7

Tree to 20 m tall. Twigs 0.1 - 0.2 cm in diameter, minutely pubescent. Stipules 0.4 - 1.0 cm long. Lamina 0.6 - 2.4 cm wide X 1.6 - 4.2 cm long, oval; apex acuminate; base acute to slightly rounded; lateral veins 10 - 16. Petiole 0.2 - 0.8 cm long,  $1/5 - 1/8$  the length of the lamina. Figs  $\pm 0.55$  cm in diameter, globose, glabrous, borne among the leaves; color not noted; peduncle  $\pm 0.1$  cm long; pedicel obsolete; basal bracts  $\pm 0.1$  cm long; ostiole raised.

Leaf structure: cystoliths present on both surfaces; sclereids absent; lower epidermal cells plane; stomates superficial; tabular crystal cells may be present on the veins beneath; druse cells may be present in both surfaces; pubescence absent.

## Vernacular names:

none noted.

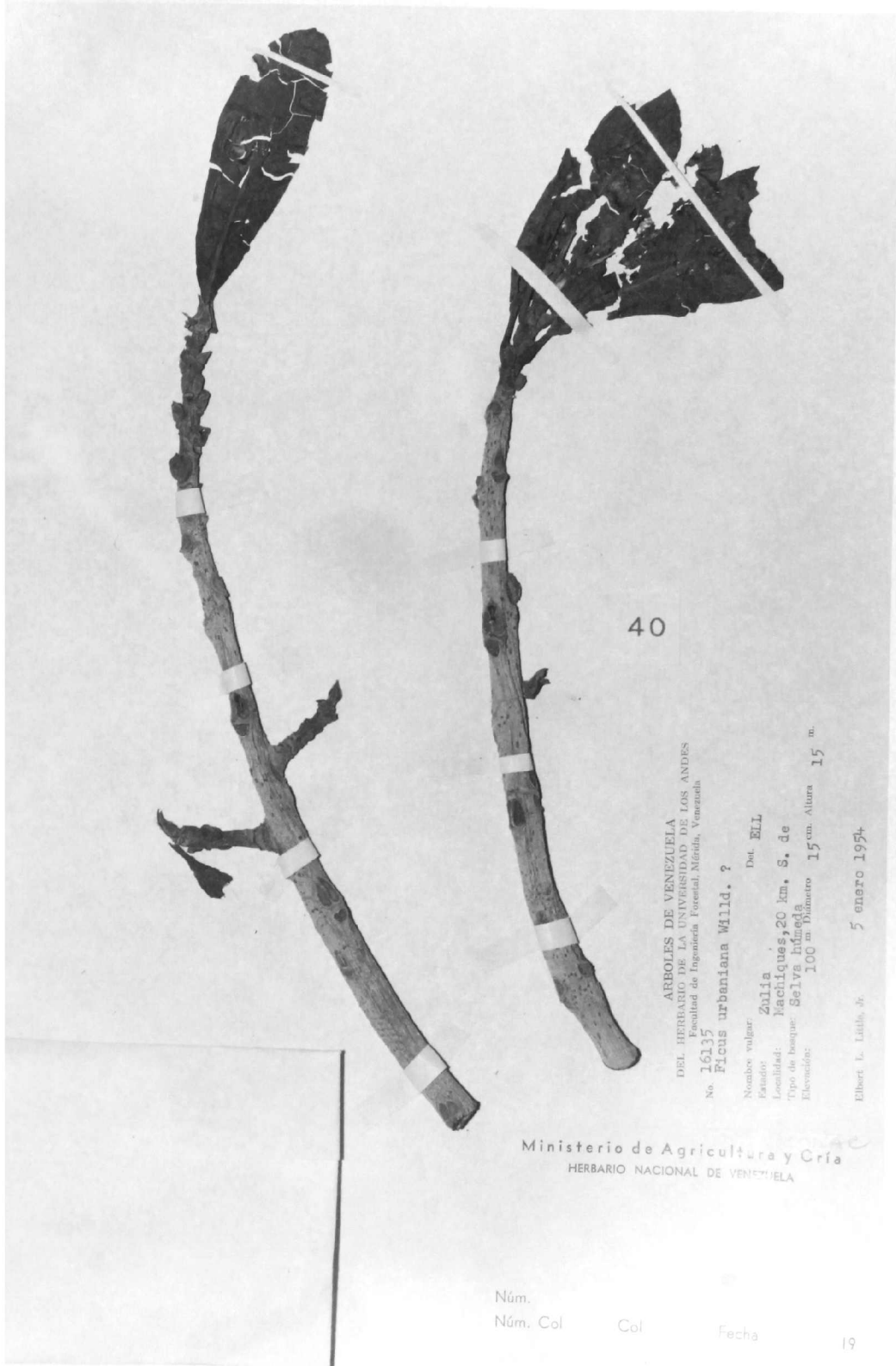
## Ecology:

This species is found from 1,800 - 2,255 m in altitude. The only noted habitat is that of a rich mossy forest of uneven ground.

## Specimens studied:

Bolivar: J. A. Steyermark; 60091, 93642

able new species "A"



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ARBOLES DE VENEZUELA  
 DEL HERBARIO DE LA UNIVERSIDAD DE LOS ANDES  
 Facultad de Ingeniería Forestal, Mérida, Venezuela  
 No. 16135

*Ficus urbaniana* Willd. ?  
 Nombre vulgar:   
 País:   
 Localidad:   
 Tipo de bosque:   
 Elevación:   
 Dst. ELL  
 Zulia  
 Nacimiento, 20 km. S. de  
 Selva húmeda  
 100 m Diámetro 15 cm. Altura 15 m.

Elbert L. Little, Jr. 5 enero 1954

Ministerio de Agricultura y Cría  
 HERBARIO NACIONAL DE VENEZUELA

Núm.   
 Núm. Col Col Fecha 19

Probable new species "A"

Habit not noted, but the plant is 15 m tall. Twigs 0.3 - 0.4 cm in diameter. Stipules 0.8 - 1.4 cm long, persistent. Lamina 1.3 - 4.3 cm wide X 5.2 - 10.0 cm long, oblanceolate; apex obtuse or acuminate; base acute; lateral veins ± 8. Petiole 0.7 - 1.5 cm long, 1/7 the length of the lamina. Figs are borne on the current growth but are immature.

Leaf structure: cystoliths are present on the upper surface only; sclereids absent; lower epidermal cells plicate; stomates superficial; tabular crystal cells absent; druse cells present in the lower surface; pubescence of abundant 2-septate glandular hairs on the lower surface.

Vernacular names:

none noted.

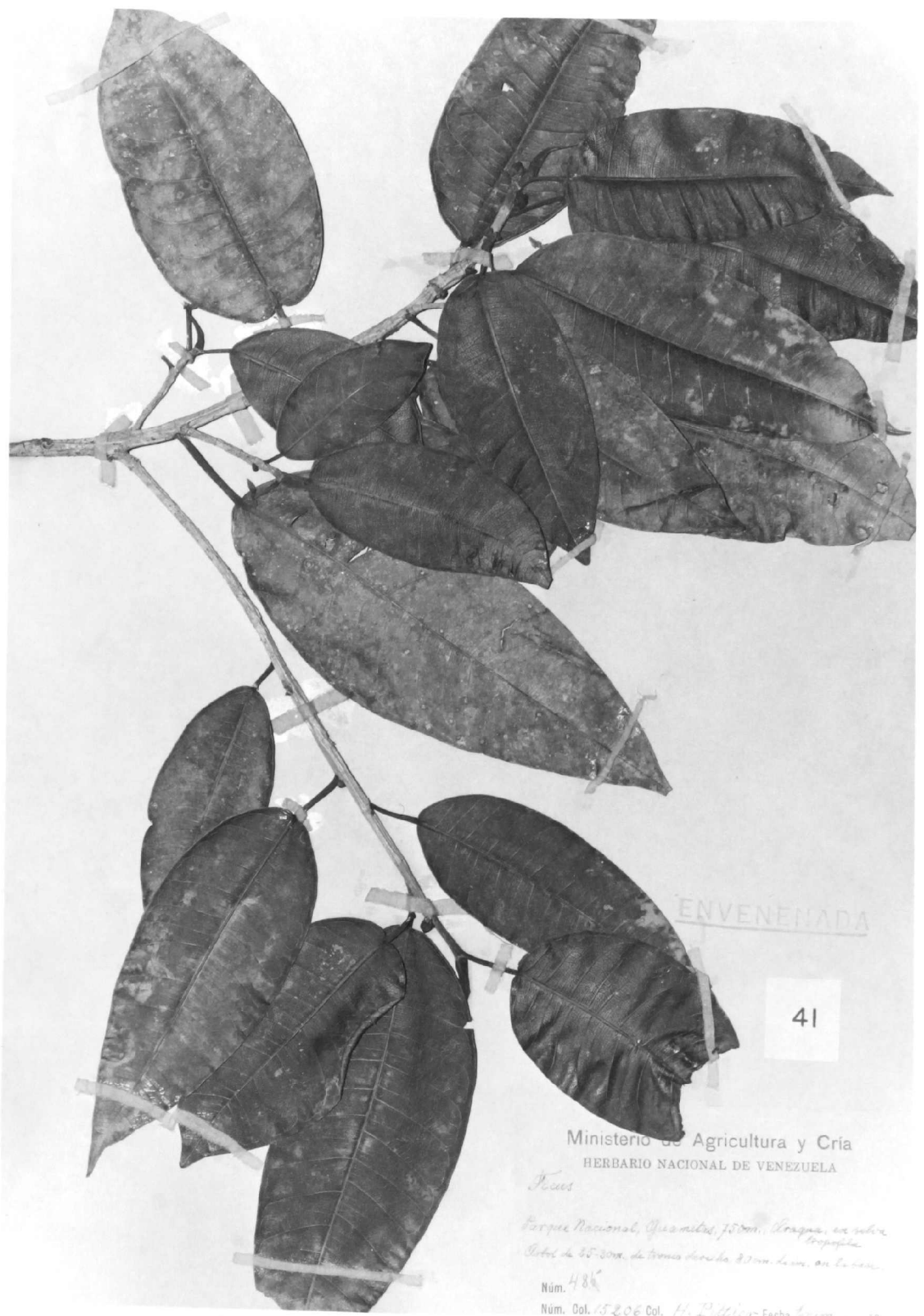
Ecology:

This plant was found at 100 m in altitude growing in a rainy forest.

Specimen studied:

Julia: E. L. Little, Jr.; 16135

Probable new species "B"



ENVENENADA

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Ministerio de Agricultura y Cría  
HERBARIO NACIONAL DE VENEZUELA

*Tucos*  
*Parque Nacional, Guasimoles, 750m., Aragua, ex herb.*  
*Col. de 25-30m. de tronco desde 20m. de m. en la base.*  
 Núm. 486  
 Núm. Col. 15206 Col. H. Pollock Fecha 1950

Probable new species "B"

Tree to 30 m tall. Twigs 0.25 - 0.35 cm in diameter, rusty-brown pubescent. Stipules 1.5 - 2.0 cm long. Lamina 2.6 - 6.1 cm wide X 5.8 - 16.3 cm long, lanceolate; apex acuminate; base rounded to slightly cordate; lateral veins 13 - 16. Figs (immature) 0.35 - 0.45 cm in diameter, glabrous, borne among the leaves; orifice raised.

Leaf structure: cystaliths present only on the upper surface; sclereids absent; lower epidermal cells plane; stomates superficial; tabular crystal cells absent; druse cells present in both surfaces; pubescence absent.

Vernacular names:

none noted.

Ecology:

This plant was found at 750 m in a forest.

Specimen studied:

Aragua: H. Pittier; 15206

Probable new species "C"

*Ficus plicata* Pittier,  
Bol. Soc. Venez. Cienc. Nat. 8:258,  
1912 (Venezuela).



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MINISTERIO DE AGRICULTURA Y CRIA  
HERBARIO NACIONAL DE VENEZUELA

*Ficus plicata* *obovata* Pittier 1912  
11-12 Matayula  
El Guatape, Dept. de Bolívar, Venezuela  
Hb. Pittier

Núm 331



Probable new species "0"

Tree to 5 m tall. Twigs 0.2 - 0.3 cm in diameter, pubescent. Stipules 0.5 - 0.7 cm long. Lamina 1.6 - 7.4 cm wide X 3.8 - 18.5 cm long, oval; apex acuminate; base rounded; lateral veins 7 - 13. Petiole 0.5 - 1.3 cm long, 1/8 - 1/14 the length of the lamina. Figs ± 0.1 cm in diameter, globose, very minutely pubescent, position not known; color not noted; peduncle ± 0.2 cm long; pedicel obsolete; basal bracts ± 0.2 cm long; ostiole contained within 3 plicate folds of the receptacular tissue.

Leaf structure: cystaliths absent; sclereids absent; lower epidermal cells striated to plicate; stomates superficial; tabular crystal cells absent; druse cells present in the lower surface; pubescence absent.

Vernacular name:

Matapalo.

Ecology:

This plant was found at 121 m in altitude growing in the margin of the river town.

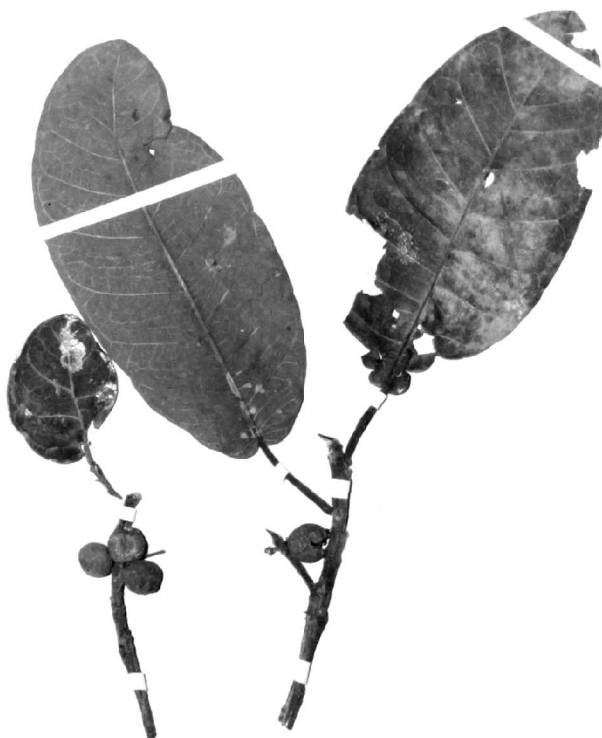
Specimen studied:

Yamatama; Williams; 15115

Discussion:

This specimen was quite different, particularly in reference to the ostiole, from any of the others examined. Since only one specimen was seen, there was reluctance to designate this a separate species.

Probable new species "D"



Probable new species "D"

Tree to 20 m tall. Twigs  $\pm 0.3$  cm in diameter, pubescent. Stipules  $\pm 0.5$  cm long. Lamina 3.0 - 5.3 cm wide X 4.9 - 11.3 cm long, oval; apex slightly acuminate to almost obtuse; base cordate; lateral veins 10 - 12. Petiole 2.2 - 2.6 cm long,  $1/4$  -  $1/5$  the length of the lamina. Figs 0.7 - 0.9 cm in diameter, somewhat globose, minutely pubescent, borne among the leaves; color not noted; peduncle  $\pm 0.3$  cm long; pedicel obsolete; basal bracts 0.1 - 0.2 cm long; ostiole raised, contained within a roughly triangular rim of fairly thick receptacular tissue.

Leaf structure: cystaliths absent; sclereids absent; lower epidermal cells plicate; stomates superficial; tabular crystal cells absent; druse cells absent; pubescence of short to medium length multiseptate hairs mostly on the veins of the lower surface; and short, 1-celled, conical hairs on the larger veins of the upper surface.

Vernacular name:

Higuerote.

Ecology:

This plant was collected at 100 m in altitude in an elevated forest on an island.

Specimen studied:

El Ratin or Ratoir: Williams; 13208

## CONCLUSIONS

The species treated in this thesis probably are representative of most of the species in Venezuela. Because the country has large areas that are as yet unexplored botanically, more species may be present. Several of the included species are represented by too few specimens. These few specimens might be due to insufficient collections or the scarcity of the plant itself. Further botanical exploration of Venezuela might prove very interesting.

The lack of available literature is quite detrimental. The absence of this literature has made this survey somewhat incomplete; however, the majority of the species that were found seem to have rather definitive boundaries.

This study is intended to be a beginning and as such does not completely circumscribe all the species in Venezuela. It circumscribes the collections of the species in the country to the present time, however.

RECEIVED  
MAY 1954