

# DAVIS EXPEDITION FUND

## REPORT ON EXPEDITION / PROJECT

**Expedition/Project Title:** Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos

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**Travel Dates:** 15th June 2021 – 19th September 2022

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**Location:** Colombia (Cundinamarca, Boyacá, Cesar, Caldas, Cauca, Nariño)

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**Group Members:** Andrés Orejuela

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**Aims:** The proposed work aims to increase collections of poorly represented species of the Colombian *Berberis* in the herbaria, make field observations, take live photographs, and collect fresh leaves in silica gel for molecular studies.

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**Photography consent form attached:**  Yes  
(please refer to your award letter)  No

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**Outcome (a minimum of 500 words):** A field expedition, supported by the Davis Expedition Fund, was completed in the Colombian Andes between June 2021 and September 2022. A total of 42 specimens of *Berberis* (Berberidaceae) were collected, representing 16 native species, including 11 endemic species, ten of which were collected in the type locality. The fieldwork was divided into several trips focused on the Boyacá and Cundinamarca departments, with one trip to the Serrania of Perija in the north of Colombia, another to Central Colombia in Caldas and another to the Southwestern Colombia in Cauca and Nariño departments. In addition, four herbaria were also visited, PSO in Pasto (43 specimens), CUVC in Cali (31 specimens), JBB (162 specimens) and COL (588 specimens) in Bogotá, with a total of 824 herbaria collections of *Berberis* studied.

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Expedition to collect *Berberis* (Berberidaceae) in the Colombian  
Paramos

Andrés Orejuela PhD  
Herbario JBB, subdirección científica, Jardín Botánico de Bogotá



*Berberis hallii* Hieron. in Nariño, Colombia (photo: A. Orejuela)

ROYAL  
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Royal Botanic Garden  
Edinburgh

University of Edinburgh



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## Introduction

*Berberis* L. is a large and widely distributed genus of ~650 species distributed nearly throughout the temperate to subtropical regions of the world. It is the only genus of Berberidaceae that extends its distribution to the Southern Hemisphere to the Andes and temperate habitats in South America and North and East African highlands (Adhikari et al., 2015; Sun et al., 2018). One hundred eighty species of *Berberis* grow in the Americas (Ulloa-Ulloa et al., 2018), including “compound” and “simple” leaved species. All the South American *Berberis* are “simple-leaved” and grow in the high Andean Paramos in northern South America or the temperate regions in southern South America. In South America, the highest diversity can be found in Peru, Colombia, and Ecuador, with 33, 31 and 30 species and a remarkable endemism.

## Aims

The fieldwork aimed to increase collections of poorly represented species of the Colombian *Berberis* in the herbaria, make field observations, take live photographs and collect fresh leaves in silica gel. The specimens, photographs and field observations will be used to assess variability in characters within a species and as a basis for the taxonomic revision of the genus for Colombia. Fresh leaves will be preserved in silica gel for future molecular studies and to enrich the current phylogenies with species from northern South America.

## Study Site

The study area comprises the paramos located in the Colombian Andes. Paramos, with 3431 species of vascular plants (Luteyn, 1999), may be considered a plant diversity hotspot (Myers et al., 2000). At altitudes ranging from 2800 to 4700 m above sea level, paramos form an archipelago-like distribution between latitudes 11N and 8S covering approximately 35,000 km<sup>2</sup> (Madriñan et al. 2013). Physical characteristics of

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the ecosystem include aseasonal conditions with high daytime temperatures and low night-time temperatures, and high solar energy input and ultraviolet radiation. (Luteyn, 1999). The great majority of the plant species found in the Páramos are endemic to this ecosystem, with close relatives in lowland-tropical or north and south-temperate regions (van der Hammen and Cleef, 1986). The last is the case of *Berberis*, which belongs to paramo taxa, allochthonous, temperate plant groups that immigrated to the tropics from higher latitudes after environments suitable for species adapted to temperate conditions became available (Cleef, 1979).

### Preliminary results

A total of 42 specimens were collected from 16 Colombian native species of *Berberis*. All collections are summarised in table 1, and a representative per species is shown in appendix 1.

The latitude and longitude of the collection place and elevation data were recorded for all specimens. The labels for all collections included habitat information and plant descriptions focused on characters lost during drying (e.g., habit, height, and colour). Photographs were taken whenever possible. Silica-dried fresh leaves were collected for each numbered collection. Specimens were preserved in 70% alcohol and heat dried in Bogotá at the JBB herbarium in the Bogotá Botanic Garden.

At least three duplicates were made for each collection whenever possible. All specimens collected during the fieldwork were deposited at the JBB herbarium. One set of duplicates will be sent to the National Herbarium (COL) from Universidad Nacional de Colombia, and another will be exported to the E herbarium at the Royal Botanic Garden Edinburgh.

**Table 1.** Individuals collected in each locality

Species	Voucher	Latitude	Longitude	Locality
<i>Berberis carrikeri</i> L.A. Camargo	Orejuela 3712	10° 16' 2.172" N	72° 58' 32.664" W	Cesar

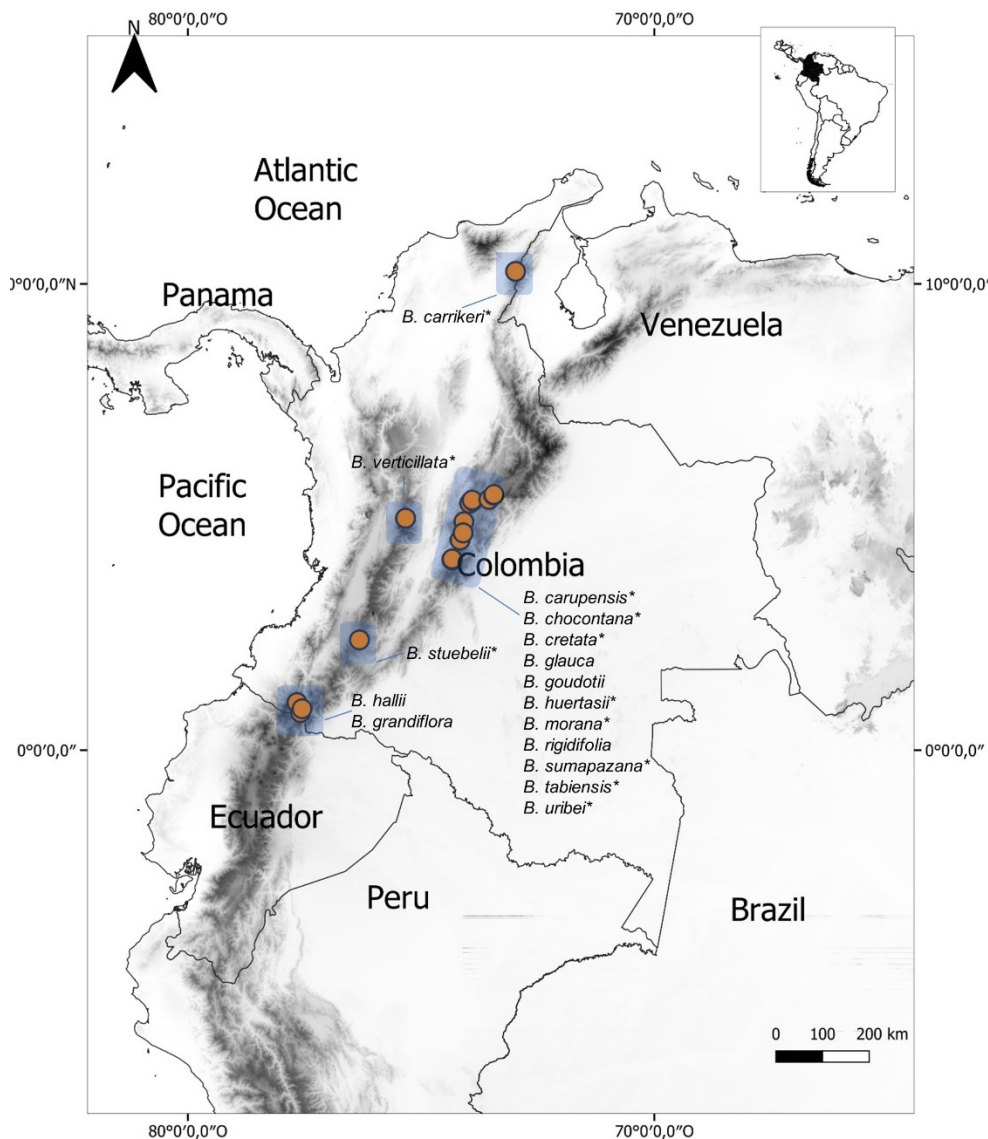
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<i>Berberis carupensis</i> L.A. Camargo	Orejuela 3744	5°21'03.12" N	73°53'44.06" W	Cundinamarca
<i>Berberis chocontana</i> L.A. Camargo	Orejuela 3843	5°05'43.08" N	73°42'77.95" W	Cundinamarca
<i>Berberis cretata</i> L.A. Camargo	Orejuela 3313	4° 6' 27.396" N	74° 20' 5.352" W	Bogotá D.C.
<i>Berberis cretata</i> L.A. Camargo	Orejuela 3762	4°31'02.62"N	74°09'54.95"W	Bogotá D.C.
<i>Berberis glauca</i> DC	Orejuela 3277	4°05'25.73" N	74°20'15.30" W	Cundinamarca
<i>Berberis glauca</i> DC	Orejuela 3282	4°05'25.73" N	74°20'15.30" W	Cundinamarca
<i>Berberis goudotii</i> Triana & Planch. ex Wedd.	Orejuela 3311	4° 6' 27.396" N	74° 20' 5.352" W	Bogotá D.C.
<i>Berberis goudotii</i> Triana & Planch. ex Wedd.	Orejuela 3312	4° 6' 27.396" N	74° 20' 5.352" W	Bogotá D.C.
<i>Berberis goudotii</i> Triana & Planch. ex Wedd.	Orejuela 3314	4° 6' 27.396" N	74° 20' 5.352" W	Bogotá D.C.
<i>Berberis goudotii</i> Triana & Planch. ex Wedd.	Orejuela 3321	4° 6' 27.612"N	74° 20' 5.568" W	Bogotá D.C.
<i>Berberis goudotii</i> Triana & Planch. ex Wedd.	Orejuela 3399	4° 6' 30.384" N	74° 20' 8.34" W	Bogotá D.C.
<i>Berberis grandiflora</i> Turcz.	Orejuela 4019	1°0.5'27"N	77°39'45"W	Nariño
<i>Berberis grandiflora</i> Turcz.	Orejuela 4028	1°0.5'27"N	77°39'45"W	Nariño
<i>Berberis grandiflora</i> Turcz.	Orejuela 4029	1°0.5'27"N	77°39'45"W	Nariño
<i>Berberis grandiflora</i> Turcz.	Orejuela 4030	1°0.5'27"N	77°39'45"W	Nariño
<i>Berberis hallii</i> Hieron.	Orejuela 4126	0°48'20"N	77°35'10"W	Nariño
<i>Berberis hallii</i> Hieron.	Orejuela 4128	0°48'20"N	77°35'10"W	Nariño
<i>Berberis hallii</i> Hieron.	Orejuela 4130	0°53'02"N	77°33'14"W	Nariño
<i>Berberis huertasii</i> L.A. Camargo	Orejuela 4191	5°23'3.28"N	73°32'48.9"W	Boyacá
<i>Berberis huertasii</i> L.A. Camargo	Orejuela 4192	5°23'3.28"N	73°32'48.9"W	Boyacá
<i>Berberis huertasii</i> L.A. Camargo	Orejuela 4193	5°28'31"N	73°26'49"W	Boyacá
<i>Berberis huertasii</i> L.A. Camargo	Orejuela 4194	5°28'37.3"N	73°26'57"W	Boyacá
<i>Berberis huertasii</i> L.A. Camargo	Orejuela 4195	5°29'24.9"N	73°26'27.3"W	Boyacá
<i>Berberis julianae</i> C.K. Schneid. (cultivated)	Orejuela 4183	4°40'10.08"N	74°06'6.6"W	Bogotá D.C.
<i>Berberis morana</i> L.A. Camargo	Orejuela 3747	5°22'13.21"N	73°54'23.57"W	Cundinamarca
<i>Berberis morana</i> L.A. Camargo	Orejuela 3751	4°40'05.1"N	74°06'00.4"W	Bogotá D.C.
<i>Berberis morana</i> L.A. Camargo	Orejuela 4184	4°40'1.16"N	74°05'57.5"W	Bogotá D.C.
<i>Berberis rigidifolia</i> Kunth ex DC.	Orejuela 3400	4° 6' 30.38" N	74° 20' 8.34" W	Bogotá D.C.
<i>Berberis rigidifolia</i> Kunth ex DC.	Orejuela 3735	5°20'12.8"N	73°57'02.3"W	Cundinamarca
<i>Berberis rigidifolia</i> Kunth ex DC.	Orejuela 3755	4°40'05.1"N	74°06'00.4"W	Bogotá D.C.
<i>Berberis rigidifolia</i> Kunth ex DC.	Orejuela 3760	4°31'02.62"N	74°09'54.95"W	Bogotá D.C.
<i>Berberis rigidifolia</i> Kunth ex DC.	Orejuela 4186	4°40'1.16"N	74°05'57.5"W	Bogotá D.C.
<i>Berberis</i> sp.	Orejuela 3763	4°31'02.62"N	74°09'54.95"W	Bogotá D.C.
<i>Berberis stuebelii</i> Hieron.	Orejuela 4143	2°21'24.4"N	76°18'82.6"W	Cauca
<i>Berberis sumapazana</i> L.A. Camargo	Orejuela 3736	5°20'12.8"N	73°57'02.3"W	Cundinamarca
<i>Berberis sumapazana</i> L.A. Camargo	Orejuela 3739	5°18'15.09"N	73°57'27.3"W	Cundinamarca
<i>Berberis tabiensis</i> L.A. Camargo	Orejuela 3748	4°54'18.52" N	74°05'1.22" W	Cundinamarca
<i>Berberis uribei</i> L.A. Camargo	Orejuela 3315	4° 6' 27.39" N	74° 20' 5.35" W	Bogotá D.C.

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<i>Berberis verticillata</i> Turcz.	Orejuela 3968	4°58'57.84"N	75°20'1.43"W	Caldas
<i>Berberis verticillata</i> Turcz.	Orejuela 3971	4°58'57.84"N	75°20'1.43"W	Caldas
<i>Berberis vulgaris</i> L. (cultivated)	Orejuela 4185	4°40'1.16"N	74°05'57.5"W	Bogotá D.C.

The collection effort was focused on the Cundinamarca and Boyacá departments, where Camargo (1966, 1981, 1983, 1991) described many endemic and poor known species. Of 16 native species collected, 11 are endemic to Colombia (Figure 1 & 2).



**Figure 1.** Map of fieldwork done in Colombia. *Berberis* species collected during the fieldwork are shown in orange circles. Endemic species are highlighted with an asterisk.

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Live photos of the species collected are shown in figure 2.



**Figure 2.** Live photos of some of the *Berberis* species collected during the fieldwork in Colombia. A,B *Berberis carupensis*; C,D: *Berberis chocontana*; E: *Berberis cretata*; F,G: *Berberis glauca*; H,I: *Berberis goudotii*; J,K: *Berberis grandiflora*; L,M: *Berberis hallii*; N,O: *Berberis huertasii*; P,Q: *Berberis morana*; R: *Berberis rigidifolia*; S: *Berberis stuebelii*; T: *Berberis sumapazana*; U: *Berberis tabienseis*; W: *Berberis uribei*; X: *Berberis verticillata*. Photos by A. Orejuela, except N and O by Carlos Vargas.

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## Conclusions

- The species of *Berberis* collected during the fieldwork funded by the Davis Expedition Fund account for around 50% of the Colombian species diversity.
- The herbaria revision, coupled with the fieldwork, allowed us to improve our understanding of the diversity of the Colombian *Berberis*. However, much more remains to be done to understand the genus *Berberis* in Colombia fully. This is particularly true considering the high plasticity of the leaf morphology of some species and, the recurrent use of leaf morphology, and the loose interpretation of some key morphological characters by the Colombian *Berberis* specialist Luis Alfredo Camargo when describing many new species between 1966-1991 (He described 18 of 31 currently accepted species of Colombian *Berberis*).
- Our work showed that many of the Colombian species, especially those described by Camargo, are potential synonyms. This is the case of *B. sumapazana* and *B. crenata* which look like variants of *B. goudotii*. *Berberis morana* and *B. carrikeri* are putative synonyms of *B. glauca*. *Berberis chocontana* and *B. muiscarum* look very like *B. quindiuensis*. There are probably many more such cases.

## Future work

- Fieldwork to the western Andean cordillera and the north of the country must be prioritised to collect the remaining species of Colombian *Berberis* and allow for assessing the identity of these species. Mainly, fieldwork focused on collecting the species described by Camargo on the type localities must be emphasised.



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- We are starting to extract the DNA of the 16 species of *Berberis* collected during this work, and including these species in the current molecular phylogenies is a priority.
- We will keep working on the herbaria around Colombia and examining the type collections to progress in the taxonomic revision of *Berberis* of Colombia. Concerning this, a morphometric study of the leaf morphology of the Colombian *Berberis* and an exploration of the new sources of morphological variation must be prioritised.

### Acknowledgements

This field trip was made possible by the generous support of the Davis Fund. I thank Carlos Vargas, Jhoana Castillo, Humberto Mendoza, Camilo Fernandez, Fabio Ávila, Diego Másmela and Boris Villanueva for their field assistance; Julio Betancur (COL), Alejandro Zuluaga (CUVC), Lina Corrales (JBB) and Aida Elena Bacca (PSO) for their support during my herbaria visits; and James Richardson and Carlos Vargas for their academic support.

### References

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## Appendix 1

Examples of specimens of *Berberis* collected during the fieldwork (one representative per species in alphabetical order are shown)

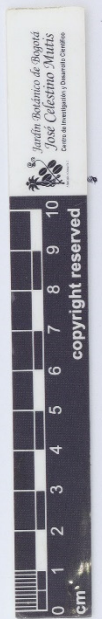


# DAVIS EXPEDITION FUND



JBB36390

Herbario JBB  
Nº 10730



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis carupensis* L.A. Camargo

Det.: Andrés Orejuela

2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

HERBARIO JARDÍN BOTÁNICO DE BOGOTÁ JOSÉ CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*

Arbusto 1 m., hojas verde discoloras, verde oscuro lustroso por el haz, verde más claro y opaco por el envés. Creciendo en matorrales relictuales en potrero o cerca a plantaciones de *Acacia*. Colecciones realizadas en la localidad tipo de *Berberis carupensis* L.A. Camargo

COLOMBIA: Cundinamarca, Carmen de Carupa, Alrededores del casco urbano, detrás del hospital, en el cañón formado por la quebrada Suchinica. 5°21'00.2"N 73°53'43.7"W. 2900-3000 m de altitud.

3744 Andrés Orejuela

16/01/2022

Proyecto "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" financiado por The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh.

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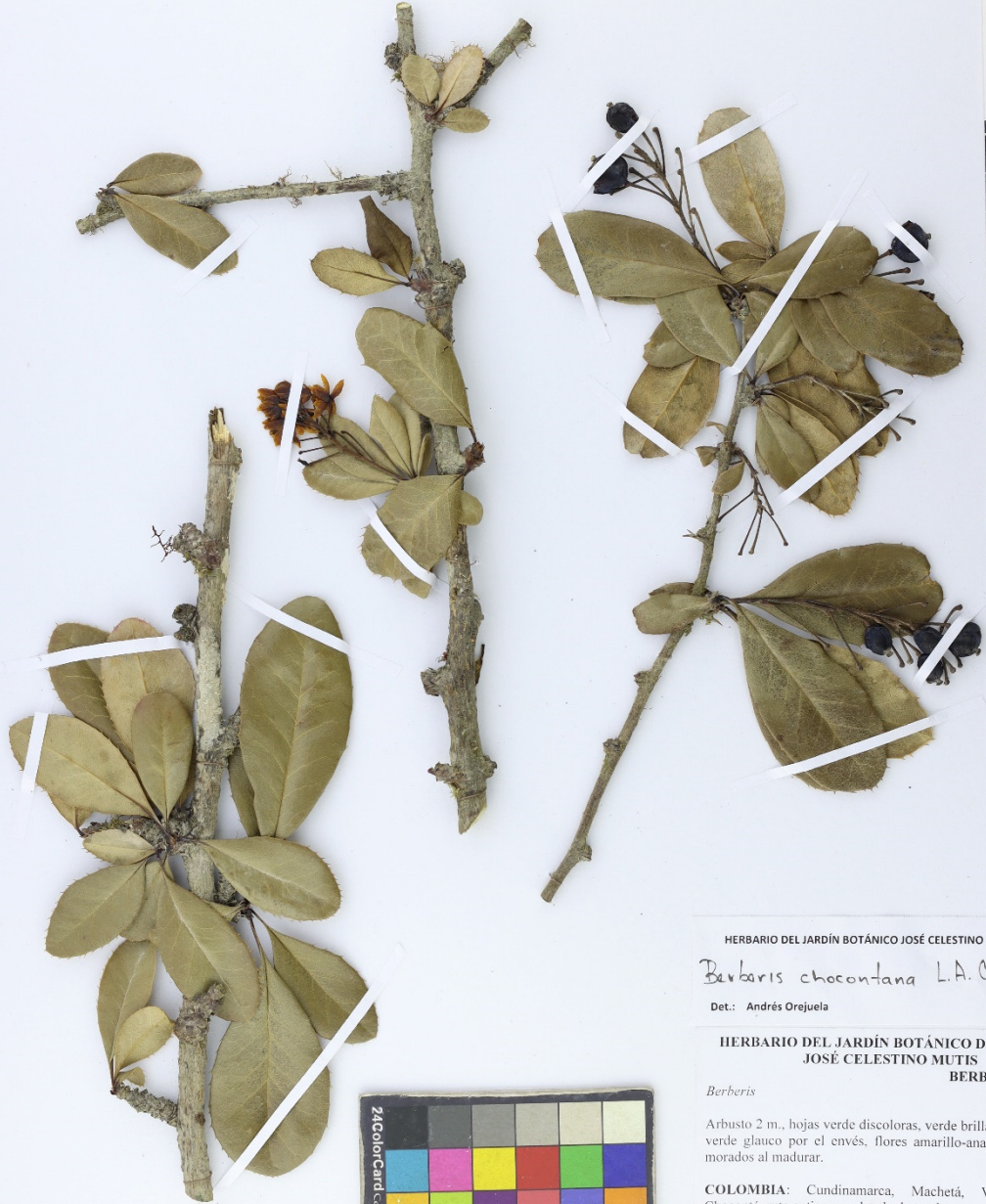


JBB36380



Herbario JBB

Nº 10745



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis chocontana* L.A. Camargo

Det.: Andrés Orejuela

2022

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS

BERBERIDACEAE

*Berberis*

Arbusto 2 m., hojas verde discoloras, verde brillante por la haz, verde glauco por el envés, flores amarillo-anaranjado, frutos morados al madurar.

COLOMBIA: Cundinamarca, Machetá, Vía Machetá-Chocontá, ruta antigua, en borde de trocha.

5°06'06.7"N 73°38'38.2"W, 2700 m.

3843 Andrés Orejuela, Carlos Vargas.

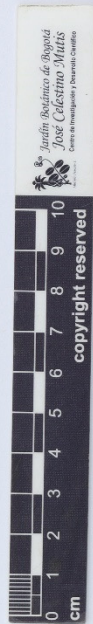
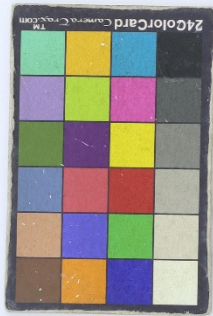
12 de marzo de 2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

# DAVIS EXPEDITION FUND



Herbario JBB  
Nº 32757



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis crotata* L.A. Camargo

Det.: Andrés Orejuela

2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

Berberidaceae

*Berberis*

Arbusto de 2 m. Tallos grises. Hojas verde amarillentas lustrosas por la haz, verde glauca por el envés. Eje de la inflorescencia verde rojizo. Frutos verdes inmaduros.

Colombia, Bogotá D.C., Bogotá D.C., Vereda San Antonio. Carretera San Bernardo - Bogotá. Desde río El Pilar hacia Bogotá 3 km sobre el camino desde el río hacia el páramo, bosque talado por paso de carretera., N 4.10761, W 74.33482, 3103 m.

3313 Andrés Orejuela, Boris Villanueva, Humberto Mendoza y Carlos Vargas

30/6/2021

Flora de Bogotá

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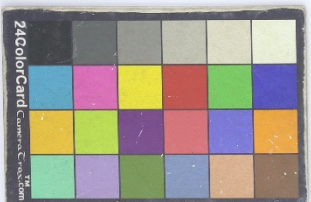
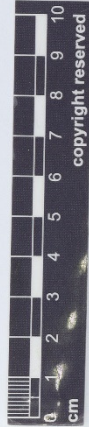


JBB32757



Herbario JBB  
N° 34740

Jardín Botánico de Bogotá  
José Celestino Mutis  
Centro de Investigaciones y Estudios Científicos



Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

Berberidaceae

*Berberis*

Arbusto con ramas largas, hojas discoloras, verde lustroso por la haz, glaucas por el envés. Botones florales verde amarillento.

Colombia, Cundinamarca, San Bernardo, Vereda El Pilar, N 4°07'43"13", W 74°19'7"146", 3096 m.

3282 Andrés Orejuela, Boris Villanueva, Humberto Mendoza y Carlos Vargas

29/6/2021

Flora de Bogotá

HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis glauca* DC.

Det.: Andrés Orejuela

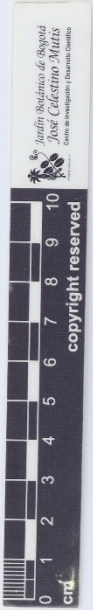
Oct/ 2021

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JBB35501

Herbario JBS  
Nº 36630



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis goudotii* Trana & Planch. ex Wedd.

Det.: Andrés Orejuela

2022

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

Berberidaceae

*Berberis* sp.  
Determinó: F. Ávila Jun-22

Colombia, Bogotá, D.C., Bogotá, D.C., Usme, puertas del Chisacá, 4.317784, -74.206931, 3640 m. Arbustales de subpáramo.

Arbusto de 3 m. Flores corola naranja, frutos morado oscuro.

4694 Fabio Ávila, José Aguilar, Salomé Gómez y Luis Fernando Coca

8/6/2022

Flora de Bogotá

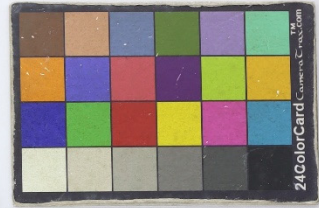
Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh



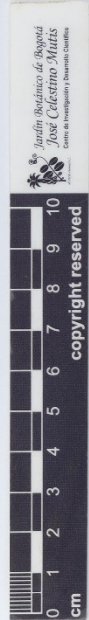
# DAVIS EXPEDITION FUND



JBB36386



Herbario JBB  
Nº 10752



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis grandiflora* Turcz.

Det.: Andrés Orejuela 2022

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*

Arbusto 2 m, flores amarillo-naranja, frutos verdes inmaduros.

COLOMBIA, Nariño, Túquerres, Via acceso a Laguna verde,  
vereda Villa Santa Isabel, 1°0.5'27"N, 77°46'56"W. 3340 m.

4030 Andrés Orejuela, Johana Isabel Castillo & Diego  
Másmela

26 de Julio de 2022

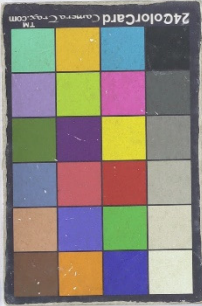
Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian  
Paramos" funded by The Davis Expedition Fund, round 2021. School of  
Biological Sciences, The University of Edinburgh

Collected under the auspices of the Davis  
Expedition Fund and The Royal Botanic Garden  
Edinburgh

# DAVIS EXPEDITION FUND

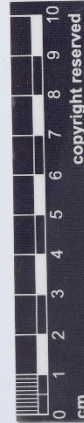
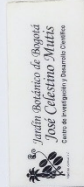


JBB36397



Herbario JBB

Nº 10754



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis hallii* Heron

Det.: Andrés Orejuela

2022

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*

Arbusto 2 m, hojas verdes discoloras, verde oscuro brillante por el haz, verde claro por el envés, botones florales amarillos. Flores amarillas.

COLOMBIA, Nariño, Ipiales, en los alrededores del Santuario de las Lajas, 0°48'20"N, 77°35'10"W. 2631 m.

4126 Andrés Orejuela, Johana Isabel Castillo & Diego Másmela

31 de Julio de 2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

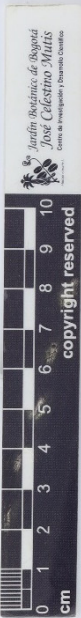
Collected under the auspices of the Davis Expedition Fund and The Royal Botanic Garden Edinburgh

# DAVIS EXPEDITION FUND



JBB36412

Herbario JBB  
Nº 10767



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis huertasii* L.A. Camargo  
Det: Andrés Orejuela Sept/ 2022

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*

Arbusto 2 m, flores amarillo-naranja, frutos morados al madurar

COLOMBIA, Boyacá, Samacá, Vía Samacá-Tunja, desvío por la trocha de la quebrada Pijaos, 5°29'24.9"N; 73°26'27.3"W. 2893 m.

4195 Andrés Orejuela & Carlos Vargas

19 de Septiembre de 2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

Collected under the auspices of the Davis Expedition Fund and The Royal Botanic Garden Edinburgh

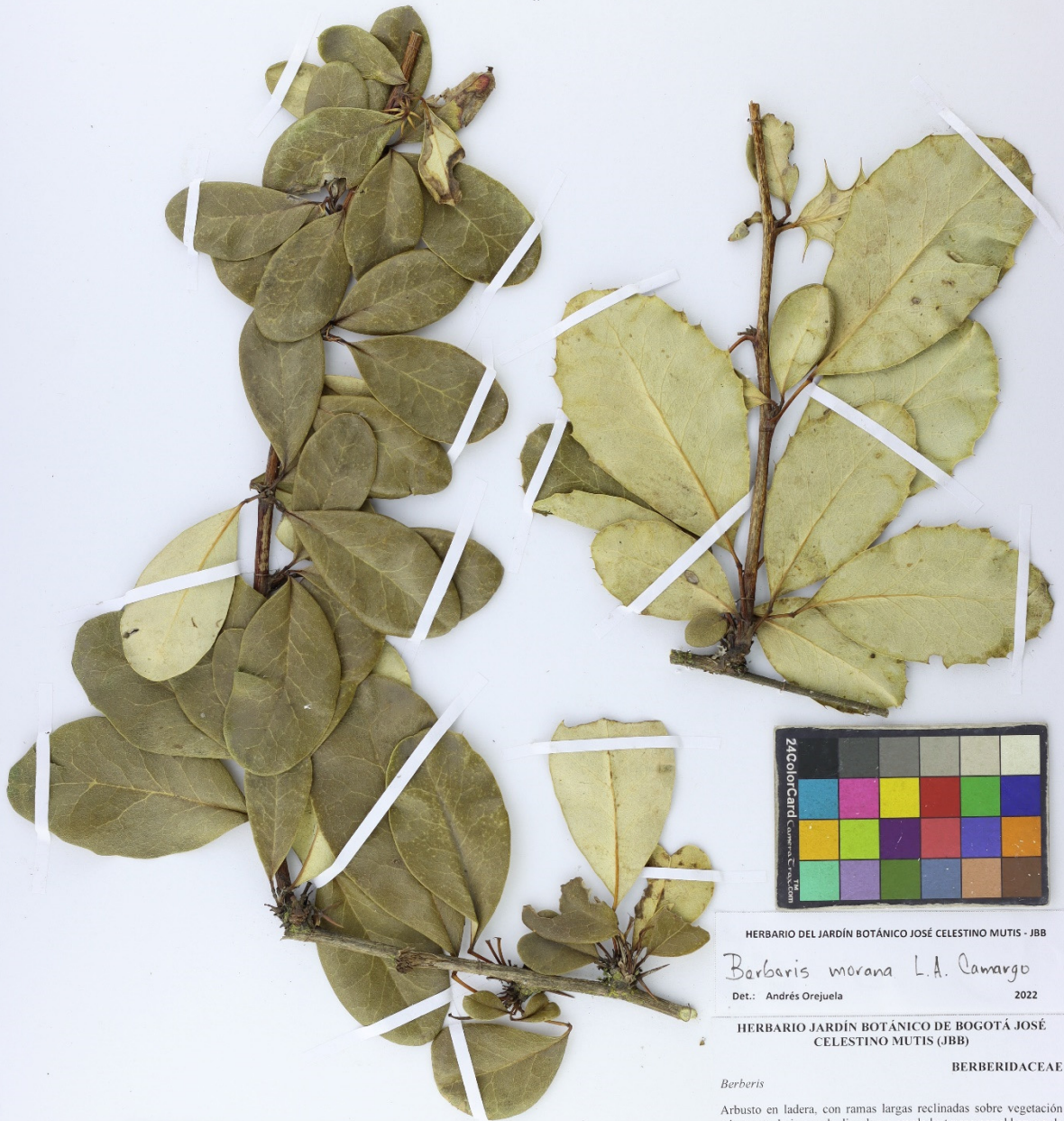
# DAVIS EXPEDITION FUND



JBB36391

Herbario JBB

Nº 10731



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis morana* L.A. Camargo

Det.: Andrés Orejuela

2022

HERBARIO JARDÍN BOTÁNICO DE BOGOTÁ JOSÉ CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*

Arbusto en ladera, con ramas largas reclinadas sobre vegetación adyacente, hojas verde discoloras, verde lustrosas por el haz, verde glaucas por el envés. Colección realizada en la localidad tipo de *Berberis morana* L.A. Camargo

COLOMBIA: Cundinamarca, Carmen de Carupa, Vía hacia el alto de Mesa, matorrales a la orilla de la trocha. En inmediaciones del alto de Mesa. 5°22'29.7"N 73°54'34.6"W. 3100-3300 m de altitud.

3747 Andrés Orejuela

16/01/2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

Proyecto "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" financiado por The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh.



# DAVIS EXPEDITION FUND



JBB36395

Herbario JBB

Nº 10739



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis rigidifolia* Kunth

Det.: Andrés Orejuela

2022

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ JOSÉ CELESTINO MUTIS

BERBERIDACEAE

*Berberis*

Arbusto 1 m, hojas verdes discoloras, verde glaucas por el envés, flores amarillas-anaranjadas, frutos madurando en morado.

COLOMBIA: Bogotá D.C., Arborescencia alta, vía al paramo de Quiba. 4°52'22.8"N, 74°18'15.6"W, 2900 m.

3760 Andrés Orejuela C. Vargas, F. Avila, J. Aguilar, L. F. Coca, J. Cabezas, M. Rincon, S. Gomez.

21 de febrero de 2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

# DAVIS EXPEDITION FUND

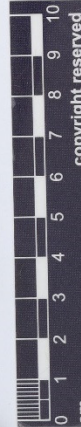


JBB36401

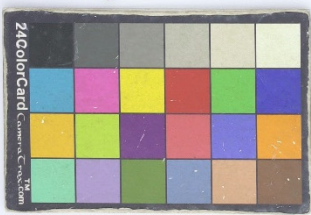
Herbario JBB

Nº 10757

Jardín Botánico de Bogotá  
José Celestino Mutis  
Centro de Investigaciones y Estudios Científicos



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HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis stuebelii* Hieron.

Det.: Andrés Orejuela

2022

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*

Arbusto 2 m, corola amarillo naranja, fruto morado.

COLOMBIA, Cauca, Vía Popayán-Coconuco, en cercanías del  
PPN Puracé, 2°21'24.4"N, 76°18'82.6"W, 3280 m.

4143 Andrés Orejuela & Diego Masmela

01 de agosto de 2022

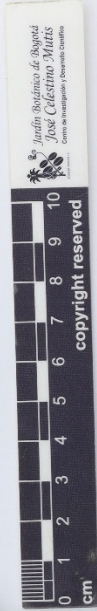
Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian  
Paramos" funded by The Davis Expedition Fund, round 2021. School of  
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Collected under the auspices of the Davis  
Expedition Fund and The Royal Botanic  
Garden Edinburgh

# DAVIS EXPEDITION FUND



Herbario JBB  
Nº 10728



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB  
*Berberis sumapazana* L.A. Camargo  
Det.: Andrés Orejuela 2022  
Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

HERBARIO JARDÍN BOTÁNICO DE BOGOTÁ JOSÉ CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*  
Arbusto 3-4 m., hojas verdes discoloras, verde lustrosas por el haz, verde glaucas por el envés, flores amarillo-anaranjados, frutos morados al madurar.

COLOMBIA: Cundinamarca, Carmen de Carupa, Después de la Peña de Sucre, vereda El Mortiño hacia San Cayetano, colecciones realizadas desde la escuela rural El Mortiño hasta el Páramo de Guargua. 5°20'12.8"N-73°57'02.3"W a 5°18'15.9"N-73°57'27.3"W. 3250-3500 m de altitud.

3736 Andrés Orejuela 15/01/2022  
Proyecto "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" financiado por The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh.

# DAVIS EXPEDITION FUND



JBB36392

Herbario JBB

Nº 10732



Jardín Botánico de Bogotá  
José Celestino Mutis  
Centro de Investigación y Desarrollo Científico

HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB

*Berberis tabiensis* L.A. Camargo

Det.: Andrés Orejuela

2022

HERBARIO JARDÍN BOTÁNICO DE BOGOTÁ JOSÉ  
CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*

Arbusto 3-4 m., hojas verde discoloras, verde lustrosas por el haz, verde glaucas por el envés, cáliz y corola amarillas. Colección realizada en la localidad tipo de *Berberis tabiensis* L.A. Camargo

COLOMBIA: Cundinamarca, Tabío, Matorrales con vegetación nativa en inmediaciones de la capilla Lourdes. 4°54.3148'N 74°05.0095'W. 2650 m de altitud.

3748 Andrés Orejuela & Carlos Vargas

19/01/2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

Proyecto "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" financiado por The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh.

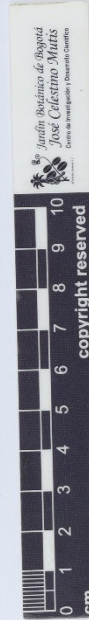
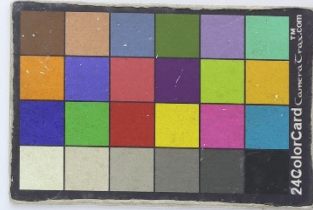


# DAVIS EXPEDITION FUND



JBB36374

Herbario JBB  
Nº 32759



HERBARIO DEL JARDÍN BOTÁNICO JOSÉ CELESTINO MUTIS - JBB  
*Berberis vitbei* L.A. Camargo  
Det.: Andrés Orejuela 2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

Berberidaceae

*Berberis*

Arbusto de 3 m. Tallos rojizos. Hojas verde lustrosas por la haz, glaucas por el envés. Ejes de la inflorescencia verde, cáliz y corola amarillo.

Colombia, Bogotá D.C., Bogotá D.C., Vereda San Antonio. Carretera San Bernardo - Bogotá. Desde río El Pilar hacia Bogotá 3 km sobre el camino desde el río hacia el páramo, bosque talado por paso de carretera., N 4.10761, W 74.33482, 3103 m.

3315 Andrés Orejuela, Boris Millanueva, Humberto Mendoza y Carlos Vargas

30/6/2021

Flora de Bogotá

# DAVIS EXPEDITION FUND

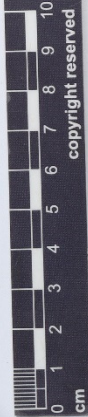


JBB36381

Herbario JBB  
Nº 10746

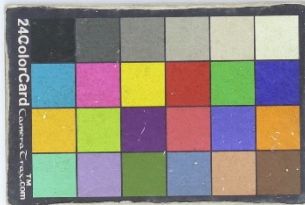


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*Berberis verticillata* Turcz.

Det.: Andrés Orejuela

2022

HERBARIO DEL JARDÍN BOTÁNICO DE BOGOTÁ  
JOSÉ CELESTINO MUTIS (JBB)

BERBERIDACEAE

*Berberis*

Arbusto 3 m, hojas verde lustrosas por la haz, verde glauco por el envés, inflorescencia de eje verde-marrón, flores anaranjadas, frutos verdes inmaduros.

COLOMBIA, Caldas, Manizales, cercanías del PNN Los Nevados, en los alrededores de la laguna negra, 4°58'57.84"N, 75°20'1.43"W, 3870 m.

3968 Andrés Orejuela & Jhoana Isabel Castillo

20 de Julio de 2022

Project "Expedition to collect *Berberis* (Berberidaceae) in the Colombian Paramos" funded by The Davis Expedition Fund, round 2021. School of Biological Sciences, The University of Edinburgh

Collected under the auspices of the Davis Expedition Fund and The Royal Botanic Garden Edinburgh