

# Pearsall Ecuadorian Comparative Wood Reference Collection: Scanning Electron Micrographs of Charred Samples 2022

McCown Archaeobotany Laboratory Report #90

Part 2 of 2

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**Berkeley**  
UNIVERSITY OF CALIFORNIA



**ARCHAEOLOGICAL  
RESEARCH  
FACILITY**



# Methodology

1. Samples were collected for the National Science Foundation project "Human Ecology in the Jama River Valley" by James Ziedler & Deborah Pearsall (Principal Investigators) during October-December 1982, March-April 1988, January 1990, August 1991. All sample numbering and identifications are from this original collection and can be found at <https://www.tropicos.org/person/35870>. The EWC notation in front of a sample number refers to the "Ecuador Wood Collection."
2. Charred wood specimen were fractured in order to view a flat surface of the transverse, tangential, and radial anatomical views. This fracture was either done by hand with a 'snapping' motion or using slight pressure from a knife or blade under the view of a WILD M3B stereomicroscope (6x-40x) in the McCown Archaeobotany Laboratory. The reverse side of the specimen was then shaved down flat so that each piece could be positioned appropriately.
3. Specimen were fixed onto an aluminum ½" slotted head mount (Ted Pella Prod No. 16111) using PELCO Colloidal Graphite (Ted Pella Prod No. 16053).
4. Samples were imaged using a TM-1000 Environmental Scanning Electron Microscope at the University of California's Archaeological Research Facility.
5. Generally, images were recorded for each anatomical view at 50x, 100x, and 200x magnifications. Vessel wall texture images were recorded anywhere between 500x and 1000x, depending on the size of the feature.
6. Anatomical measurements recorded for each hardwood specimen include:
  - a. vessel size, frequency, arrangement, and presence of tyloses, gum, or resin,
  - b. ray thickness and frequency,
  - c. parenchyma type, and
  - d. porosity.
7. Anatomical measurements followed the modern hardwood feature descriptions by the IAWA.
  - a. (InsideWood. 2004-onwards. Published on the Internet. <http://insidewood.lib.ncsu.edu/search>).
8. After imaging, all specimen were returned to their original storage boxes.

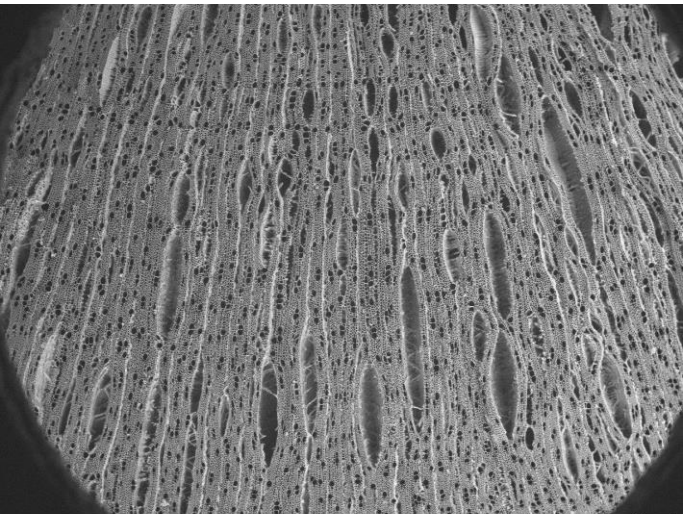
# EWC 1648 Unknown Identification

**Vessels**  
Size: <50µm  
Freq.: 100+  
Arrangement: solitary, pairs ,chains  
**Tyloses:** absent

**Rays:**  
# per mm: 12+  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Vasicentric,  
Unilateral  
**Porosity:** diffuse

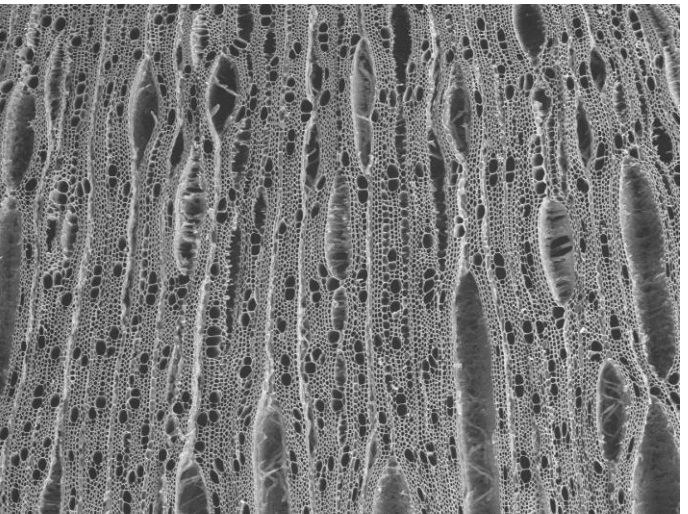
**Common Name:** "negrito"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



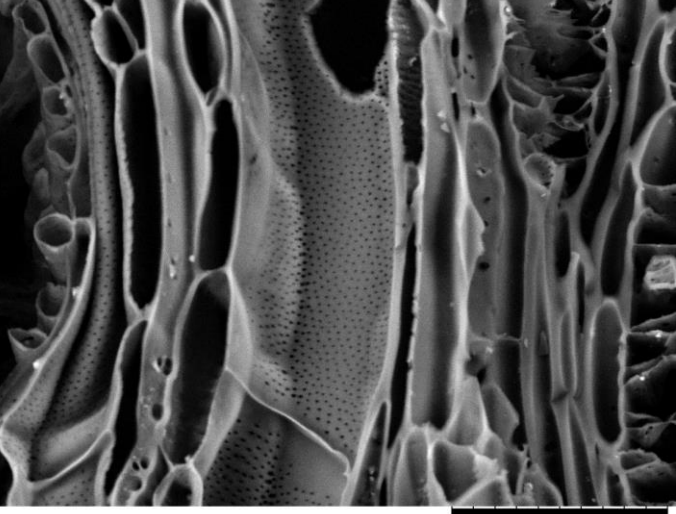
EWC 1648 2022/10/13 17:52 D2.8 x50 2 mm

**Transverse 100x**



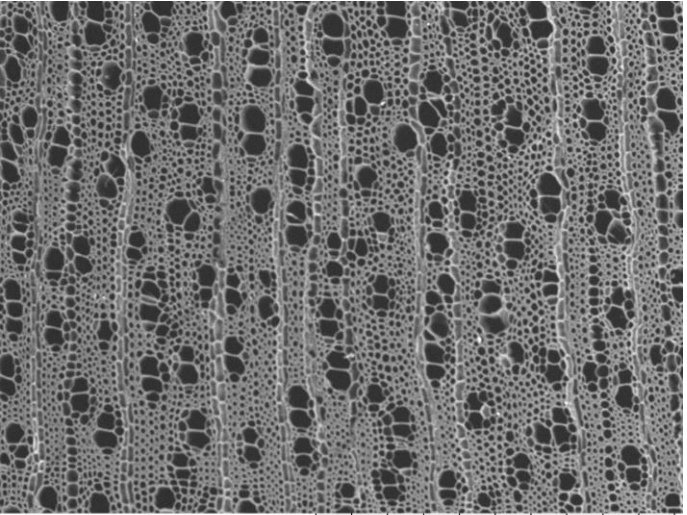
EWC 1648 2022/10/13 17:51 D2.8 x100 1 mm

**Vessel Wall**



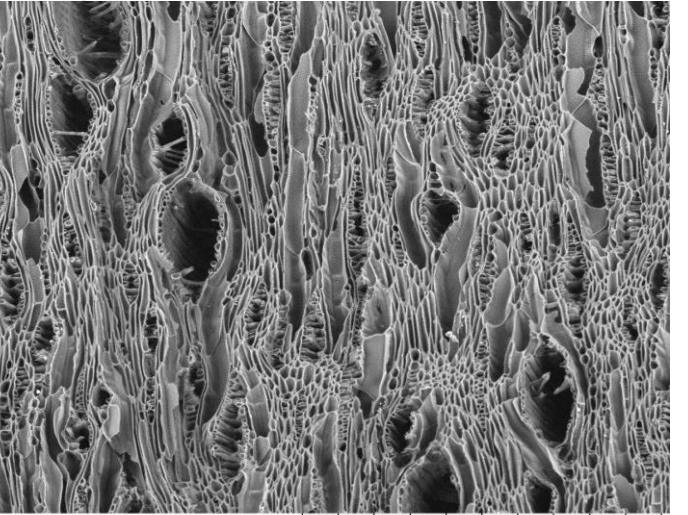
EWC 1648 2022/10/13 18:12 D3.4 x1.2k 50 um

**Transverse 200x**



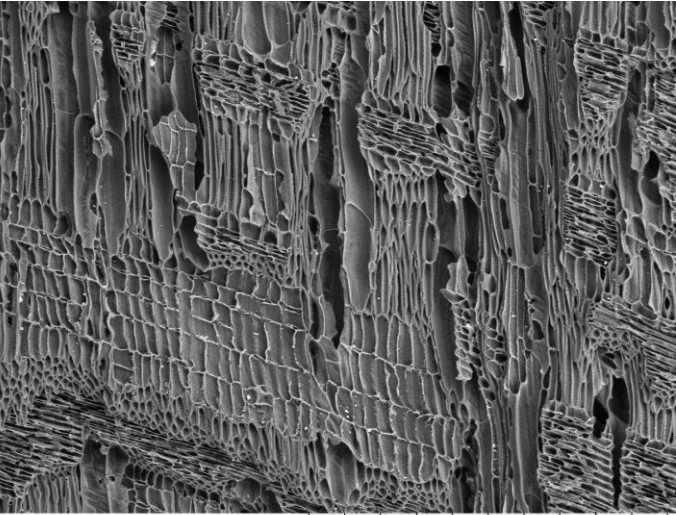
EWC 1648 2022/10/13 17:58 D2.8 x200 500 um

**Tangential**



EWC 1648 2022/10/13 18:09 D3.4 x200 500 um

**Radial**



EWC 1648 2022/10/13 18:04 D3.5 x200 500 um

# EWC 1649 FABACEAE Pithecellobium

## Vessels

Size: 50-100µm  
Freq.: 5 to 20  
Arrangement: solitary, chains  
Tyloses: common

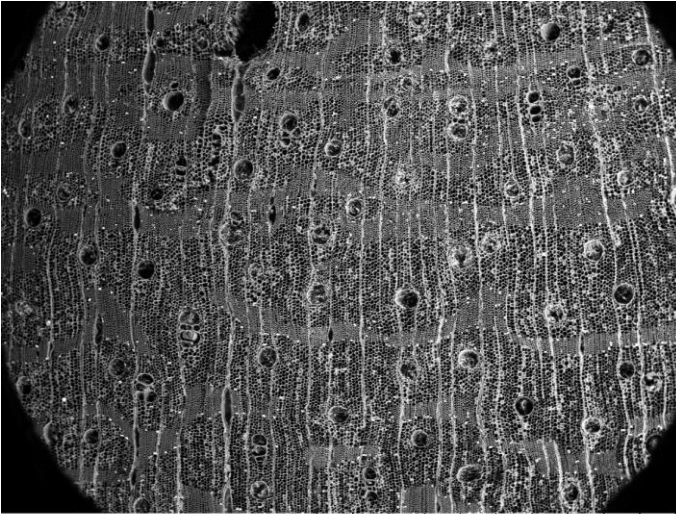
## Rays:

# per mm: 4-12  
Thickness (cells): 1 to 3  
Parenchyma Type: Vascentric,  
confluent, thick bands  
Porosity: diffuse

## Common Name:

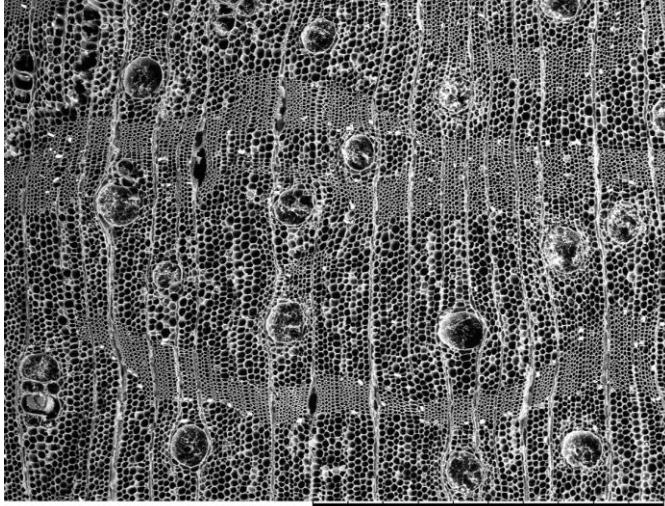
Elevation:  
Description:  
Location: Ecuador  
Locality:

Transverse 50x



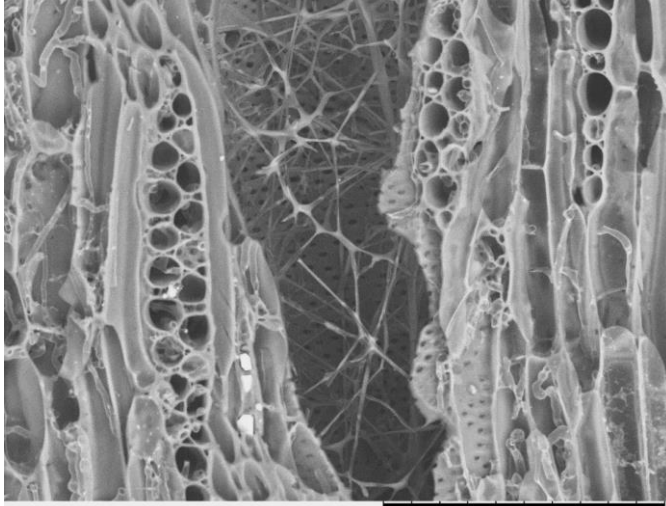
EWC 1649 2022/10/13 18:17 D2.9 x50 2 mm

Transverse 100x



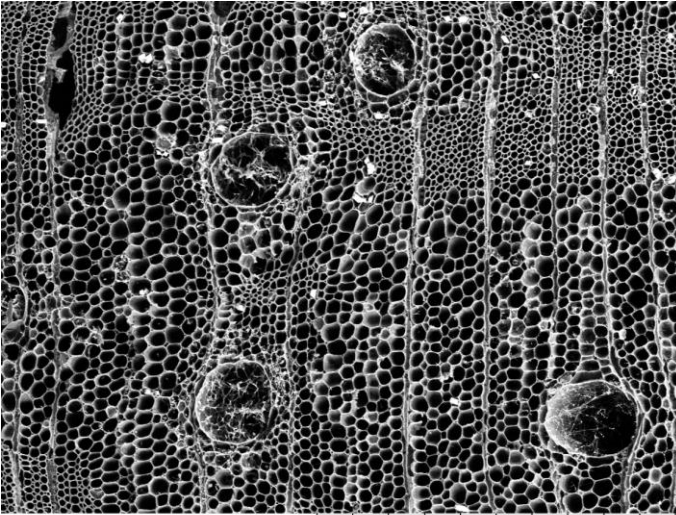
EWC 1649 2022/10/13 18:18 D2.9 x100 1 mm

Vessel Wall



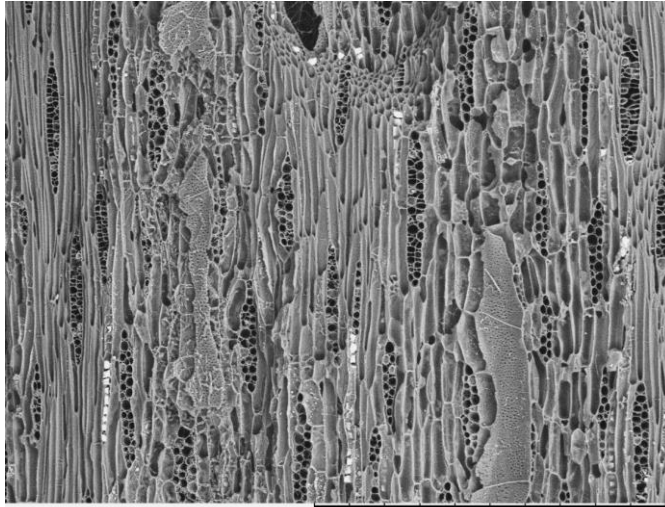
EWC 1649 2022/10/20 17:09 D5.8 x800 100 um

Transverse 200x



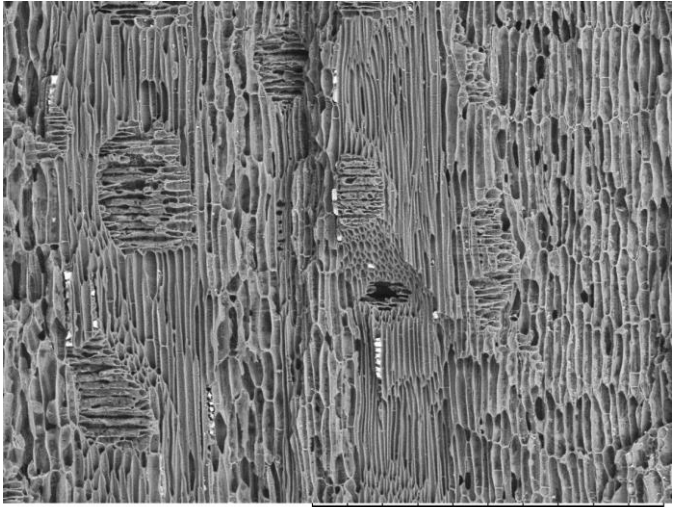
EWC 1649 2022/10/13 18:20 D2.9 x200 500 um

Tangential



EWC 1649 2022/10/20 17:07 D5.8 x200 500 um

Radial



EWC 1649 2022/10/20 17:12 D5.8 x200 500 um

# EWC 1650 BIGNONIACEAE *Crescentia cujete* L.

**Common Name:** "Mate"

**Elevation:** 20 m

**Description:** Relatively small understory tree with gourd-like fruits. .

**Location:** Ecuador, Manabí, Jama

**Locality:** Jama, Area 2: Approximately 1 km SW of Jama. Collected from a farm in the Jama River Valley. Jama topo map 1:50,000, cuadrícula (block) N77 E81.

## Vessels

**Size:** <50µm, 50-100µm

**Freq.:** 20 to 40, 40 to 100

**Arrangement:** solitary, pairs

**Tyloses:** absent

**Porosity:** semi-ring porous

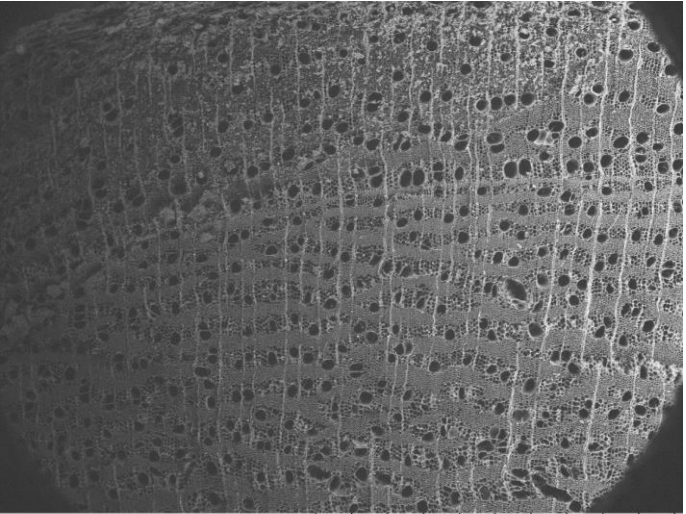
## Rays:

**# per mm:** 4-12

**Thickness (cells):** 1 to 3

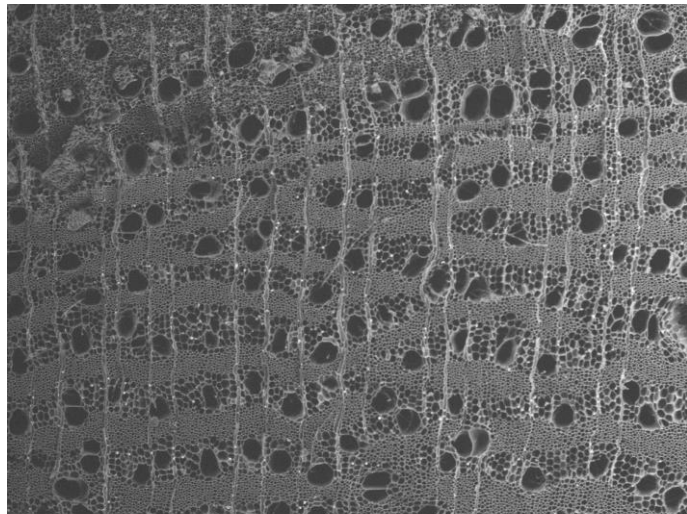
**Parenchyma Type:** Banded (thick), Vascentric (confluent), Diffuse-in-aggregates

**Transverse 50x**



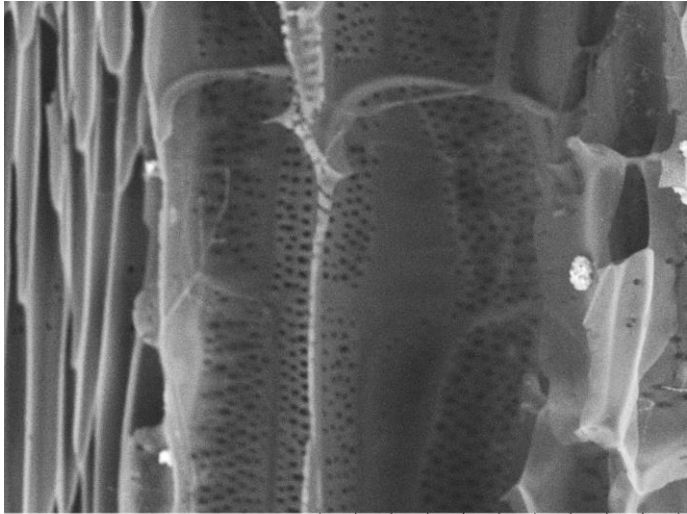
EWC 1650 2022/09/22 22:36 L D3.2 x50 2 mm

**Transverse 100x**



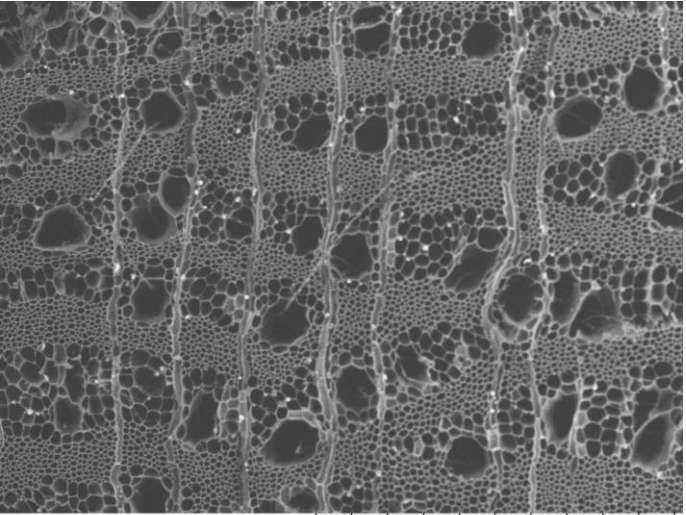
EWC 1650 2022/09/22 22:37 L D3.2 x100 1 mm

**Vessel Wall**



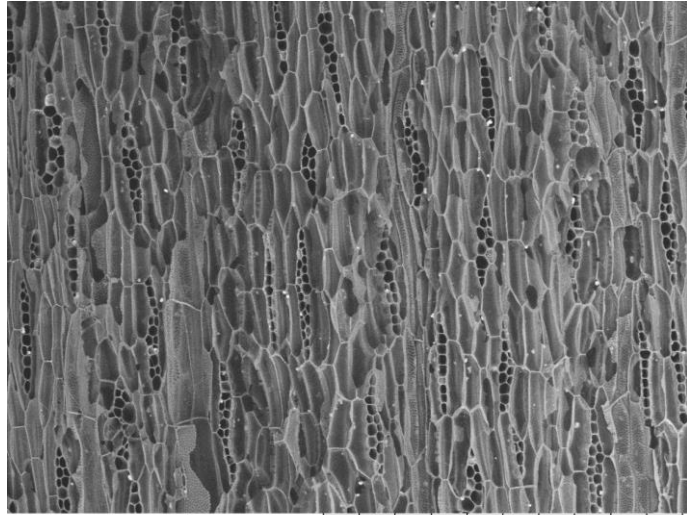
EWC 1650 2022/09/22 22:25 L D4.4 x1.0k 100 µm

**Transverse 200x**



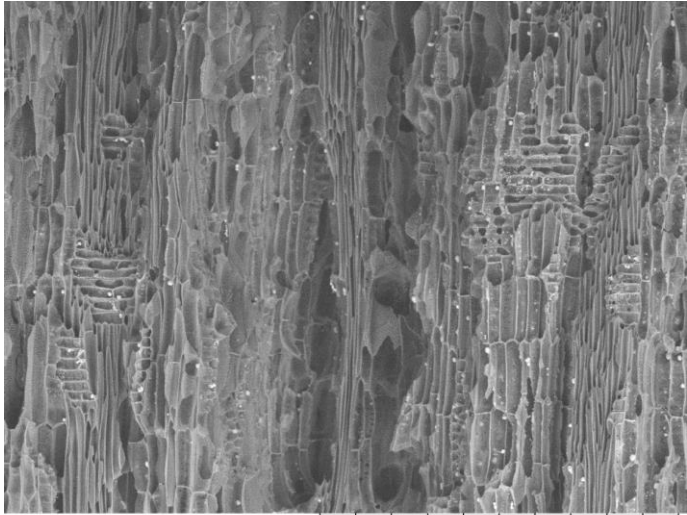
EWC 1650 2022/09/22 22:38 L D3.2 x200 500 µm

**Tangential**



EWC 1650 2022/09/22 22:29 L D4.6 x200 500 µm

**Radial**



EWC 1650 2022/09/22 22:20 L D4.4 x200 500 µm

# EWC 1651 MUNTINGIACEAE *Muntingia calabura* L.

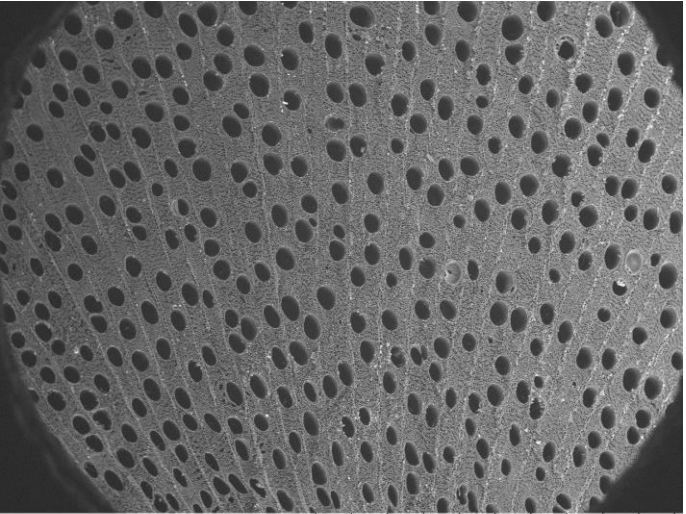
**Common Name:** "Frutillo"  
**Elevation:** 20 m

**Vessels**  
**Size:** 50-100µm, 100-200µm  
**Freq.:** 20-40  
**Arrangement:** exclusively solitary  
**Tyloses:** absent

**Rays:**  
**# per mm:** 4-12  
**Thickness (cells):** 4+  
**Parenchyma Type:** Banded (thin),  
Diffuse-in-aggregates  
**Porosity:** diffuse

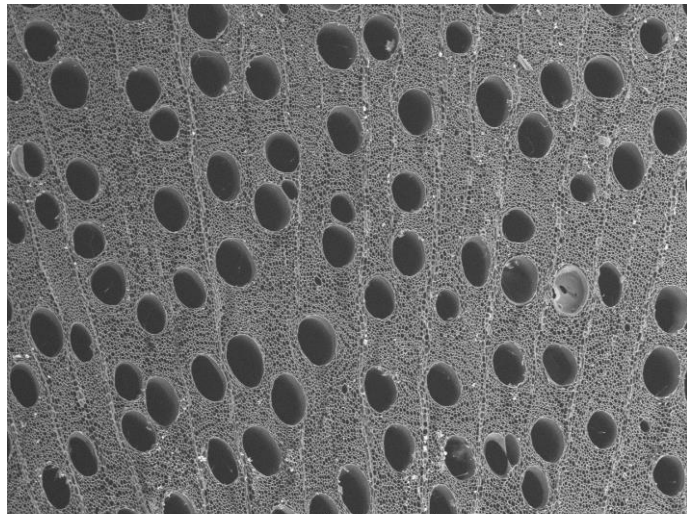
**Description:** Large upperstory tree with white flrs and a purple edible berries (~1cm diam.).  
**Location:** Ecuador, Manabí, Jama  
**Locality:** Jama, Area 2: Approximately 1 km SW of Jama. Collected from a farm in the Jama River Valley. Jama topo map 1:50,000, cuadrícula (block) N77 E81.

**Transverse 50x**



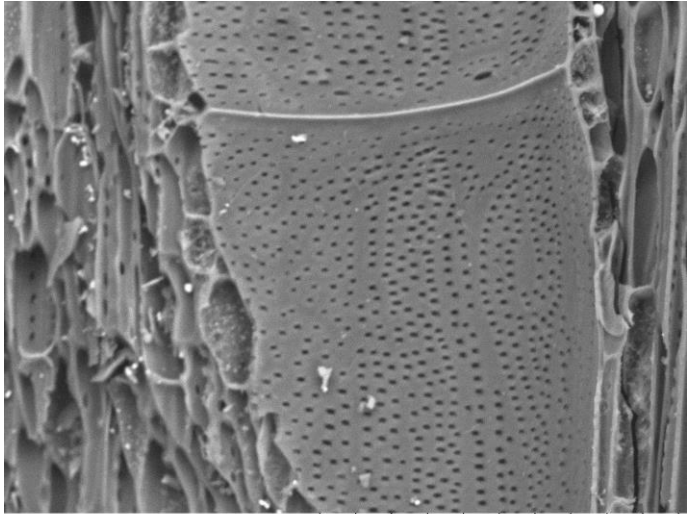
EWC 1651 2022/10/14 10:10 D2.6 x50 2 mm

**Transverse 100x**



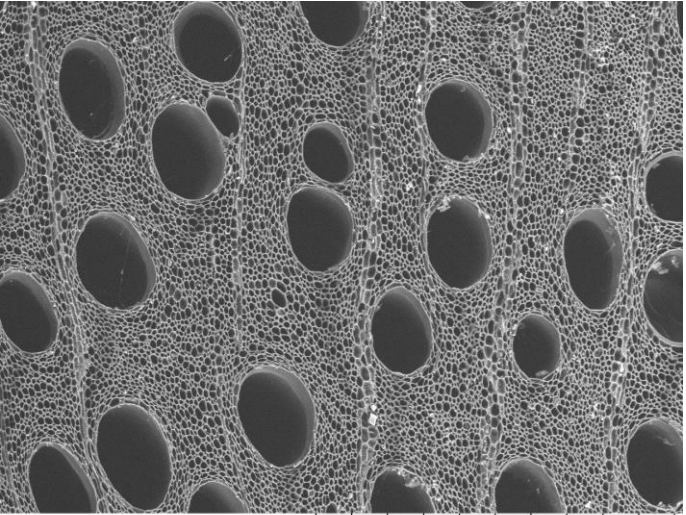
EWC 1651 2022/10/14 10:11 D2.6 x100 1 mm

**Vessel Wall**



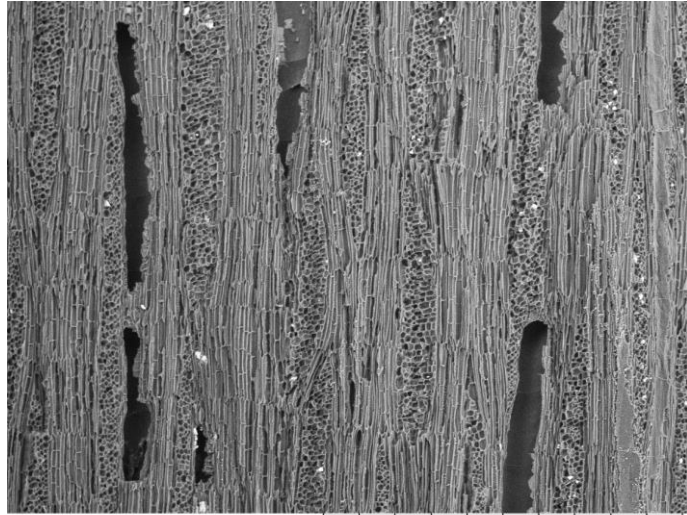
EWC 1651 2022/10/14 10:23 D4.1 x1.0k 100 um

**Transverse 200x**



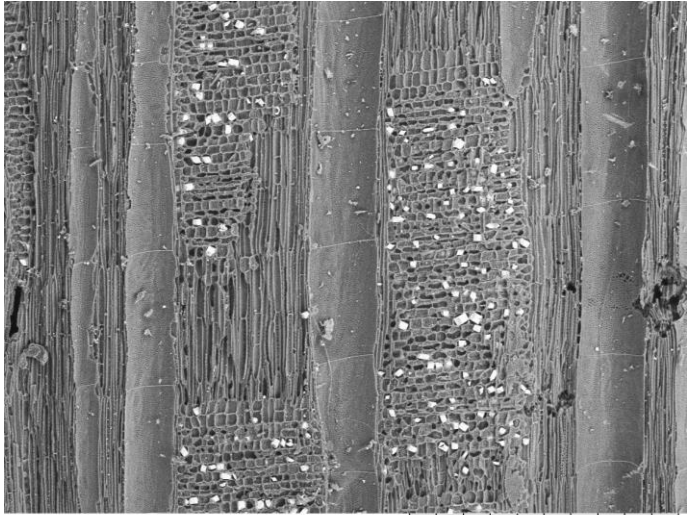
EWC 1651 2022/10/14 10:12 D2.6 x200 500 um

**Tangential**



EWC 1651 2022/10/14 10:15 D4.0 x100 1 mm

**Radial**



EWC 1651 2022/10/20 09:44 D5.0 x150 500 um

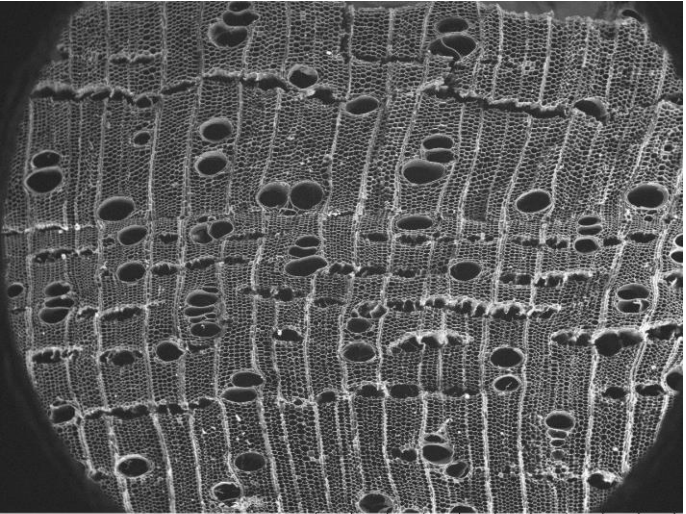
# EWC 1652 BIXACEAE Cochlospermum vitifolium (Willd.) Spreng.

**Vessels**  
Size: 50-100µm, 100-200µm, 200+µm  
Freq.: 20 to 40  
Arrangement: solitary, pairs, chains  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3, 4+  
**Parenchyma Type:** Vasicentric (unilateral), Diffuse-in-aggregates  
**Porosity:** diffuse

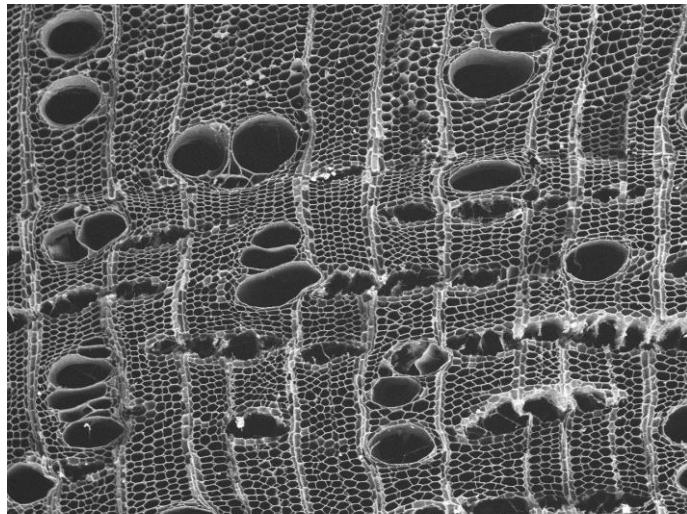
**Common Name:** "Bototillo"  
**Elevation:** 20 m  
**Description:** Upper canopy tree.  
**Location:** Ecuador, Manabí, Jama  
**Locality:** Jama, Area 2: Approximately 1 km SW of Jama. Collected from a farm in the Jama River Valley. Jama topo map 1:50,000, cuadrícula (block) N77 E81.

**Transverse 50x**



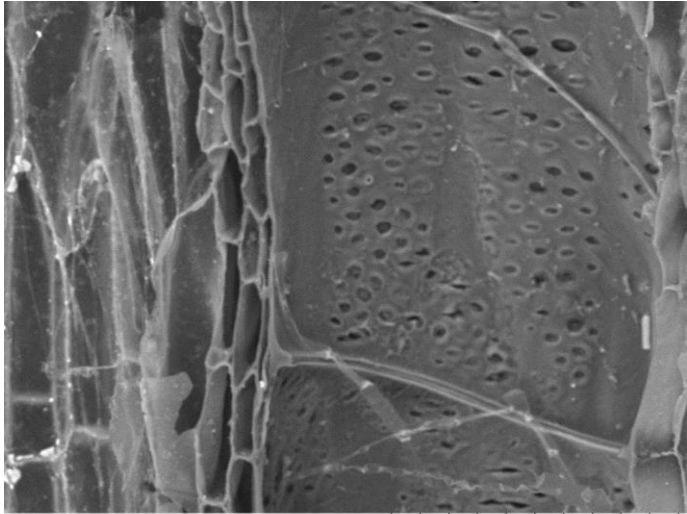
EWC 1652 2022/10/14 10:26 D2.5 x50 2 mm

**Transverse 100x**



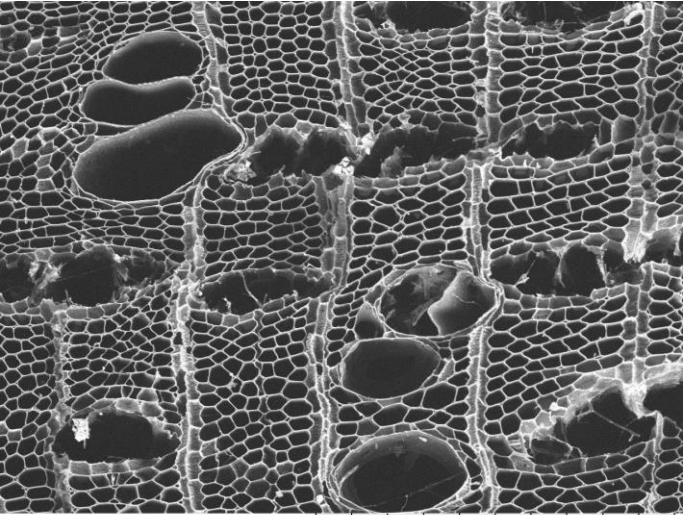
EWC 1652 2022/10/14 10:27 D2.5 x100 1 mm

**Vessel Wall**



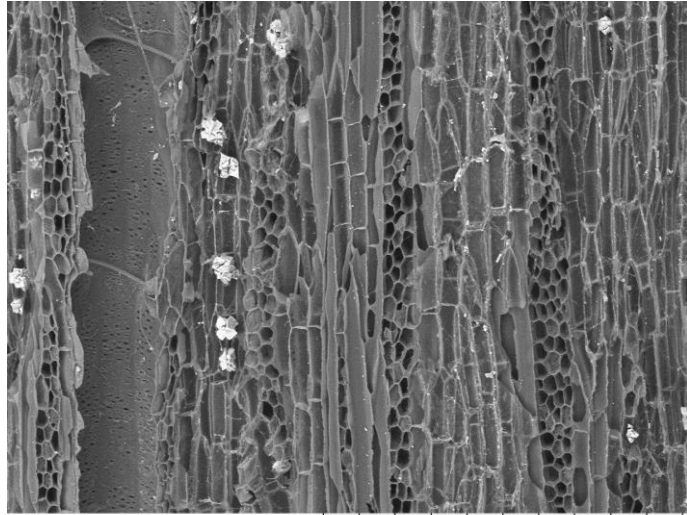
EWC 1652 2022/10/14 10:37 D4.3 x800 100 µm

**Transverse 200x**



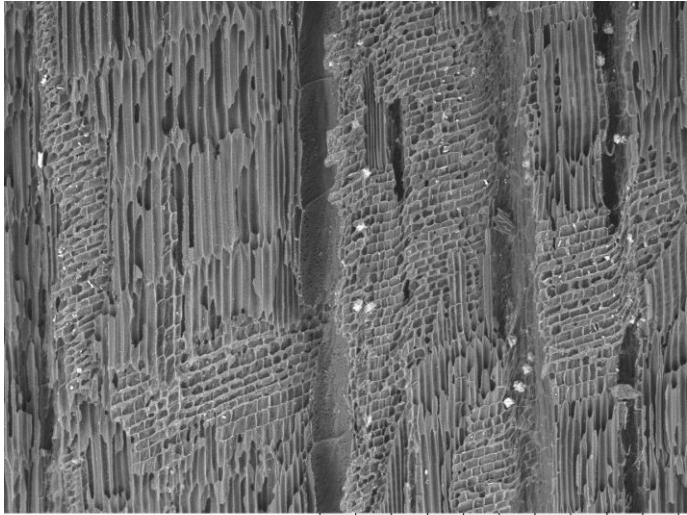
EWC 1652 2022/10/14 10:28 D2.5 x200 500 µm

**Tangential**



EWC 1652 2022/10/14 10:36 D4.3 x200 500 µm

**Radial**



EWC 1652 2022/10/14 10:31 D4.2 x100 1 mm

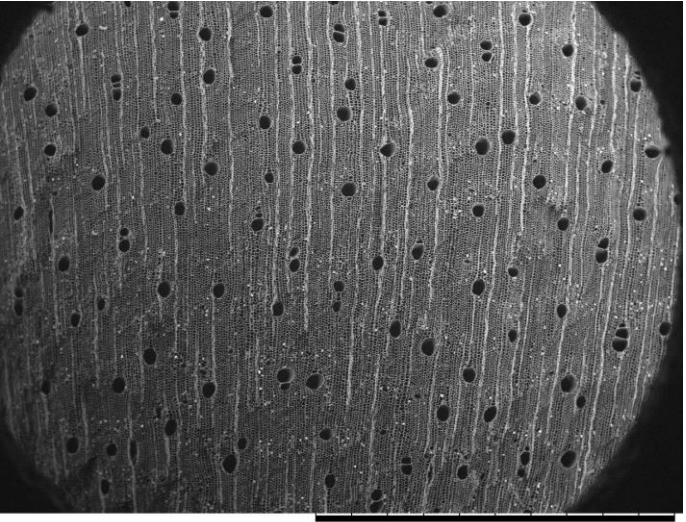
# EWC 1653 Unknown Identification

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 5-20  
Arrangement: solitary, pairs, chains  
Tyloses: absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Absent, Scanty,  
Vasicentric (unilateral)  
**Porosity:** diffuse

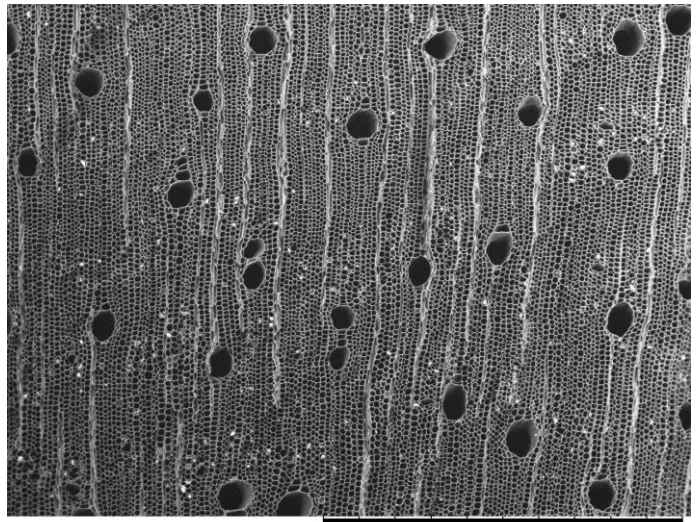
**Common Name:** "muchina"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



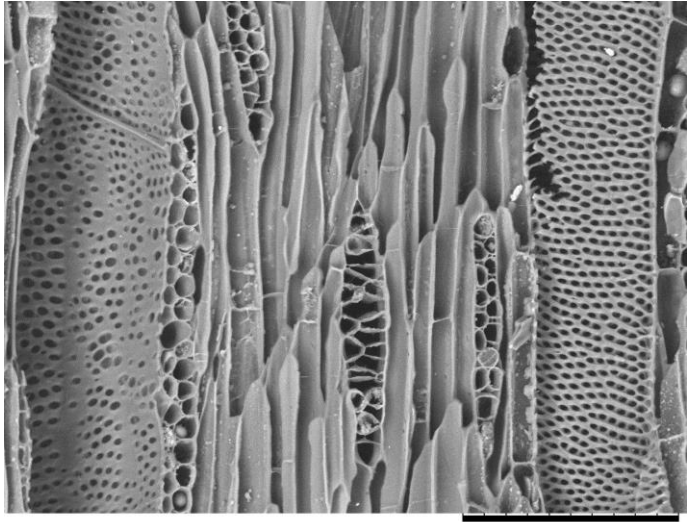
EWC 1653 2022/10/14 10:59 D2.6 x50 2 mm

**Transverse 100x**



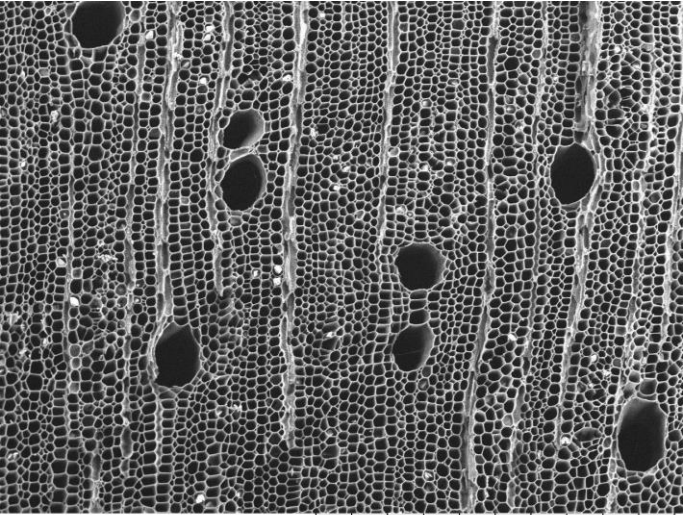
EWC 1653 2022/10/14 11:00 D2.6 x100 1 mm

**Vessel Wall**



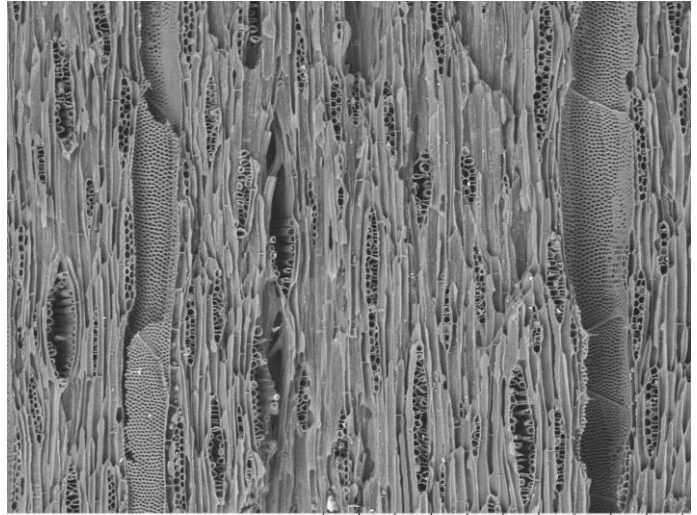
EWC 1653 2022/10/20 09:50 D5.5 x600 100 um

**Transverse 200x**



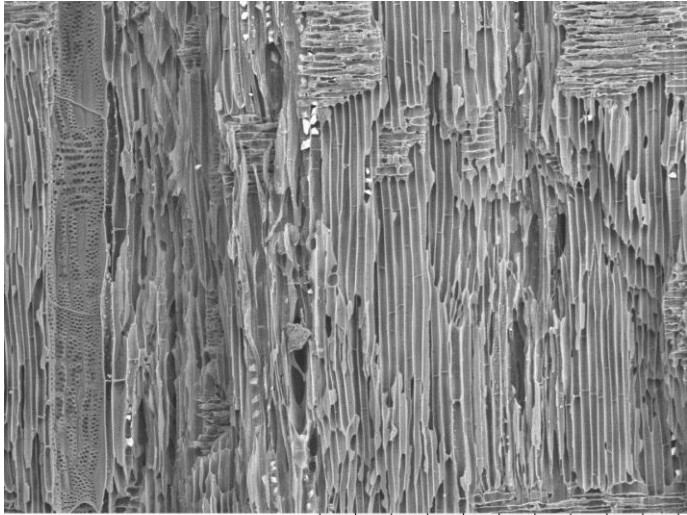
EWC 1653 2022/10/14 11:01 D2.6 x200 500 um

**Tangential**



EWC 1653 2022/10/20 09:48 D5.3 x200 500 um

**Radial**



EWC 1653 2022/10/14 11:04 D4.1 x200 500 um



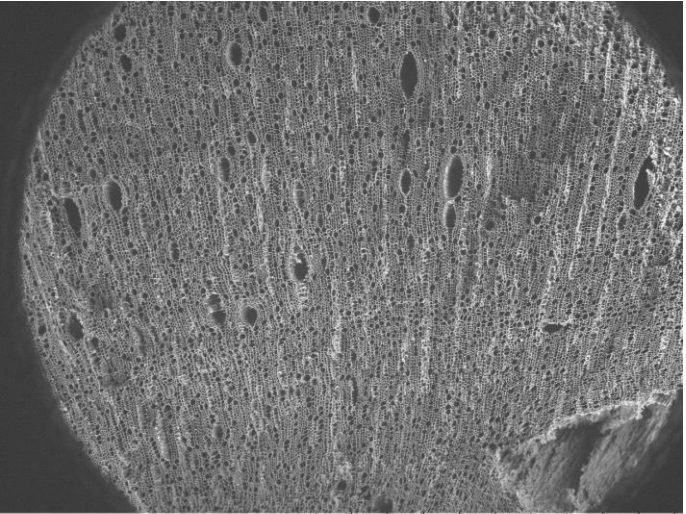
# EWC 1656 Unknown Identification

**Vessels**  
Size: <50-100µm  
Freq.: 40-100, 100+  
Arrangement: solitary  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Absent, Scanty,  
Diffuse  
**Porosity:** diffuse, semi-ring porous

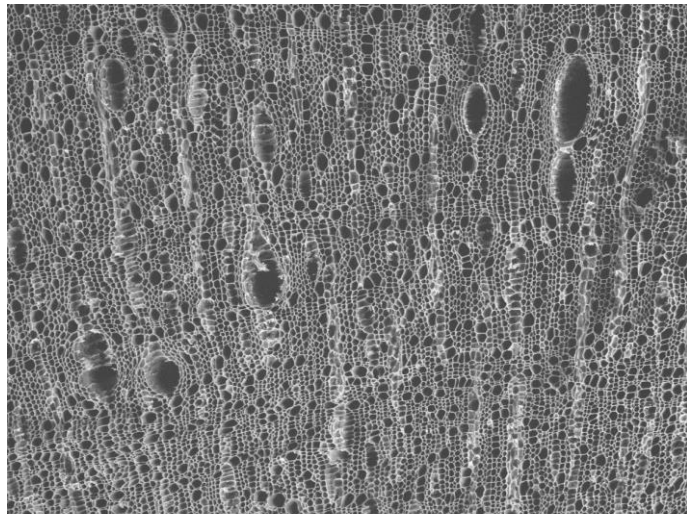
**Common Name:** "lengua de vaca"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



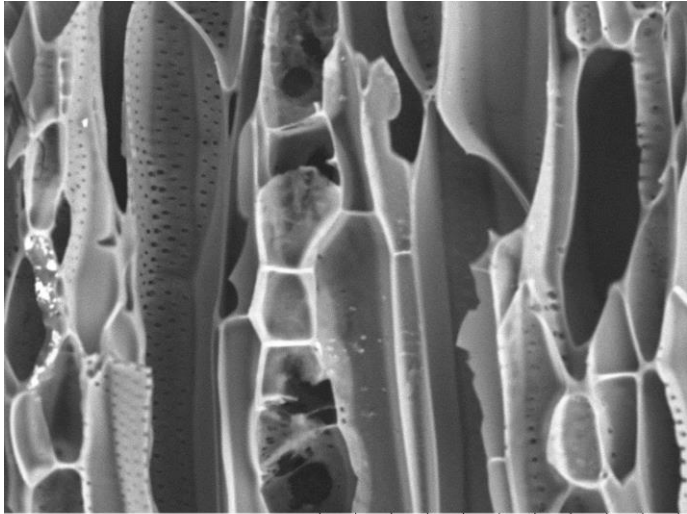
EWC 1656 2022/10/14 11:19 D2.2 x50 2 mm

**Transverse 100x**



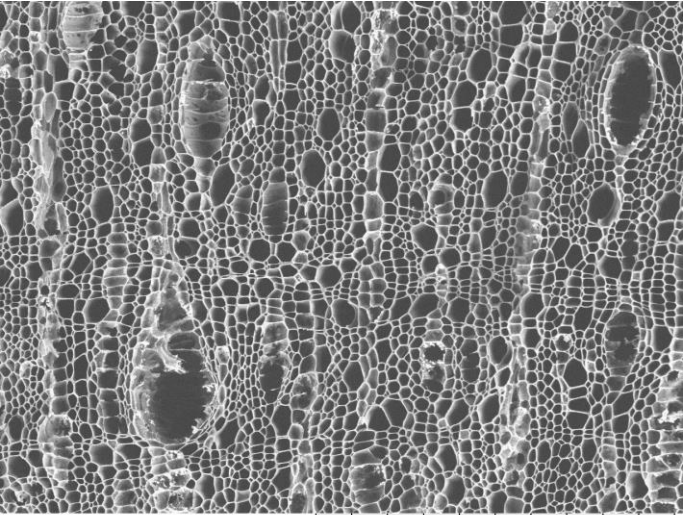
EWC 1656 2022/10/14 11:20 D2.2 x100 1 mm

**Vessel Wall**



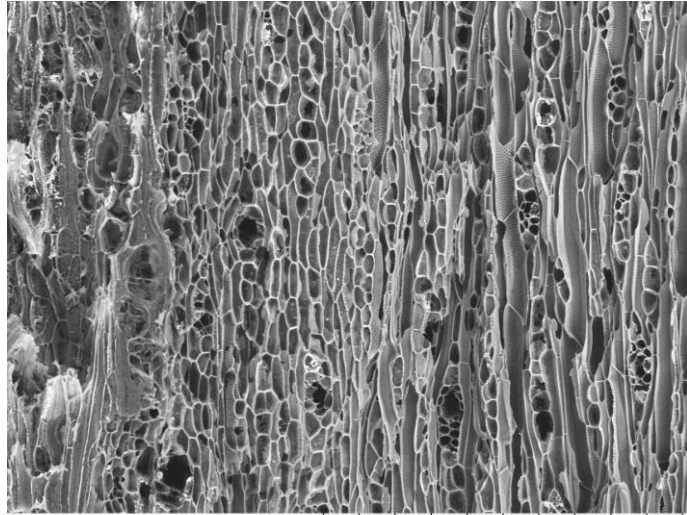
EWC 1656 2022/10/14 11:27 D2.6 x1.0k 100 µm

**Transverse 200x**



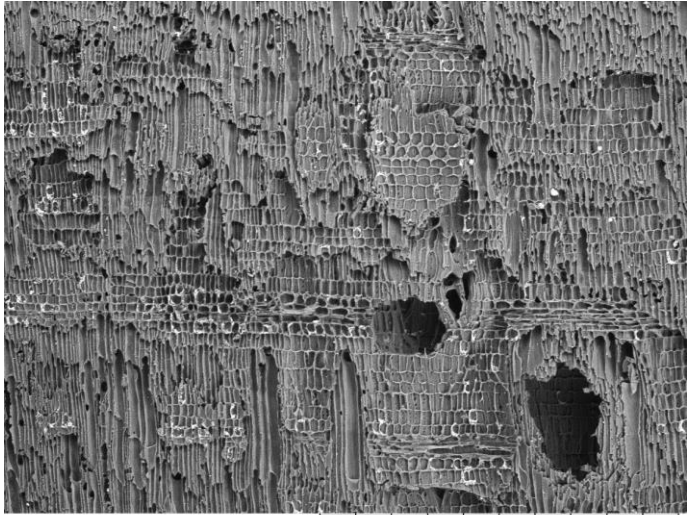
EWC 1656 2022/10/14 11:21 D2.2 x200 500 µm

**Tangential**



EWC 1656 2022/10/14 11:25 D2.5 x200 500 µm

**Radial**



EWC 1656 2022/10/14 11:29 D3.7 x100 1 mm

# EWC 1657 MELIACEAE *Trichilia* P. Browne

**Common Name:** "Cameron"

**Elevation:** 80 m

**Description:** Upper canopy tree. Collected from a mature secondary forest with closed canopy.

**Location:** Ecuador, Manabí

**Locality:** Jama River Valley. Campamento, Area 1: Approximately 2 km W by SW of Campamento. Jama topo map 1:50,000, cuadrícula (block) N75 E74.

## Vessels

**Size:** <50µm, 50-100µm

**Freq.:** 5-20, 20-40

**Arrangement:** solitary

**Tyloses:** absent

## Rays:

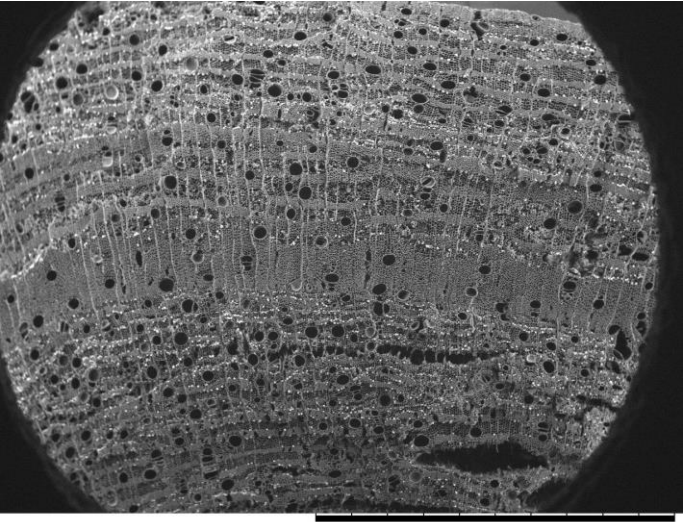
**# per mm:** 4-12

**Thickness (cells):** 1 to 3

**Parenchyma Type:** Banded (thick), Vasicentric (confluent)

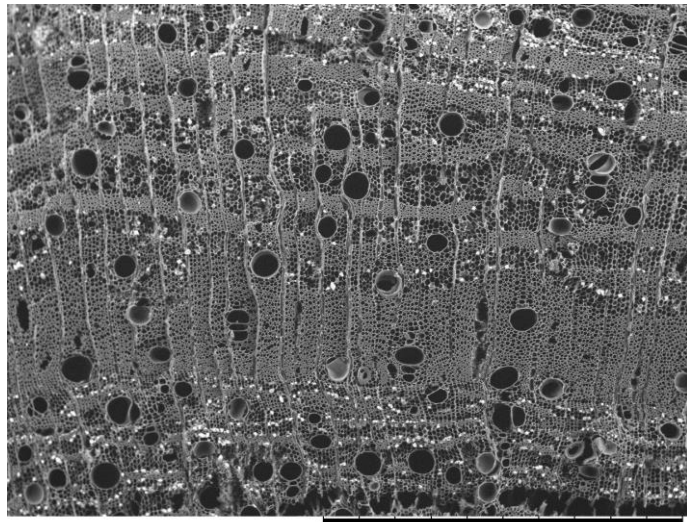
**Porosity:** semi-ring porous, ring porous

**Transverse 50x**



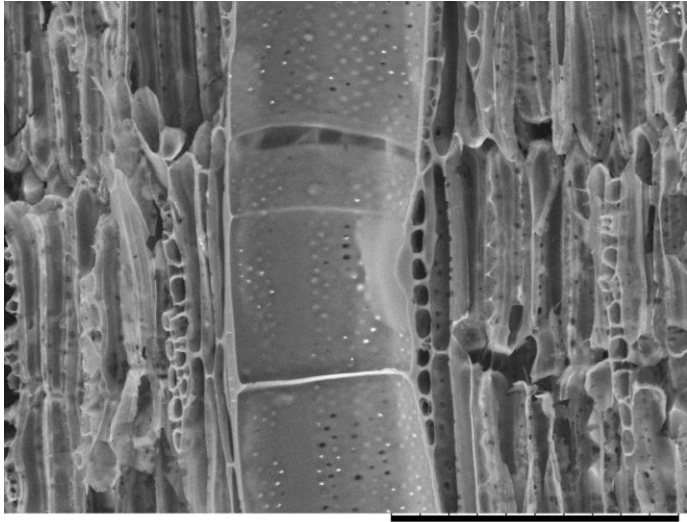
EWC 1657 2022/10/14 11:32 D2.0 x50 2 mm

**Transverse 100x**



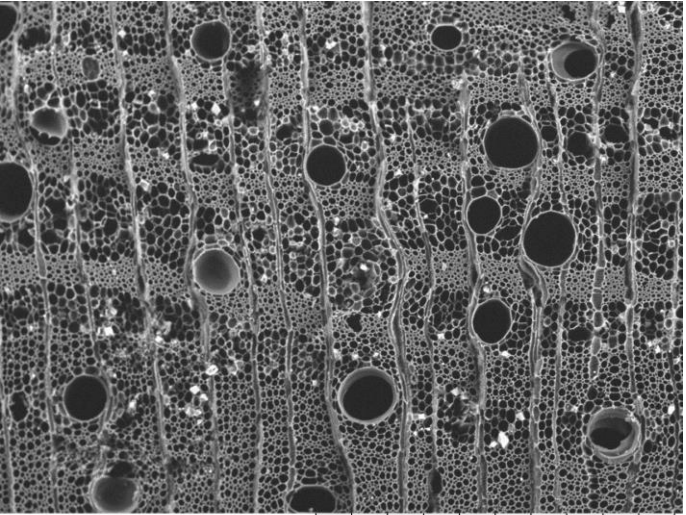
EWC 1657 2022/10/14 11:33 D2.0 x100 1 mm

**Vessel Wall**



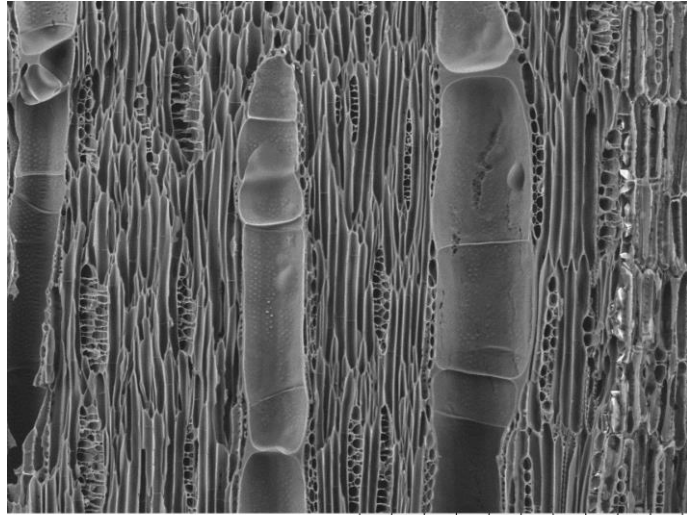
EWC 1657 2022/10/20 09:57 D4.8 x800 100 µm

**Transverse 200x**



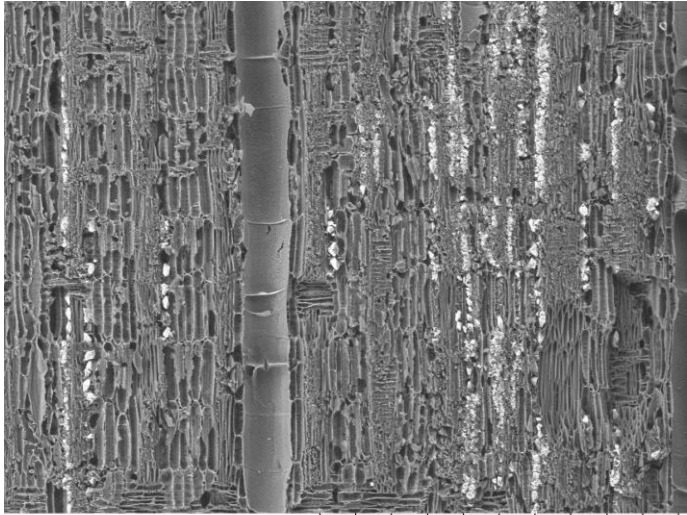
EWC 1657 2022/10/14 11:33 D2.0 x200 500 µm

**Tangential**



EWC 1657 2022/10/14 11:37 D2.3 x300 300 µm

**Radial**



EWC 1657 2022/10/14 11:41 D2.6 x200 500 µm

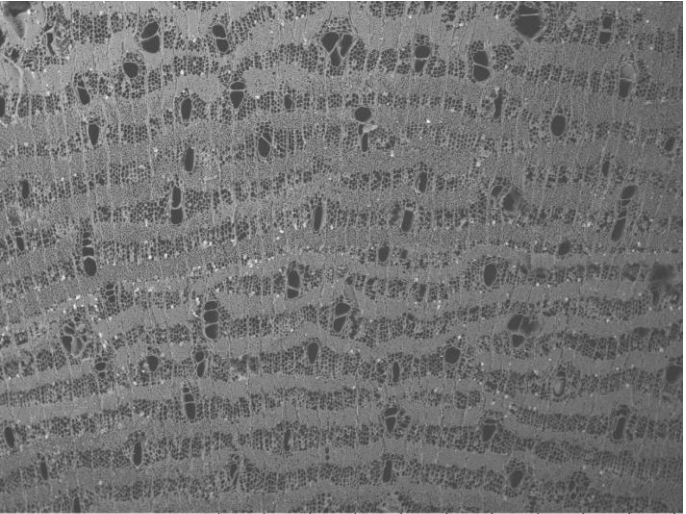
# EWC 1660 FABACEAE *Libidibia corymbosa* (Benth.) Britton & Killip

**Vessels**  
Size: 50-100µm  
Freq.: 5 to 20  
Arrangement: solitary, pairs, chains, clusters  
**Tyloses:** absent

**Rays:**  
# per mm: 12+  
Thickness (cells): 1 to 3, storied  
**Parenchyma Type:** Banded (thick),  
**Porosity:** diffuse

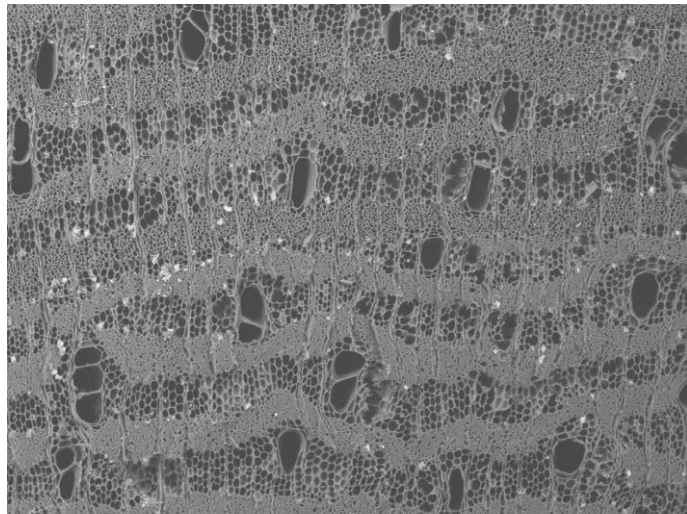
**Common Name:**  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



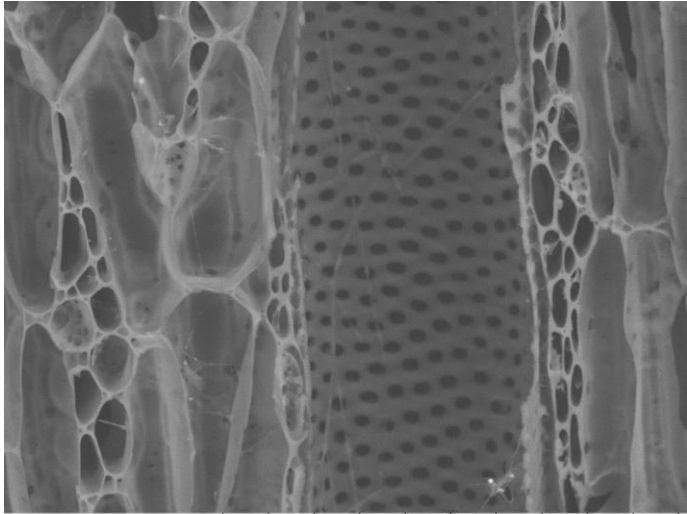
EWC 1660 2022/10/14 14:33 D3.3 x50 2 mm

**Transverse 100x**



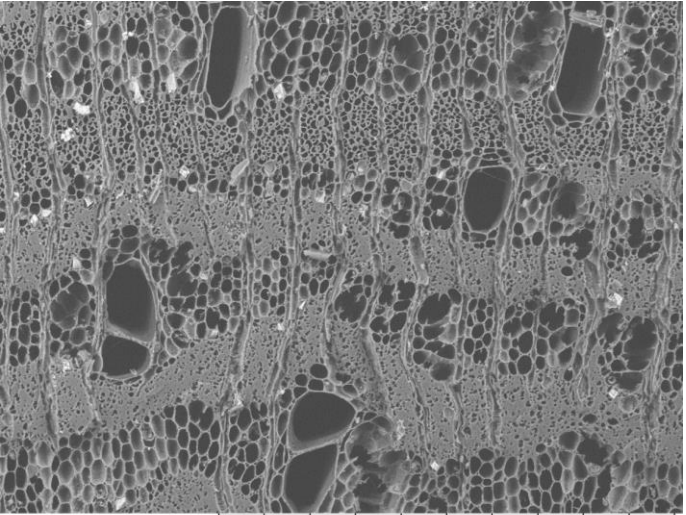
EWC 1660 2022/10/14 14:33 D3.3 x100 1 mm

**Vessel Wall**



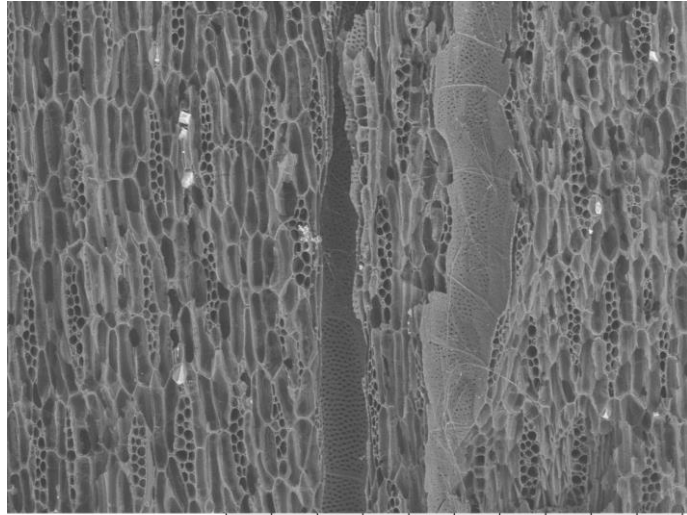
EWC 1660 2022/10/14 14:40 D5.2 x1.0k 100 µm

**Transverse 200x**



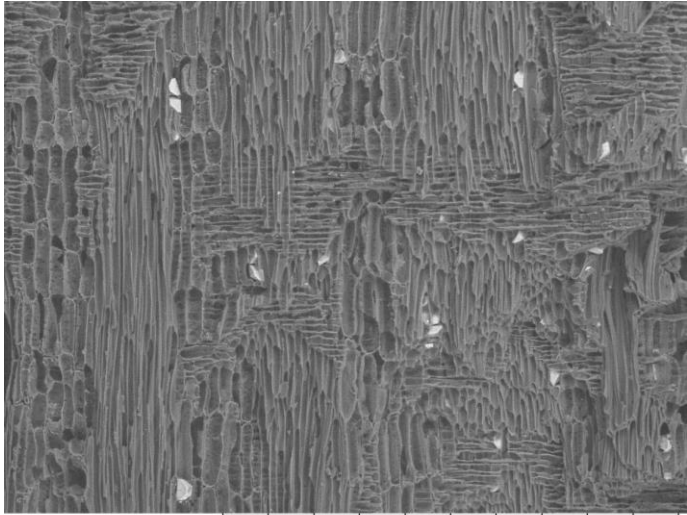
EWC 1660 2022/10/14 14:34 D3.3 x200 500 µm

**Tangential**



EWC 1660 2022/10/14 14:39 D5.2 x200 500 µm

**Radial**



EWC 1660 2022/10/14 14:44 D6.4 x200 500 µm

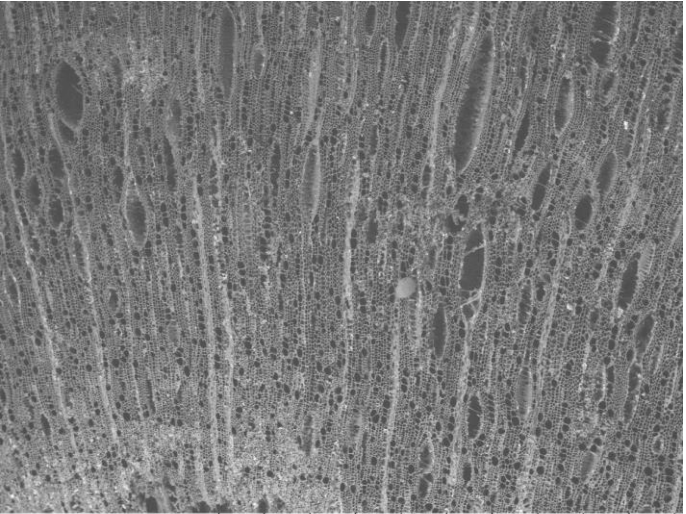
# EWC 1662 Unknown Identification

**Vessels**  
Size: <50µm  
Freq.: 100+  
Arrangement: solitary, chains, clusters  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Diffuse, Diffuse-in-aggregates  
**Porosity:** semi-ring porous

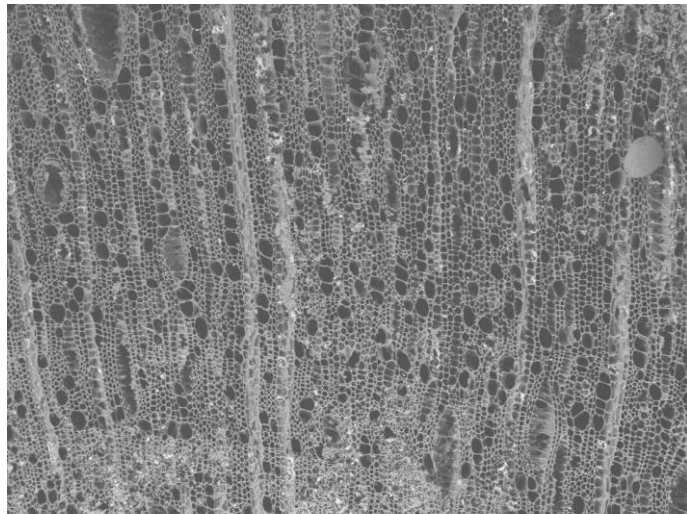
**Common Name:** "lengua de vaca"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



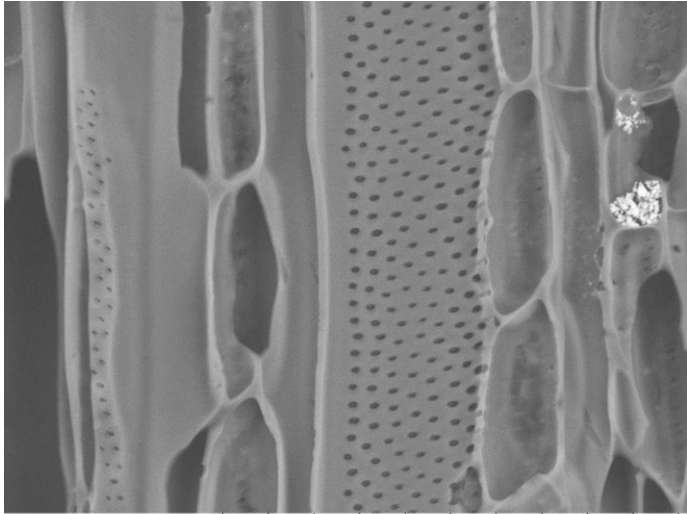
EWC 1662 2022/10/14 14:48 D4.7 x50 2 mm

**Transverse 100x**



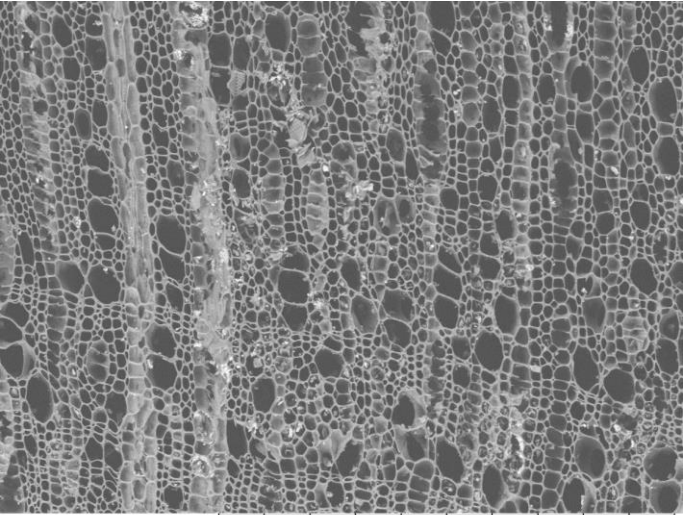
EWC 1662 2022/10/14 14:49 D4.7 x100 1 mm

**Vessel Wall**



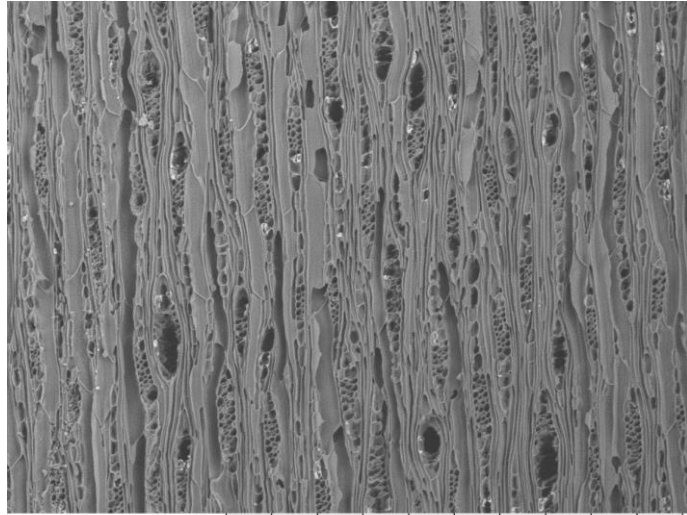
EWC 1662 2022/10/14 14:59 D5.3 x1.0k 100 µm

**Transverse 200x**



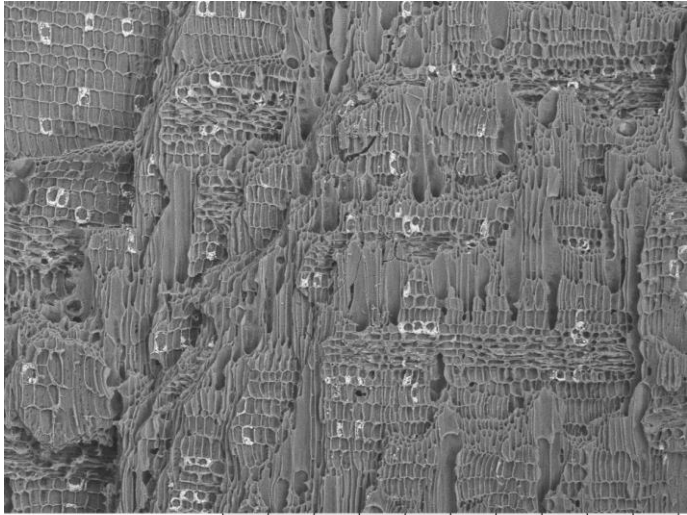
EWC 1662 2022/10/14 14:49 D4.7 x200 500 µm

**Tangential**



EWC 1662 2022/10/14 14:55 D5.0 x100 1 mm

**Radial**



EWC 1662 2022/10/14 14:52 D6.2 x100 1 mm

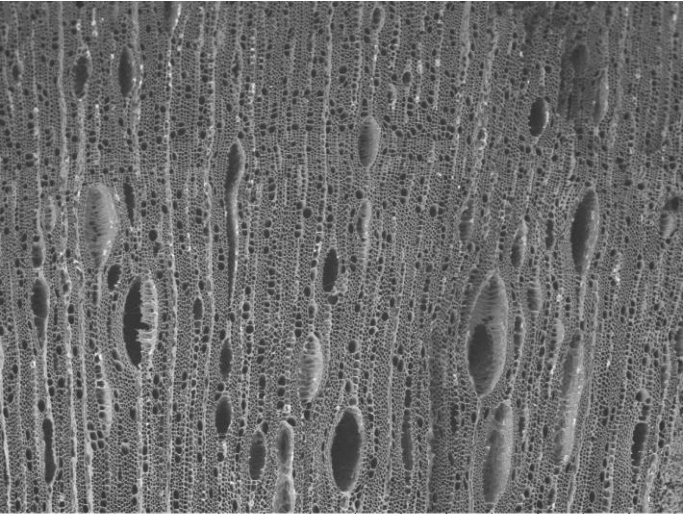
# EWC 1663 Unknown Identification

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 40 to 100  
Arrangement: solitary, chains, clusters  
Tyloses: absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1-3, of two distinct sizes  
**Parenchyma Type:** Absent, scanty  
**Porosity:** semi-ring porous

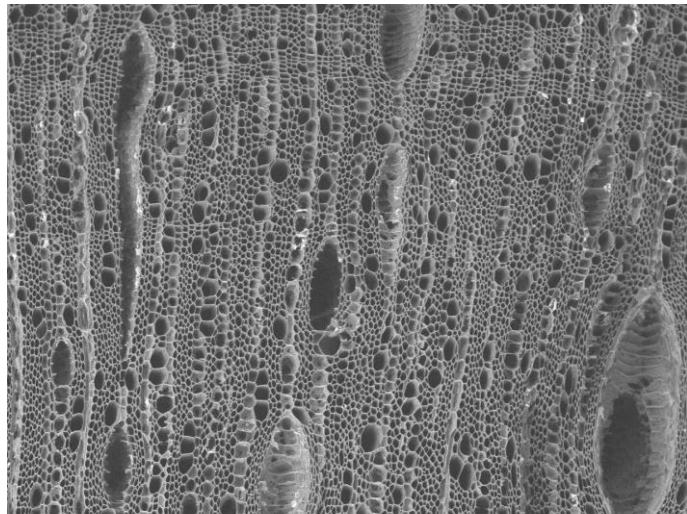
**Common Name:** "lengua de vaca"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



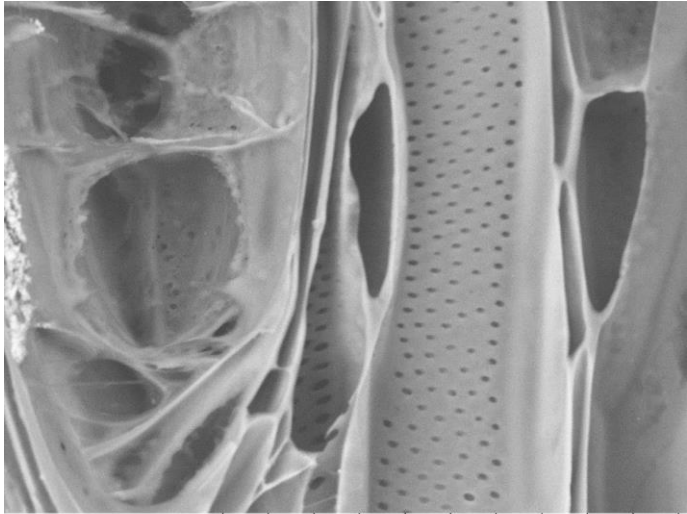
EWC 1663 2022/10/14 15:15 D4.4 x50 2 mm

**Transverse 100x**



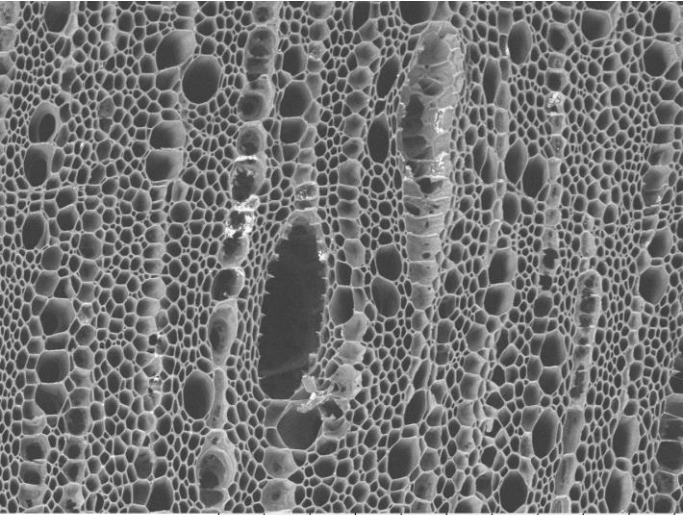
EWC 1663 2022/10/14 15:16 D4.4 x100 1 mm

**Vessel Wall**



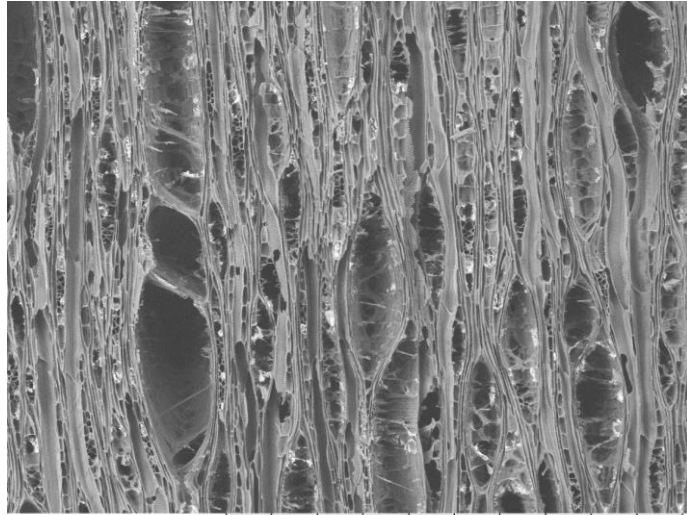
EWC 1663 2022/10/14 15:25 D5.4 x1.0k 100 µm

**Transverse 200x**



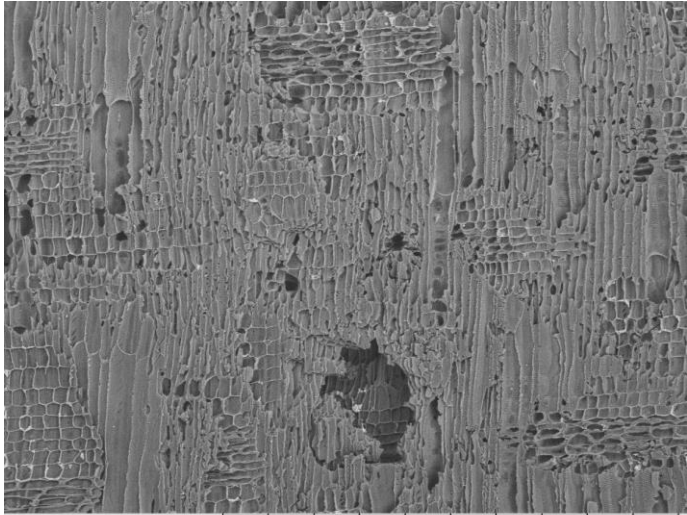
EWC 1663 2022/10/14 15:17 D4.4 x200 500 µm

**Tangential**



EWC 1663 2022/10/14 15:22 D5.3 x100 1 mm

**Radial**



EWC 1663 2022/10/14 15:19 D5.9 x100 1 mm

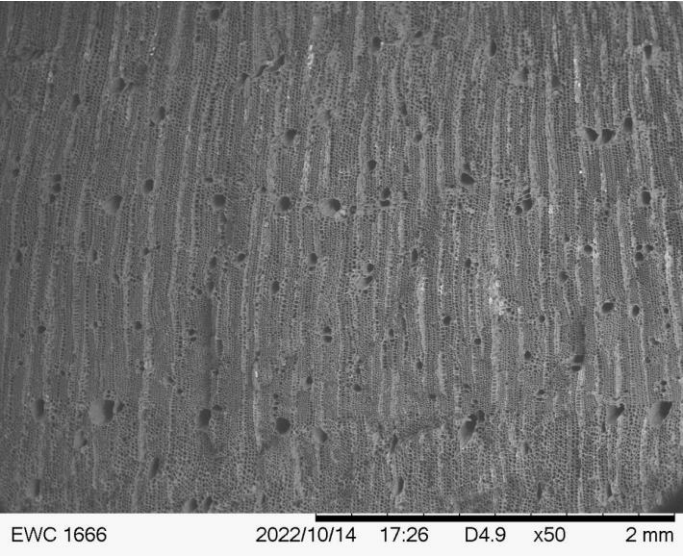
# EWC 1666 Unknown Identification

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 5 to 20  
Arrangement: solitary, pairs  
**Tyloses:** absent

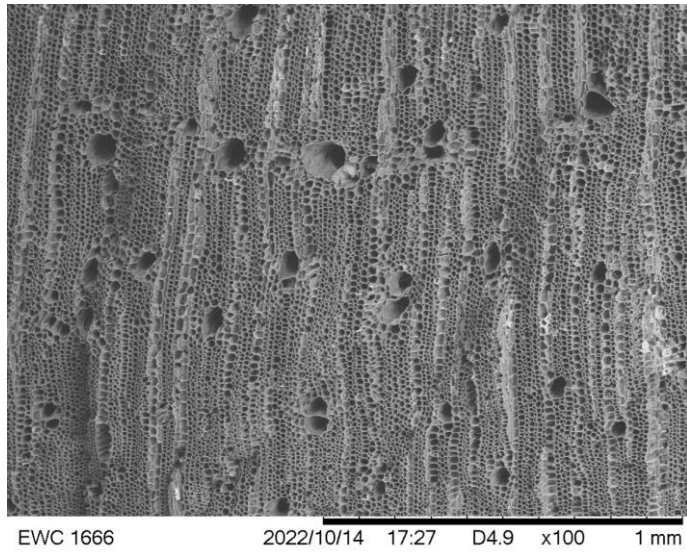
**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Vascentric  
(lozenge, confluent) Diffuse  
**Porosity:** diffuse

**Common Name:** "negrito"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

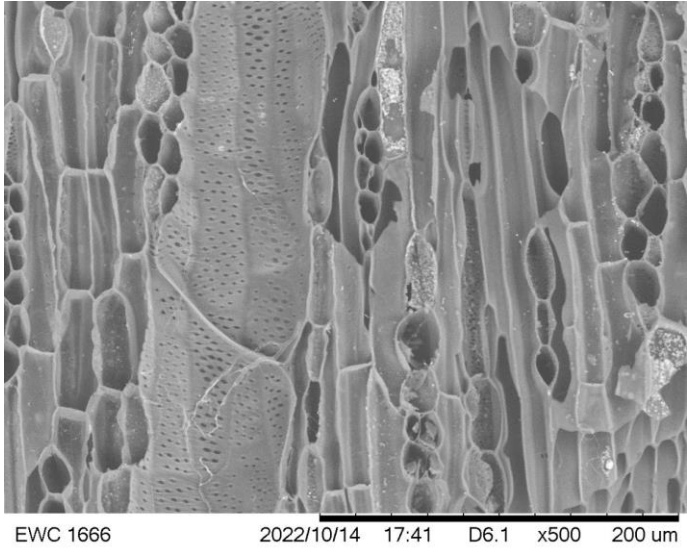
**Transverse 50x**



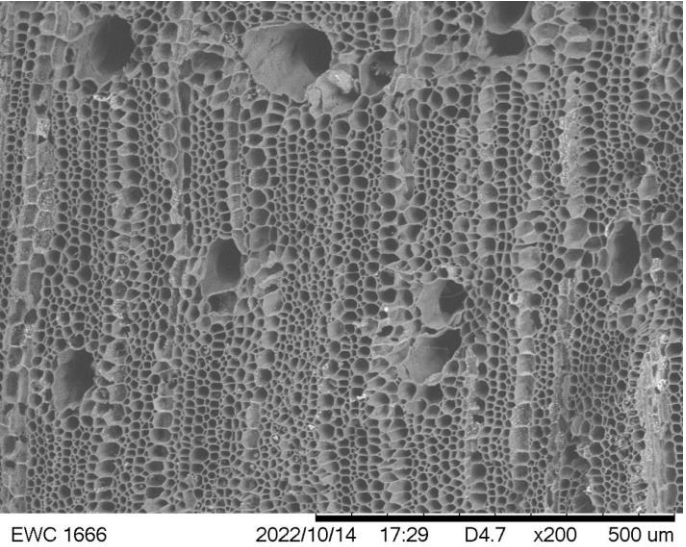
**Transverse 100x**



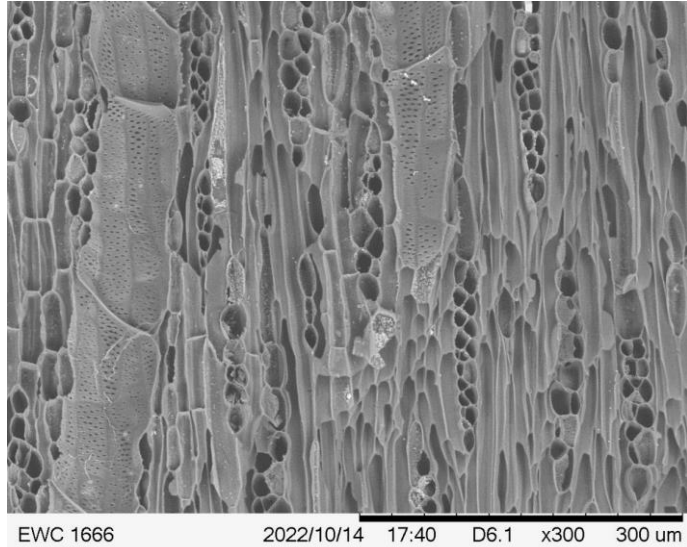
**Vessel Wall 500x**



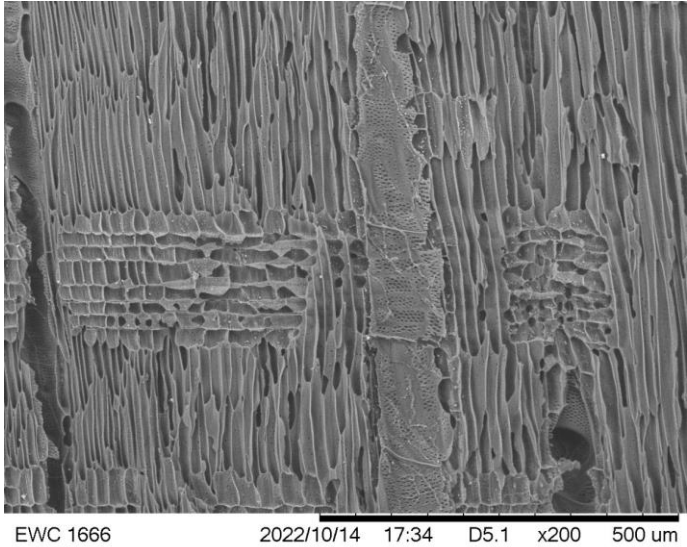
**Transverse 200x**



**Tangential 300x**



**Radial 200x**



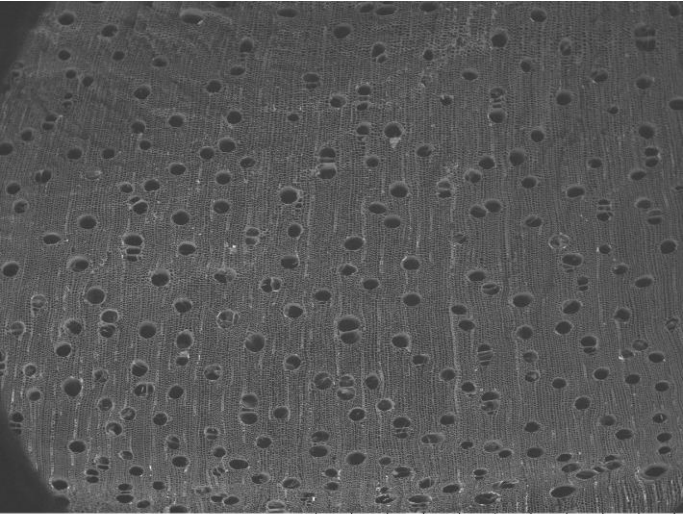
# EWC 1667 Unknown Identification

**Vessels**  
Size: 50-100µm, 100-200µm  
Freq.: 20 to 40  
Arrangement: solitary, pairs, chains  
**Tyloses:** common

**Rays:**  
# per mm: 4-12  
Thickness (cells): uniseriate  
**Parenchyma Type:** Absent, Scanty,  
Diffuse  
**Porosity:** diffuse

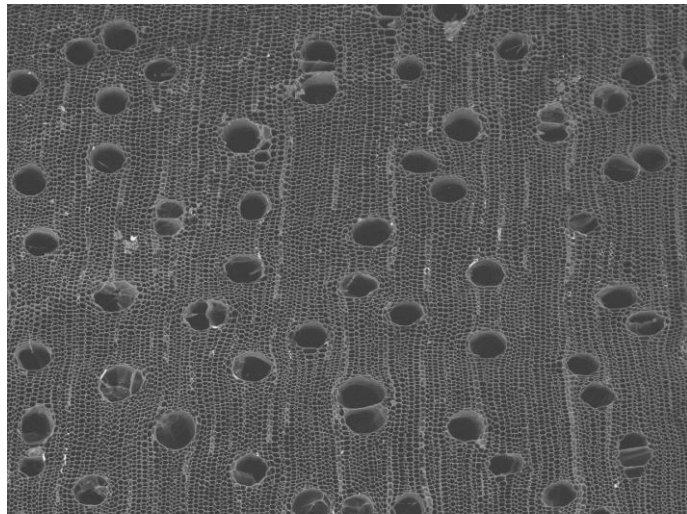
**Common Name:** “Zapán de paloma”  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



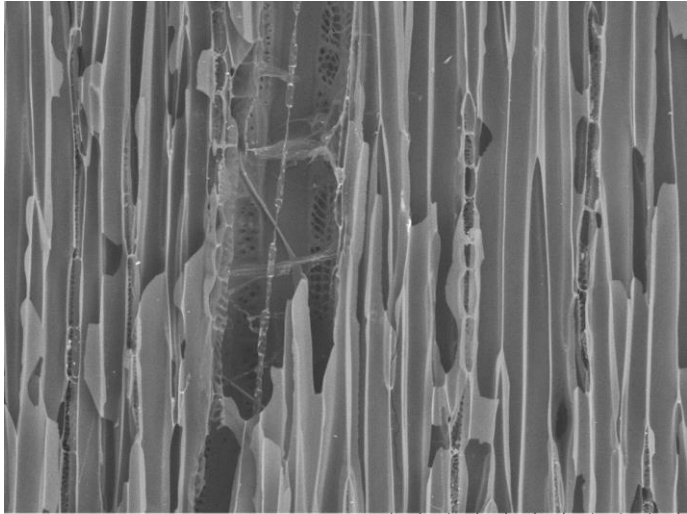
EWC 1667 2022/10/14 17:52 D3.8 x50 2 mm

**Transverse 100x**



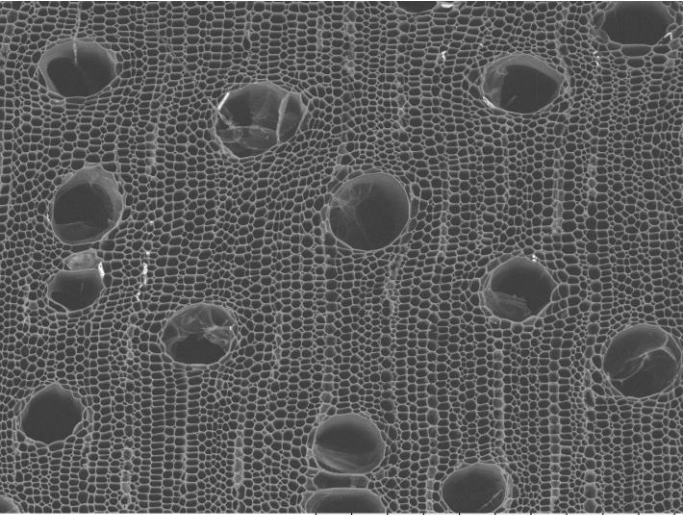
EWC 1667 2022/10/14 17:53 D3.8 x100 1 mm

**Vessel Wall 400x**



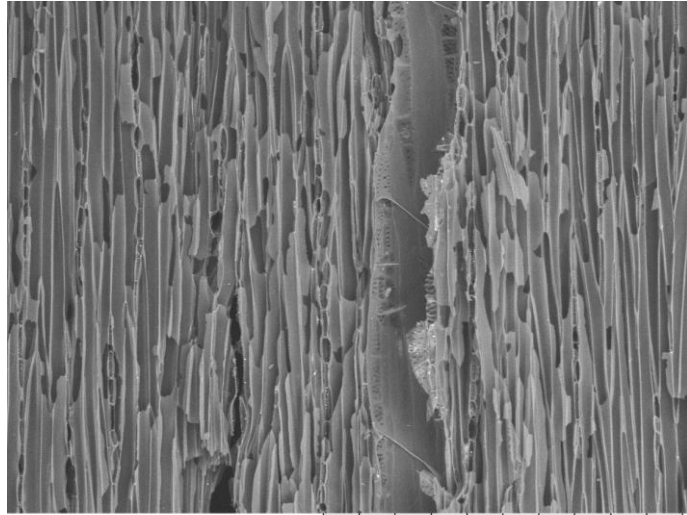
EWC 1667 2022/10/14 17:50 D5.2 x400 200 um

**Transverse 200x**



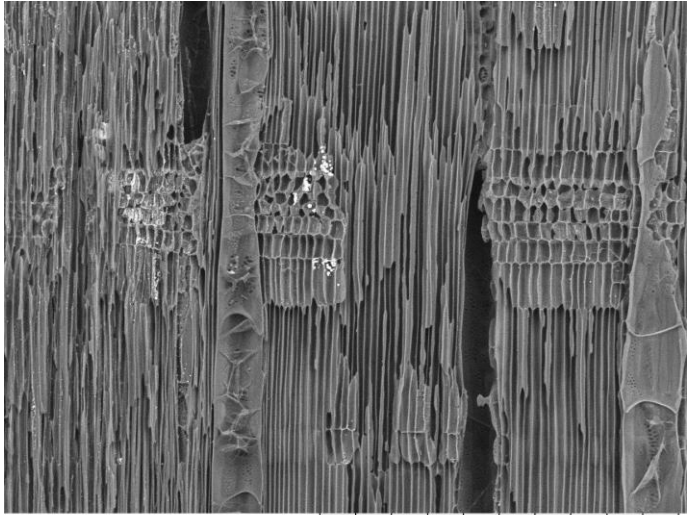
EWC 1667 2022/10/14 17:54 D3.8 x200 500 um

**Tangential 200x**



EWC 1667 2022/10/14 17:47 D5.2 x200 500 um

**Radial**



EWC 1667 2022/10/20 17:35 D5.2 x200 500 um

# EWC 1668 ASTERACEAE *Vernonia baccharoides* Kunth

## Vessels

Size: 50-100µm

Freq.: 20 to 40

Arrangement: solitary, pairs, chains

Tyloses:absent

## Rays:

# per mm: <4-12

Thickness (cells): 4+

Parenchyma Type: Absent

Porosity: diffuse

Common Name: "Chirca"

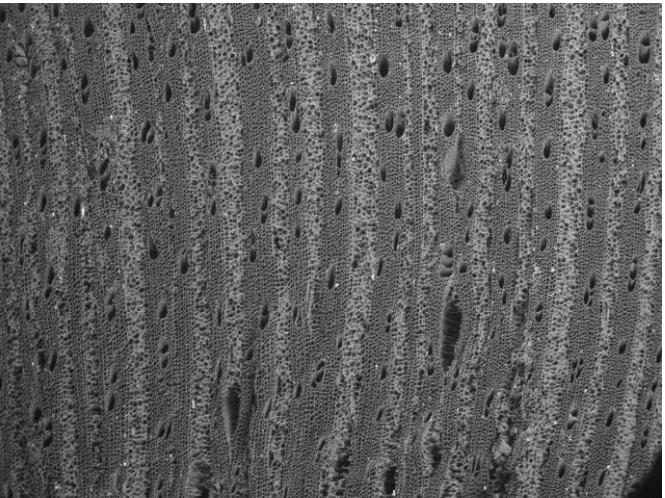
Elevation: 90 m

Description: Lower canopy tree.

Location: Ecuador, Manabí, Jama

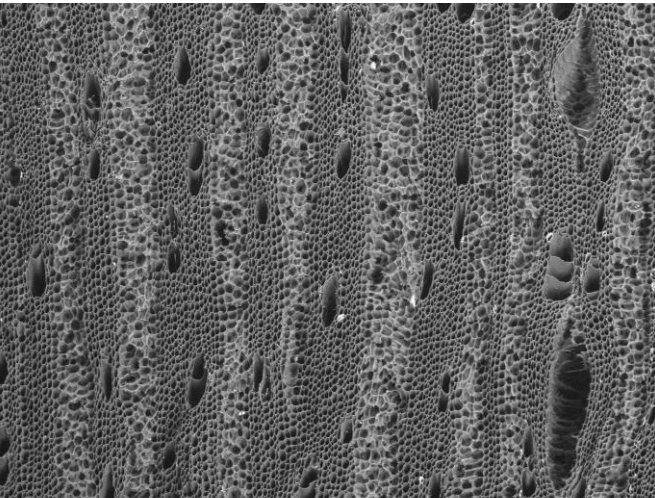
Locality: Campamento, Area 2: Approximately 2 km W by SW of Campamento. Collected from a mature secondary forest with closed canopy. Jama topo map 1:50,000, cuadrícula (block) N75 E74.

Transverse 50x



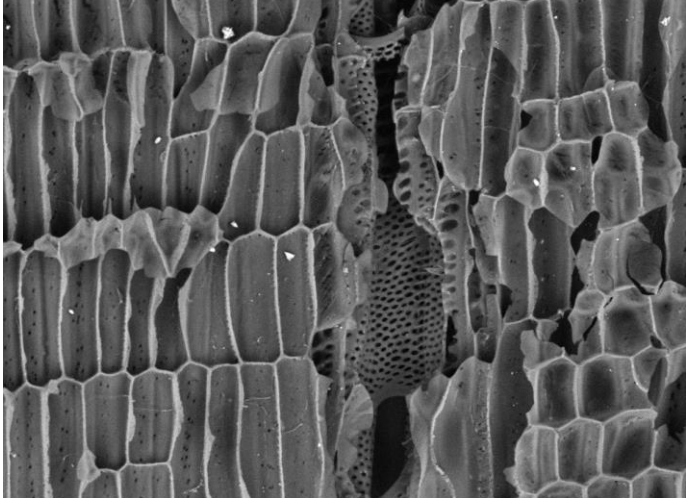
EWC 1668 2022/10/20 17:18 D4.5 x50 2 mm

Transverse 100x



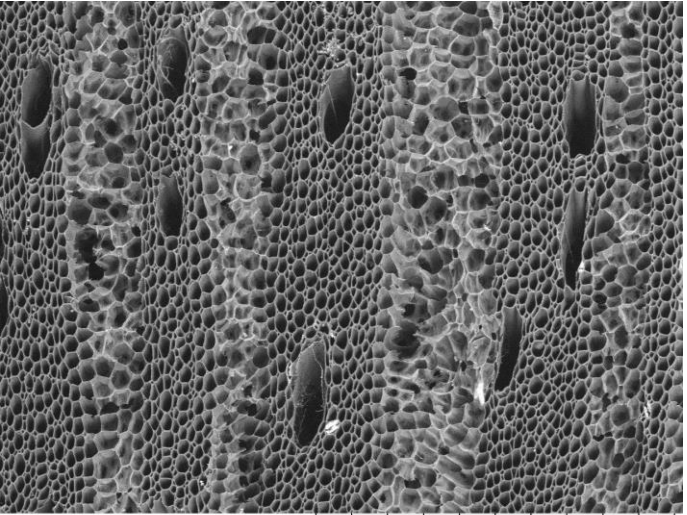
EWC 1668 2022/10/20 17:19 D4.5 x100 1 mm

Vessel Wall



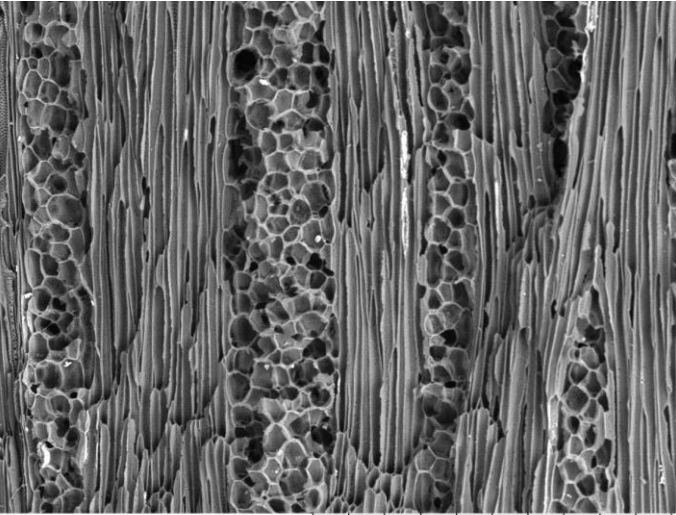
EWC 1668 2022/10/20 17:31 D5.8 x500 200 um

Transverse 200x



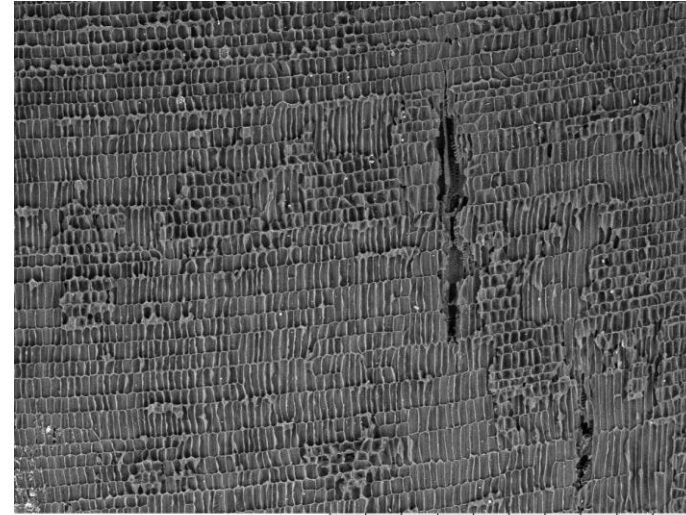
EWC 1668 2022/10/20 17:20 D4.5 x200 500 um

Tangential



EWC 1668 2022/10/20 17:24 D4.2 x200 500 um

Radial



EWC 1668 2022/10/20 17:30 D5.8 x100 1 mm



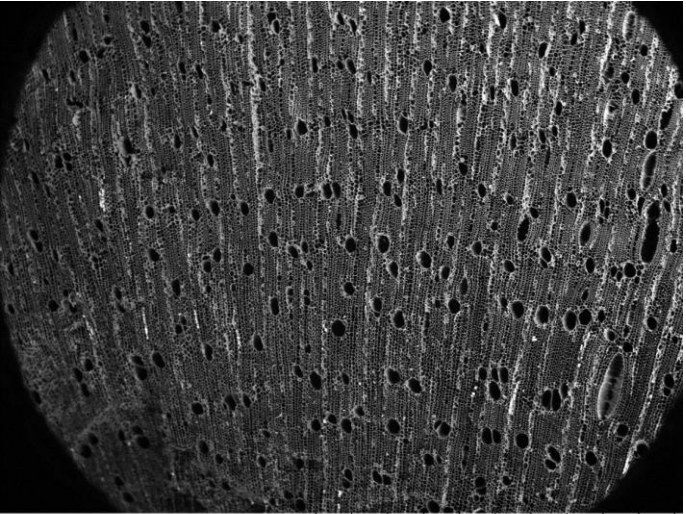
# EWC 1669 Unknown Identification

**Vessels**  
Size: 50-100µm, 100-200µm  
Freq.: 40 to 100  
Arrangement: solitary, pairs  
**Tyloses:** common  
**Porosity:** diffuse

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Vascentric  
(confluent, unilateral), Diffuse-in-aggregates

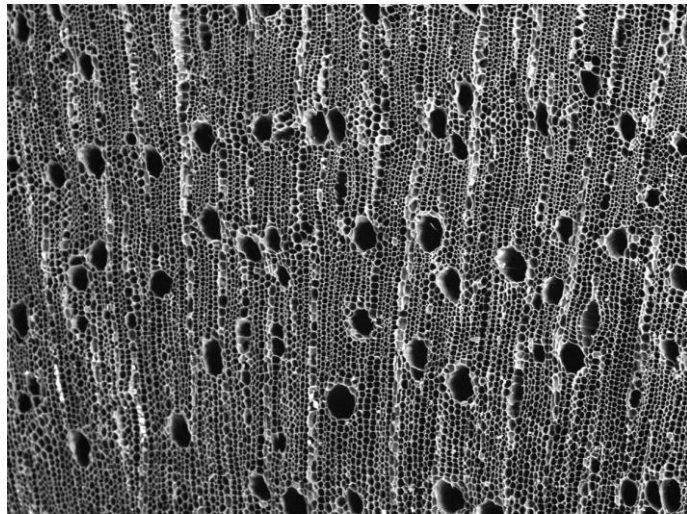
**Common Name:** "mangle de río"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

Transverse 50x



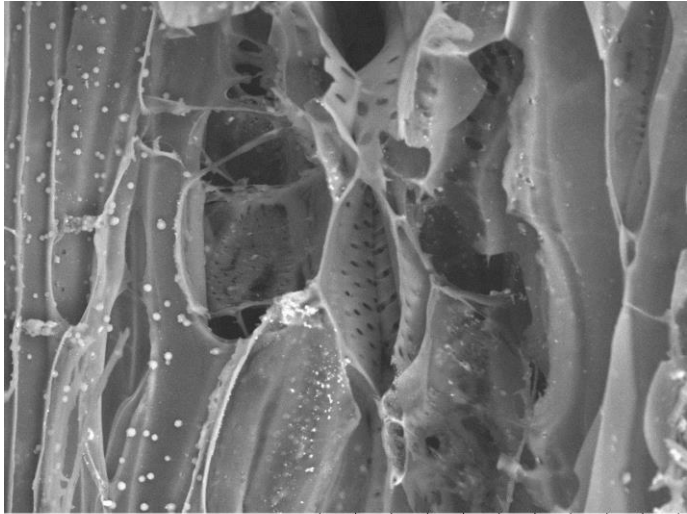
EWC 1669 2022/10/27 09:44 D2.6 x50 2 mm

Transverse 100x



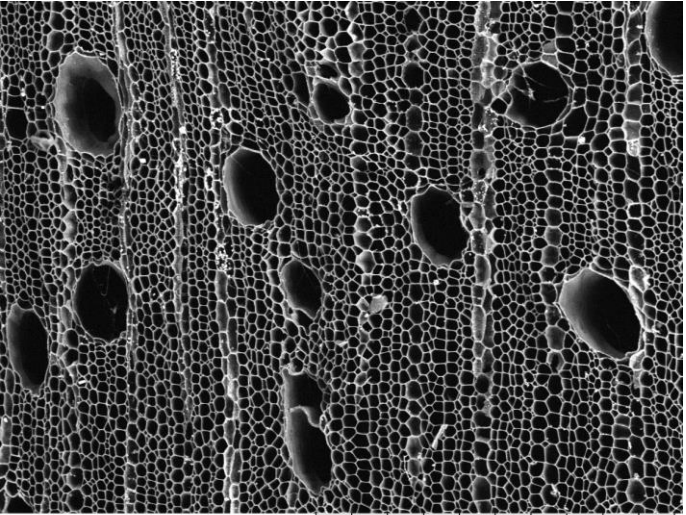
EWC 1669 2022/10/27 09:45 D2.6 x100 1 mm

Vessel Wall



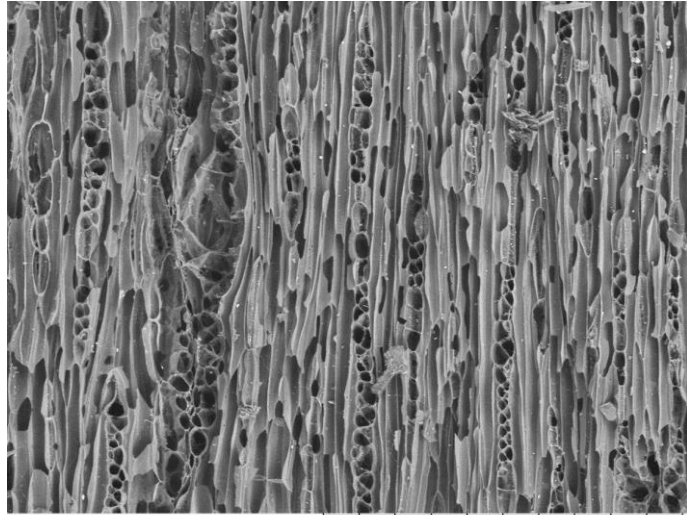
EWC 1669 2022/10/20 10:34 D5.1 x1.0k 100 um

Transverse 200x



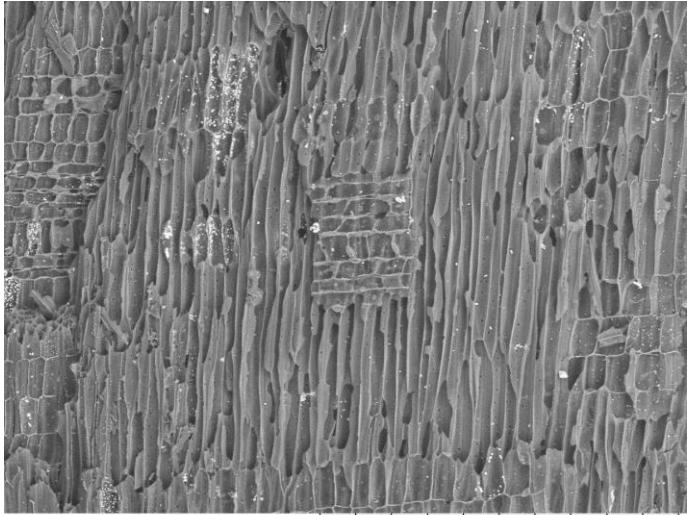
EWC 1669 2022/10/27 09:42 D2.6 x200 500 um

Tangential



EWC 1669 2022/10/20 10:22 D4.9 x200 500 um

Radial



EWC 1669 2022/10/20 10:30 D6.0 x200 500 um

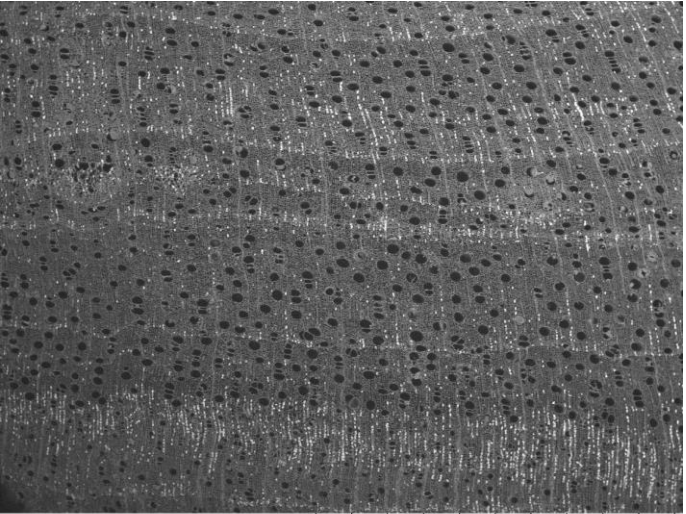
# EWC 1670 EUPHORBIACEAE *Croton glabellus* L.

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 100+  
Arrangement: solitary, pairs, chains  
**Tyloses:** common

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3 cells  
**Parenchyma Type:** Vasicentric  
(unilateral), Diffuse-in-aggregates  
**Porosity:** semi-ring porous

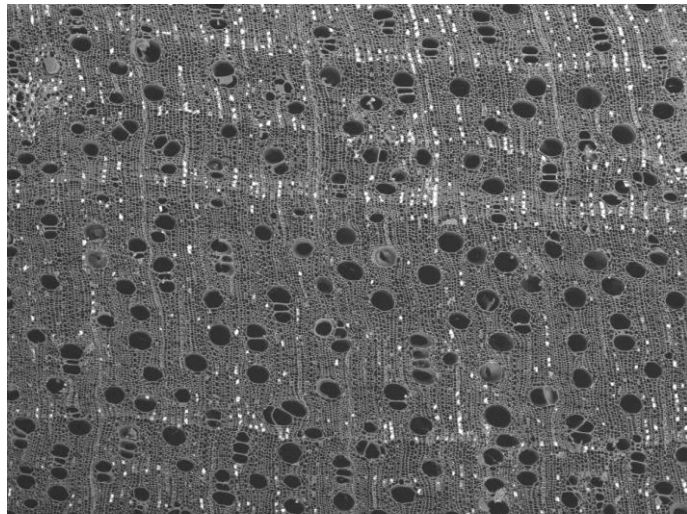
**Common Name:**  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



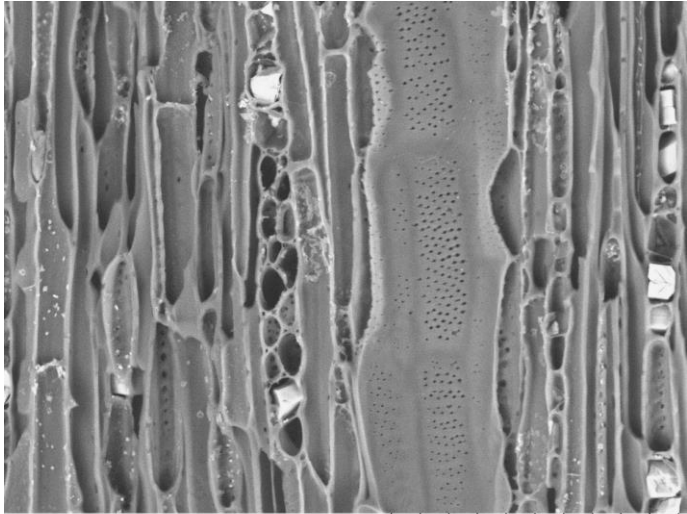
EWC 1670 2022/10/20 11:17 D5.0 x50 2 mm

**Transverse 100x**



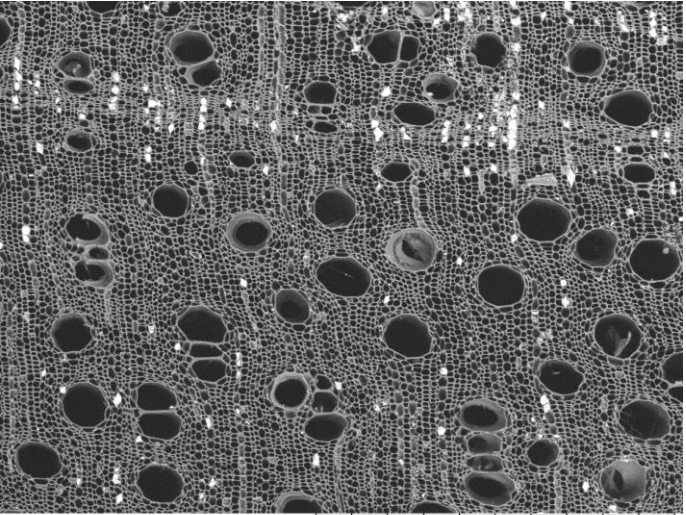
EWC 1670 2022/10/20 11:18 D5.0 x100 1 mm

**Vessel Wall**



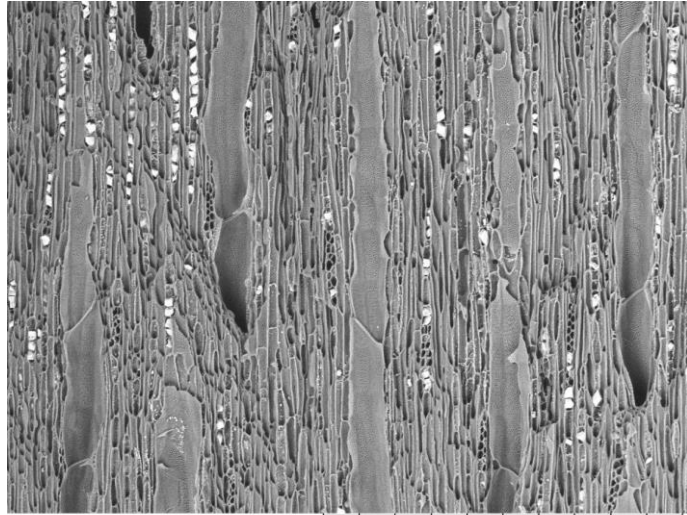
EWC 1670 2022/10/20 11:24 D4.4 x800 100 µm

**Transverse 200x**



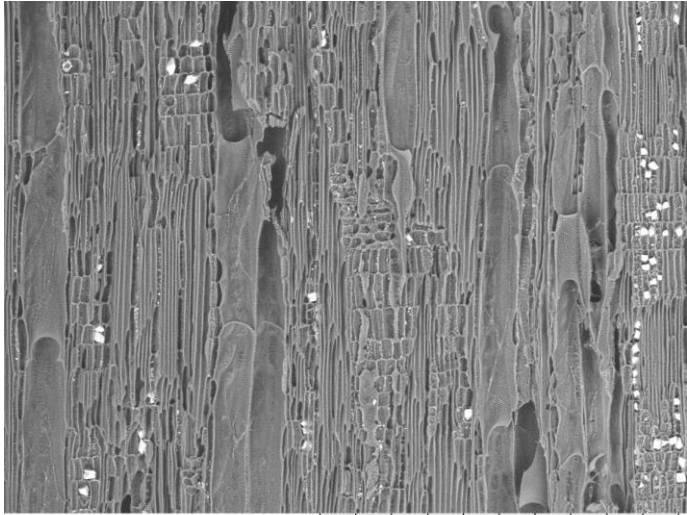
EWC 1670 2022/10/20 11:19 D5.0 x200 500 µm

**Tangential**



EWC 1670 2022/10/20 11:22 D4.4 x200 500 µm

**Radial**



EWC 1670 2022/10/20 11:26 D5.4 x200 500 µm

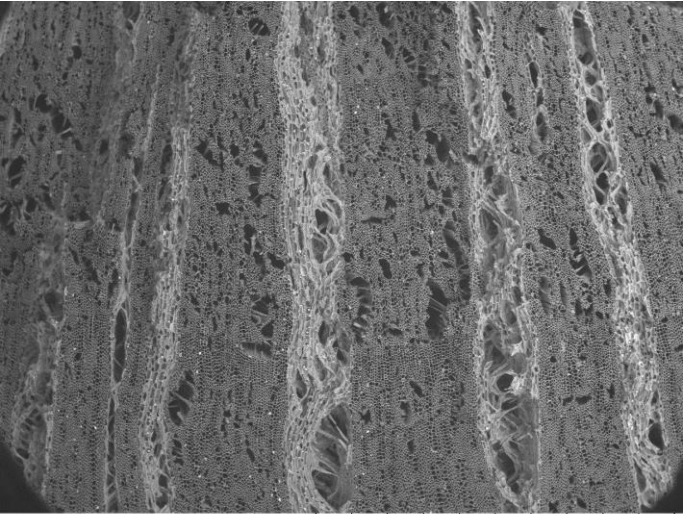
# EWC 1671 Unknown Identification

**Vessels**  
Size: <50µm  
Freq.: 20 to 40  
Arrangement: solitary, pairs, chais  
**Tyloses:** absent

**Rays:**  
# per mm: <4  
Thickness (cells): 4+  
**Parenchyma Type:** Absent,  
Vasicentric (unilateral), Scanty, Diffuse  
**Porosity:** diffuse

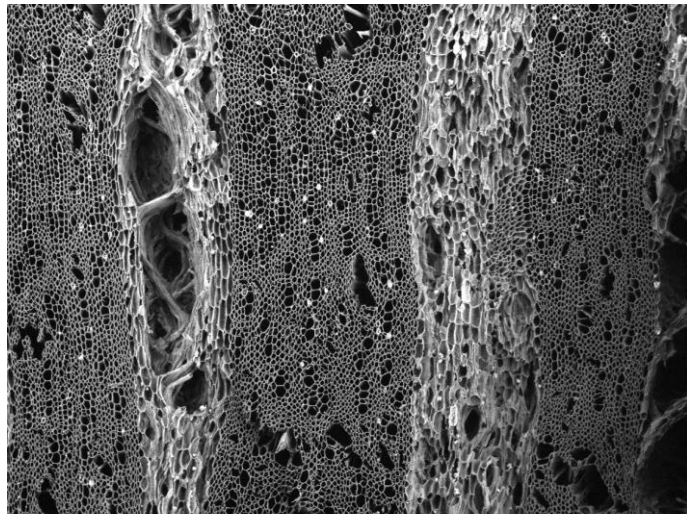
**Common Name:** "cebo de mico"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



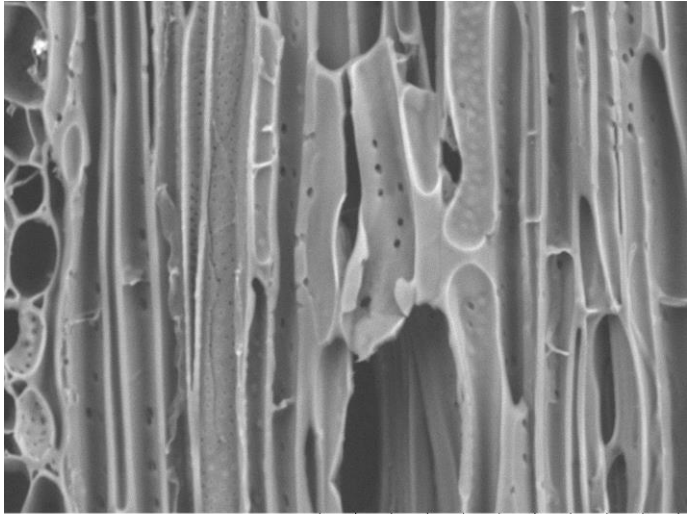
EWC 1671 2022/10/20 10:39 D4.0 x50 2 mm

**Transverse 100x**



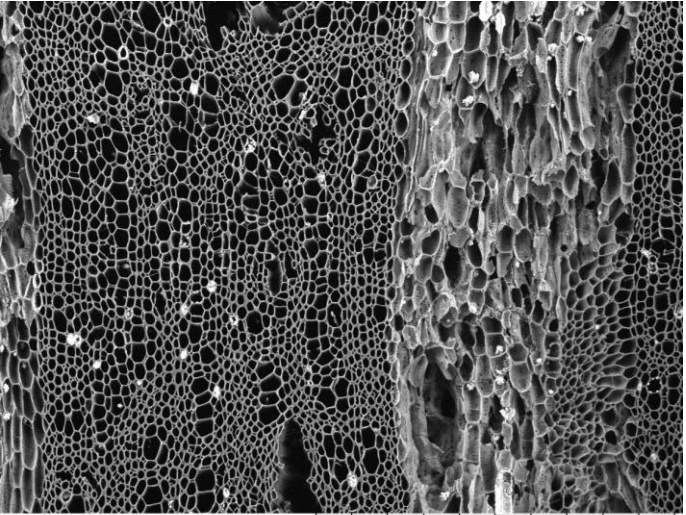
EWC 1671 2022/10/27 09:47 D2.5 x100 1 mm

**Vessel Wall**



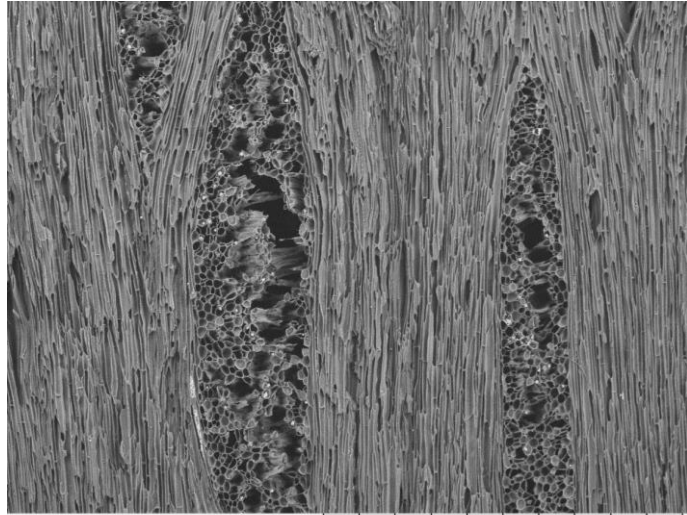
EWC 1671 2022/10/20 10:50 D5.1 x1.0k 100 um

**Transverse 200x**



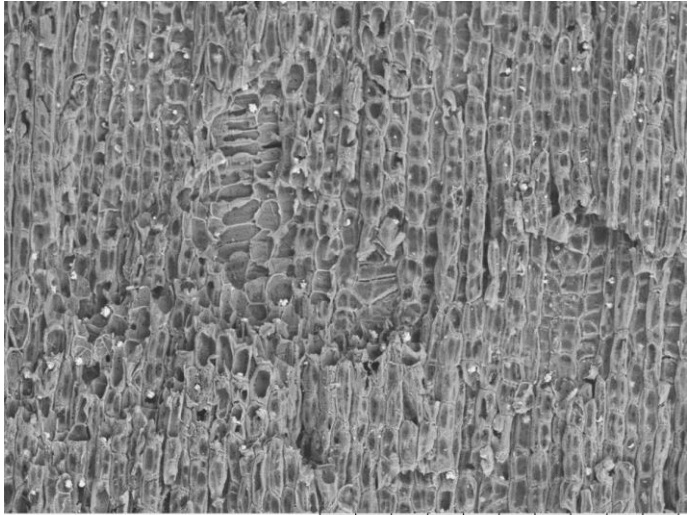
EWC 1671 2022/10/27 09:48 D2.5 x200 500 um

**Tangential**



EWC 1671 2022/10/20 10:47 D5.0 x100 1 mm

**Radial**



EWC 1671 2022/10/20 10:45 D5.6 x200 500 um

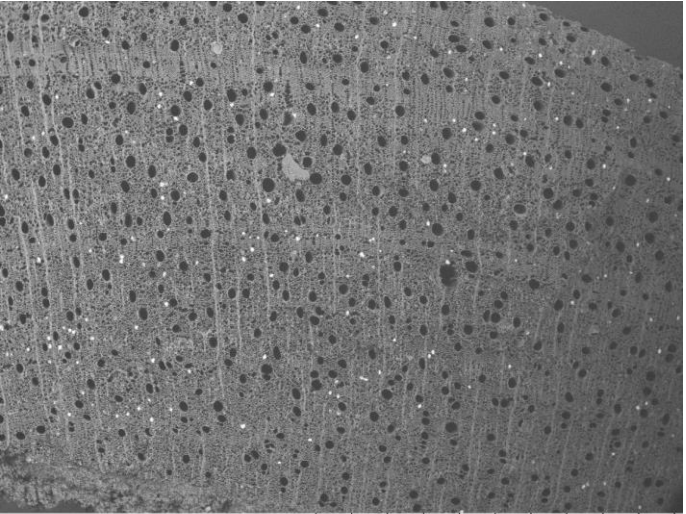
# EWC 1672 MYRTACEAE *Eugenia*

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 100+  
Arrangement: mostly solitary, some pairs  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Banded (thin),  
Vasicentric (confluent), Diffuse-in-aggregates  
**Porosity:** semi-ring porous

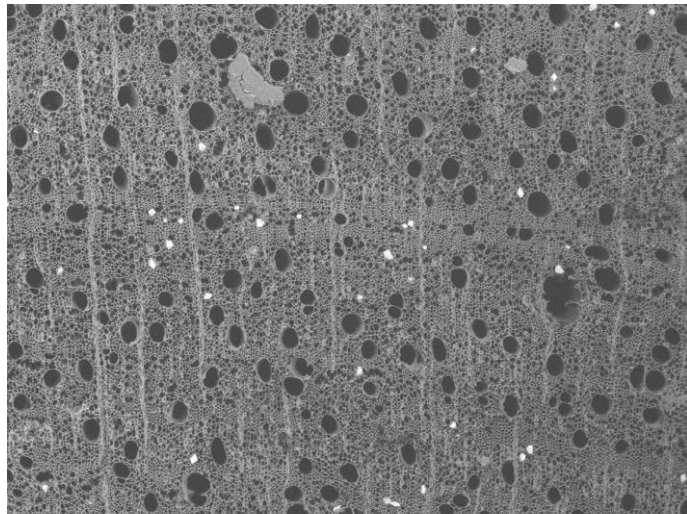
**Common Name:** "arrayán"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



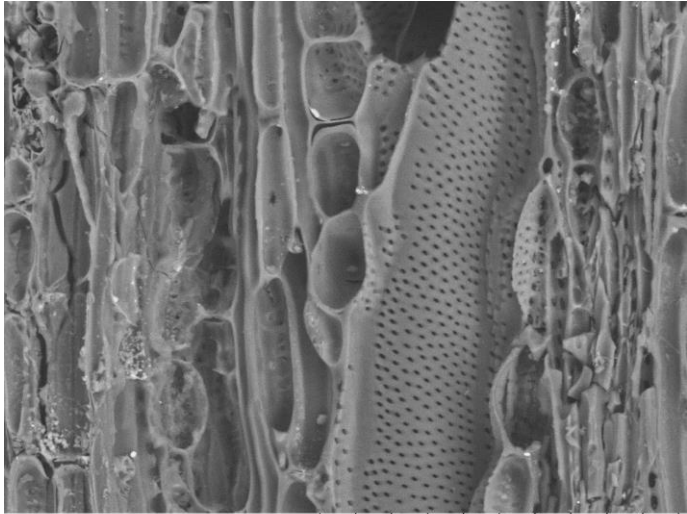
EWC 1672 2022/10/20 11:04 D5.1 x50 2 mm

**Transverse 100x**



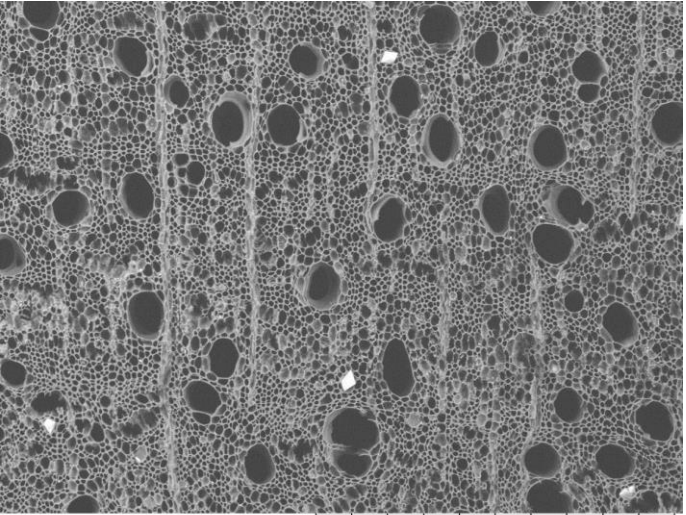
EWC 1672 2022/10/20 11:05 D5.1 x100 1 mm

**Vessel Wall**



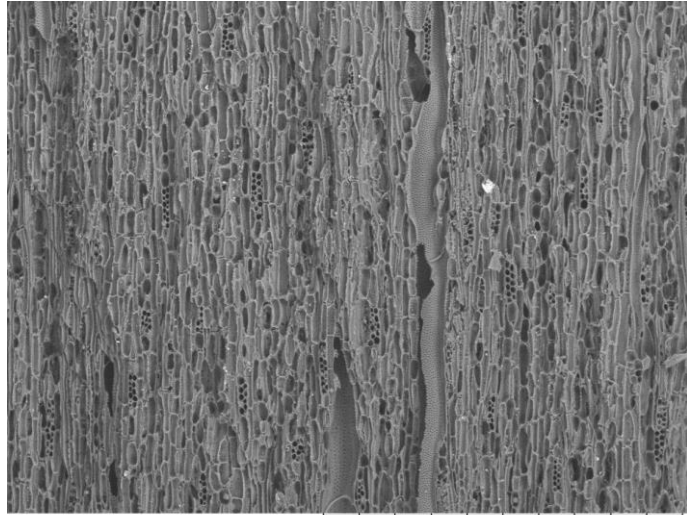
EWC 1672 2022/10/20 11:15 D5.6 x1.0k 100 µm

**Transverse 200x**



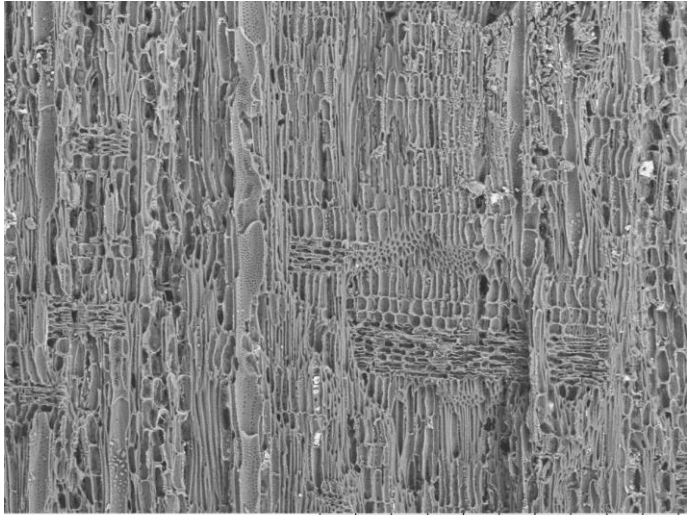
EWC 1672 2022/10/20 11:06 D5.1 x200 500 µm

**Tangential**



EWC 1672 2022/10/20 11:13 D5.6 x200 500 µm

**Radial**



EWC 1672 2022/10/20 11:08 D5.2 x200 500 µm

# EWC 1673 Unknown identification

## Vessels

Size: 50-100µm, 100-200µm

Freq.: 5 to 20

Arrangement: solitary, pairs, chains

Tyloses: common

## Rays:

# per mm: 4-12

Thickness (cells): 1 to 3

Parenchyma Type: Vascentric (aliform), Diffuse-in-aggregates

Porosity: diffuse

## Common Name:

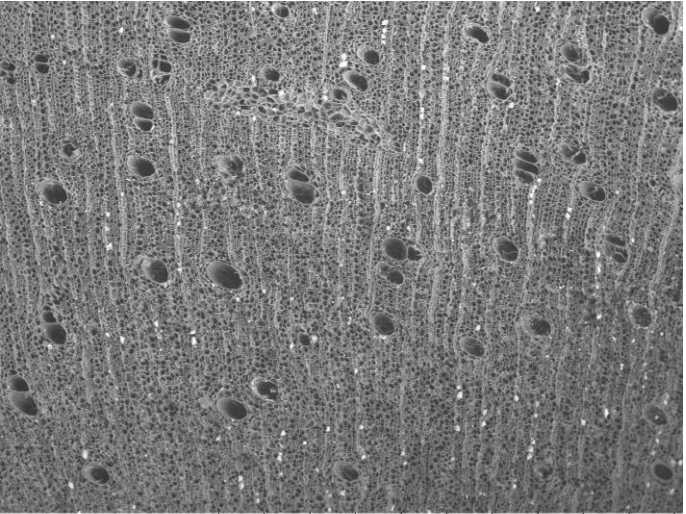
Elevation:

Description:

Location: Ecuador

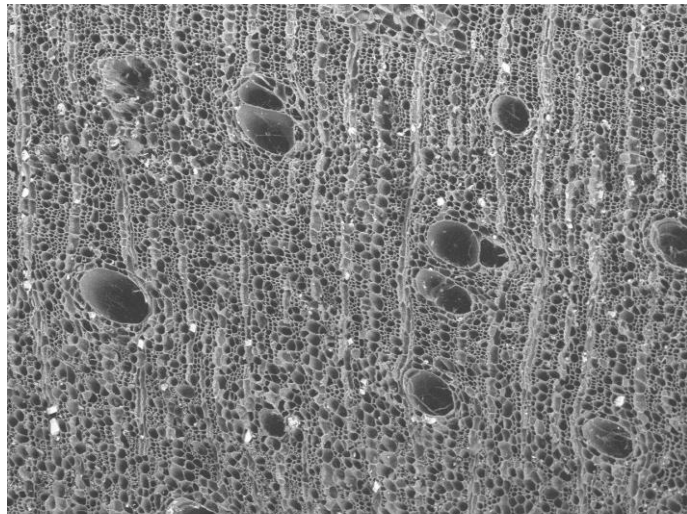
Locality:

Transverse 50x



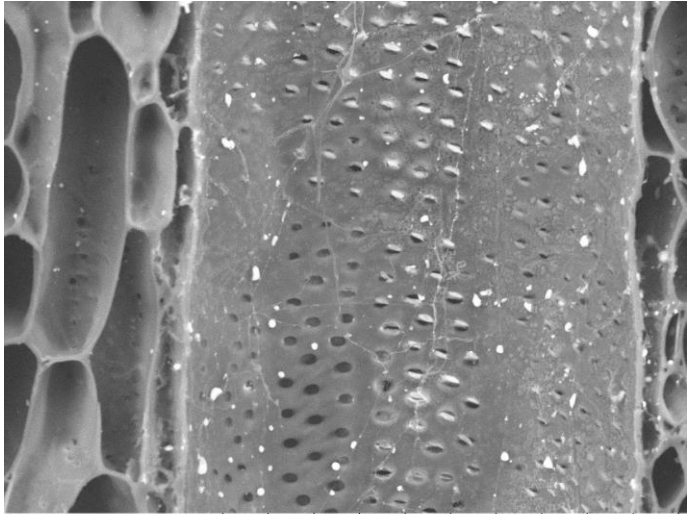
EWC 1673 2022/10/20 14:28 D3.4 x50 2 mm

Transverse 100x



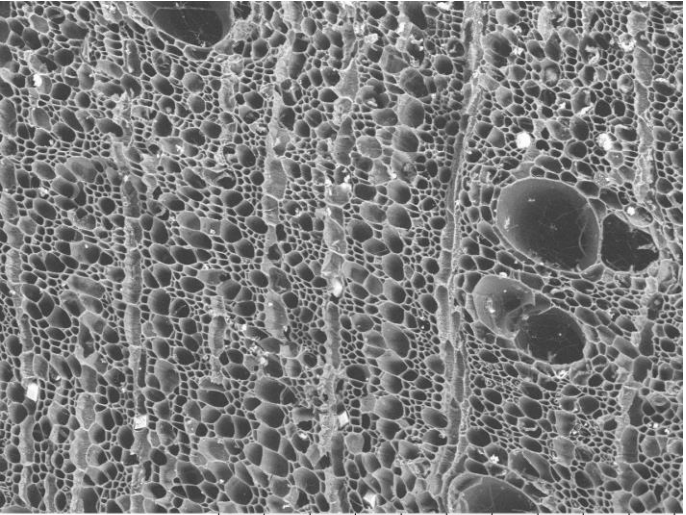
EWC 1673 2022/10/20 14:29 D3.4 x100 1 mm

Vessel Wall



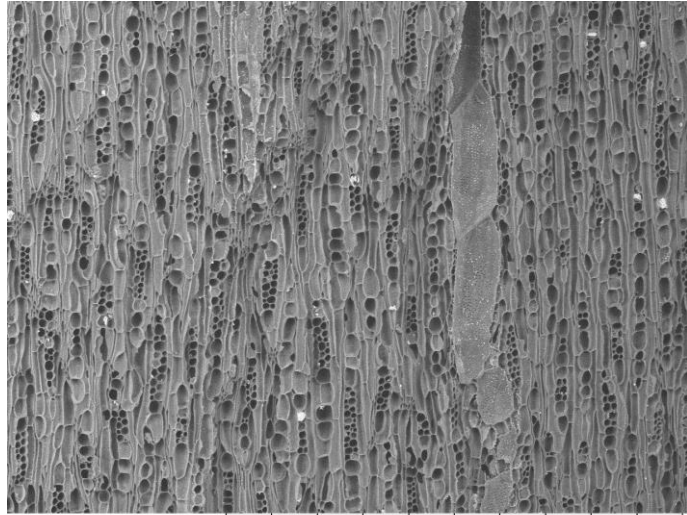
EWC 1673 2022/10/20 14:35 D5.2 x1.0k 100 µm

Transverse 200x



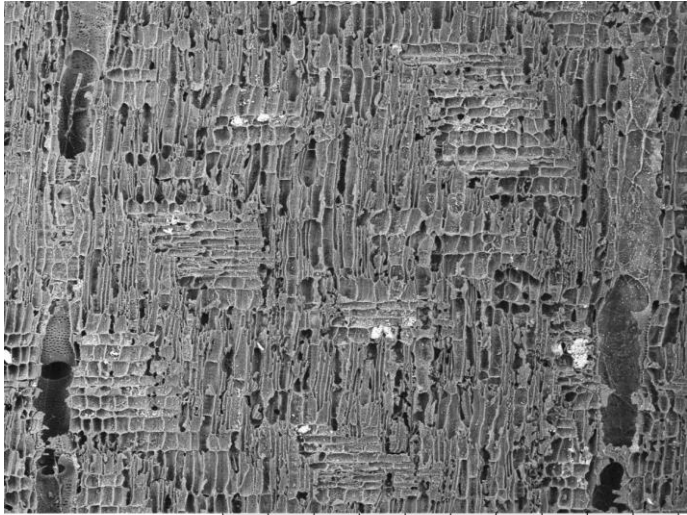
EWC 1673 2022/10/20 14:30 D3.4 x200 500 µm

Tangential



EWC 1673 2022/10/20 14:32 D5.2 x100 1 mm

Radial



EWC 1673 2022/10/20 14:36 D5.5 x100 1 mm

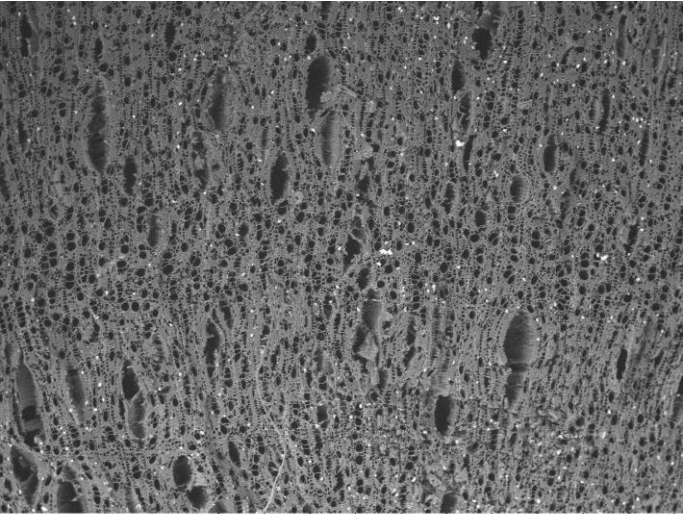
# EWC 1674 Unknown identification

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 40 to 100, 100+  
Arrangement: solitary, chains, clusters  
Tyloses: absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Thin bands,  
Diffuse-in-aggregates  
**Porosity:** semi-ring porous

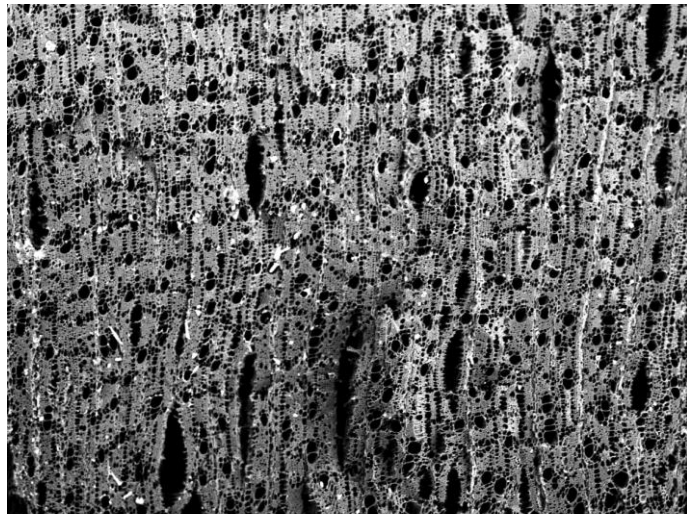
**Common Name:**  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



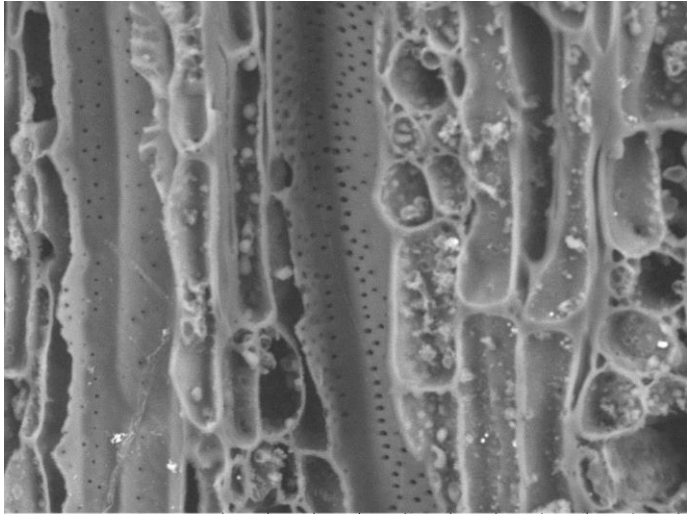
EWC 1674 2022/10/20 14:40 D3.9 x50 2 mm

**Transverse 100x**



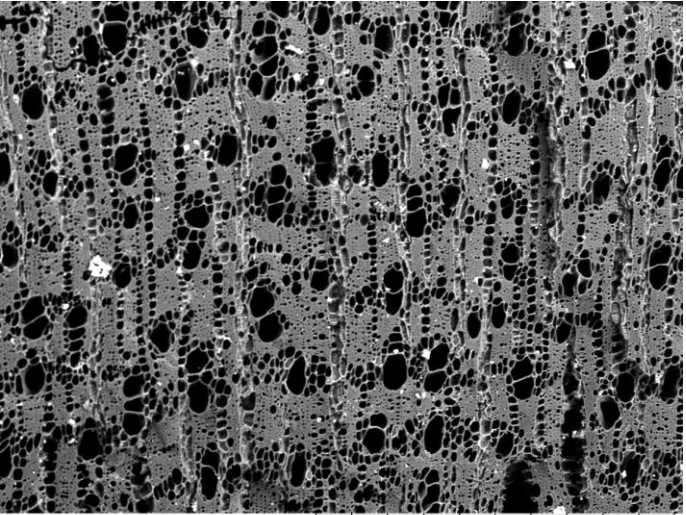
EWC 1674 2022/11/01 09:23 D3.0 x100 1 mm

**Vessel Wall**



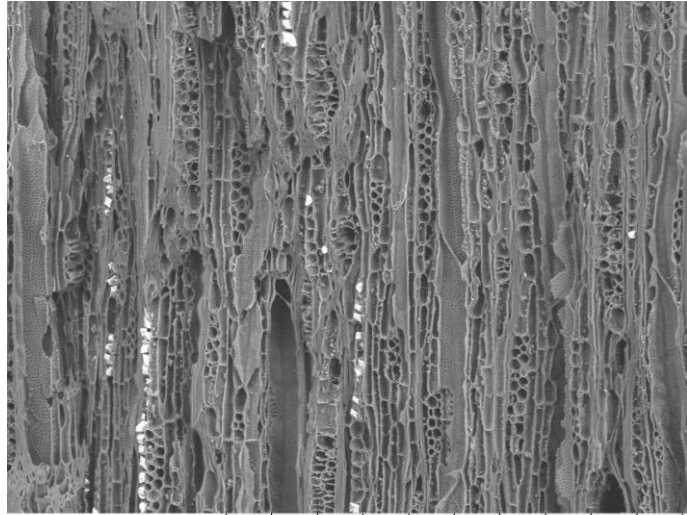
EWC 1674 2022/10/20 14:49 D4.6 x1.0k 100 µm

**Transverse 200x**



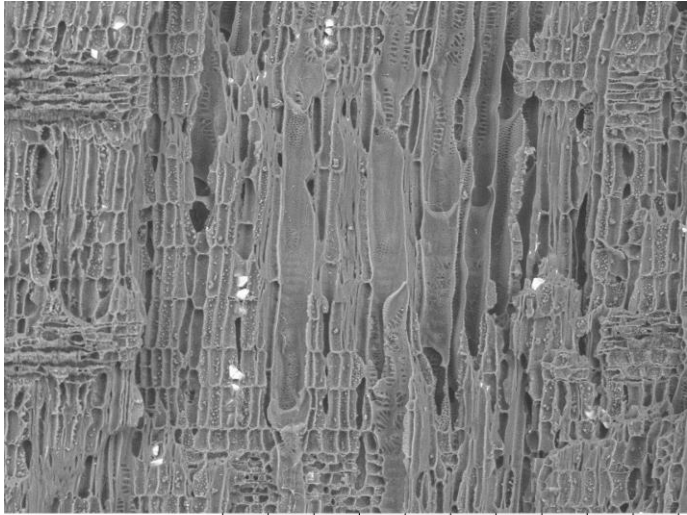
EWC 1674 2022/11/01 09:25 D3.6 x200 500 µm

**Tangential**



EWC 1674 2022/10/20 14:47 D4.6 x200 500 µm

**Radial**



EWC 1674 2022/10/20 14:45 D5.1 x200 500 µm

# EWC 1675 Unknown identification

## Vessels

Size: <50µm, 50-100µm

Freq.: 100+

Arrangement: primarily solitary, some pairs and chains

Tyloses: absent

## Rays:

# per mm: 4-12

Thickness (cells): 1 to 3

Parenchyma Type: Banded (thin), diffuse in aggregates

Porosity: semi ring porous, diffuse

## Common Name:

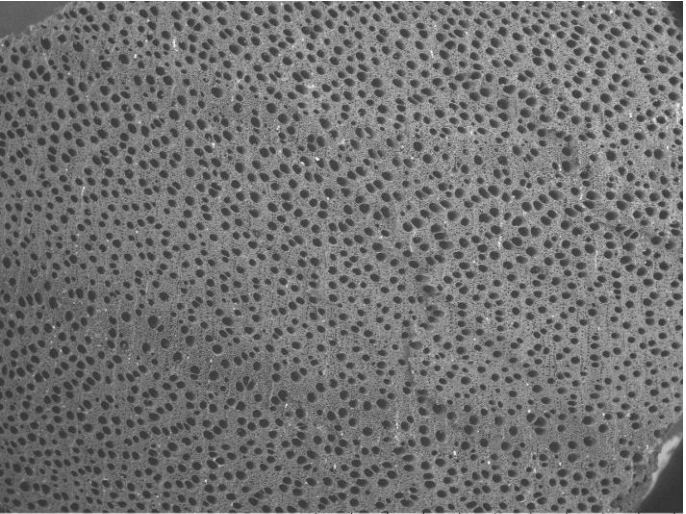
Elevation:

Description:

Location: Ecuador

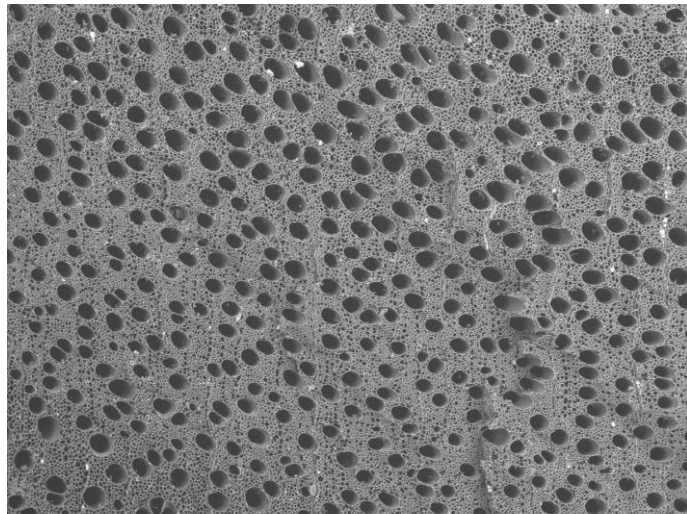
Locality:

Transverse 50x



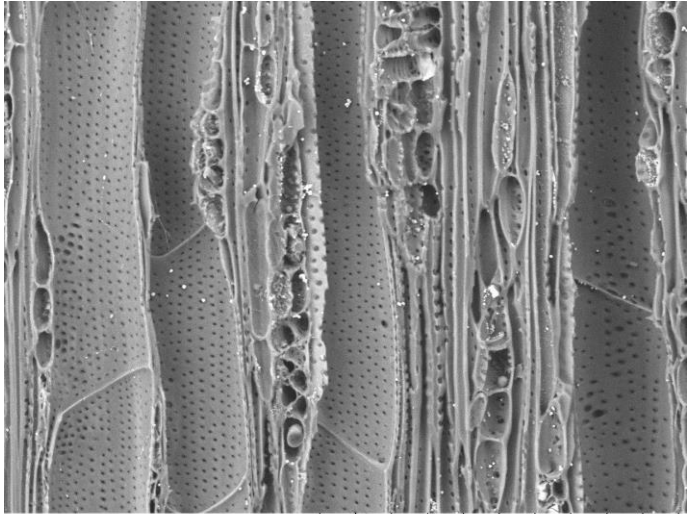
EWC 1675 2022/10/20 17:23 D4.3 x50 2 mm

Transverse 100x



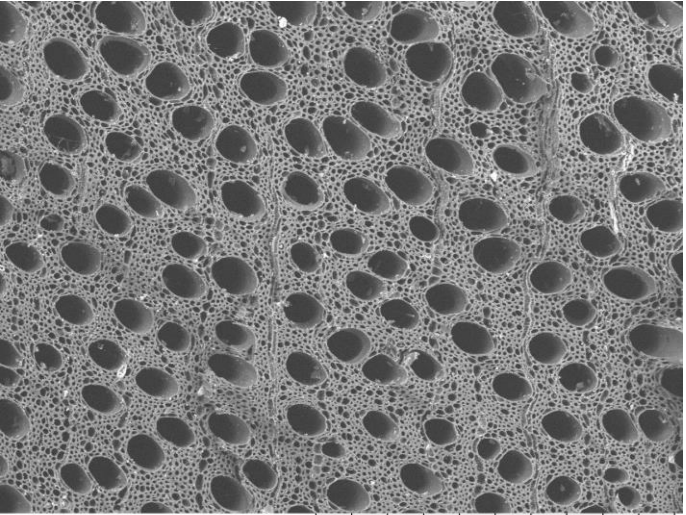
EWC 1675 2022/10/20 17:23 D4.3 x100 1 mm

Vessel Wall 500x



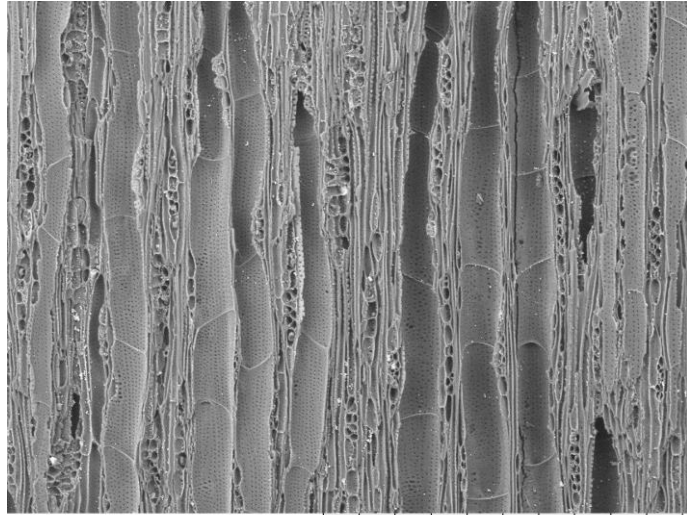
EWC 1675 2022/10/20 17:38 D4.7 x500 200 µm

Transverse 200x



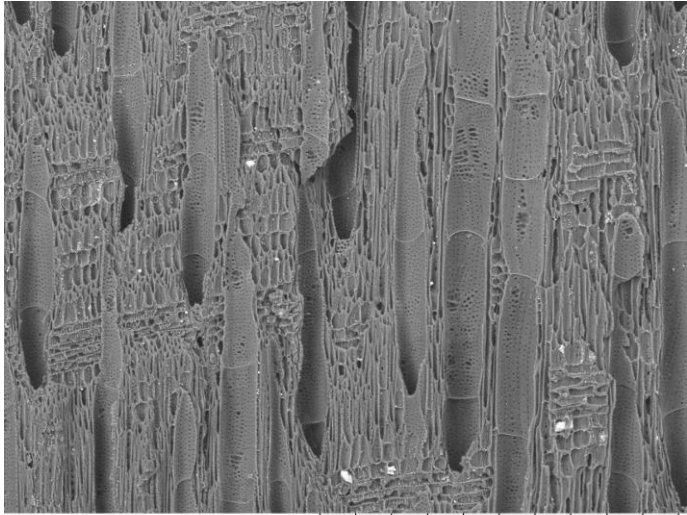
EWC 1675 2022/10/20 17:24 D4.3 x200 500 µm

Tangential 200x



EWC 1675 2022/10/20 17:37 D4.7 x200 500 µm

Radial 200x



EWC 1675 2022/10/20 17:33 D6.1 x200 500 µm

# EWC 1676 Unknown identification

## Vessels

Size: <50µm

Freq.: 40 to 100

Arrangement: solitary, pairs, chains, clusters

Tyloses: absent

## Rays:

# per mm: 4-12

Thickness (cells): 1 to 3

Parenchyma Type: Diffuse, vasicentric unilateral

Porosity: diffuse, semi ring porous

## Common Name:

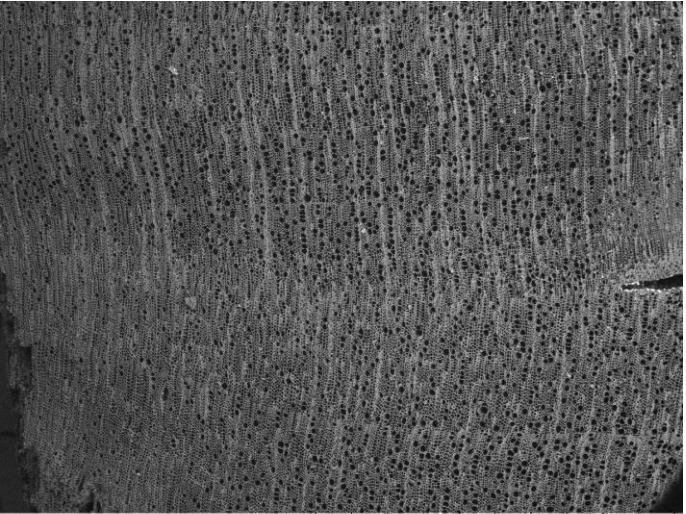
Elevation:

Description:

Location: Ecuador

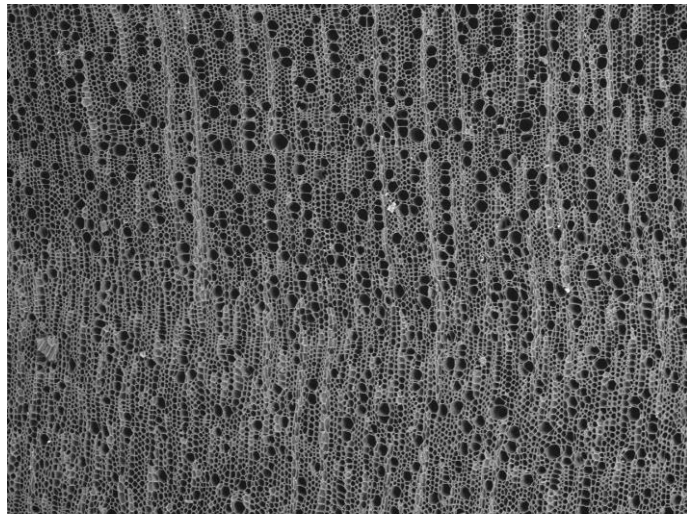
Locality:

Transverse 50x



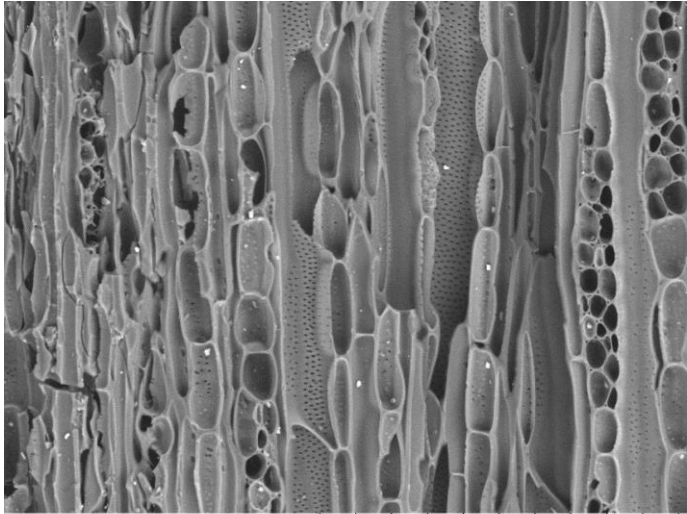
EWC 1676 2022/10/20 17:44 D4.6 x50 2 mm

Transverse 100x



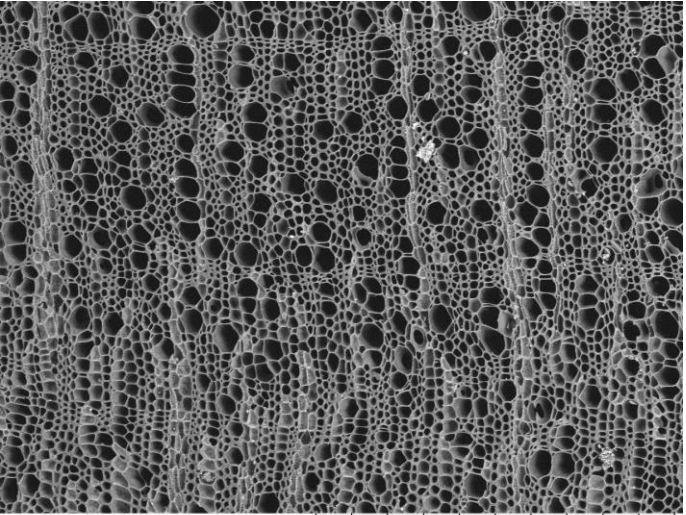
EWC 1676 2022/10/20 17:45 D4.6 x100 1 mm

Vessel Wall 500x



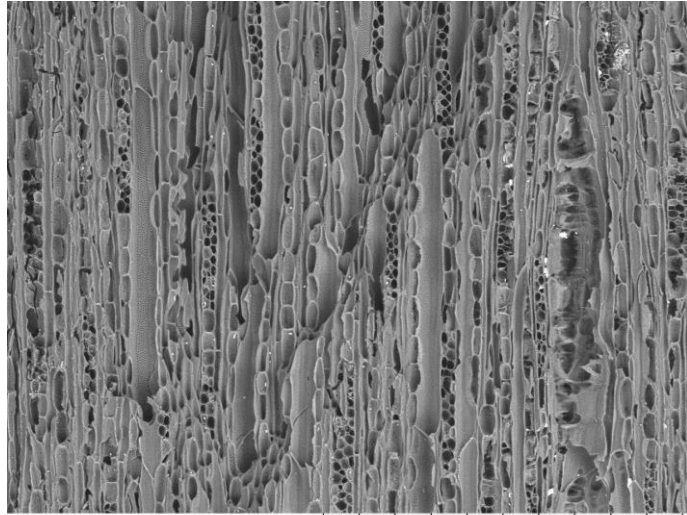
EWC 1676 2022/10/20 17:51 D5.6 x500 200 µm

Transverse 200x



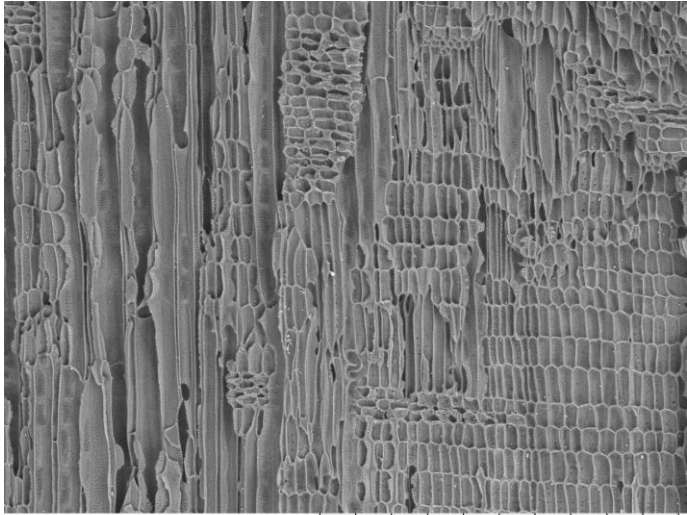
EWC 1676 2022/10/20 17:46 D4.6 x200 500 µm

Tangential 200x



EWC 1676 2022/10/20 17:49 D5.6 x200 500 µm

Radial 200x



EWC 1676 2022/10/20 17:54 D6.3 x200 500 µm



# EWC 1678 Unknown identification

## Vessels

Size: <50µm, 50-100µm

Freq.: 100+

Arrangement: solitary, pairs, chains, radials

Tyloses: absent

## Rays:

# per mm: 4-12

Thickness (cells): 1 to 3, 4+,

Parenchyma Type: Absent

Porosity: diffuse

## Common Name:

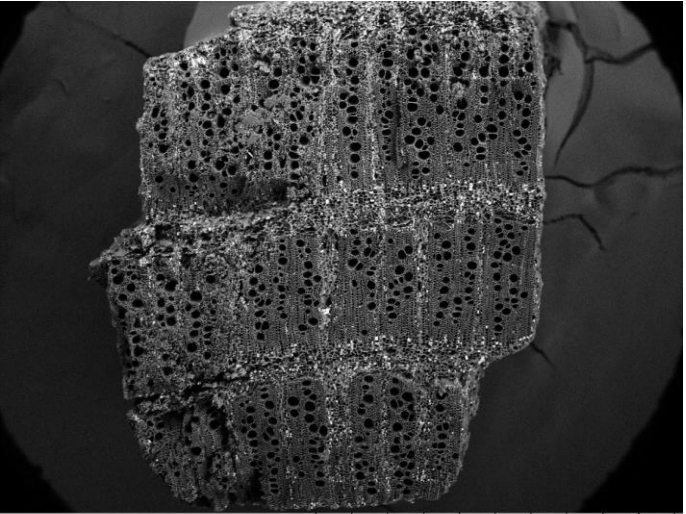
Elevation:

Description:

Location: Ecuador

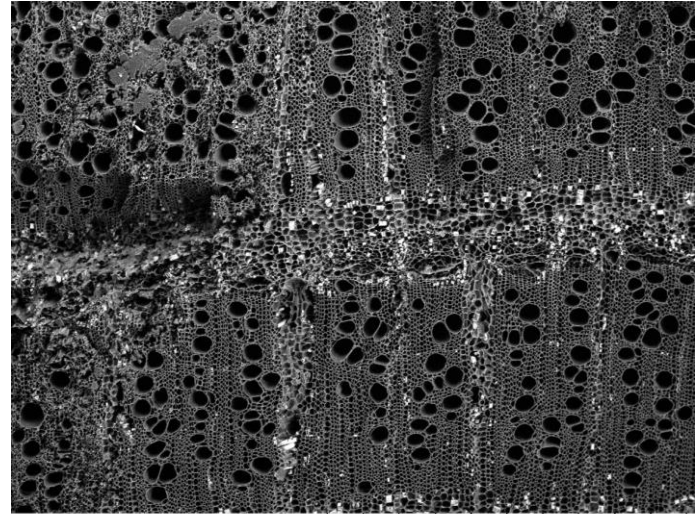
Locality:

Transverse 50x



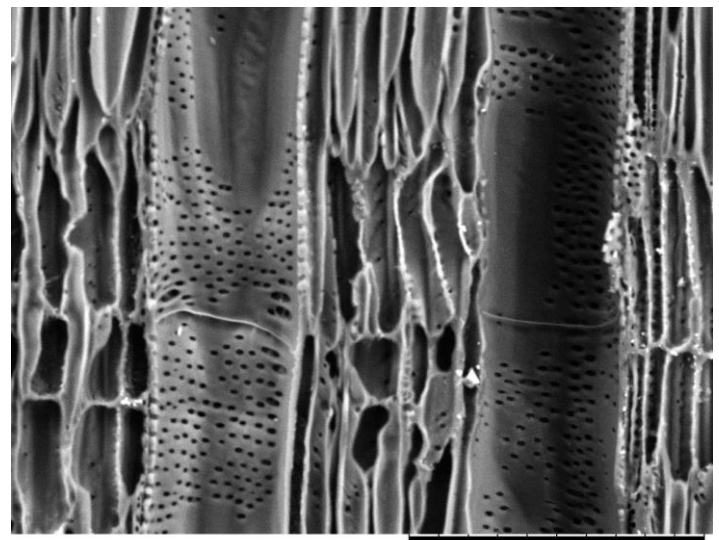
EWC 1678 2022/10/26 17:14 D2.9 x50 2 mm

Transverse 100x



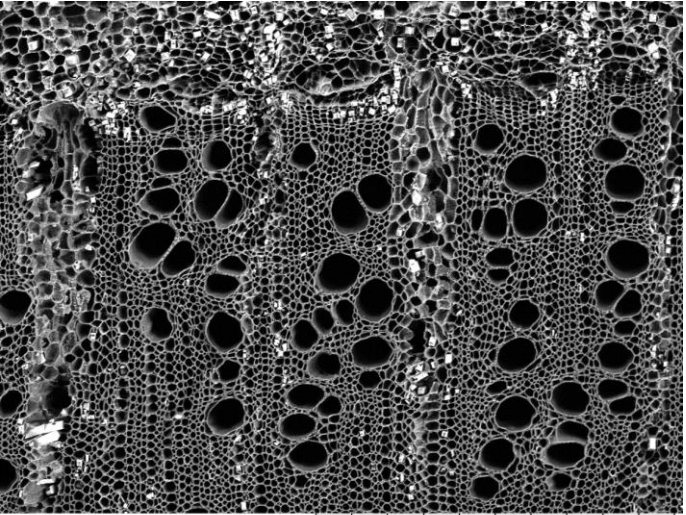
EWC 1678 2022/10/26 17:15 D2.9 x100 1 mm

Vessel Wall



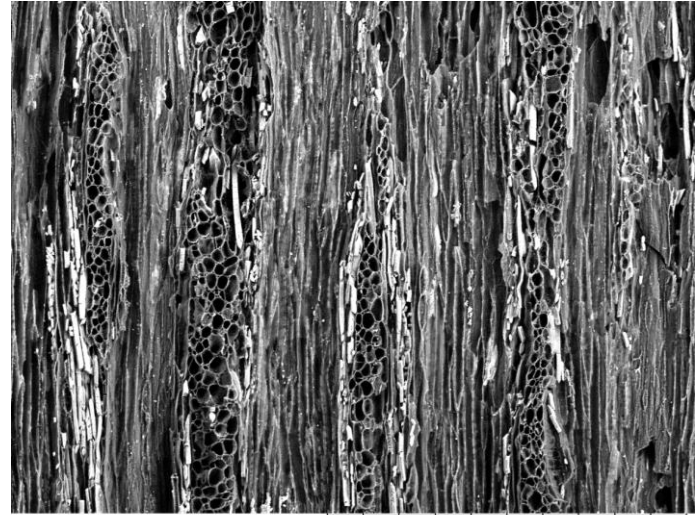
EWC 1678 2022/10/26 17:33 D2.7 x800 100 um

Transverse 200x



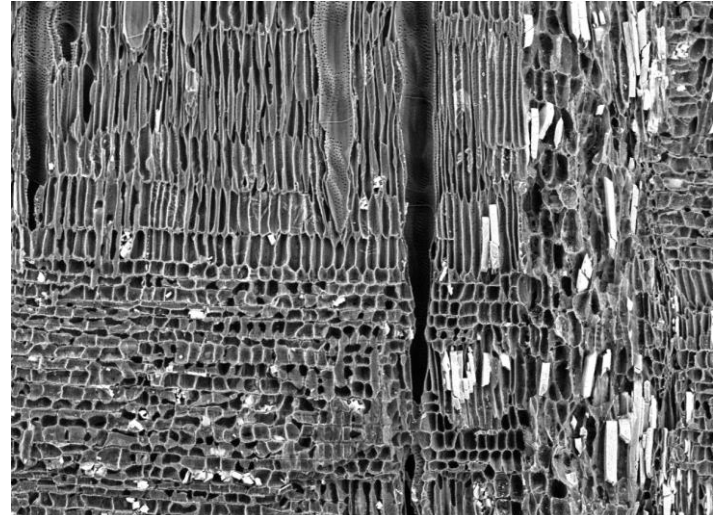
EWC 1678 2022/10/26 17:16 D2.9 x200 500 um

Tangential



EWC 1678 2022/10/26 17:25 D2.5 x200 500 um

Radial



EWC 1678 2022/10/26 17:32 D2.7 x200 500 um

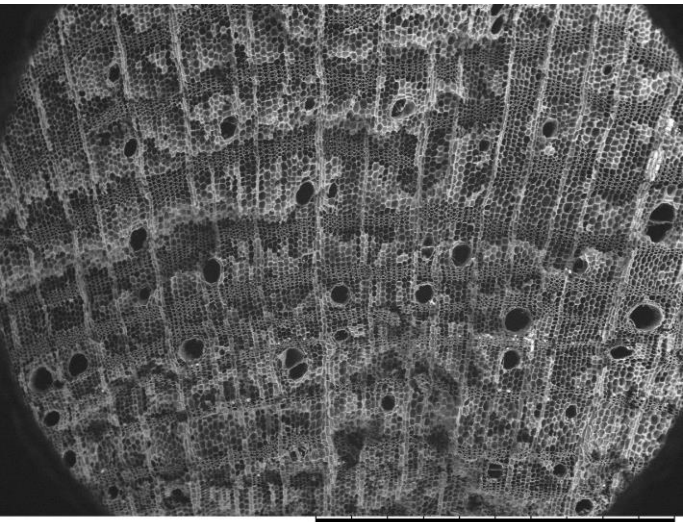
# EWC 1679 FABACEAE *Erythrina poeppigiana* (Walp.) O.F. Cook

**Vessels**  
Size: 50-100, 100-200µm  
Freq.: 5 to 20  
Arrangement: solitary, pairs  
**Tyloses:** absent

**Rays:**  
# per mm: 12+  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Banded (thick),  
Vasicentric (winged, confluent)  
**Porosity:** diffuse

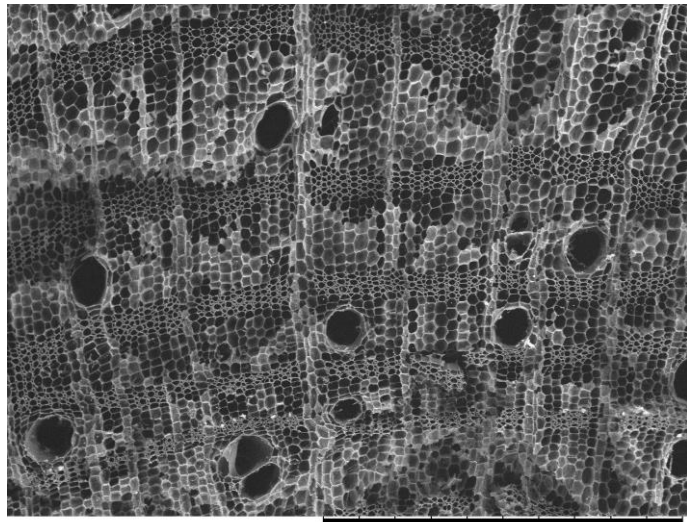
**Common Name:** "Casaca" or "Palo Prieto"  
**Elevation:** 160 m  
**Description:**  
**Location:** Ecuador, Manabí, Jama  
**Locality:** Jama. El Quemado Area 4. Tree found  
in lower canopy of secondary forest on a  
southwest facing slope. Convento topo map  
1:50,000, cuadrícula (block) N80 E87.

**Transverse 50x**



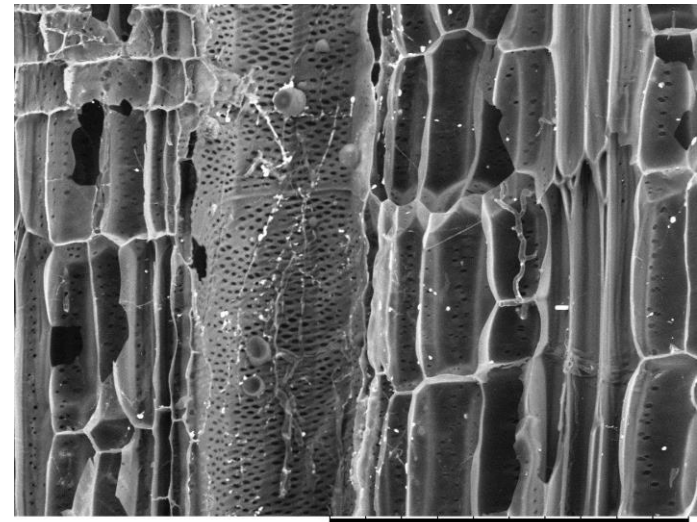
EWC 1679 2022/10/26 16:55 D2.6 x50 2 mm

**Transverse 100x**



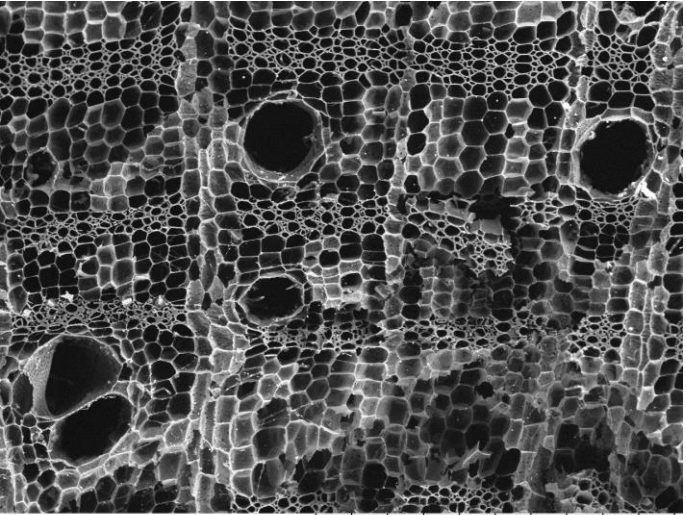
EWC 1679 2022/10/26 16:56 D2.6 x100 1 mm

**Vessel Wall**



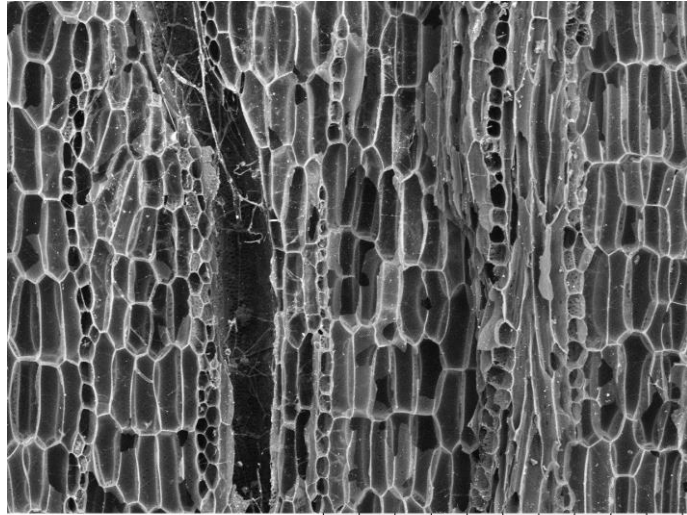
EWC 1679 2022/10/26 17:09 D4.0 x500 200 µm

**Transverse 200x**



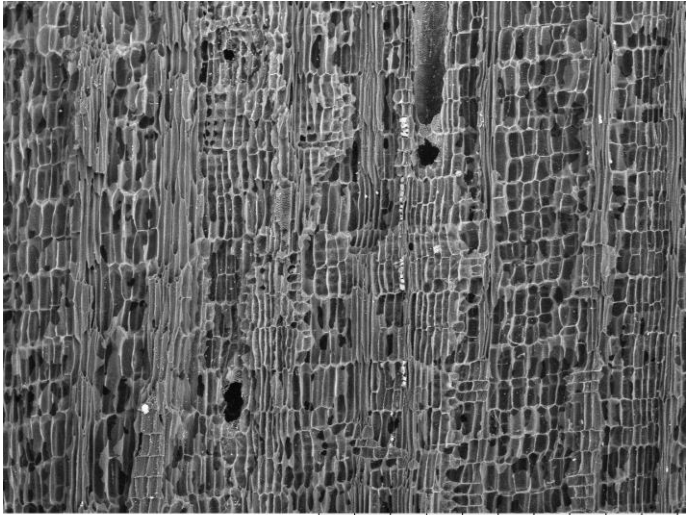
EWC 1679 2022/10/26 16:57 D2.6 x200 500 µm

**Tangential**



EWC 1679 2022/10/26 17:02 D3.8 x200 500 µm

**Radial**



EWC 1679 2022/10/26 17:07 D4.0 x100 1 mm

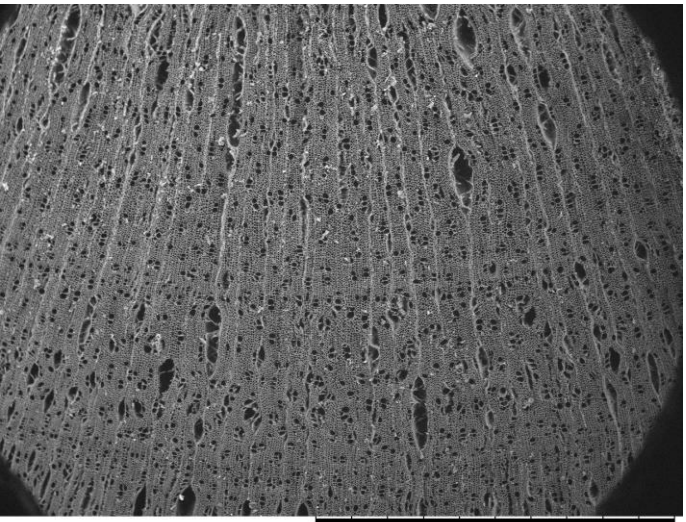
# EWC 1680 Unknown Identification

**Vessels**  
Size: <50µm  
Freq: 40-100, 100+  
Arrangement: solitary, pairs, chains, clusters  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type** Diffuse,  
Vasicentric, Unilateral  
**Porosity:** semi-ring porous

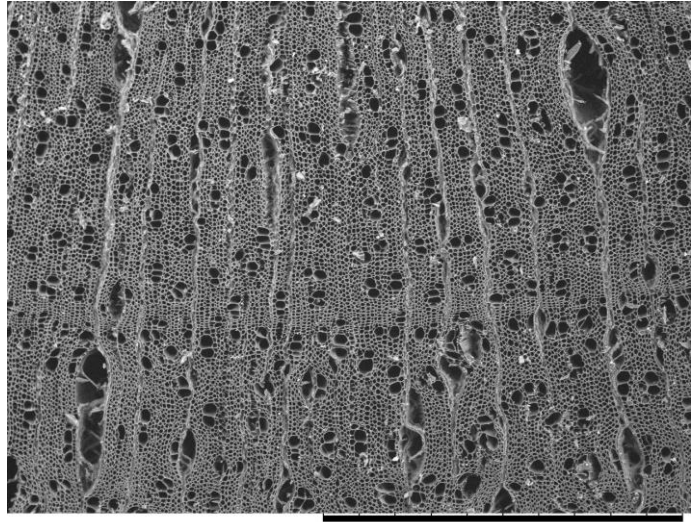
**Common Name:** "negrito"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



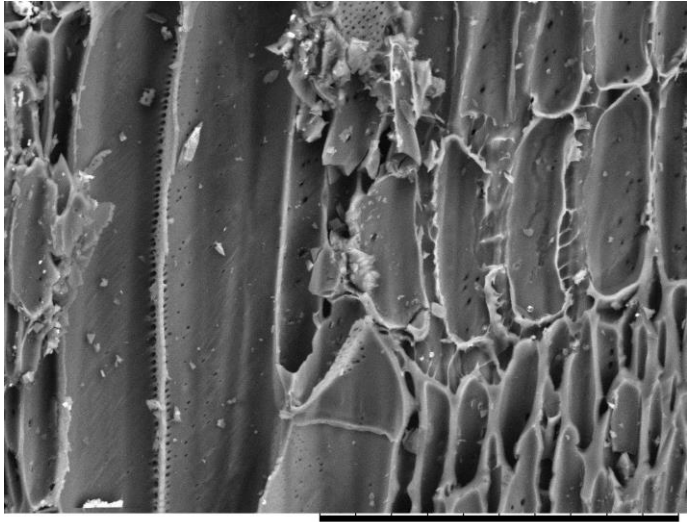
EWC 1680 2022/10/26 17:48 D3.1 x50 2 mm

**Transverse 100x**



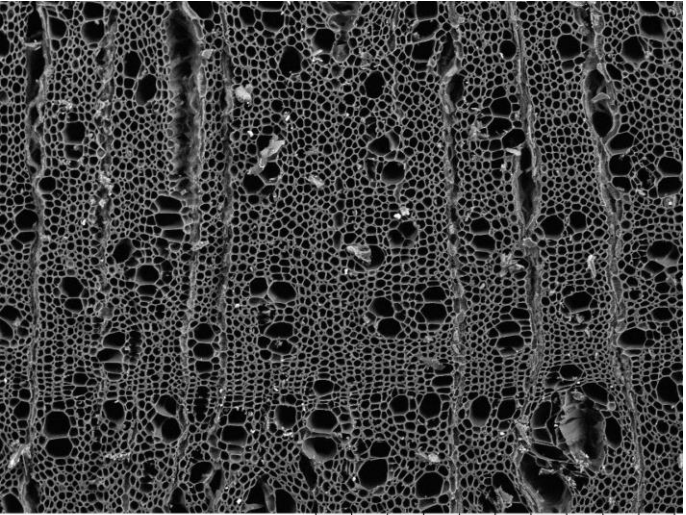
EWC 1680 2022/10/26 17:49 D3.1 x100 1 mm

**Vessel Wall**



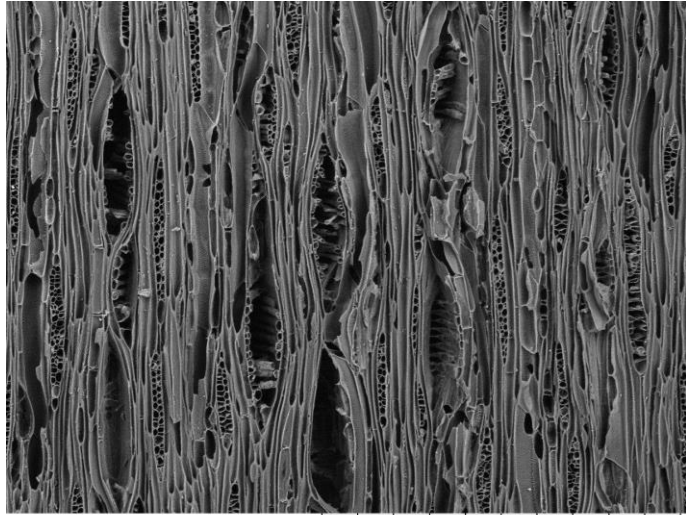
EWC 1680 2022/10/26 18:02 D4.0 x1.0k 100 um

**Transverse 200x**



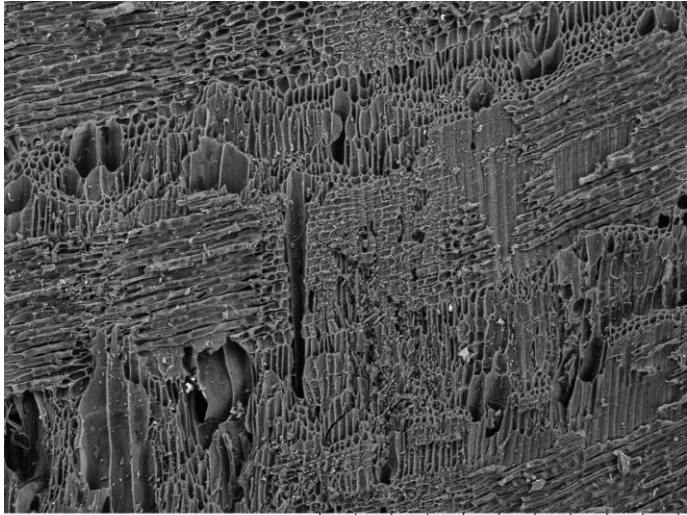
EWC 1680 2022/10/26 17:50 D3.1 x200 500 um

**Tangential**



EWC 1680 2022/10/26 17:57 D3.9 x200 500 um

**Radial**



EWC 1680 2022/10/26 17:54 D4.1 x200 500 um

# EWC 1682 cf. CAPPARIDACEAE

## Vessels

Size: 50-100µm

Freq.: 5 to 20, 20 to 40

Arrangement: solitary, pairs, chains

Tyloses: absent

## Rays:

# per mm: 4-12

Thickness (cells): 1 to 3

Parenchyma Type, Absent, Scanty,  
Diffuse, Vasicentric (winged)

Porosity: semi-ring porous

## Common Name:

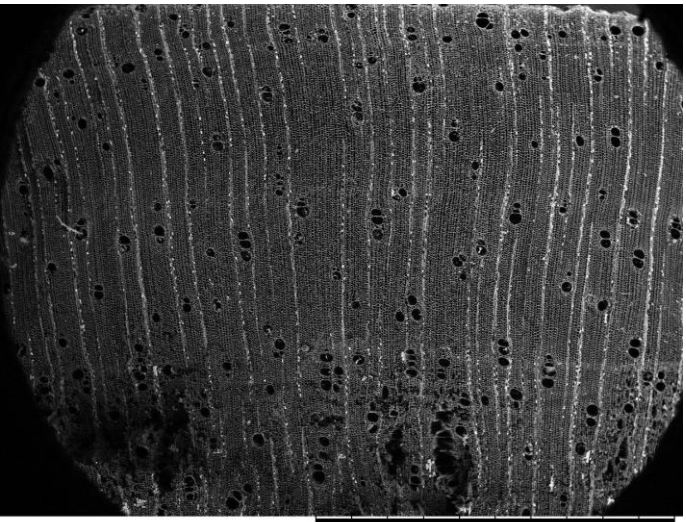
Elevation:

Description:

Location: Ecuador

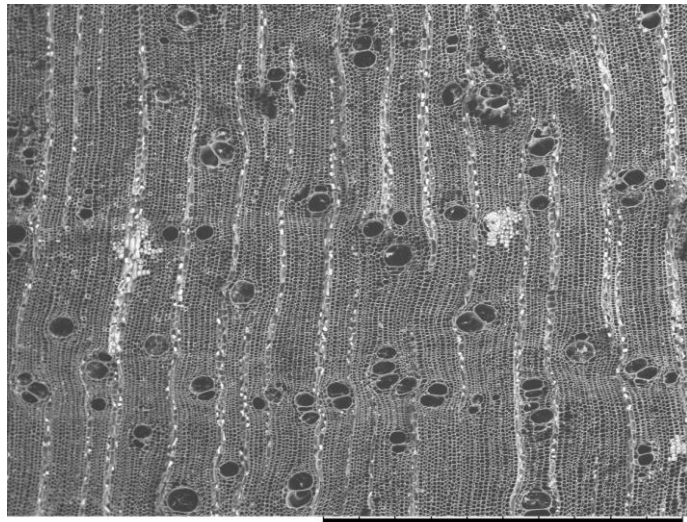
Locality:

Transverse 50x



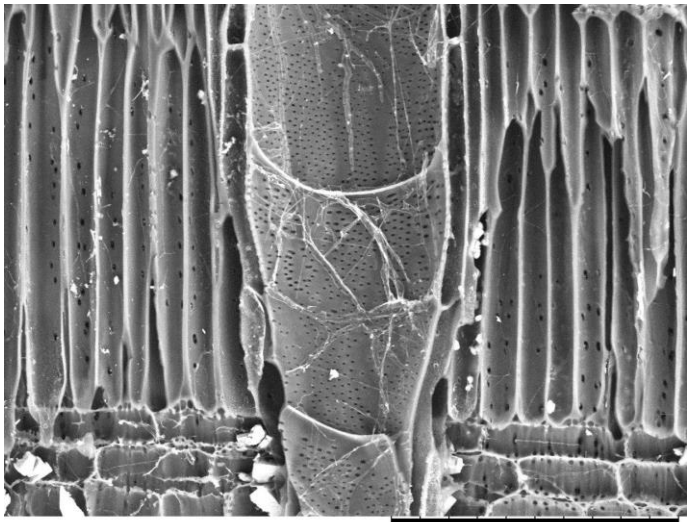
EWC 1682 2022/10/26 18:08 D2.5 x50 2 mm

Transverse 100x



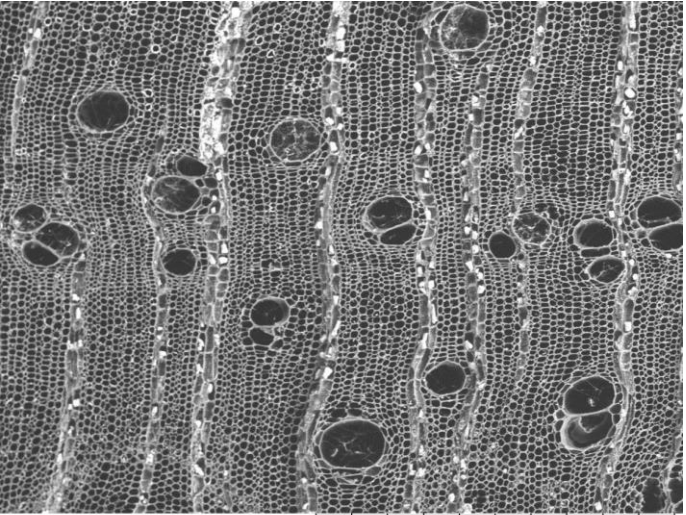
EWC1682 2022/11/09 14:25 D2.2 x100 1 mm

Vessel Wall



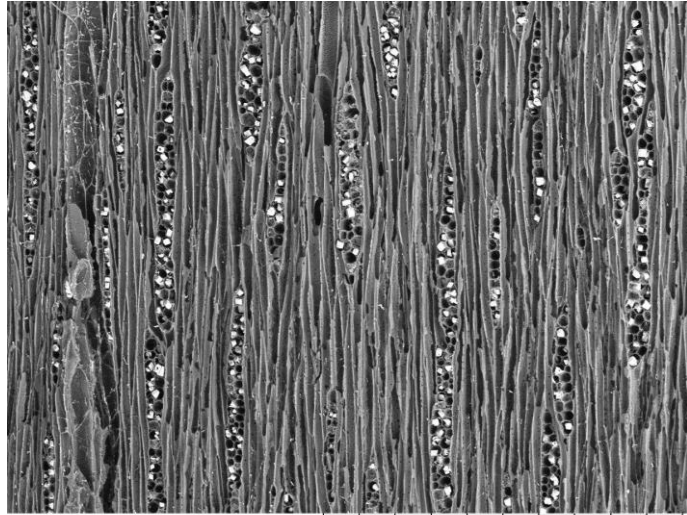
EWC 1682 2022/10/26 18:13 D3.0 x800 100 um

Transverse 200x



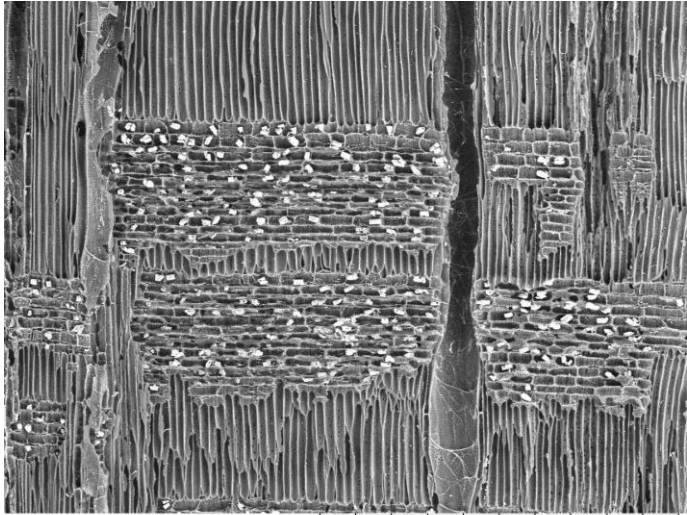
EWC1682 2022/11/09 14:27 D2.2 x200 500 um

Tangential



EWC 1682 2022/10/26 18:16 D3.7 x200 500 um

Radial



EWC 1682 2022/10/26 18:12 D3.0 x200 500 um

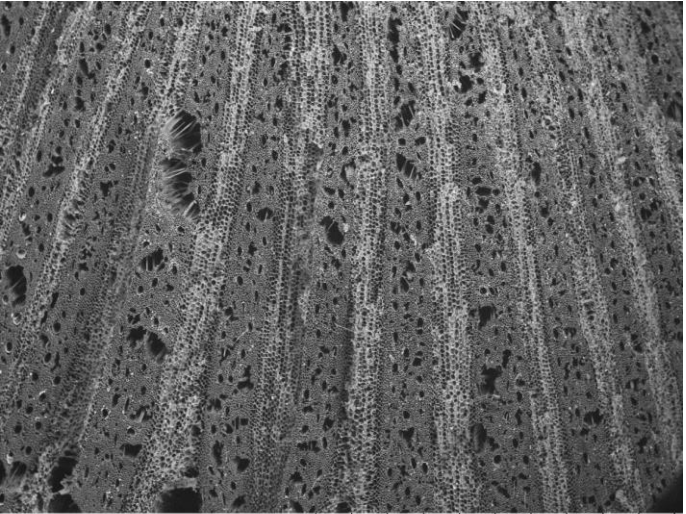
# EWC 1683 Unknown Identification

**Vessels**  
Size: <50µm  
Freq.: 100+  
Arrangement: solitary  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 4+  
**Parenchyma Type:** Absent, Scanty,  
Diffuse  
**Porosity:** diffuse

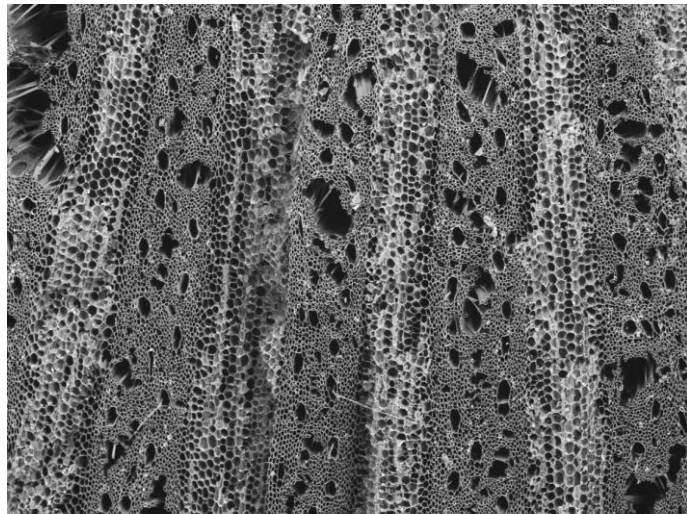
**Common Name:** "gordoncillo"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



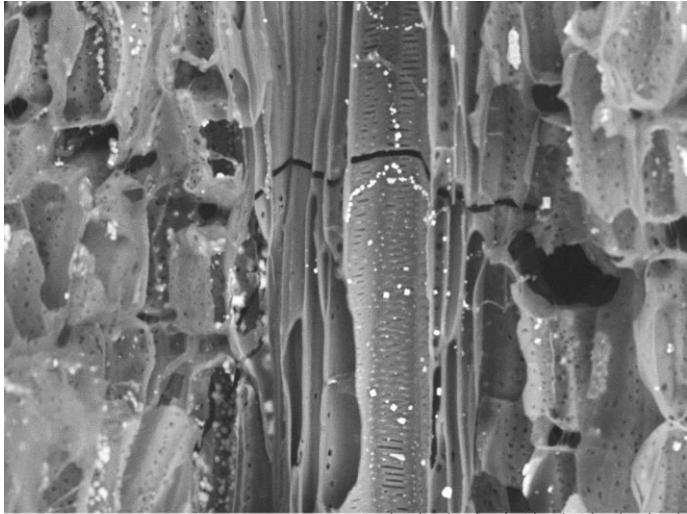
EWC 1683 2022/10/27 10:11 D4.7 x50 2 mm

**Transverse 100x**



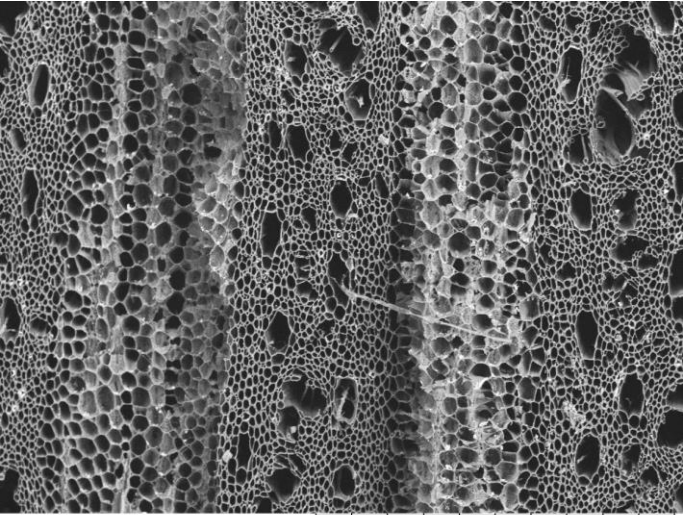
EWC 1683 2022/10/27 10:12 D4.7 x100 1 mm

**Vessel Wall**



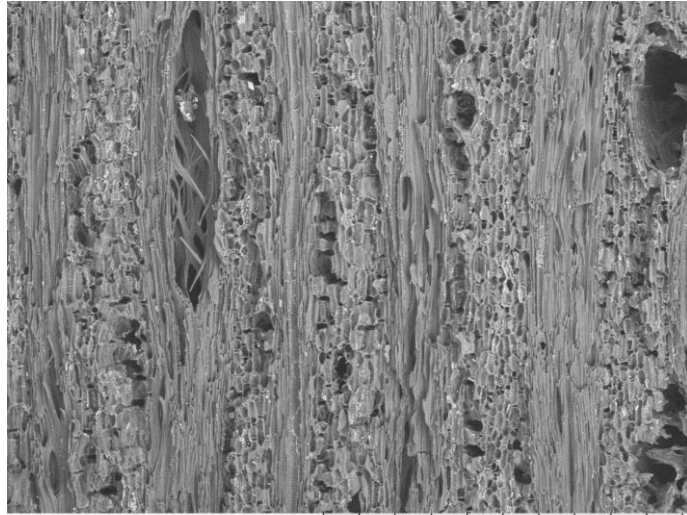
EWC 1683 2022/10/27 10:29 D6.8 x800 100 µm

**Transverse 200x**



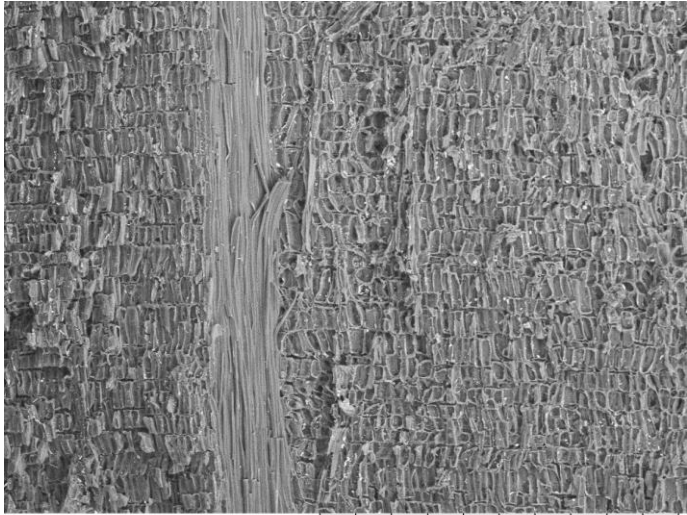
EWC 1683 2022/10/27 10:13 D4.7 x200 500 µm

**Tangential**



EWC 1683 2022/10/27 10:16 D6.3 x100 1 mm

**Radial**



EWC 1683 2022/10/27 10:21 D7.2 x100 1 mm

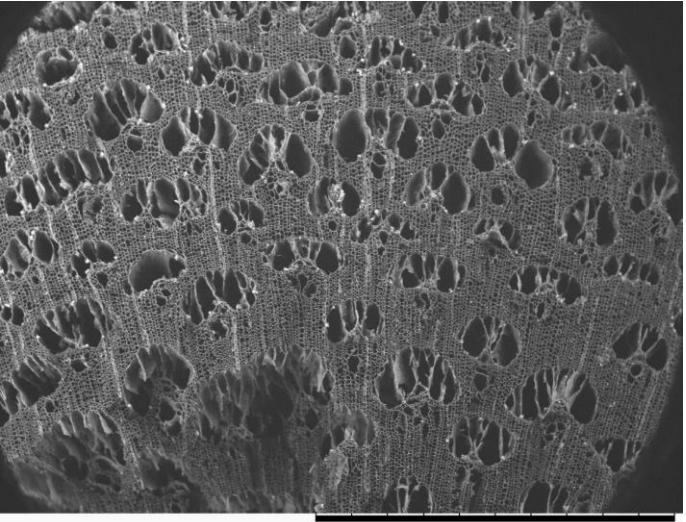
# EWC 1686 Unknown Identification

**Vessels**  
Size: 50-100µm, 100-200µm, 200+µm  
Freq.: 100+  
Arrangement: clusters  
**Tyloses:** common

**Rays:**  
# per mm: <4, 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Vascentric  
(confluent, unilateral), Diffuse  
**Porosity:** semi-ring porous

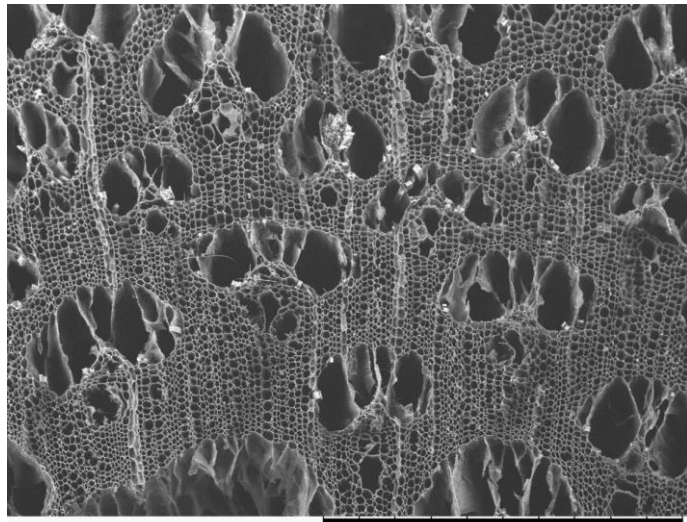
**Common Name:** "uñito"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



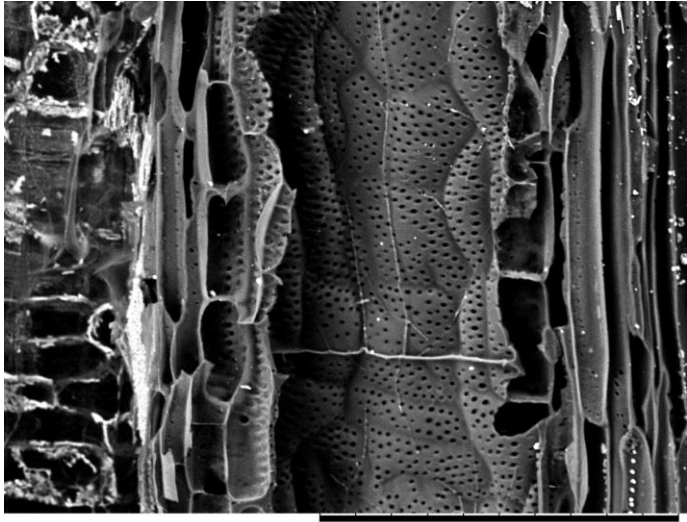
EWC 1686 2022/10/27 10:32 D2.8 x50 2 mm

**Transverse 100x**



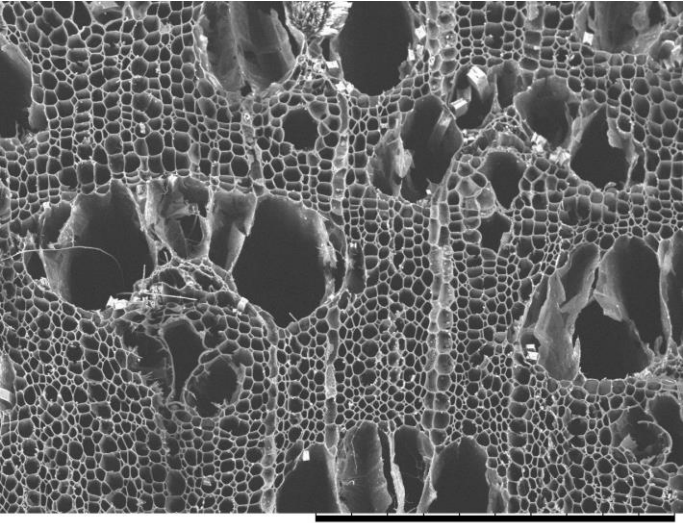
EWC 1686 2022/10/27 10:33 D2.8 x100 1 mm

**Vessel Wall**



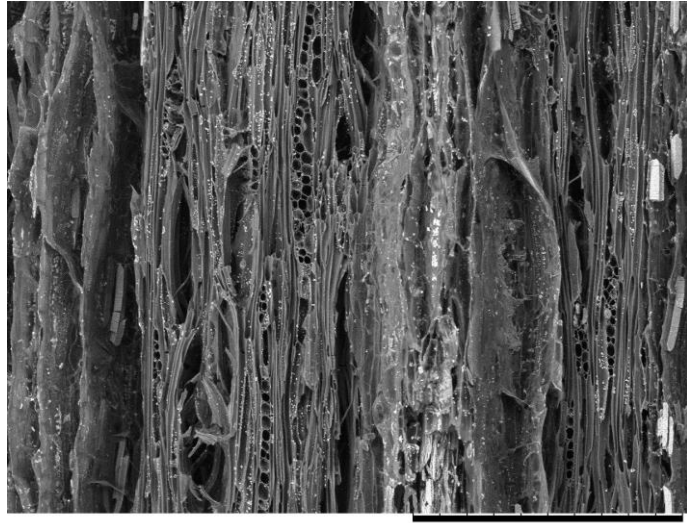
EWC 1686 2022/11/01 09:32 D3.7 x500 200 µm

**Transverse 200x**



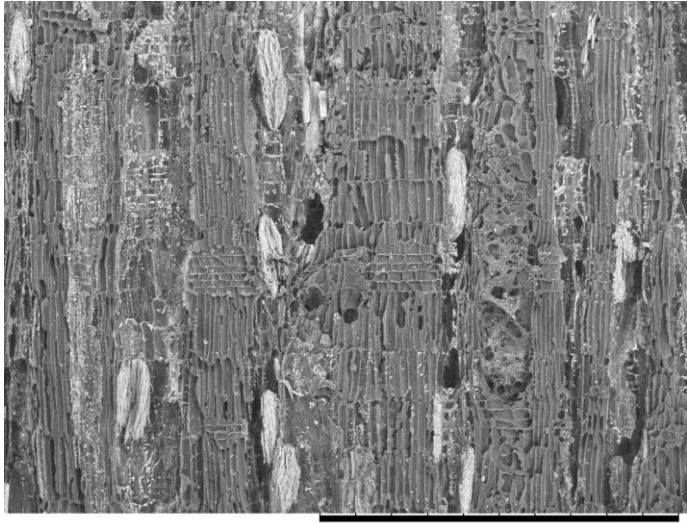
EWC 1686 2022/10/27 10:34 D2.8 x200 500 µm

**Tangential**



EWC 1686 2022/11/01 09:29 D4.6 x150 500 µm

**Radial**



EWC 1686 2022/10/27 10:45 D5.5 x100 1 mm

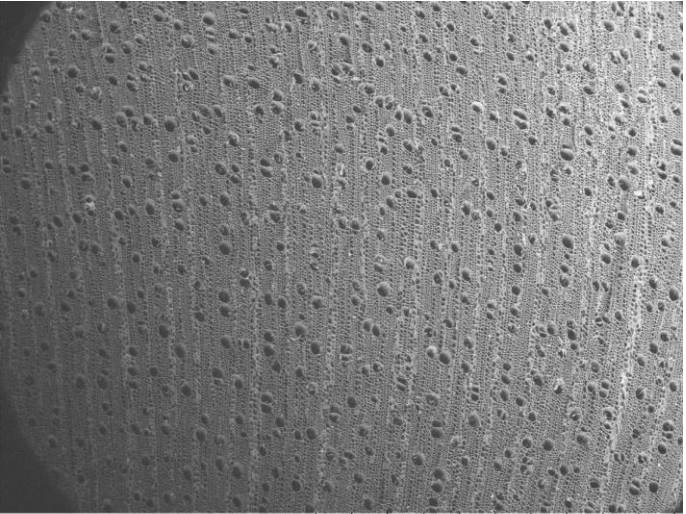
# EWC 1687 THEACEAE *Pelliciera rhizophorae* Planch. & Triana

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 100+  
Arrangement: solitary, pairs  
Tyloses: common

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** scanty, diffuse  
**Porosity:** diffuse

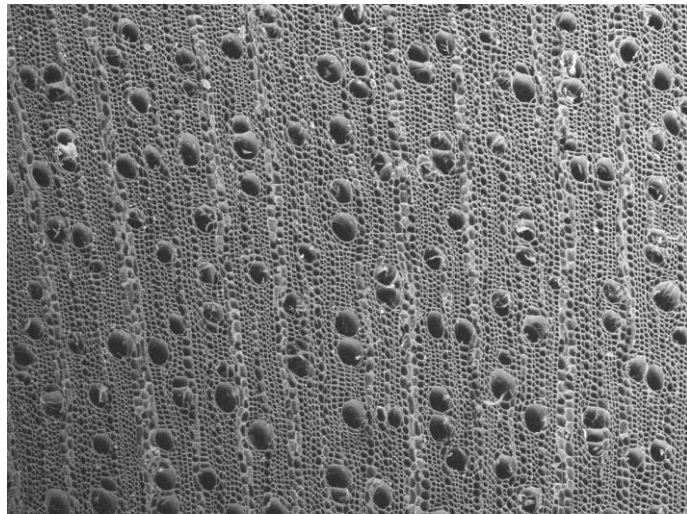
**Common Name:**  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



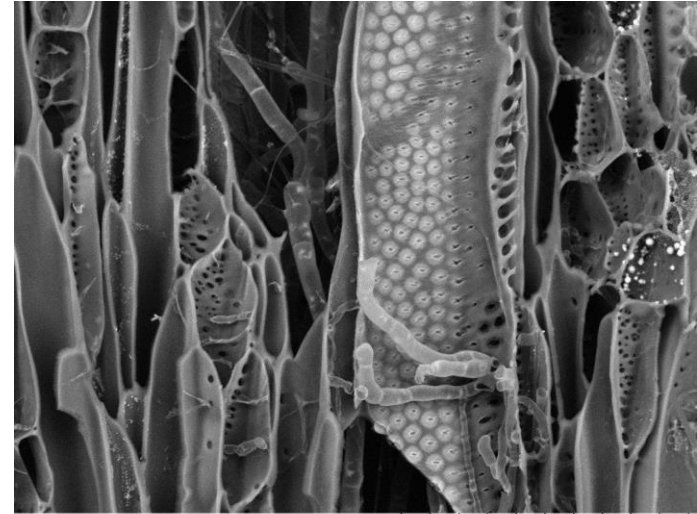
EWC 1687 2022/10/27 11:00 D3.6 x50 2 mm

**Transverse 100x**



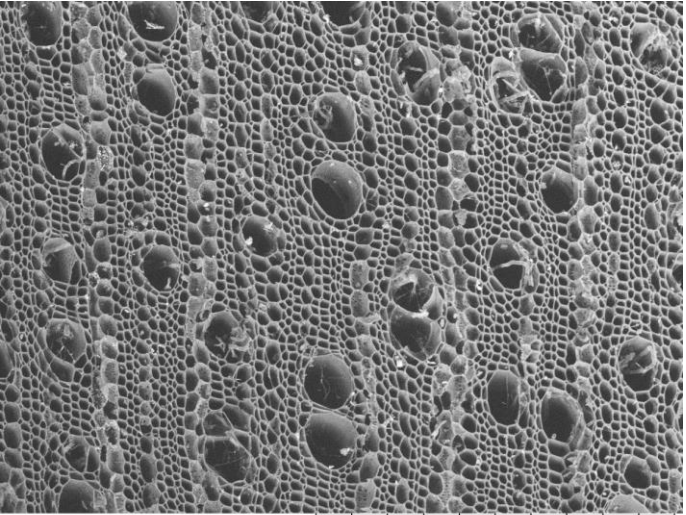
EWC 1687 2022/10/27 11:01 D3.6 x100 1 mm

**Vessel Wall**



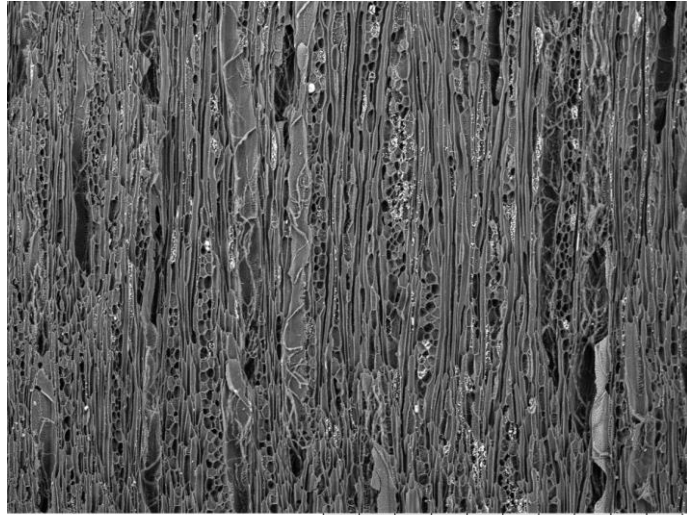
EWC 1687 2022/11/01 09:37 D4.5 x800 100 µm

**Transverse 200x**



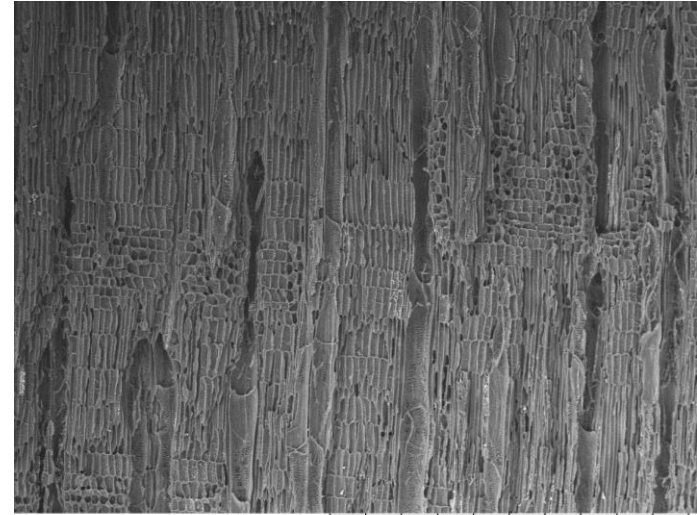
EWC 1687 2022/10/27 11:02 D3.6 x200 500 µm

**Tangential**



EWC 1687 2022/11/01 09:35 D4.4 x100 1 mm

**Radial**



EWC 1687 2022/10/27 11:12 D4.4 x100 1 mm

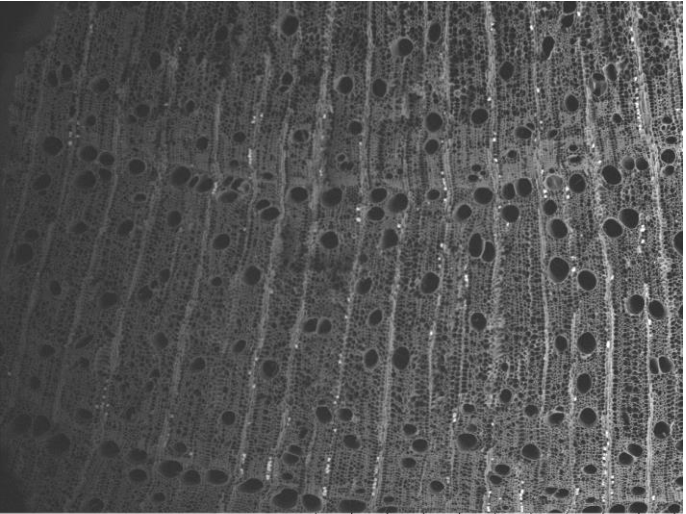
# EWC 1688 CORDIACEAE *Cordia alliodora* (R. & P.) Oken.

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 20-40 40 to 100  
Arrangement: solitary, pairs  
**Tyloses:** absent  
**Porosity:** ring porous

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Vascentric  
(aliform, unilateral), Diffuse-in-aggregates

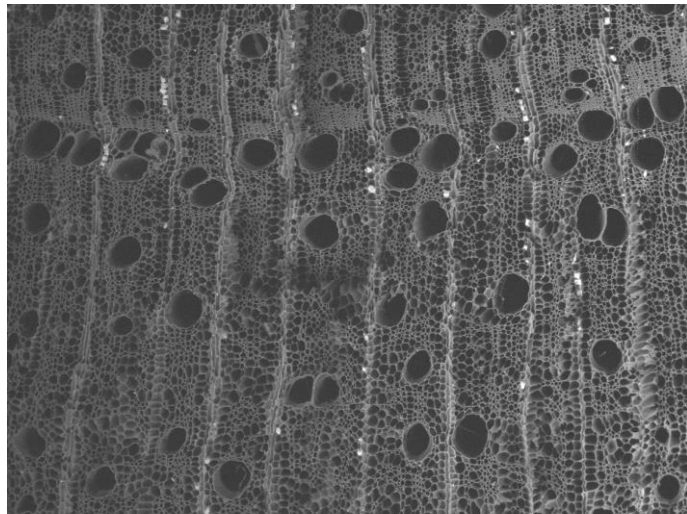
**Parenchyma Type:** Vascentric  
(aliform, unilateral), Diffuse-in-aggregates  
**Porosity:** ring porous

**Transverse 50x**



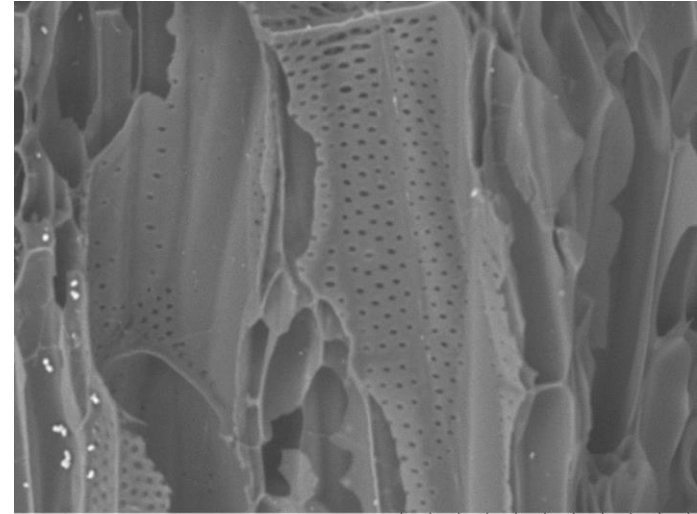
EWC 1688 2022/10/27 11:17 D4.3 x50 2 mm

**Transverse 100x**



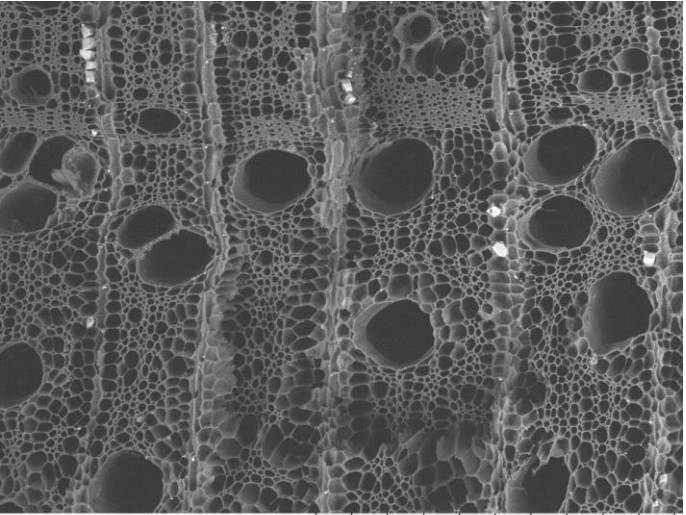
EWC 1688 2022/10/27 11:18 D3.3 x100 1 mm

**Vessel Wall**



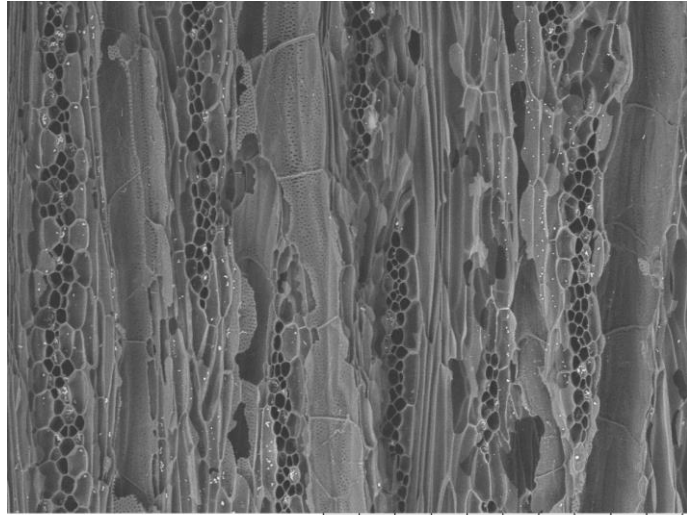
EWC 1688 2022/10/27 11:27 D5.3 x800 100 µm

**Transverse 200x**



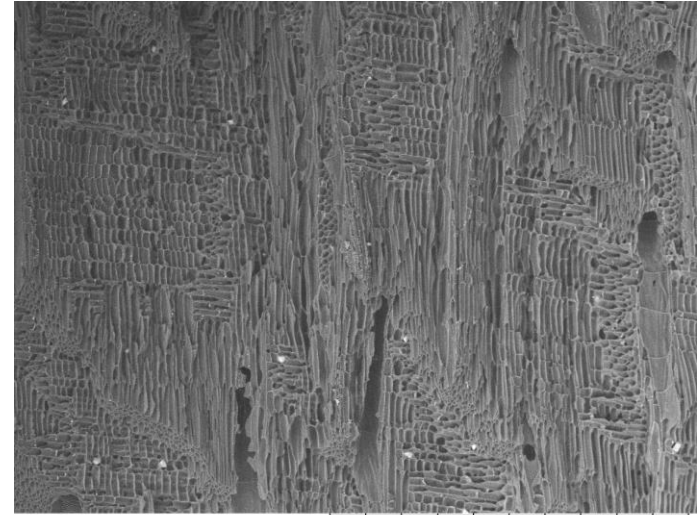
EWC 1688 2022/10/27 11:19 D3.3 x200 500 µm

**Tangential**



EWC 1688 2022/10/27 11:25 D5.3 x200 500 µm

**Radial**



EWC 1688 2022/10/27 11:21 D6.0 x100 1 mm



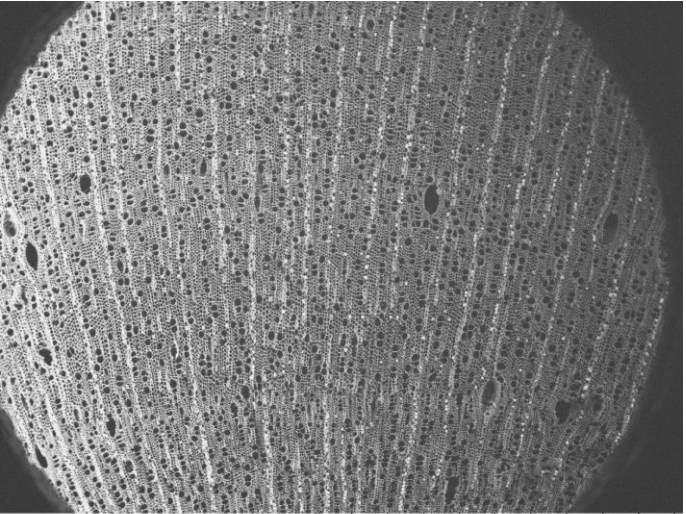
# EWC 1692 MALPIGHIACEAE *Bunchosia cornifolia* Kunth

**Vessels**  
Size: <50µm  
Freq.: 100+  
Arrangement: solitary, pairs, chains  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Diffuse, Scanty  
**Porosity:** diffuse

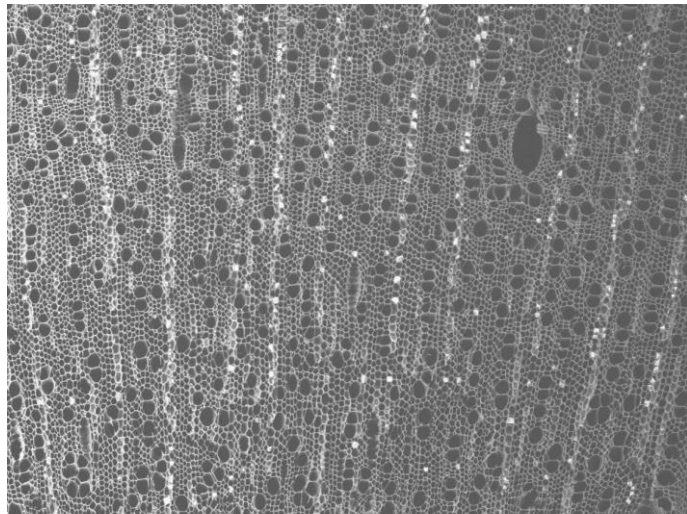
**Common Name:** "Cerzo" "Cereza de Monte"  
**Elevation:** 220 m  
**Description:** Small tree with red fruit.  
**Location:** Ecuador, Manabí, Jama  
**Locality:** La Humidad, area 2: Approximately 8 km E of Jama. Collected from a south facing slope in a low, wet forest. Convento topo map 1:50,000, cuadrícula (block) N78 E90.

**Transverse 50x**



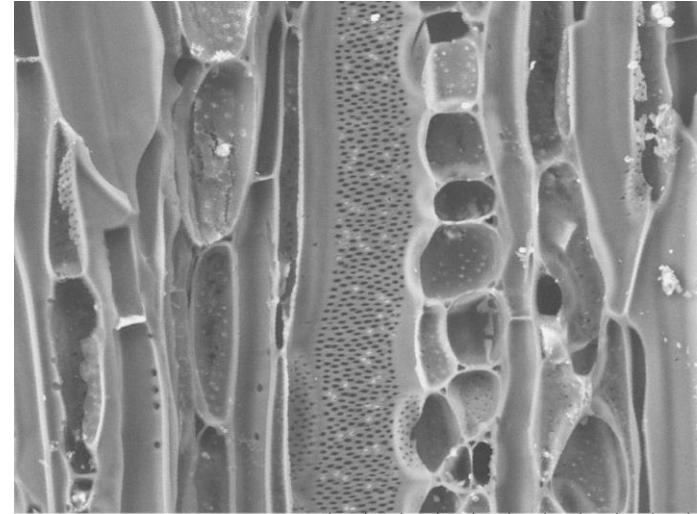
EWC 1692 2022/10/27 14:46 D2.2 x50 2 mm

**Transverse 100x**



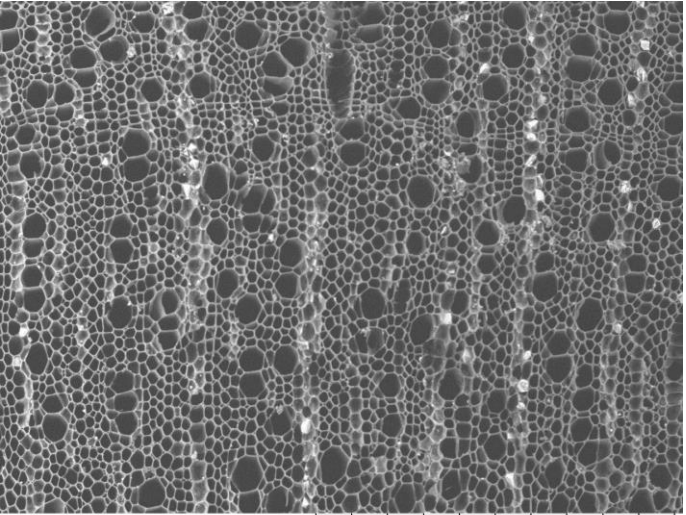
EWC 1692 2022/10/27 14:47 D2.2 x100 1 mm

**Vessel Wall**



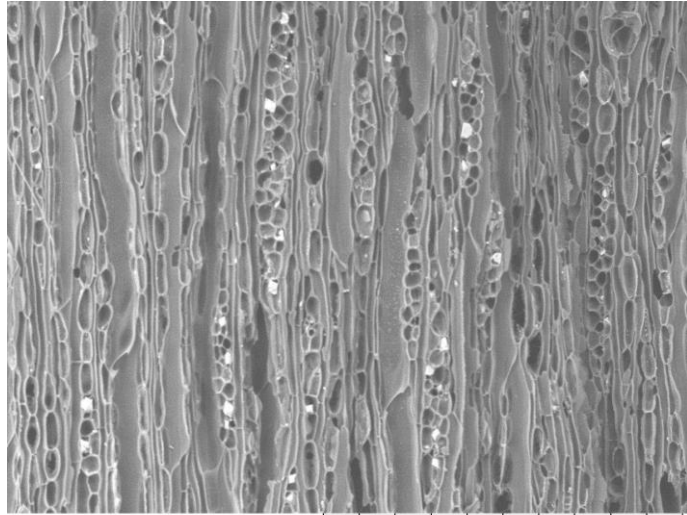
EWC 1692 2022/10/27 14:56 D2.9 x1.0k 100 µm

**Transverse 200x**



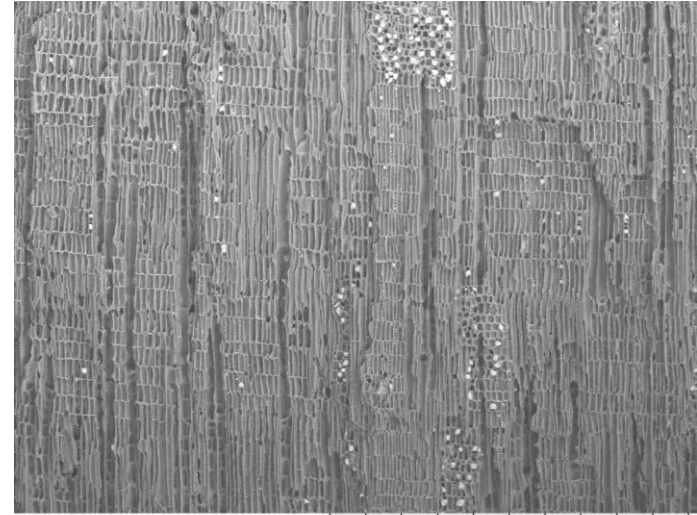
EWC 1692 2022/10/27 14:48 D2.2 x200 500 µm

**Tangential**



EWC 1692 2022/10/27 14:54 D3.2 x200 500 µm

**Radial**



EWC 1692 2022/10/27 14:50 D4.0 x100 1 mm

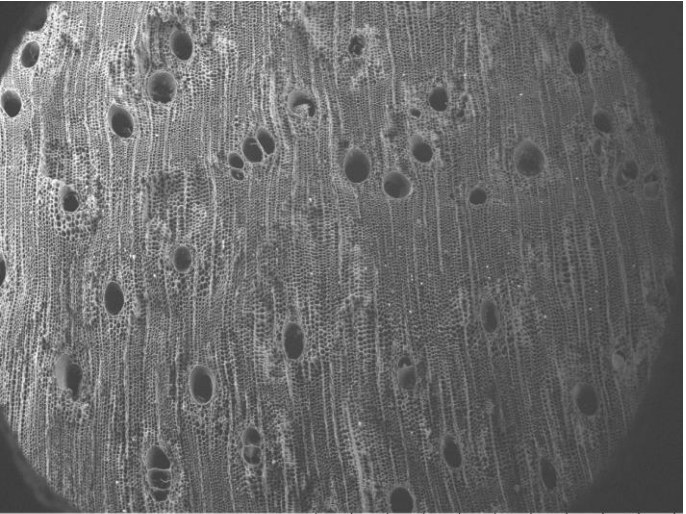
# EWC 1694 FABACEAE *Inga ynga* (Vell.) J.W. Moore

**Vessels**  
Size: 100-200µm  
Freq.: <5  
Arrangement: solitary, pairs, chains  
**Tyloses:** absent

**Rays:**  
# per mm: 12+  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Vasicentric  
(confluent, lozenge)  
**Porosity:** semi-ring porous

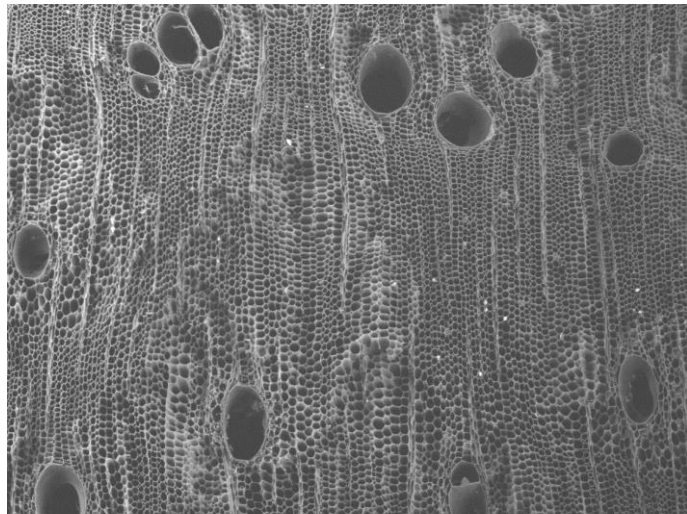
**Common Name:** "Guaba de Machete"  
**Elevation:** 220 m  
**Description:** Tree of medium height with greenish-yellow fls.  
**Location:** Ecuador, Manabí, Jama  
**Locality:** La Humedad, area 2: Approximately 8 km E of Jama. Collected from a south facing slope in a low, wet forest. Convento topo map 1:50,000, cuadrícula (block) N78 E90.

**Transverse 50x**



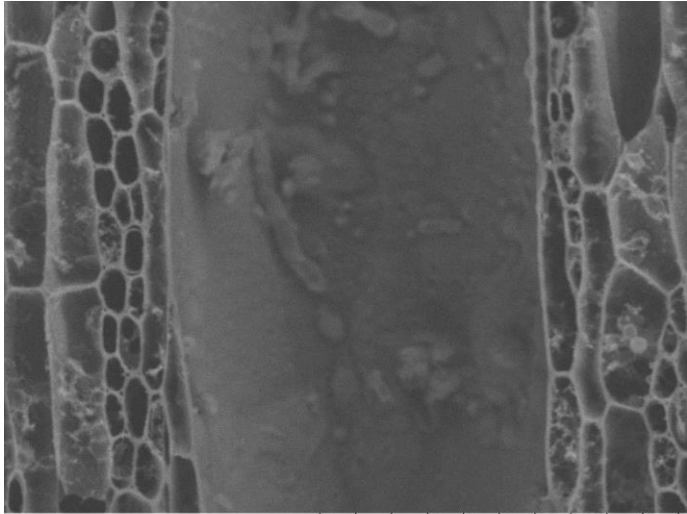
EWC 1694 2022/10/27 15:00 D2.5 x50 2 mm

**Transverse 100x**



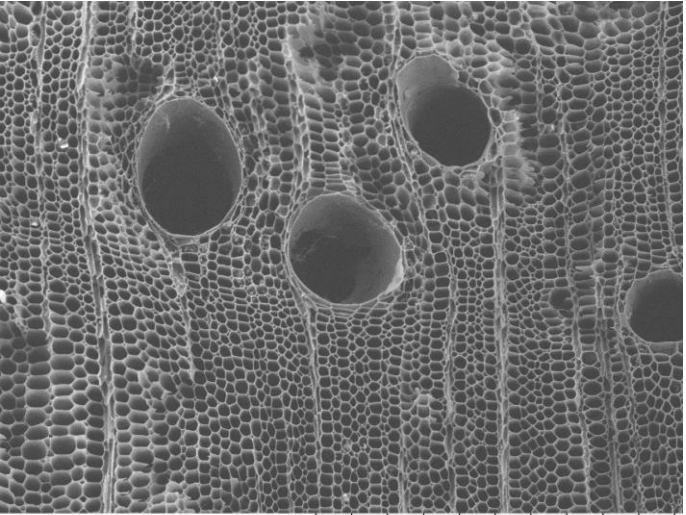
EWC 1694 2022/10/27 15:00 D2.5 x100 1 mm

**Vessel Wall**



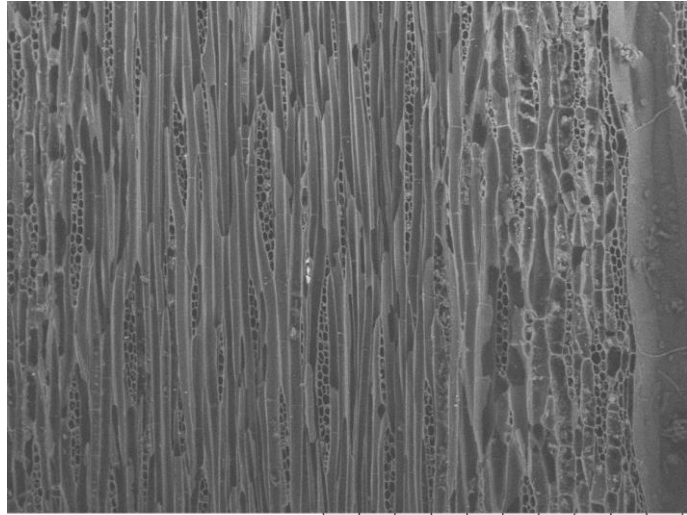
EWC 1694 2022/10/27 15:15 D2.4 x1.0k 100 µm

**Transverse 200x**



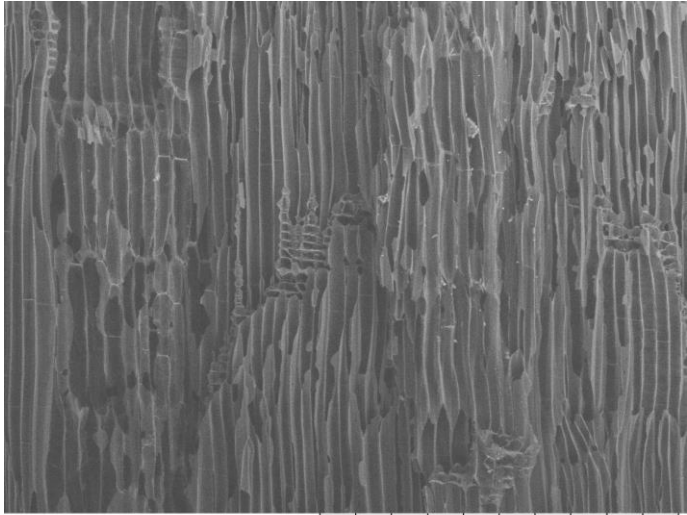
EWC 1694 2022/10/27 15:01 D2.5 x200 500 µm

**Tangential**



EWC 1694 2022/10/27 15:13 D2.5 x200 500 µm

**Radial**



EWC 1694 2022/10/27 15:19 D2.0 x200 500 µm

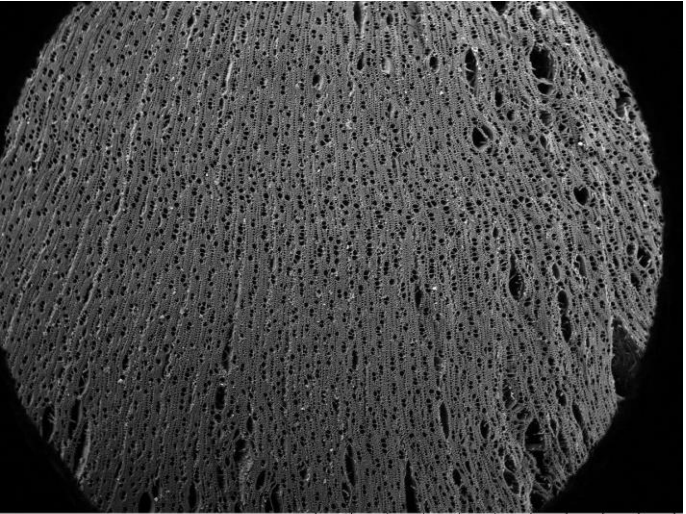
# EWC 1696 Unknown Identification

**Vessels**  
Size: <50µm  
Freq.: 100+  
Arrangement: solitary, pairs, chains, clusters  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Diffuse, scanty  
**Porosity:** semi porous

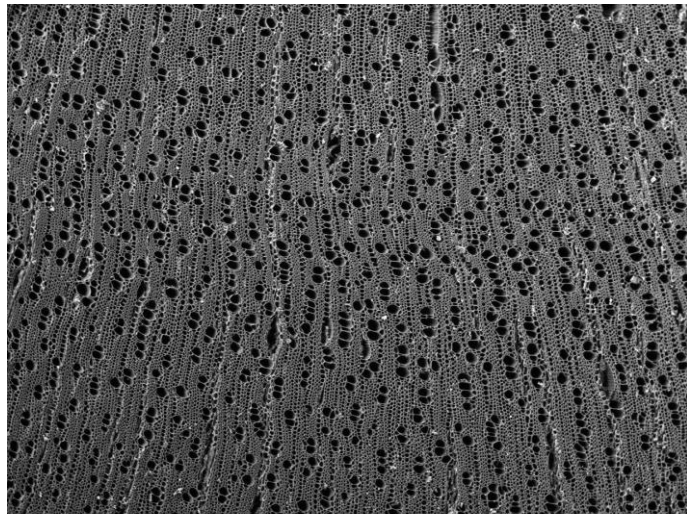
**Common Name:**  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



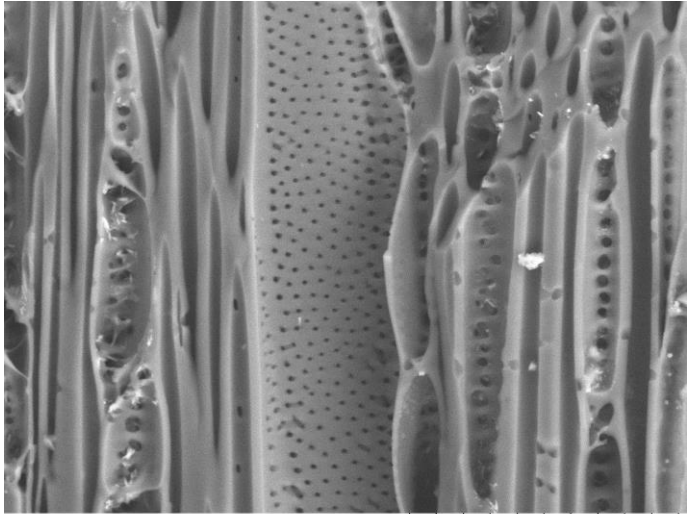
EWC 1696 2022/10/27 17:22 D2.0 x50 2 mm

**Transverse 100x**



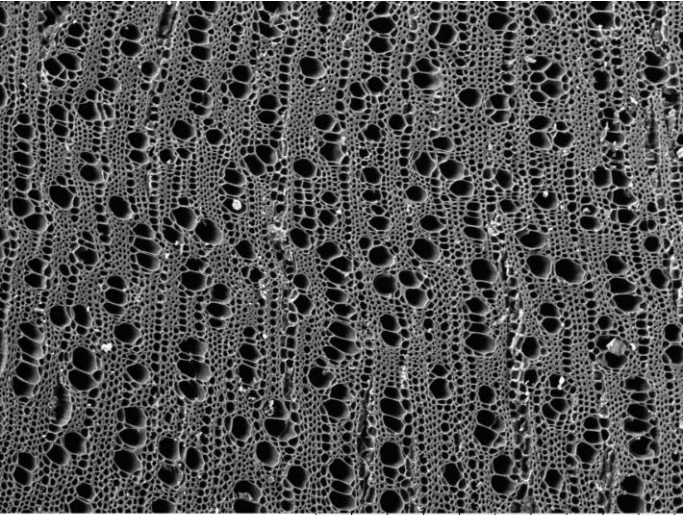
EWC 1696 2022/10/27 17:27 D2.0 x100 1 mm

**Vessel Wall 600x**



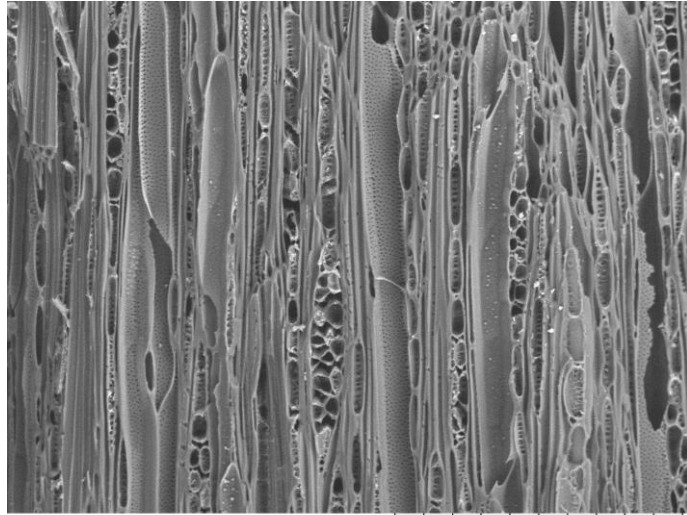
EWC 1696 2022/11/02 14:55 D2.8 x1.5k 50 µm

**Transverse 200x**



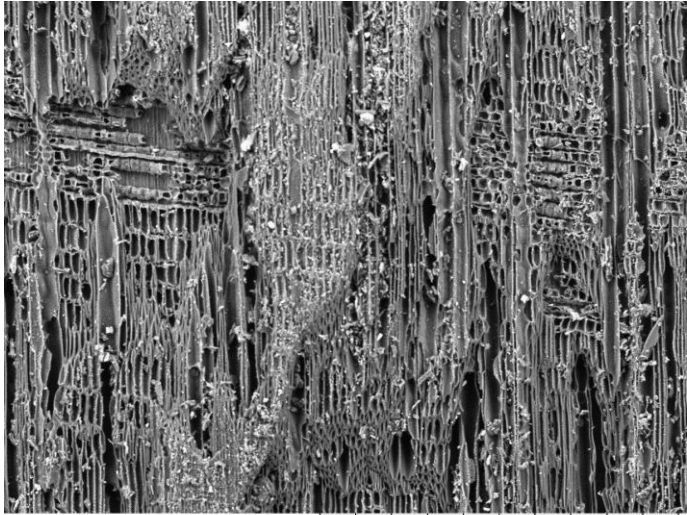
EWC 1696 2022/10/27 17:25 D2.0 x200 500 µm

**Tangential 200x**



EWC 1696 2022/11/02 14:56 D2.8 x400 200 µm

**Radial 200x**



EWC 1696 2022/10/27 17:33 D3.1 x200 500 µm

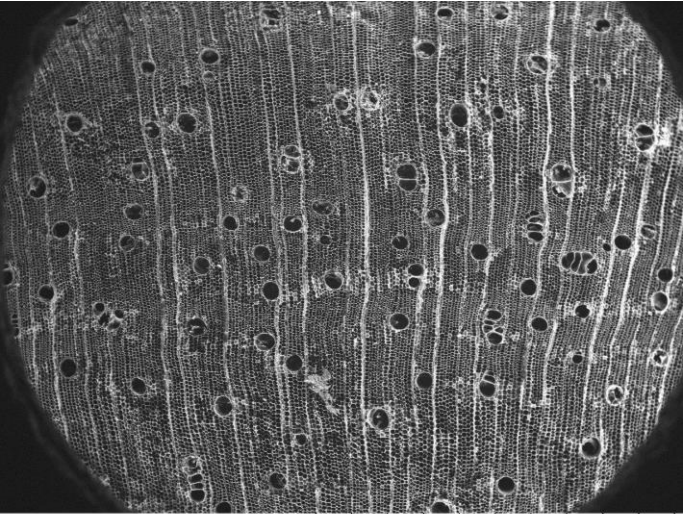
# EWC 1697 MORACEAE *Castilla tunu* Hemsl.

**Vessels**  
**Size:** 50-100µm, 100-200µm  
**Freq.:** 5 to 20  
**Arrangement:** solitary, pairs, clusters  
**Tyloses:** common

**Rays:**  
**# per mm:** 4-12  
**Thickness (cells):** 1 to 3  
**Parenchyma Type:** Vascentric (winged), confluent, aliform  
**Porosity:** diffuse

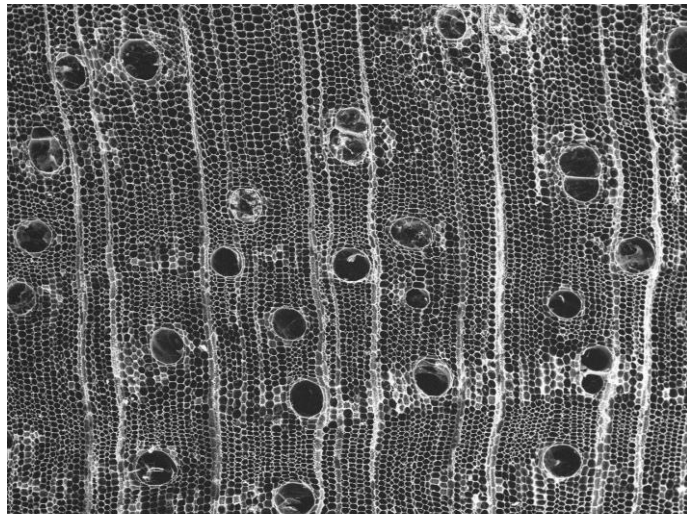
**Common Name:** "Caucho"  
**Elevation:** 220 m  
**Description:** Tall upper story tree with milky sap.  
**Location:** Ecuador, Manabí, Jama  
**Locality:** La Humidad, area 1: Approximately 8 km E of Jama. Collected from a N facing slope (very steep) of primary forest. Convento topo map 1:50,000, cuadrícula (block) N78 E90.

**Transverse 50x**



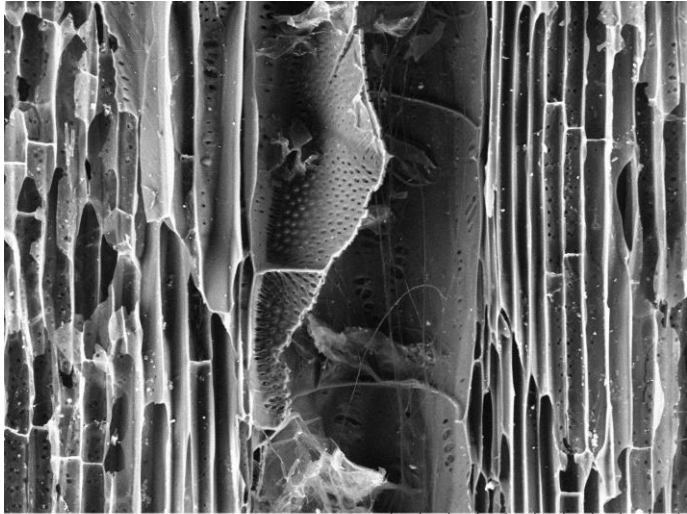
EWC 1697 2022/10/27 17:52 D2.2 x50 2 mm

**Transverse 100x**



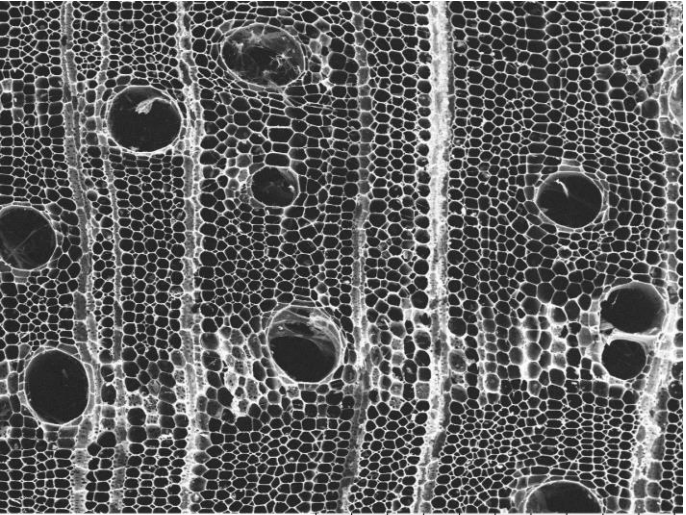
EWC 1697 2022/10/27 17:56 D2.2 x100 1 mm

**Vessel Wall 400x**



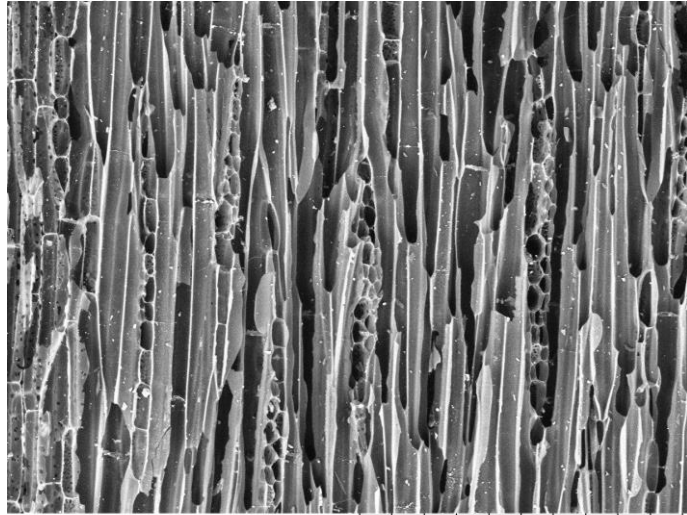
EWC 1697 2022/10/27 18:08 D2.1 x400 200 µm

**Transverse 200x**



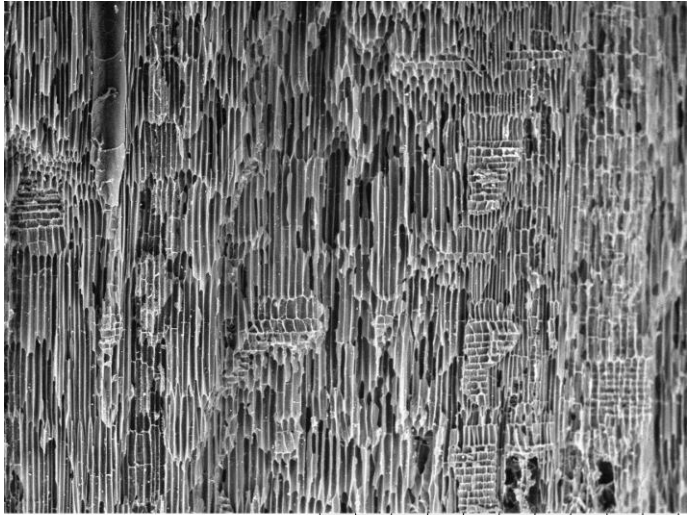
EWC 1697 2022/10/27 17:54 D2.2 x200 500 µm

**Tangential 300x**



EWC 1697 2022/10/27 18:01 D3.0 x300 300 µm

**Radial 100x**



EWC 1697 2022/10/27 18:05 D2.1 x100 1 mm

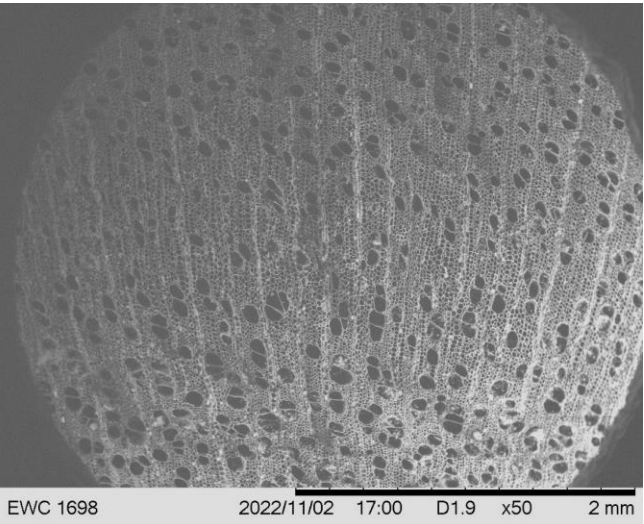
# EWC 1698 PHYLLANTHACEAE *Phyllanthus juglandifolius* Willd.

**Vessels**  
**Size:** 50-100, 100-200µm  
**Freq.:** 420-40  
**Arrangement:** solitary, pairs, chains  
**Tyloses:** absent  
**Porosity:** semi ring porous

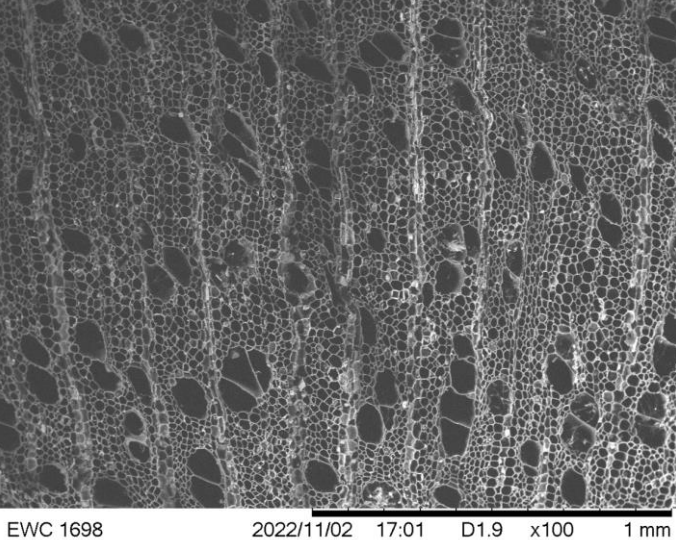
**Rays:**  
**# per mm:** 4-12  
**Thickness (cells):** 1 to 3  
**Tyloses:** absent  
**Parenchyma Type:** Absent, Scanty, Diffuse

**Common Name:** "Culo Pesado"  
**Elevation:** 220 m  
**Description:** Upper canopy tree with green, spherical fruits which arise from the leaf apices.  
**Location:** Ecuador, Manabí, Jama  
**Locality:** La Humidad, area 1: Approximately 8 km E of Jama. Collected along roadside in coffee field. Convento topo map 1:50,000, cuadrícula (block) N78 E90.

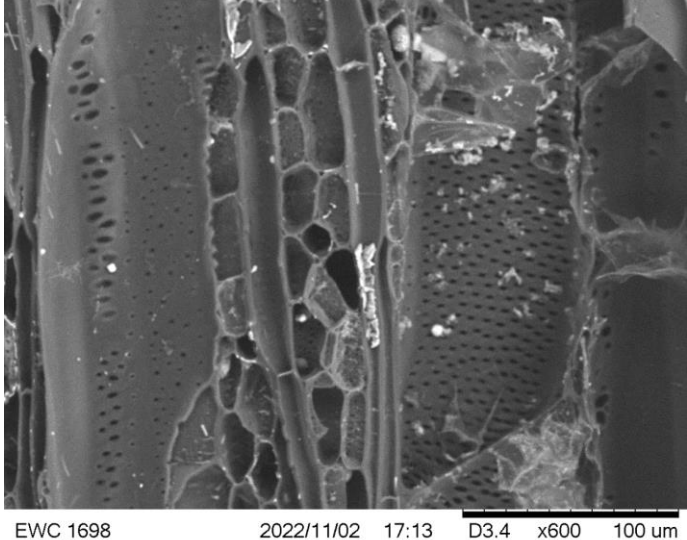
**Transverse 50x**



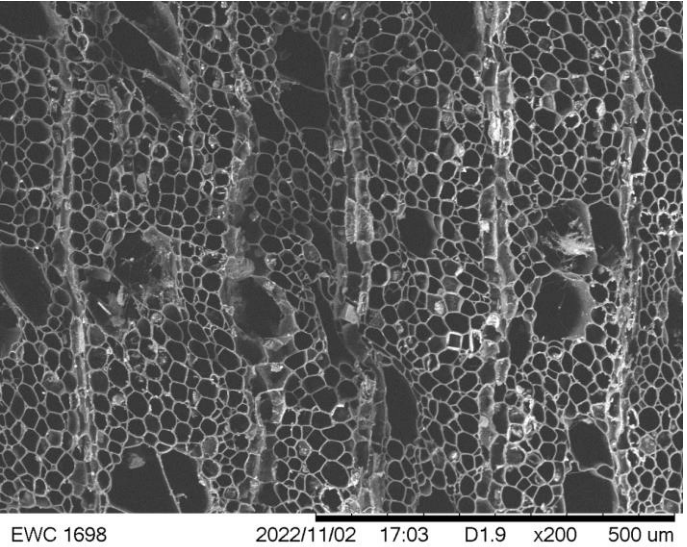
**Transverse 100x**



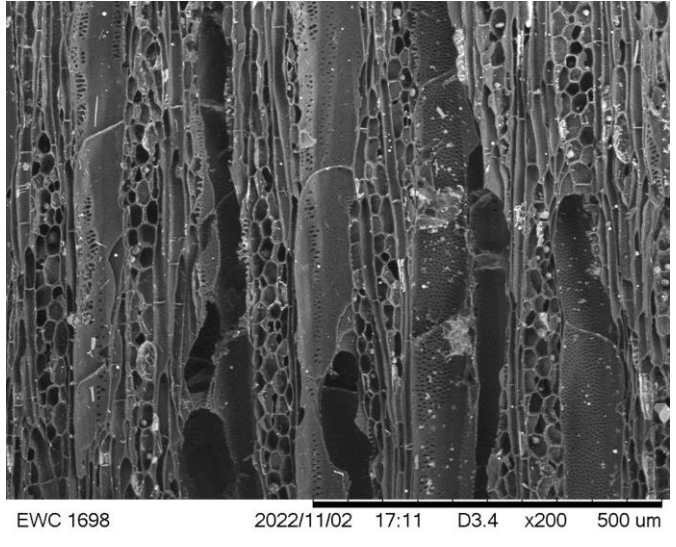
**Vessel Wall**



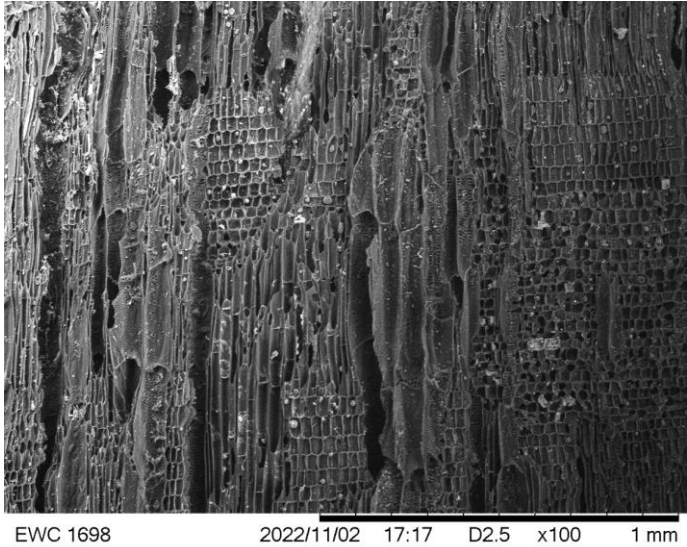
**Transverse 200x**



**Tangential**



**Radial**



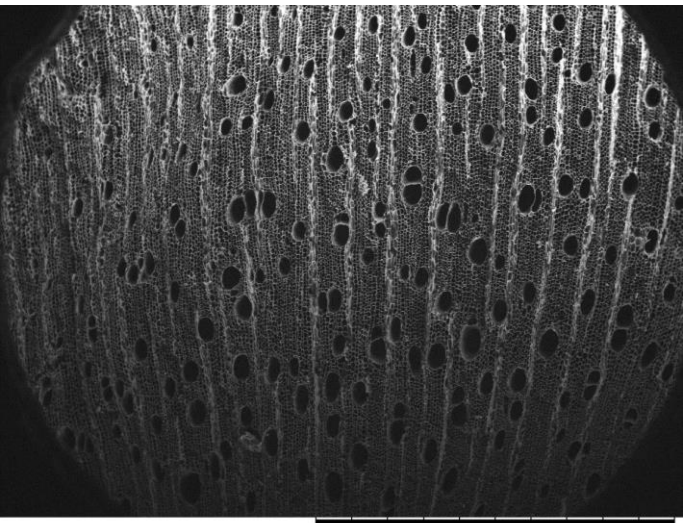
# EWC 1699 LAMIACEAE *Vitex gigantea* Kunth

**Common Name:** "Pechiche"  
**Elevation:** 220 m  
**Description:** Very tall upper canopy tree with shredding bark  
**Location:** Ecuador, Manabí, Jama  
**Locality:** La Humidad, area 1: Approximately 8 km E of Jama. Collected from a north facing slope (very steep) of primary forest. Convento topo cuadrícula (block) N78 E90.

**Vessels**  
Size: 50-100µm  
Freq.: 20 to 40  
Arrangement: solitary, pairs  
**Porosity:** diffuse

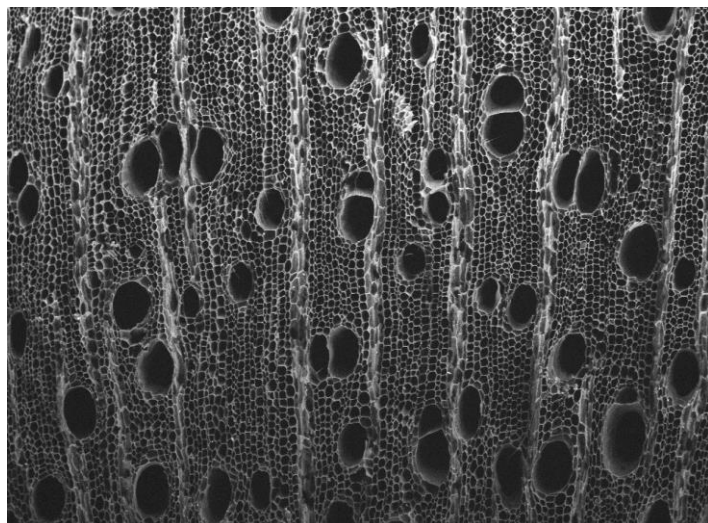
**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3, 4+  
**Tyloses:** absent  
**Parenchyma Type:** Absent, Scanty

**Transverse 50x**



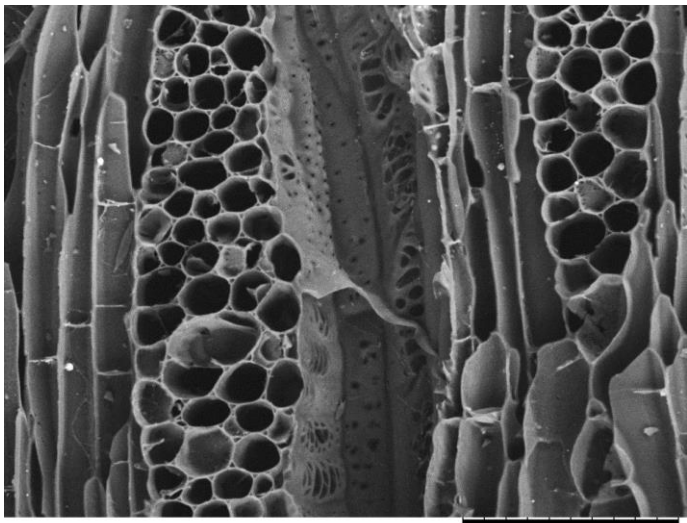
EWC 1699 2022/11/02 17:22 D2.2 x50 2 mm

**Transverse 100x**



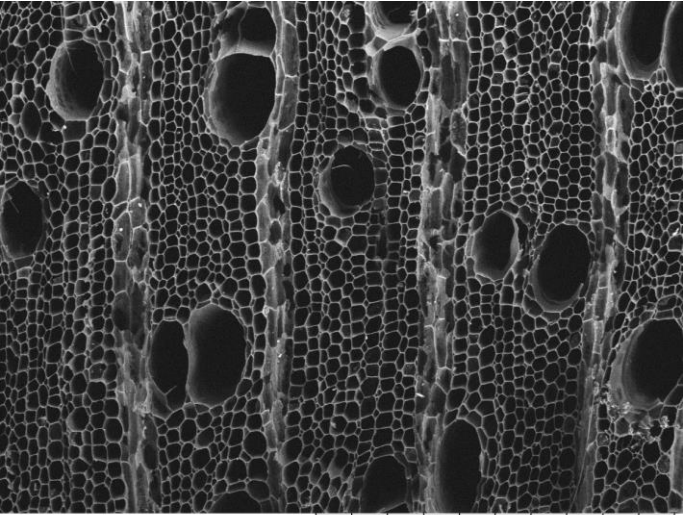
EWC 1699 2022/11/02 17:24 D2.2 x100 1 mm

**Vessel Wall**



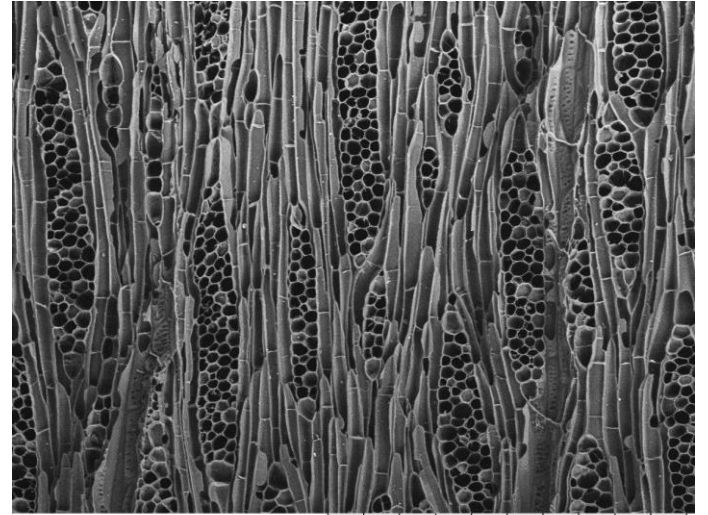
EWC 1699 2022/11/02 17:32 D2.5 x600 100 um

**Transverse 200x**



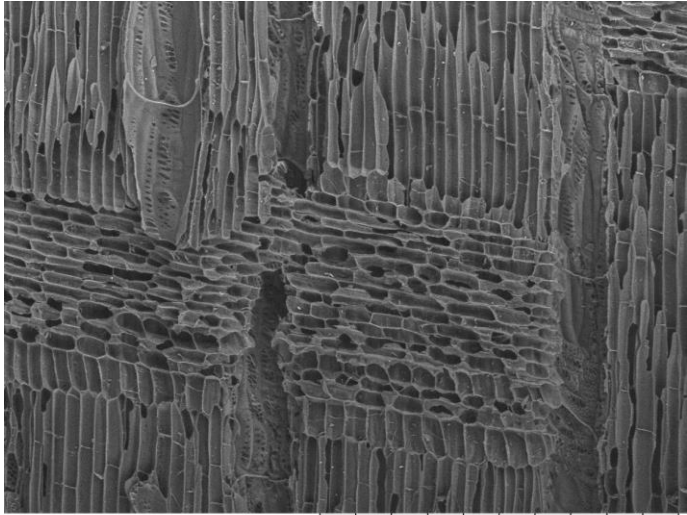
EWC 1699 2022/11/02 17:25 D2.2 x200 500 um

**Tangential**



EWC 1699 2022/11/02 17:29 D2.5 x200 500 um

**Radial**



EWC 1699 2022/11/02 17:35 D3.5 x200 500 um

# EWC 1701 SOLANACEAE *Solanum ochraceoferrugineum* Fernald

## Vessels

Size: <50, 50-100µm

Freq.: 40 to 100

Arrangement: solitary, pairs, chains, clusters

Tyloses: absent

## Rays:

# per mm: 12+

Thickness (cells): uniseriate, 1 to 3

Parenchyma Type: Absent

Porosity: diffuse

## Common Name: "Boroquera"

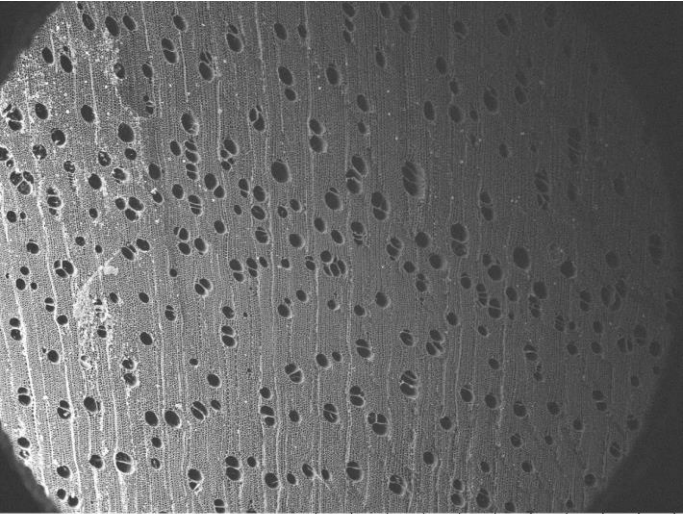
Elevation: 160 m

Description: Small tree with white flrs.

Location: Ecuador, Manabí, Jama

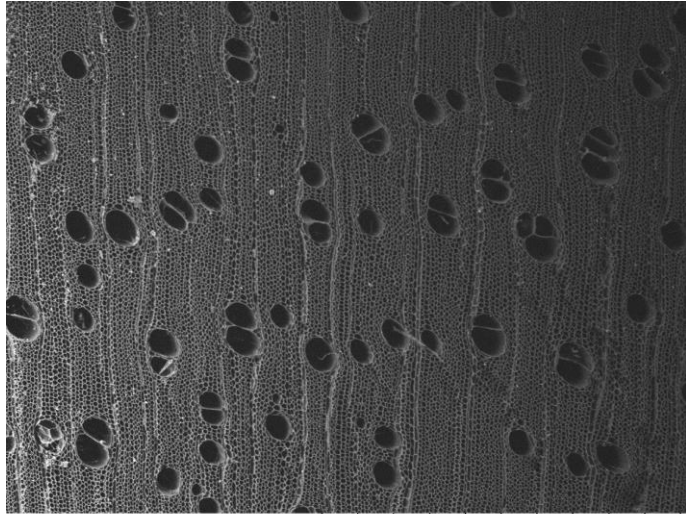
Locality: Jama River, Area 1: Approximately 3 km NE of San Isidro, just west of the river and north of the road. Area with farms and houses. San Isidro topo map 1:50,000, cuadrícula (block) N60 E93.

Transverse 50x



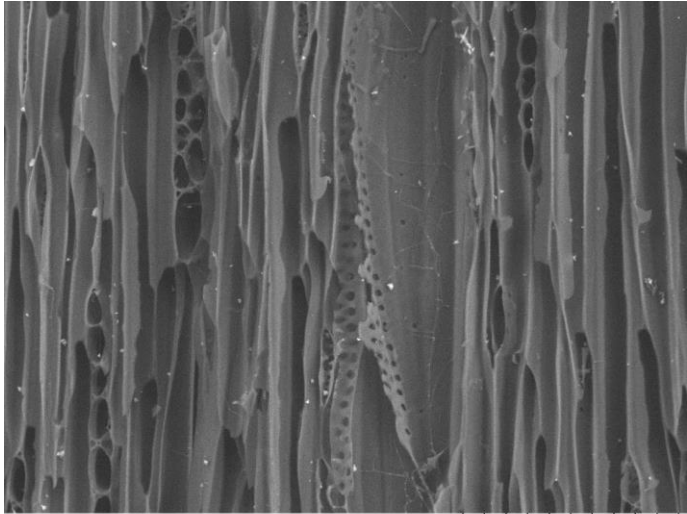
EWC 1701 2022/11/02 17:51 D2.4 x50 2 mm

Transverse 100x



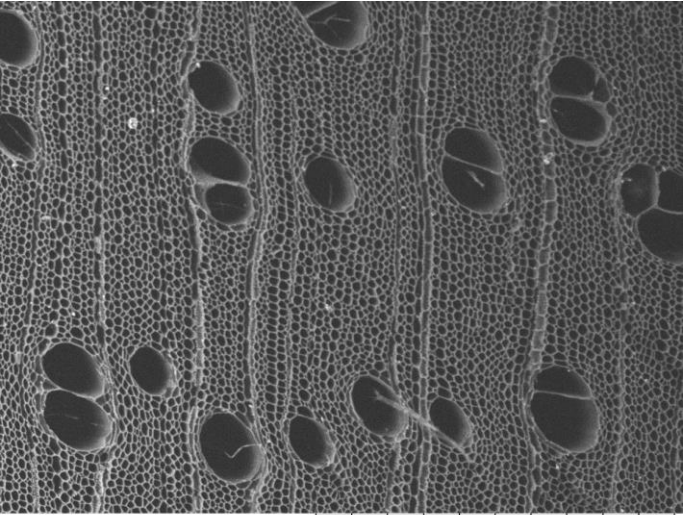
EWC 1701 2022/11/02 17:53 D2.4 x100 1 mm

Vessel Wall



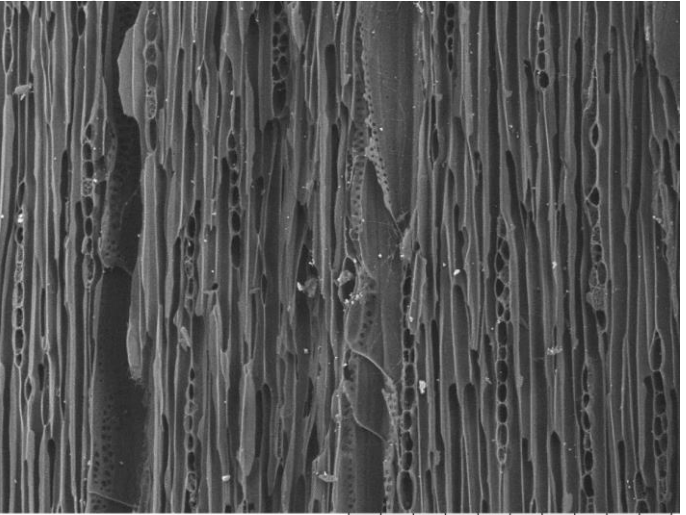
EWC 1701 2022/11/02 18:03 D3.1 x600 100 um

Transverse 200x



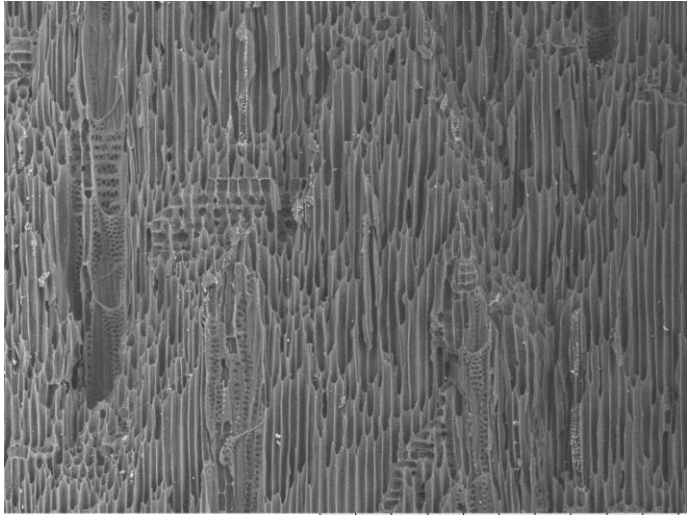
EWC 1701 2022/11/02 17:53 D2.4 x200 500 um

Tangential



EWC 1701 2022/11/02 18:02 D3.1 x300 300 um

Radial



EWC 1701 2022/11/02 18:06 D3.3 x200 500 um

# EWC 1702 MALVACEAE *Guazuma ulmifolia* Lam.

**Common Name:** "Guasmo" or "Guazmo"

**Elevation:** 160 m

**Description:** Large tree with shredding bark and black fruit.

**Location:** Ecuador, Manabí, Jama

**Locality:** Jama River, Area 1: Approximately 3 km NE of San Isidro, just west of the river and north of the road. Area with farms and houses. San Isidro topo map 1:50,000, cuadrícula (block) N60 E93.

## Vessels

**Size:** 50-100, 100-200µm

**Freq.:** 20 to 40

**Arrangement:** solitary, pairs, chains

**Porosity:** diffuse

## Rays:

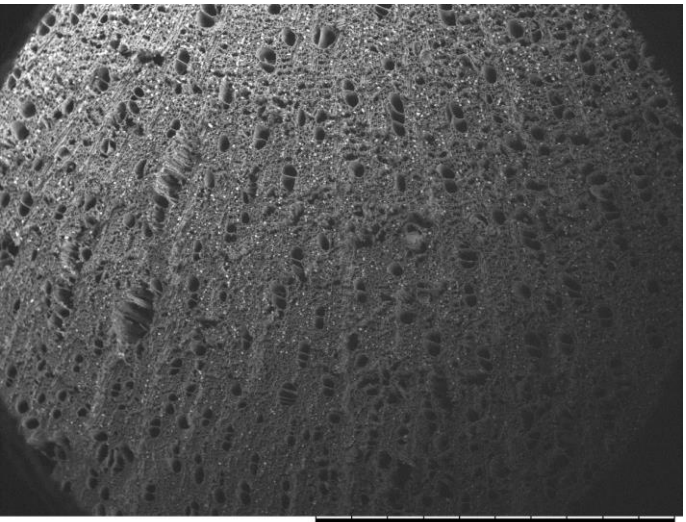
**# per mm:** 4-12

**Thickness (cells):** 1 to 3, 4+,

**Tyloses:** absent

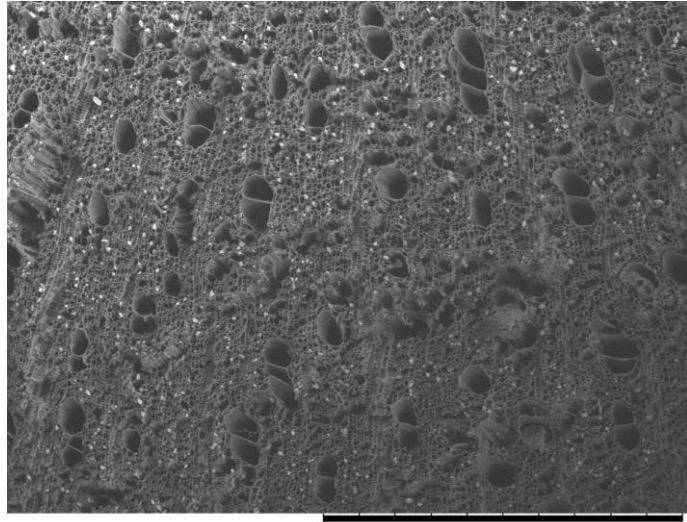
**Parenchyma Type:** Diffuse-in-aggregates, thin bands

**Transverse 50x**



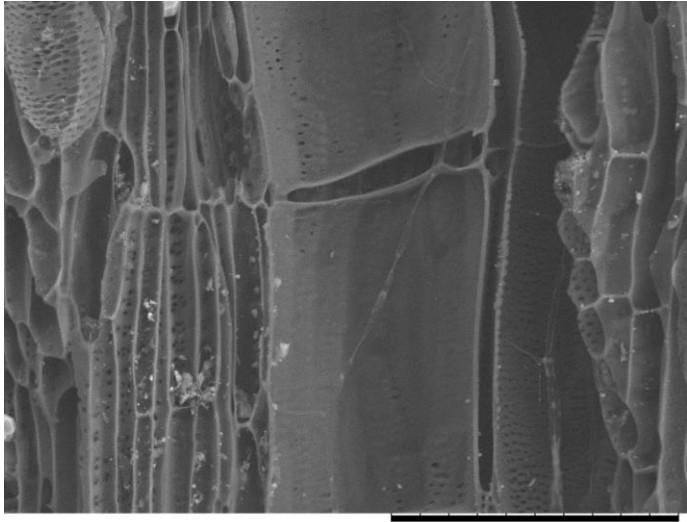
EWC 1702 2022/11/02 18:15 D2.6 x50 2 mm

**Transverse 100x**



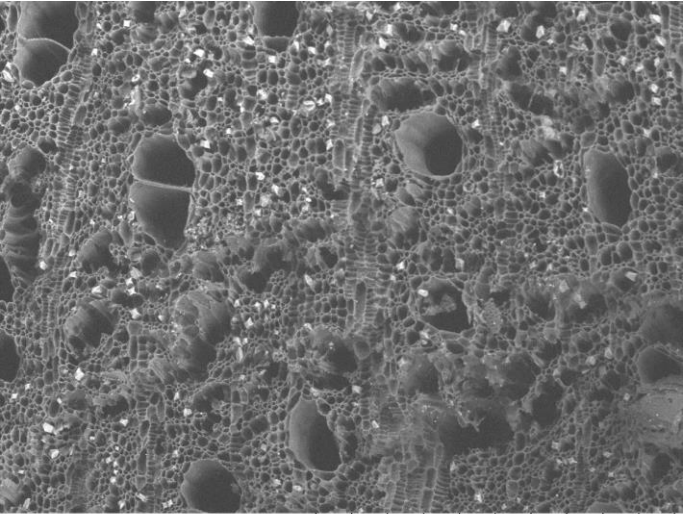
EWC 1702 2022/11/02 18:17 D2.6 x100 1 mm

**Vessel Wall**



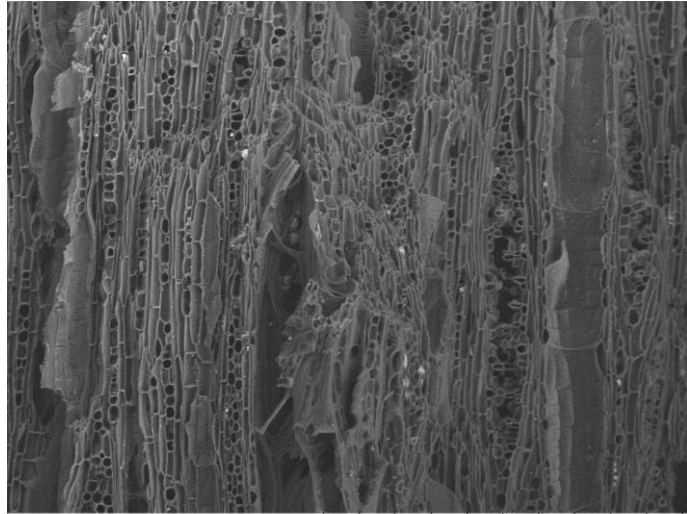
EWC 1702 2022/11/02 18:33 D3.0 x800 100 µm

**Transverse 200x**



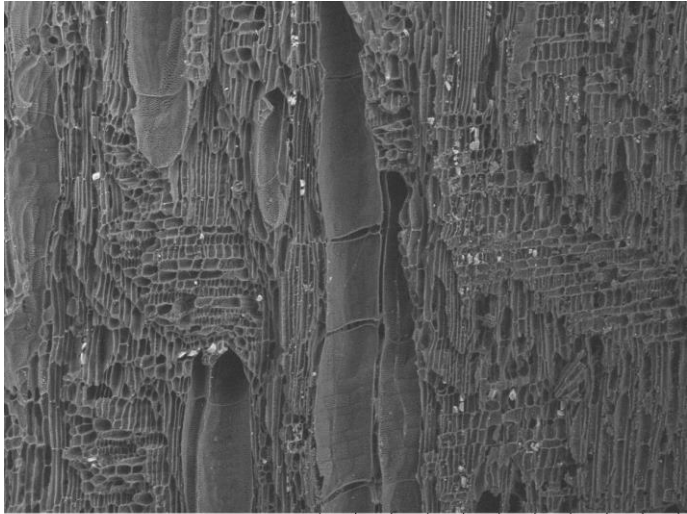
EWC 1702 2022/11/02 18:18 D2.6 x200 500 µm

**Tangential**



EWC 1702 2022/11/02 18:23 D2.6 x200 500 µm

**Radial**



EWC 1702 2022/11/02 18:32 D3.0 x200 500 µm



# EWC 1703 ANACARDIACEAE *Spondias mombin* L.

**Common Name:** "Jobo, Ovo"

**Elevation:** 160 m

**Description:** Medium sized tree with slightly wrinkled fruits

**Location:** Ecuador, Manabí, Jama

**Locality:** Jama River, Area 1: Approximately 3 km NE of San Isidro, just west of the river and north of road. Area with farms and houses. San Isidro topo map 1:50,000, cuadrícula (block) N60 E93

## Vessels

**Size:** 50-100µm

**Freq.:** 5 to 20

**Arrangement:** solitary, pairs

**Tyloses:** common

## Rays:

**# per mm:** 4-12

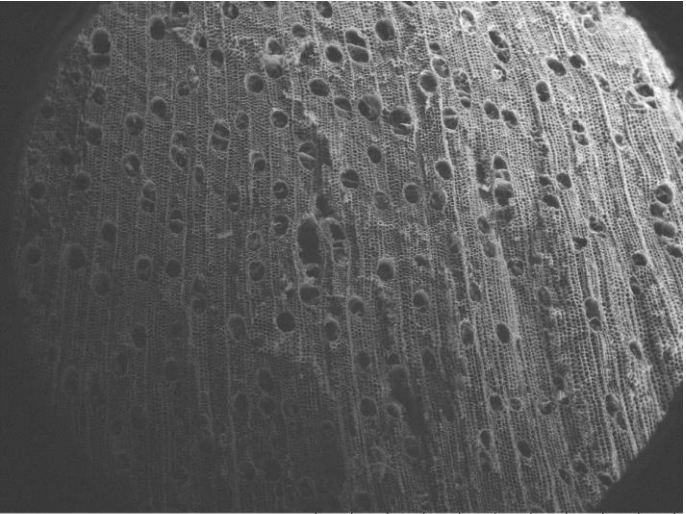
**Thickness (cells):** 1 to 3

**Parenchyma Type:** Vasicentric (unilateral), Diffuse-in-aggregates

**Porosity:** diffuse

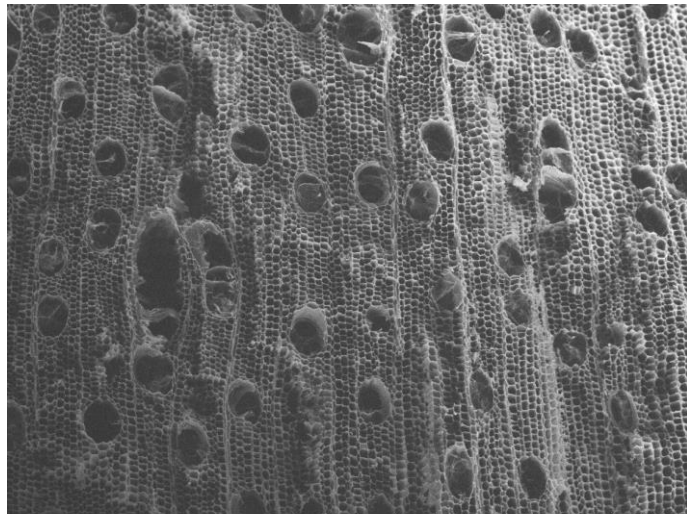
## Vessel Wall

**Transverse 50x**

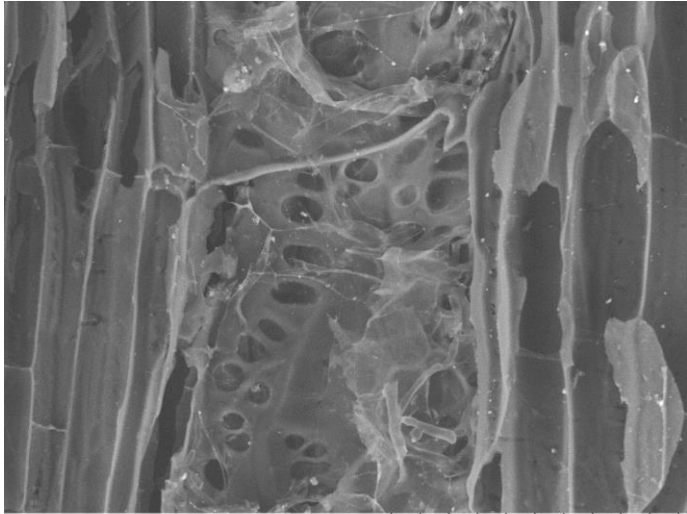


EWC 1703 2022/11/03 10:16 D2.2 x50 2 mm

**Transverse 100x**

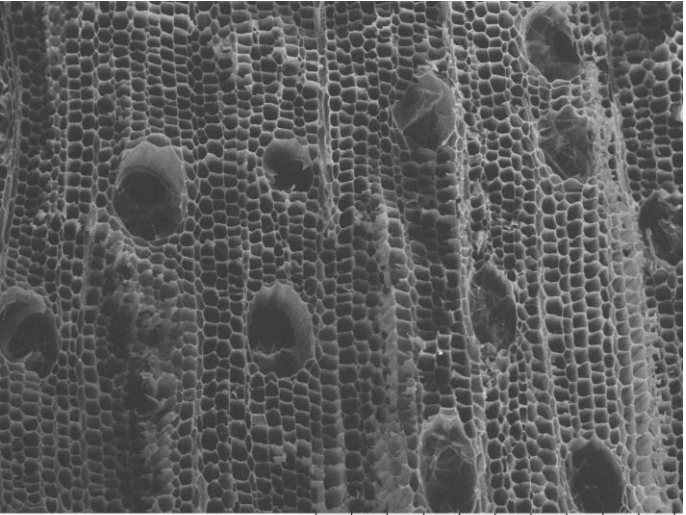


EWC 1703 2022/11/03 10:19 D2.2 x100 1 mm



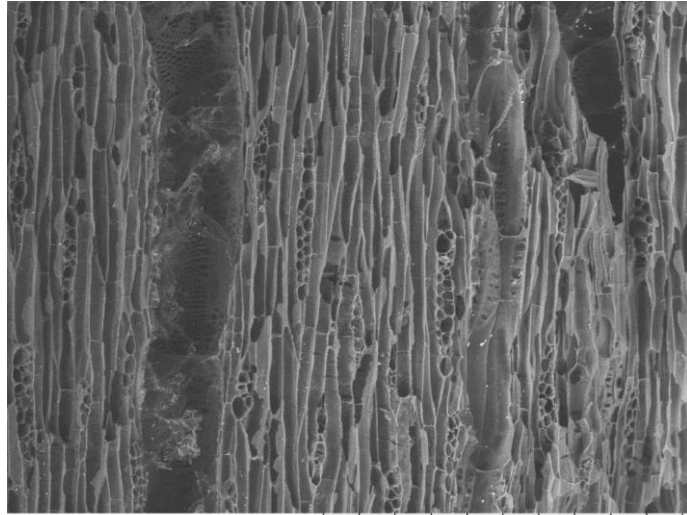
EWC 1703 2022/11/03 10:30 D2.7 x800 100 µm

**Transverse 200x**



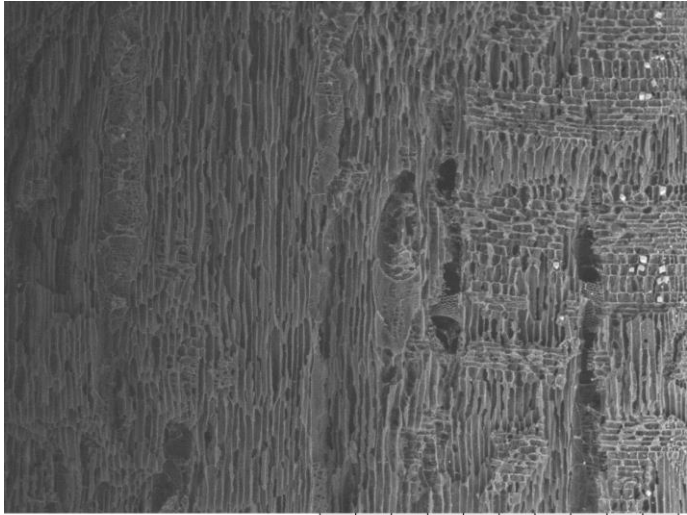
EWC 1703 2022/11/03 10:20 D2.2 x200 500 µm

**Tangential**



EWC 1703 2022/11/03 10:32 D2.8 x200 500 µm

**Radial**



EWC 1703 2022/11/03 10:23 D2.5 x100 1 mm

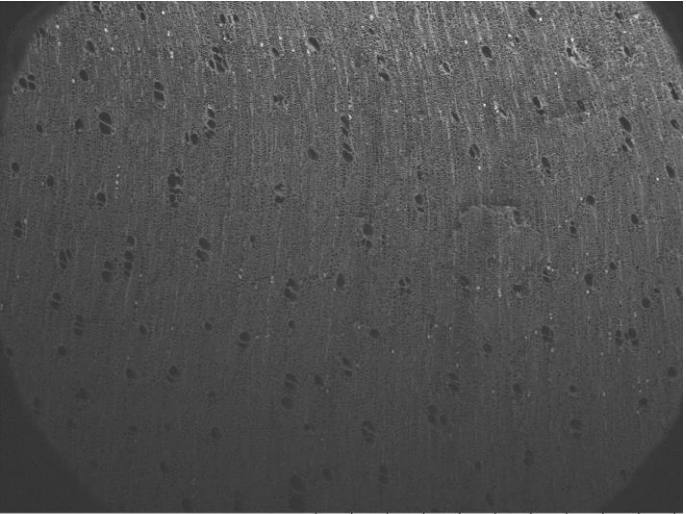
# EWC 1704 SOLANACEAE *Acnistus arborescens* (L.) Schldl.

**Vessels**  
Size: <50µm, 50-100µm  
Freq.: 20 to 40  
Arrangement: solitary, pairs, chains, clusters  
**Tyloses:** common

**Rays:**  
# per mm: 12+  
Thickness (cells): uniseriate  
**Parenchyma Type:** Vasicentric (winged, unilateral), Diffuse-in-aggregates  
**Porosity:** diffuse, semi-ring porous

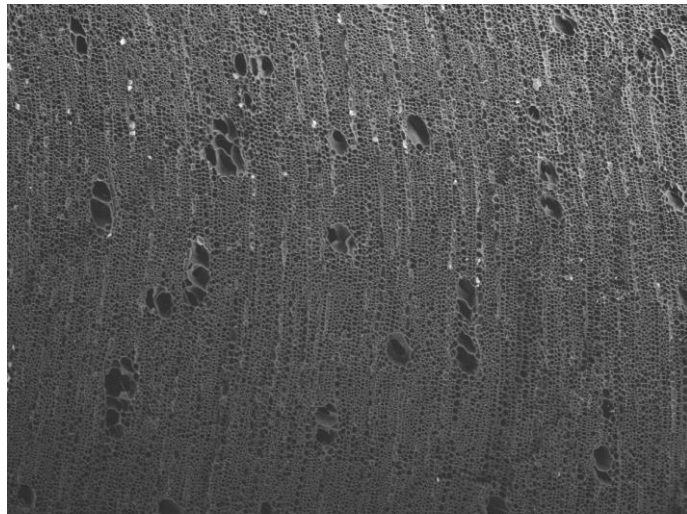
**Common Name:** "Cojojo, Guitite"  
**Elevation:** 160 m  
**Description:** Small tree  
**Location:** Ecuador, Manabí, Jama  
**Locality:** Jama River, Area 1: Approximately 3 km NE of San Isidro, just west of the river and north of the road. Area with farms and houses. San Isidro topo map 1:50,000, cuadrícula (block) N60 E93.

**Transverse 50x**



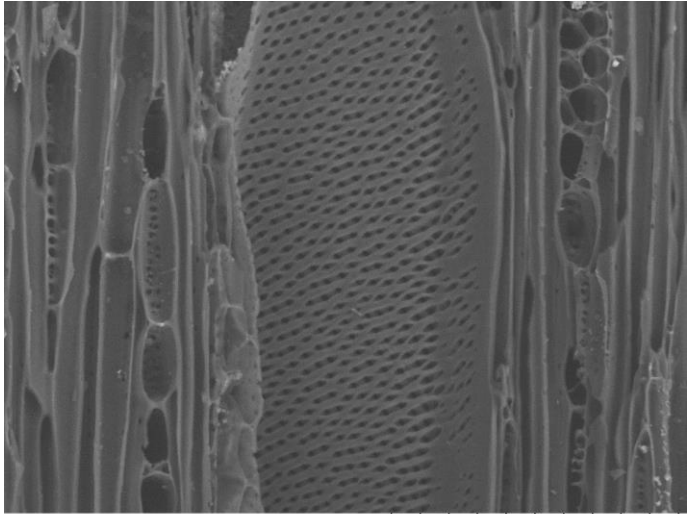
EWC 1704 2022/11/03 10:38 D2.7 x50 2 mm

**Transverse 100x**



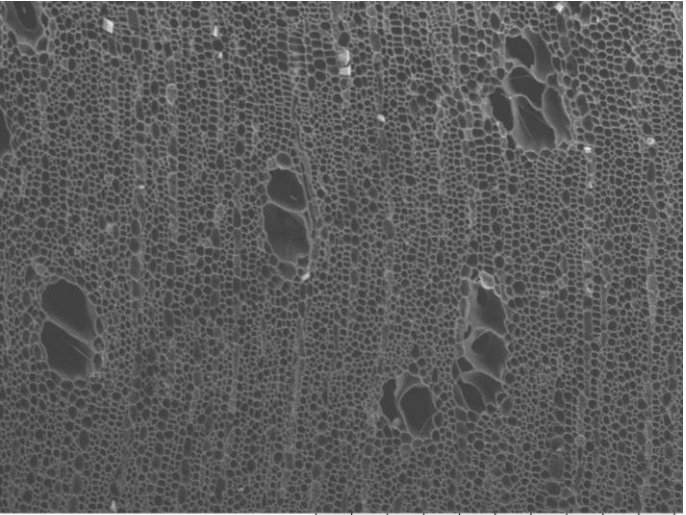
EWC 1704 2022/11/03 10:39 D2.7 x100 1 mm

**Vessel Wall**



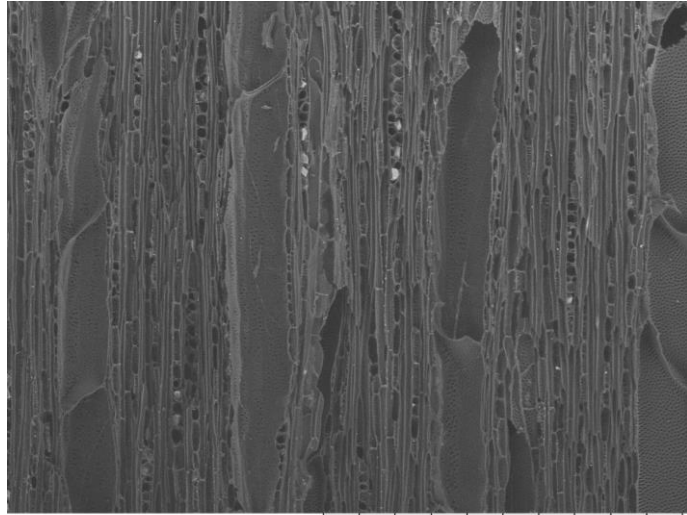
EWC 1704 2022/11/03 10:45 D3.2 x800 100 µm

**Transverse 200x**



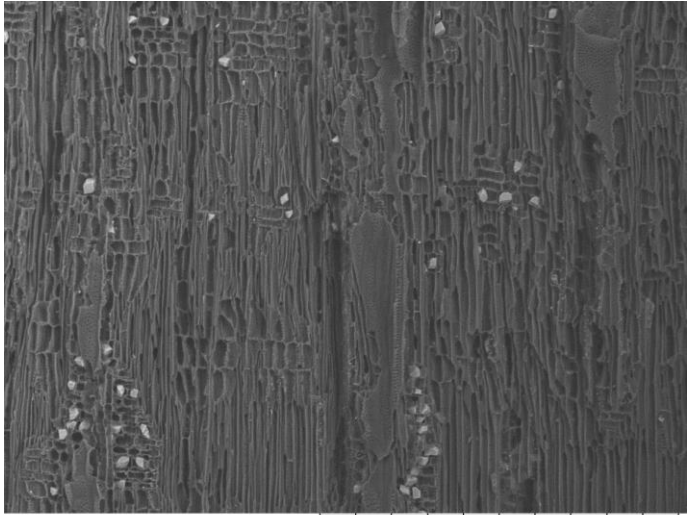
EWC 1704 2022/11/03 10:40 D2.7 x200 500 µm

**Tangential**



EWC 1704 2022/11/03 10:44 D3.2 x200 500 µm

**Radial**



EWC 1704 2022/11/03 10:48 D3.2 x200 500 µm

# EWC 1708 ANNONACEAE *Annona muricata* L.

**Common Name:** "Guanabana"

**Elevation:** 155 m

**Description:** Tree ~10m in height.

**Location:** Ecuador, Manabí

**Locality:** Estero Muchique, Area 1: Approximately 2 km E of SAn Isidro, along the W bank of the confluence of Estero Muchique and Rio Jama. Collected from a low wet area along stream. San Isidro topo map 1:50,000, cuadrícula (block) N59 E93.

## Vessels

**Size:** <50µm, 50-100µm

**Freq.:** 40 to 100

**Arrangement:** solitary, pairs, chains

**Tyloses:** common

## Rays:

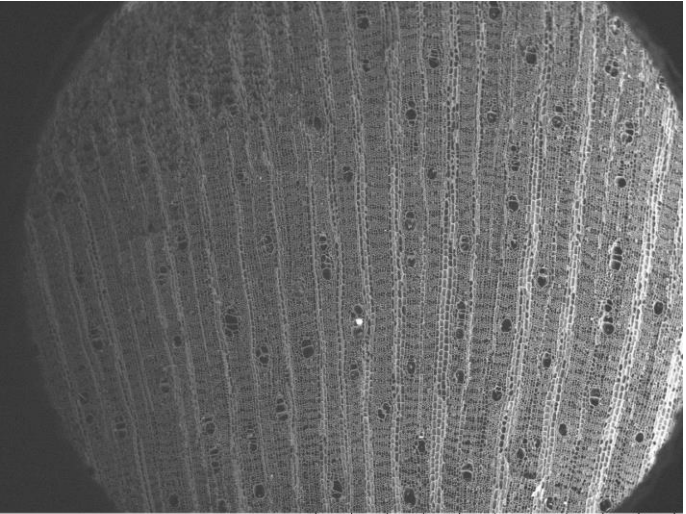
**# per mm:** 4-12

**Thickness (cells):** 4+

**Parenchyma Type:** Banded ( thin),  
Vasicentric (aliform, winged)

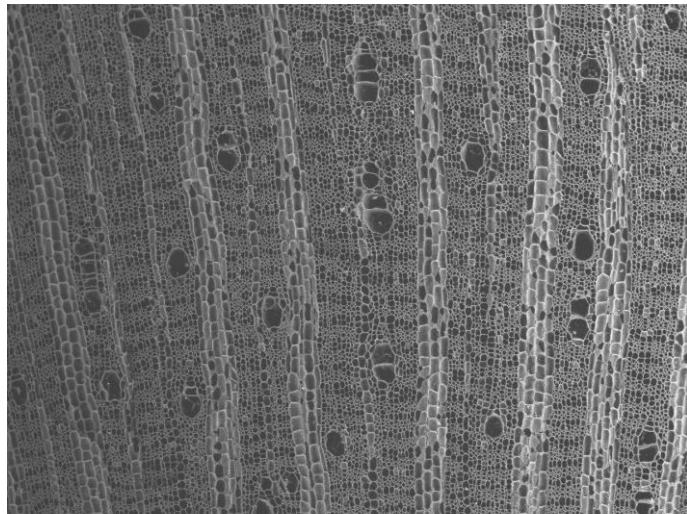
**Porosity:** diffuse

**Transverse 50x**



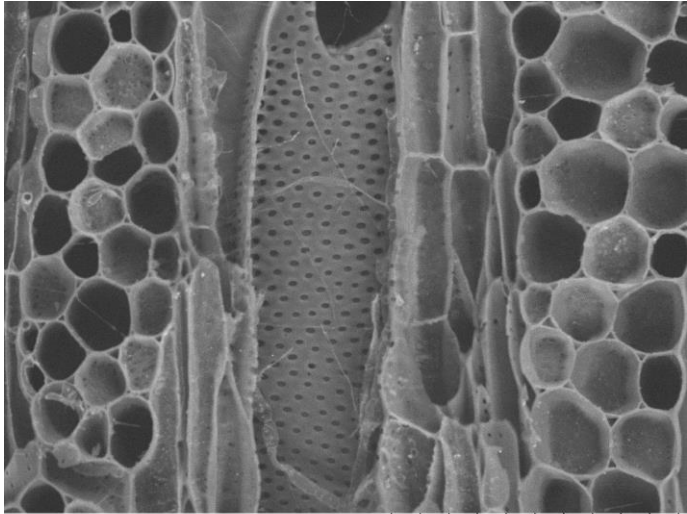
EWC 1708 2022/11/03 11:04 D2.1 x50 2 mm

**Transverse 100x**



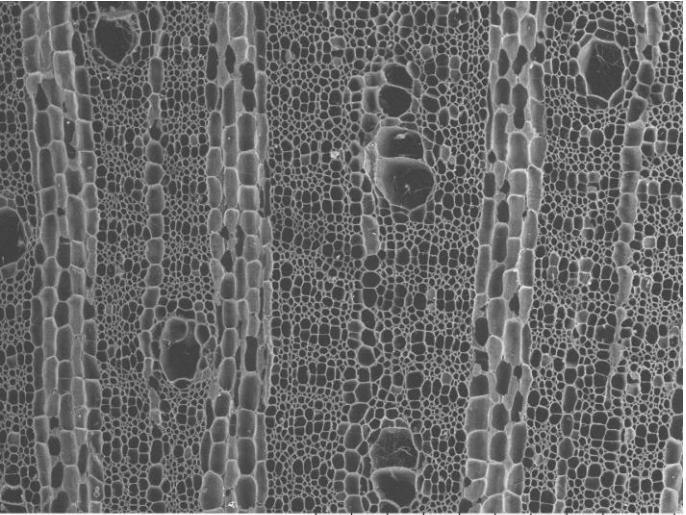
EWC 1708 2022/11/03 11:05 D2.1 x100 1 mm

**Vessel Wall**



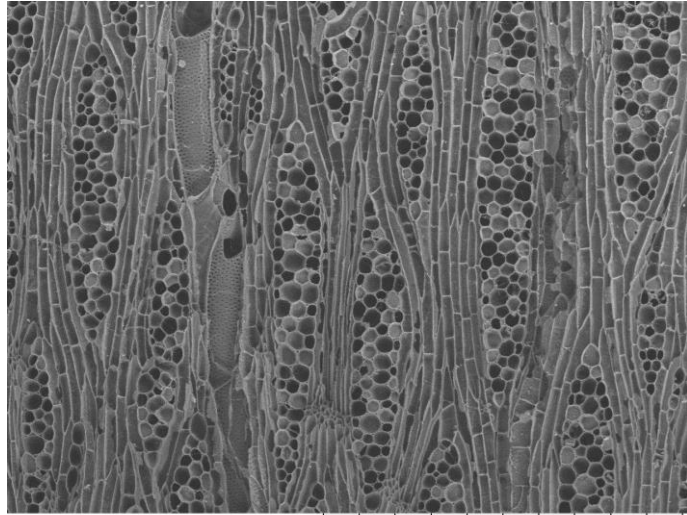
EWC 1708 2022/11/03 11:11 D3.5 x800 100 µm

**Transverse 200x**



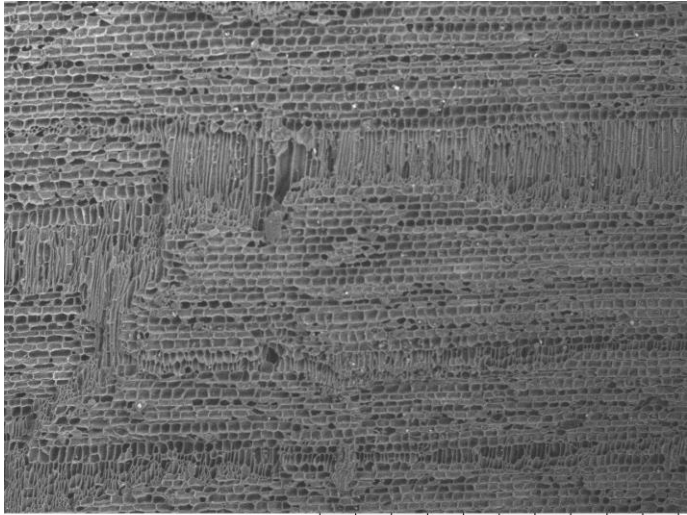
EWC 1708 2022/11/03 11:05 D2.1 x200 500 µm

**Tangential**



EWC 1708 2022/11/03 11:10 D3.5 x200 500 µm

**Radial**



EWC 1708 2022/11/03 11:13 D3.5 x100 1 mm

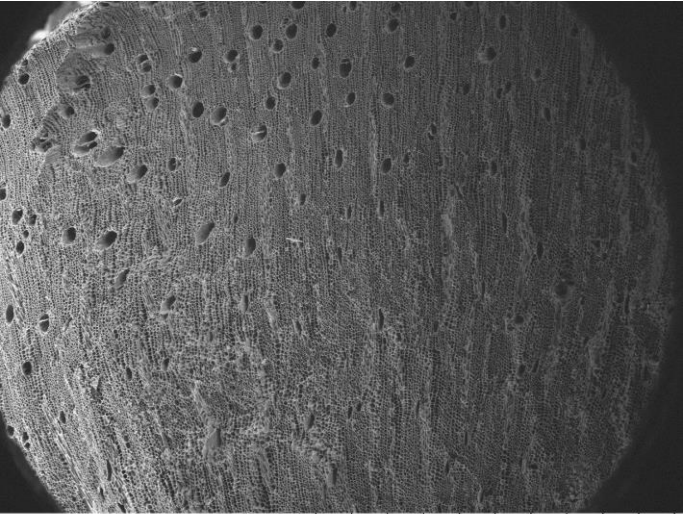
# EWC 1711 MORACEAE *Artocarpus altilis* (Parkinson) Fosberg

**Vessels**  
Size: <50, 50-100µm  
Freq.: 5-20, 20 to 40  
Arrangement: solitary, pairs  
**Tyloses:** common

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3, 4+  
**Parenchyma Type:** Vasicentric  
(winged, unilateral)  
**Porosity:** ring porous

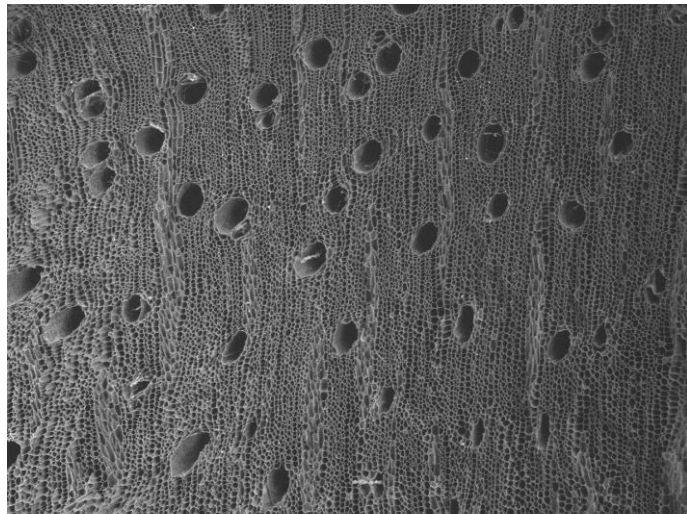
**Common Name:** "fruto de pan"  
**Elevation:** 155 m  
**Description:** Locally called "fruto de pan" (breadfruit).  
**Location:** Ecuador, Manabí  
**Locality:** Estero Muchique, Area 1: Approximately 2 km E of San Isidro, along the W bank of the confluence of Estero Muchique and Rio Jama. Collected from a low wet area along stream. San Isidro topo map 1:50,000, cuadrícula (block) N59 E93.

**Transverse 50x**



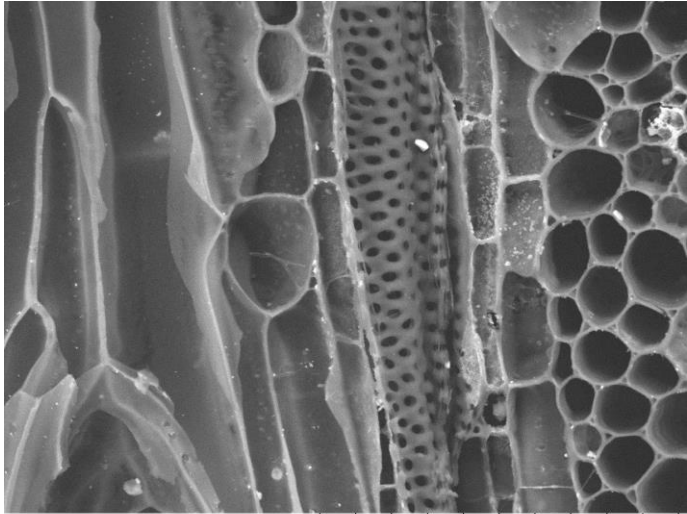
EWC 1711 2022/11/03 11:16 D2.4 x50 2 mm

**Transverse 100x**



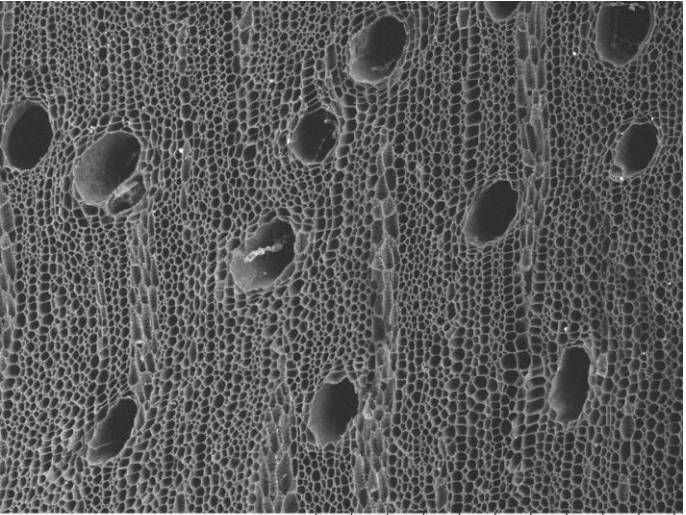
EWC 1711 2022/11/03 11:18 D2.4 x100 1 mm

**Vessel Wall**



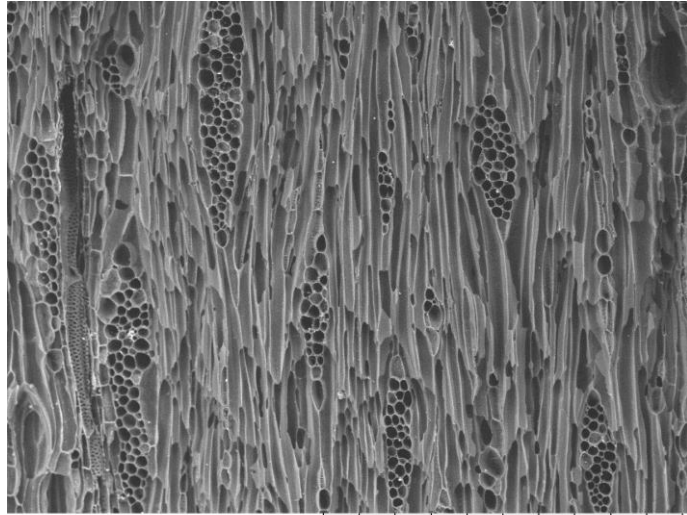
EWC 1711 2022/11/03 11:29 D3.0 x1.0k 100 µm

**Transverse 200x**



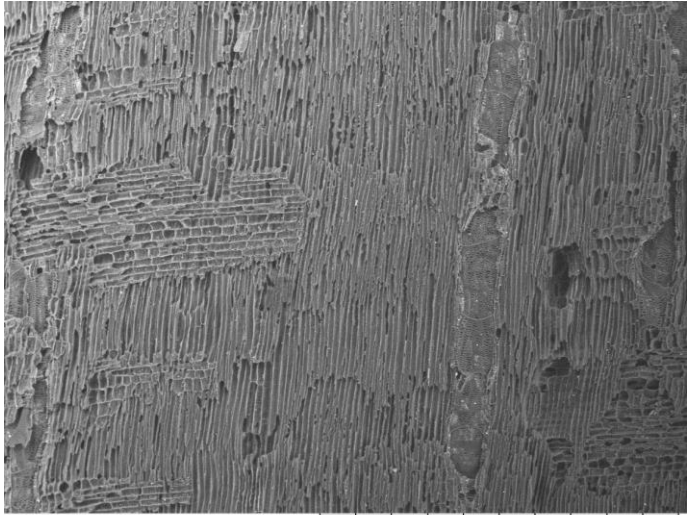
EWC 1711 2022/11/03 11:19 D2.4 x200 500 µm

**Tangential**



EWC 1711 2022/11/03 11:26 D2.8 x200 500 µm

**Radial**



EWC 1711 2022/11/03 11:22 D3.3 x100 1 mm

# EWC 1715 Unknown Identification

## Vessels

Size: <50, 50-100µm

Freq.: 40 to 100

Arrangement: solitary, pairs, chains, clusters

Tyloses: absent

## Rays:

# per mm: 4-12

Thickness (cells): 4+

Parenchyma Type: Absent, Diffuse, Scanty

Porosity: semi-ring porous

## Common Name:

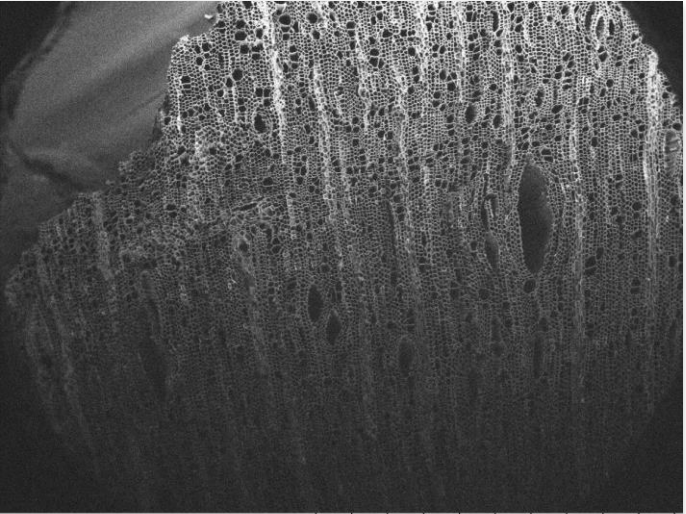
Elevation:

Description:

Location: Ecuador

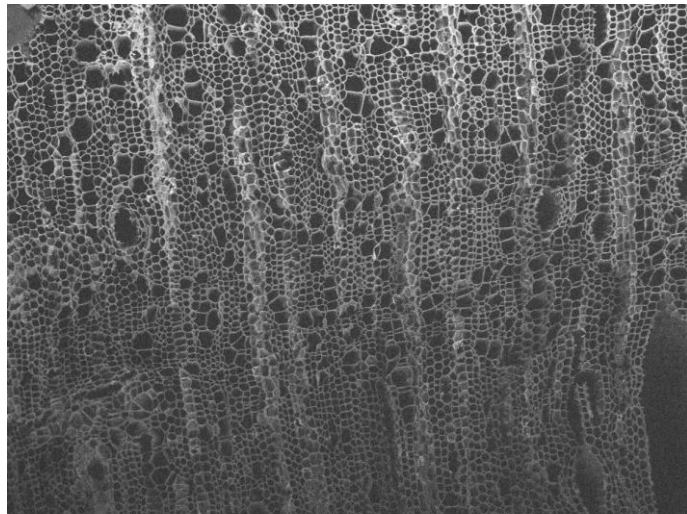
Locality:

Transverse 50x



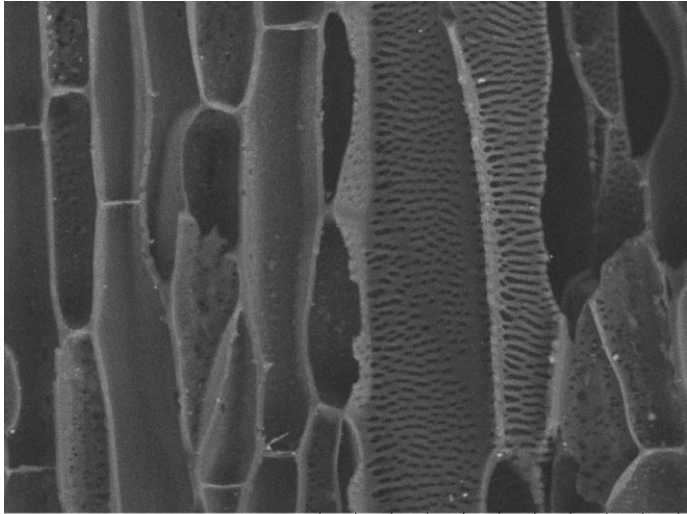
EWC 1715 2022/11/03 14:28 D2.2 x50 2 mm

Transverse 100x



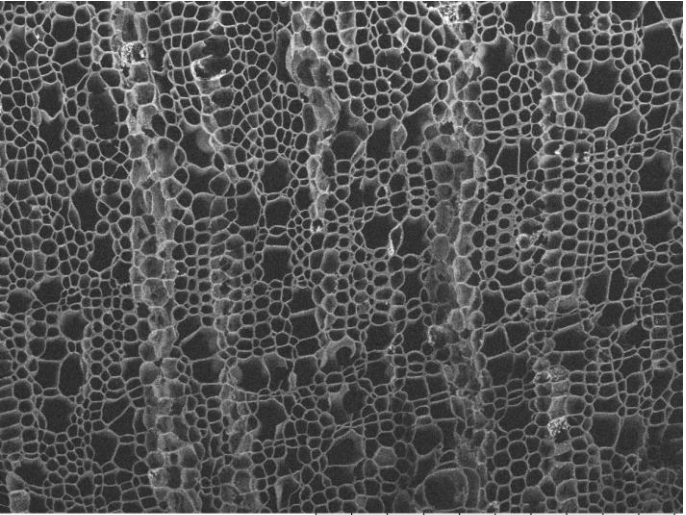
EWC 1715 2022/11/03 14:29 D2.2 x100 1 mm

Vessel Wall



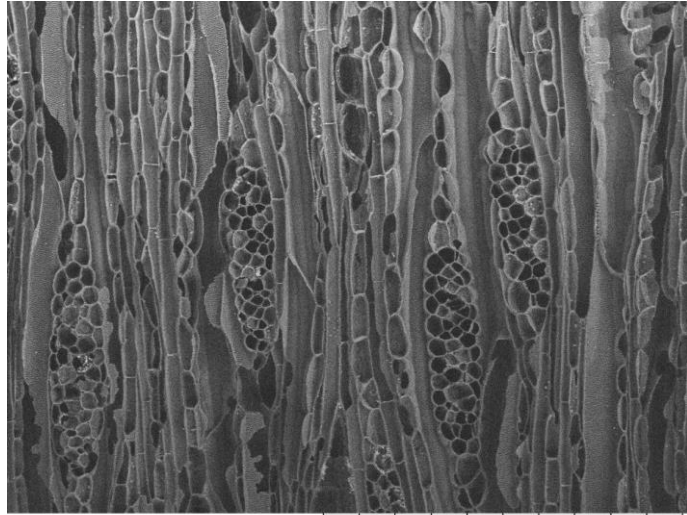
EWC 1715 2022/11/03 14:35 D2.4 x1.0k 100 µm

Transverse 200x



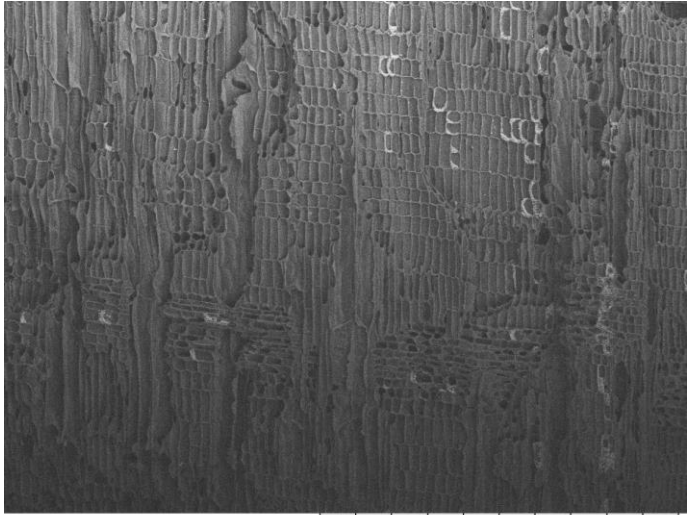
EWC 1715 2022/11/03 14:30 D2.2 x200 500 µm

Tangential



EWC 1715 2022/11/03 14:33 D2.4 x200 500 µm

Radial



EWC 1715 2022/11/03 14:37 D4.1 x100 1 mm

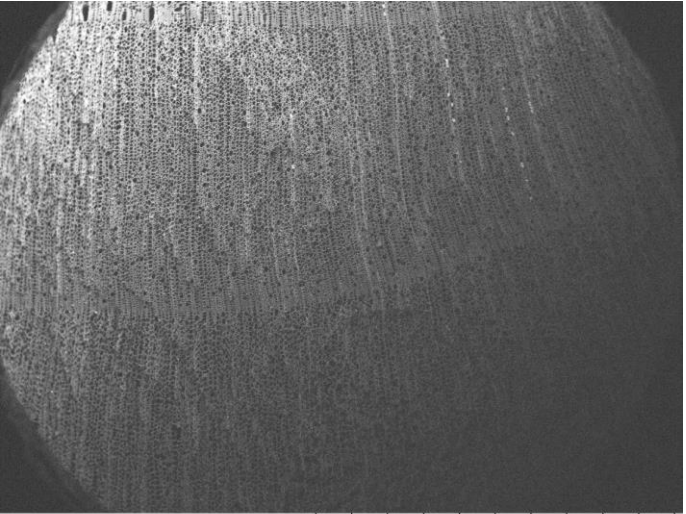
# EWC 1716 Unknown Identification

**Vessels**  
Size: <50µm  
Freq.: 40 to 100  
Arrangement: exclusively solitary  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12, 12+  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Scanty, Diffuse,  
Vasicentric (unilateral)  
**Porosity:** ring porous

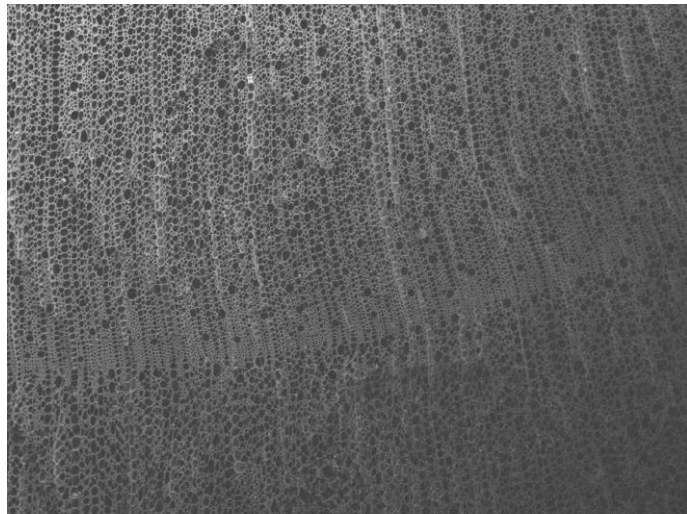
**Common Name:** "culo de negra"  
**Elevation:**  
**Description:**  
**Location:** Ecuador  
**Locality:**

**Transverse 50x**



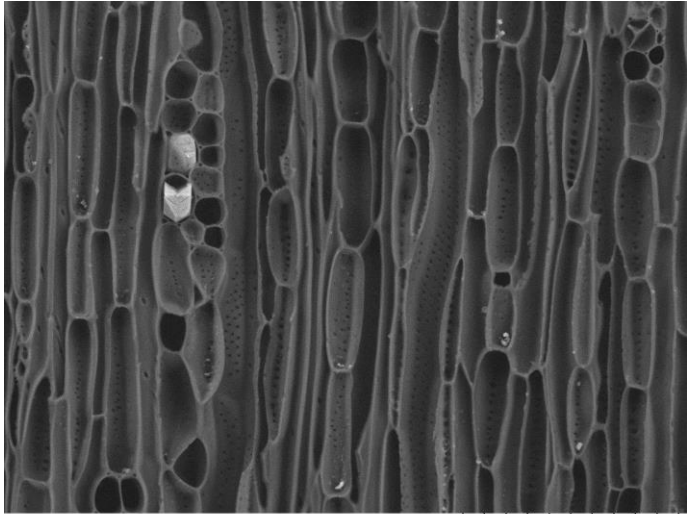
EWC 1716 2022/11/03 14:41 D2.2 x50 2 mm

**Transverse 100x**



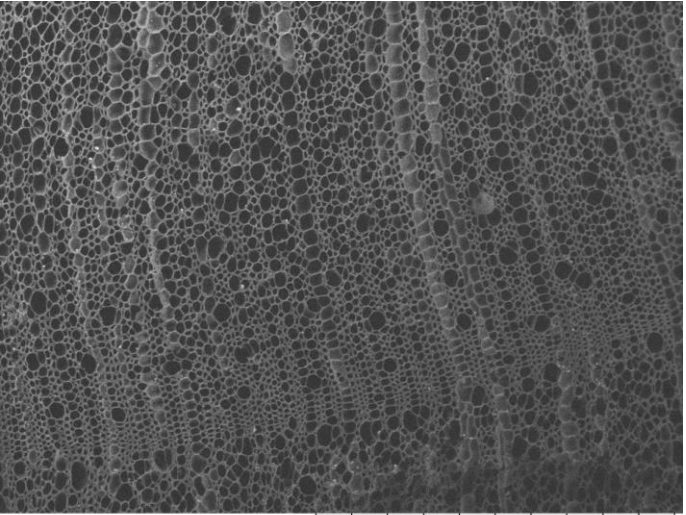
EWC 1716 2022/11/03 14:41 D2.2 x100 1 mm

**Vessel Wall**



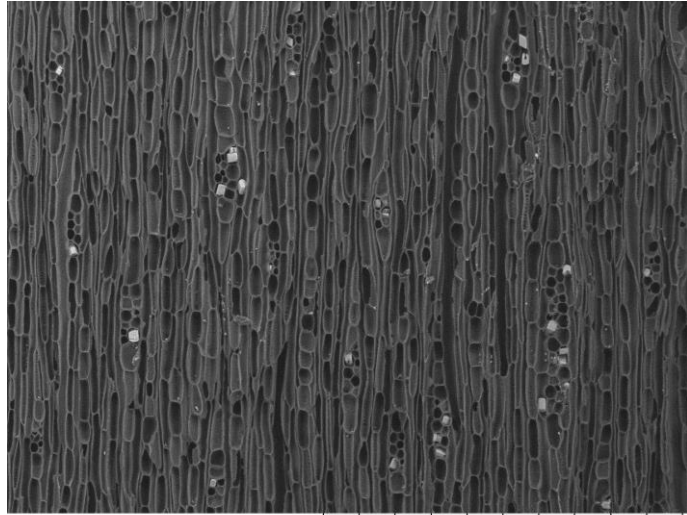
EWC 1716 2023/04/06 09:43 D3.5 x600 100 µm

**Transverse 200x**



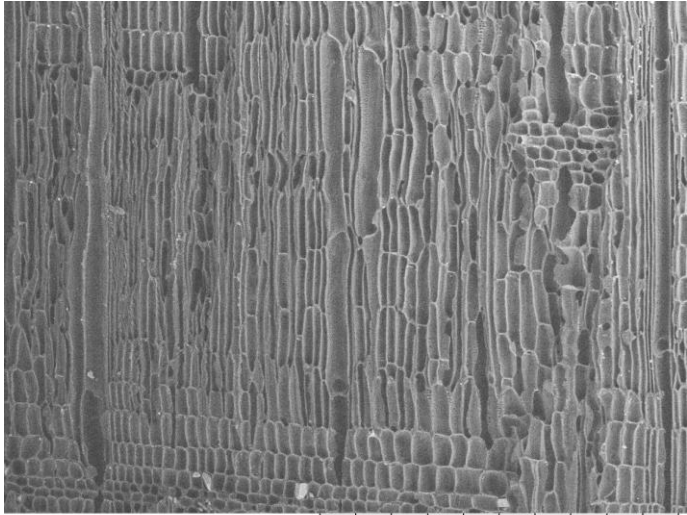
EWC 1716 2022/11/03 14:42 D2.2 x200 500 µm

**Tangential**



EWC 1716 2023/04/06 09:41 D3.5 x200 500 µm

**Radial**



EWC 1716 2022/11/03 14:46 D2.5 x200 500 µm

# EWC 1718 Unknown Identification

## Vessels

Size: <50µm, 50-100µm

Freq.: 5 to 20

Arrangement: solitary, pairs, chains

## Rays:

# per mm: 4-12

Thickness (cells): 1 to 3

Tyloses: common

Parenchyma Type: Banded (thick)

Porosity: semi-ring porous

## Common Name:

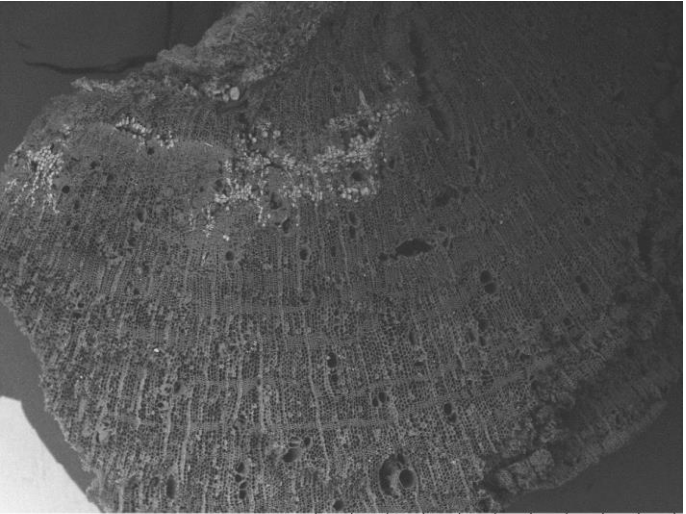
Elevation:

Description:

Location: Ecuador

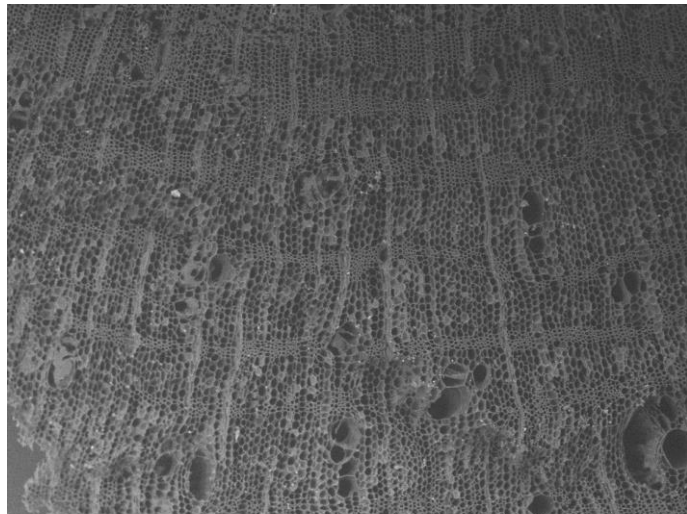
Locality:

**Transverse 50x**



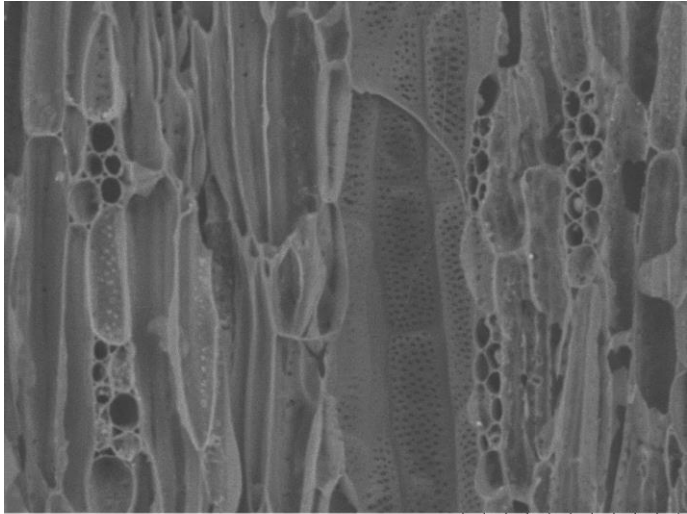
EWC 1718 2022/11/03 17:25 D5.7 x50 2 mm

**Transverse 100x**



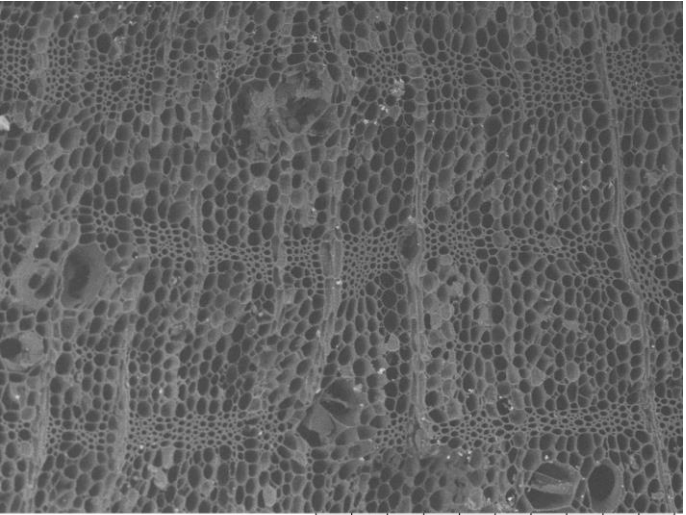
EWC 1718 2022/11/03 17:24 D5.7 x100 1 mm

**Vessel Wall 600x**



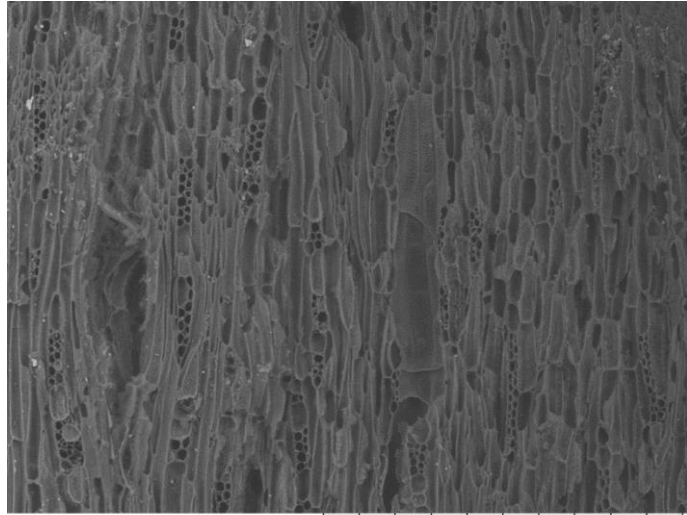
EWC 1718 2022/11/03 17:37 D6.2 x600 100 um

**Transverse 200x**



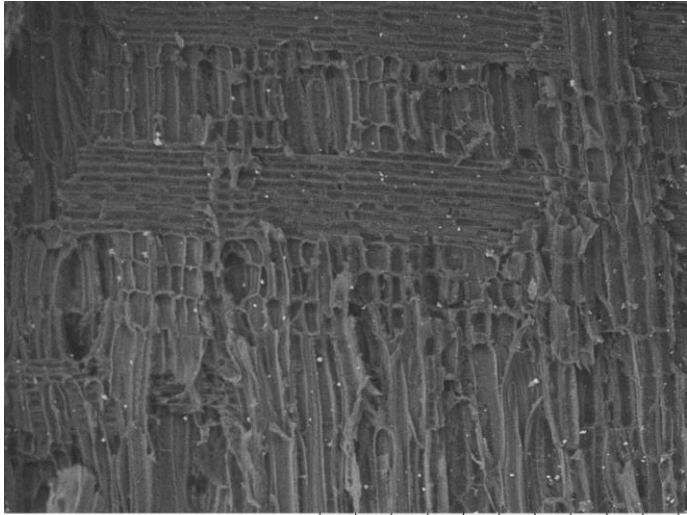
EWC 1718 2022/11/03 17:23 D5.7 x200 500 um

**Tangential 200x**



EWC 1718 2022/11/03 17:35 D6.2 x200 500 um

**Radial 200x**



EWC 1718 2022/11/03 17:46 D6.7 x200 500 um

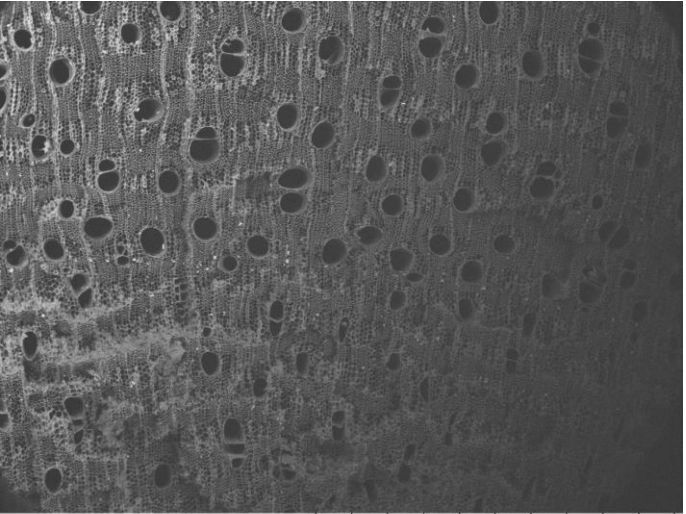
# EWC 1719 FABACEAE *Gliricidia brenningii* (Harms) Lavin

**Vessels**  
Size: 100-200µm  
Freq.: 5 to 20  
Arrangement: solitary, pairs  
**Tyloses:** absent

**Rays:**  
# per mm: 4-12  
Thickness (cells): 1 to 3  
**Parenchyma Type:** Vasicentric  
(confluent), Banded (thick)  
**Porosity:** diffuse

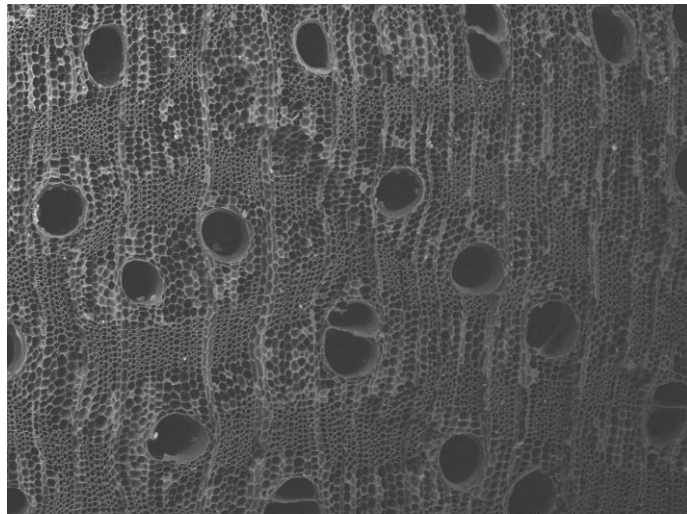
**Common Name:** "Yuca de Raton"  
**Elevation:** 230 m  
**Description:** Tall tree with white flrs.  
**Location:** Ecuador, Manabí  
**Locality:** Cerro La Sanche: Approximately 4.5 km NE of San Isidro. Collected from a ridge-top area of primary forest with open canopy. San Isidro topo map 1:50,000, cuadrícula (block) N62 E94.

**Transverse 50x**



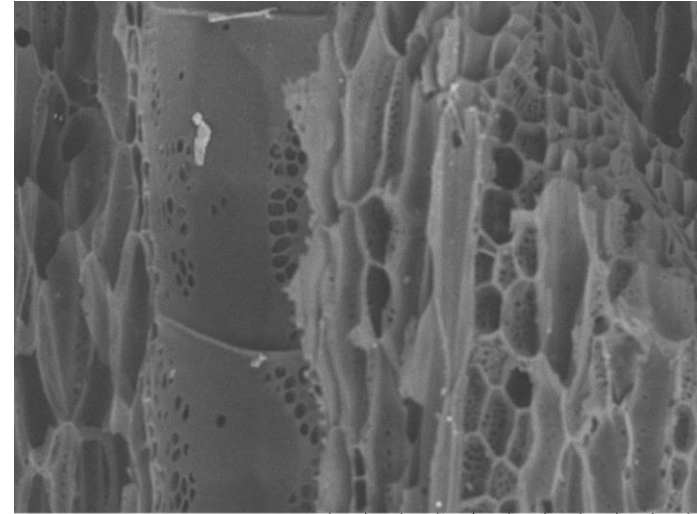
EWC 1719 2022/11/03 17:51 D3.6 x50 2 mm

**Transverse 100x**



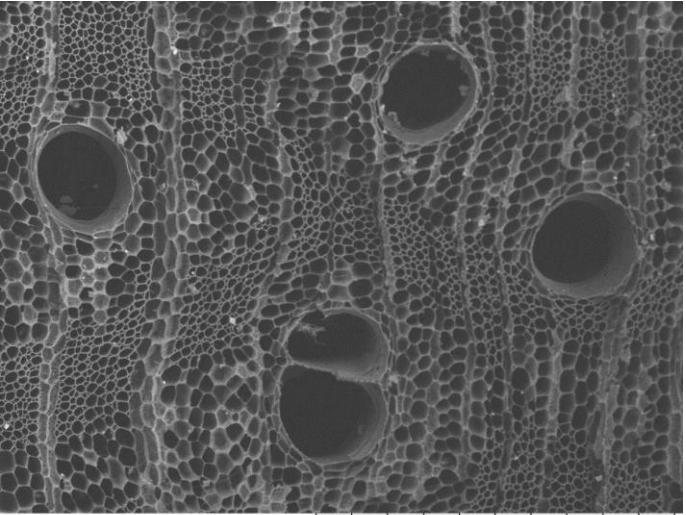
EWC 1719 2022/11/03 17:52 D3.6 x100 1 mm

**Vessel Wall 600x**



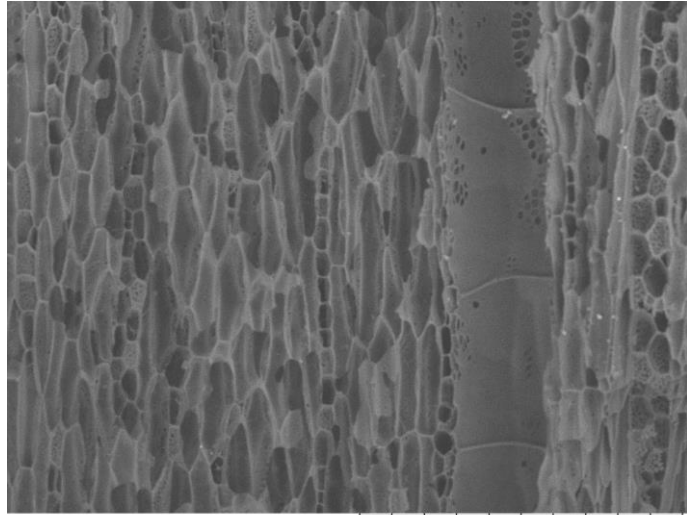
EWC 1719 2022/11/03 17:59 D6.9 x500 200 µm

**Transverse 200x**



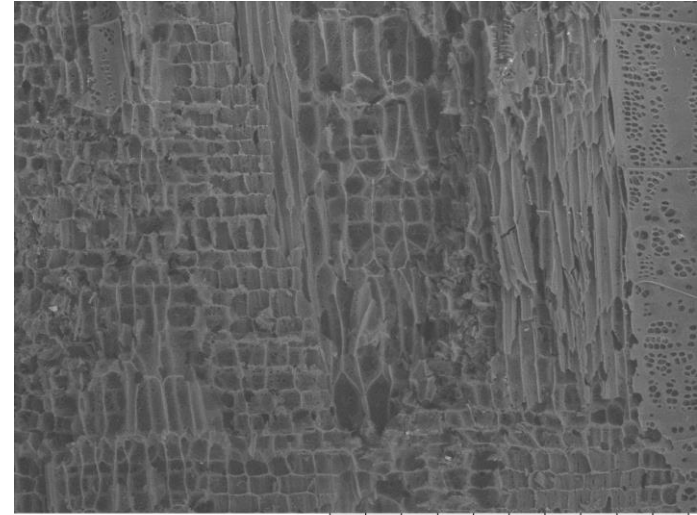
EWC 1719 2022/11/03 17:53 D3.6 x200 500 µm

**Tangential 300x**



EWC 1719 2022/11/03 17:58 D6.9 x300 300 µm

**Radial 200x**



EWC 1719 2022/11/03 18:05 D5.5 x200 500 µm