MUno 140I

Recno 252

Family Anacardiaceae

Genus Spondias

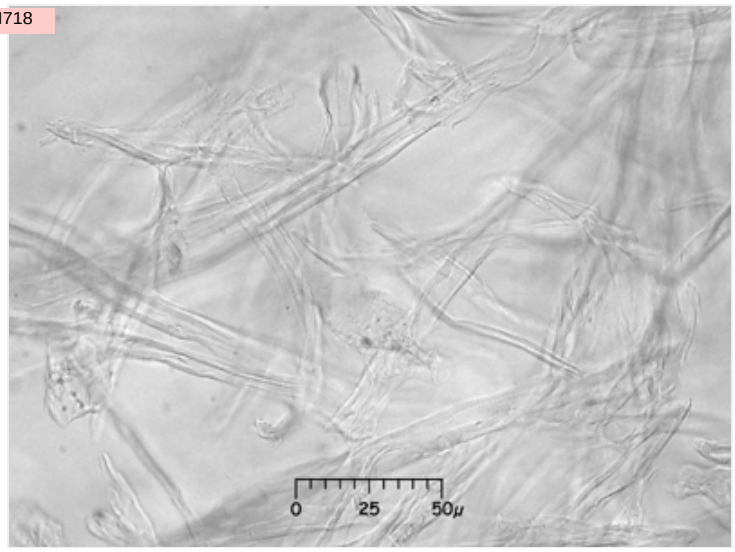
Species purpurea

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: fruit/seed

Image N718



Description

Undulating transport elements: Silica casts of transport elements (xylem and phloem) observed in a number of taxa, predominantly in fruits and seeds. Type includes thin-walled, smooth, undulating tubes without end plates.

Entered by Emily Sternberg

Updated 2/8/2005

MUno 80IFb3

Recno 52

Family Annonaceae

Genus Duguetia

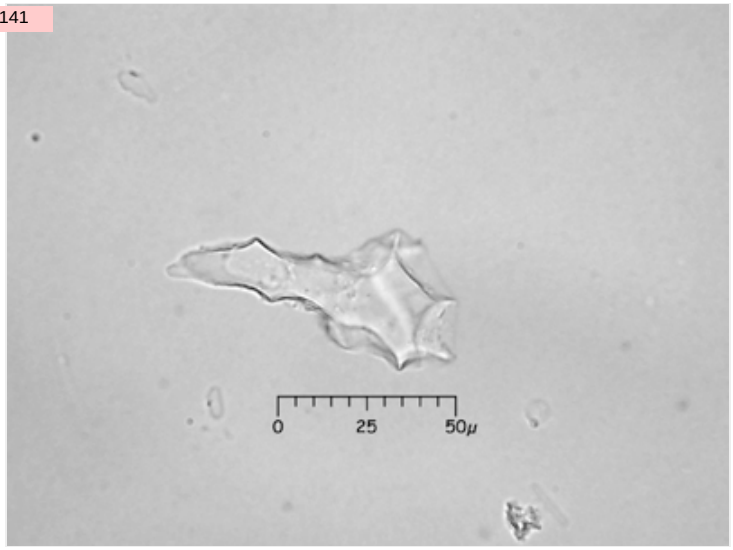
Species sp.

Authority

Comments

Facets and overall shape both irregular, often with concave surfaces.
NOT a regular , symmetrical sphere.
Diagnostic level: family

Image Z141



Description

- Irregularly faceted hemispheres
- Size large
- Irregular in shape

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 100ICa

Recno 248

Family Araceae

Genus Colacasia

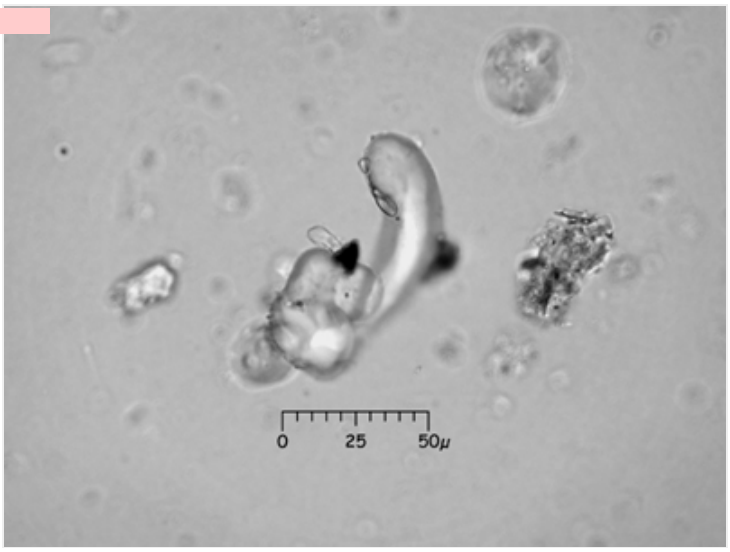
Species esculenta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004. Cultivated tuber.
Diagnostic level: undetermined

Image



Description

Smooth cystolith, sculptured: Cystoliths are found in leaves of numerous taxa. We observed these smooth, sculpted cystoliths in Dioscorea and Araceae tubers.

Entered by Emily Sternberg

Updated 2/3/2005

MUno 100ICa

Recno 265

Family Araceae

Genus Xanthosoma

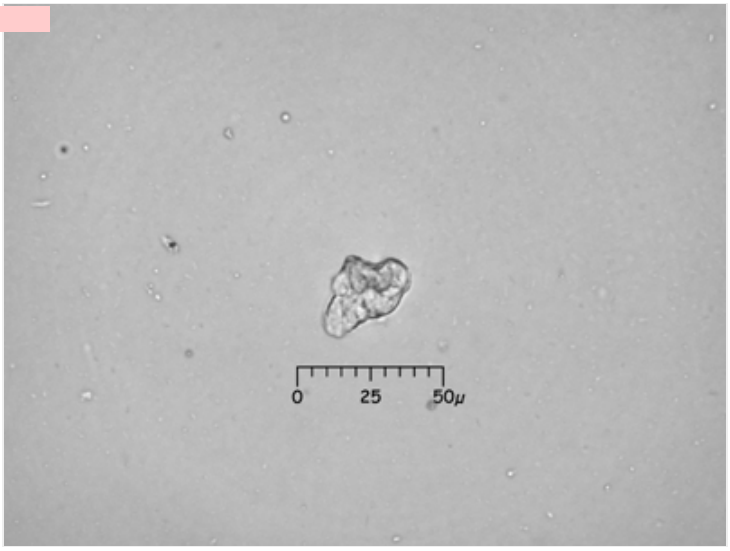
Species

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: not determined

Image



Description

Smooth cystolith, sculptured: Cystoliths are found in leaves of numerous taxa. We observed these smooth, sculpted cystoliths in Dioscorea and Araceae tubers.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 80IIIA

Recno 54

Family Arecaceae

Genus Bactris

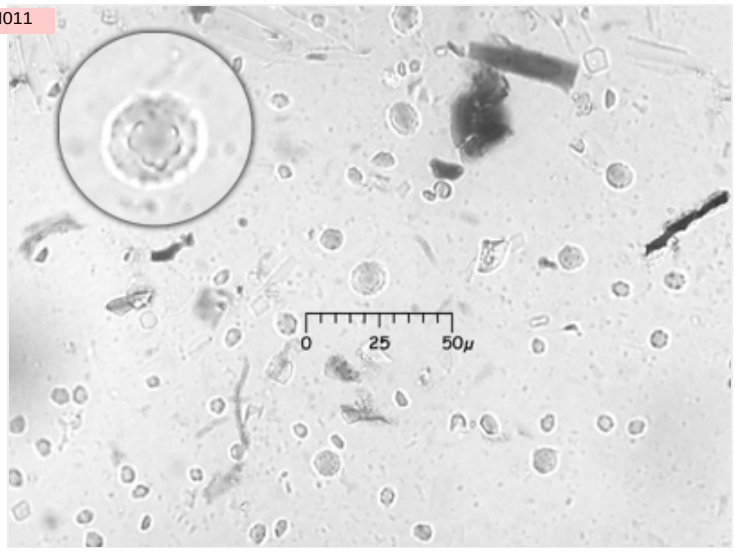
Species sp.

Authority

Comments

Side view of body shows profile of two projections on top, smooth bottom surface.
Diagnostic level: family

Image N011



Description

- Hat-shaped (conical) bodies
- Spheroidal in shape from top view
- 1-5 projections on top, visible as spinulose from side view

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IIIA

Recno 200

Family Arecaceae

Genus Bactris

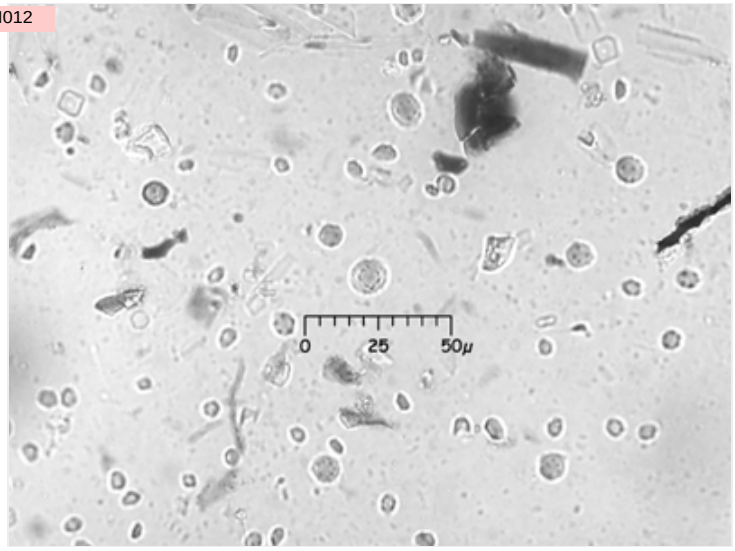
Species sp.

Authority

Comments

There are several small spinulose spheres and other conical bodies in the background of this image.
Diagnostic level: family

Image N012



Description

- Conical body
- Hat-shaped bodies
- Spheroidal with hat-shape visible in rotation
- 1-5 projectiosn visible on convex surface

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IIIA

Recno 201

Family Arecaceae

Genus Bactris

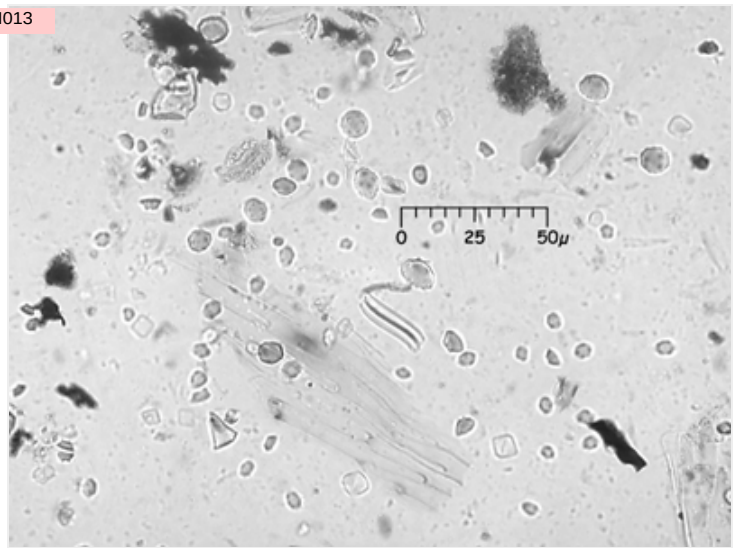
Species sp.

Authority

Comments

You can spot several spinulose spheres and other conical bodies in the background of this image.
Diagnostic level: family

Image N013



Description

- Conical body
- Hat-shaped bodies
- Spheroidal with hat-shape visible in rotation
- 1-5 projections visible on convex surface

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 80ID

Recno 53

Family Arecaceae

Genus Cocos

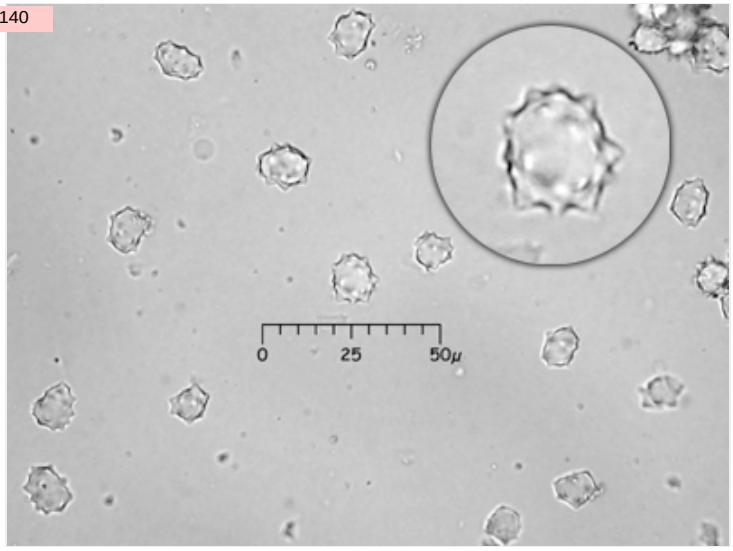
Species nucifera

Authority L.

Comments

Spinulose spheres.
Be sure to rotate to determine whether body is a sphere or conical body with spinulose projections.
Diagnostic level: family, Arecaceae

Image Z140



Description

- Spheres of varying size
- Regular spinulose projections over entire surface

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 21IBb

Recno 5

Family Asteraceae

Genus

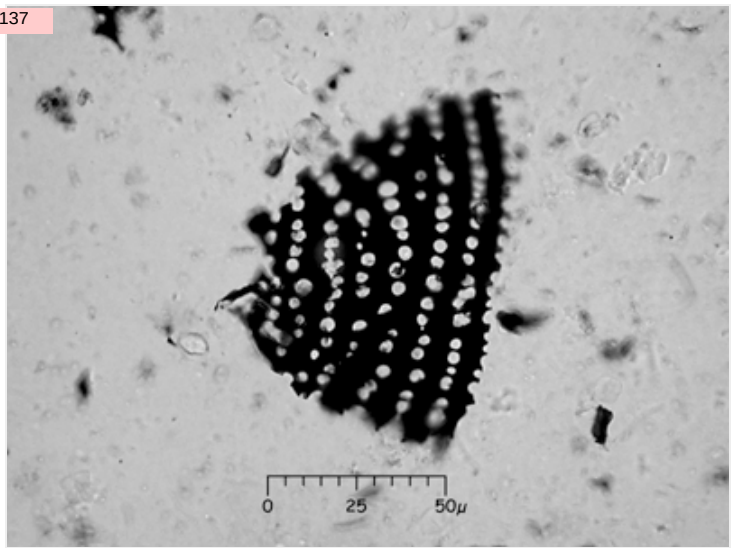
Species

Authority

Comments

Be sure sheet is occluded and flat.
Three dimensional, irregularly surfaced sheets are another type.
Diagnostic level: family

Image Z137



Description

Occluded (black) sheet
Flat, smooth surface; Often fragmented; Round perforations occur in long lines (usually parallel); Size varies from fragments of a few microns to sheets covering entire fields.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IIIBa1

Recno 3

Family Asteraceae

Genus Lipochaeta

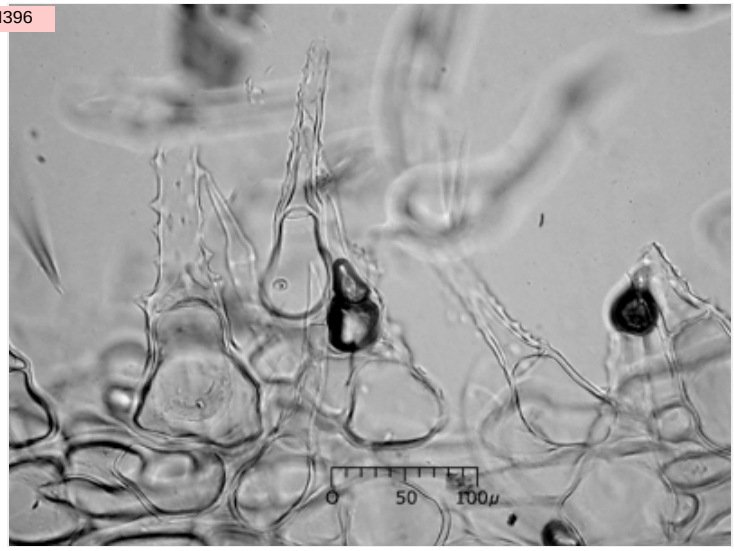
Species sp.

Authority

Comments

Asteraceae hairs tend to be armed.
Compare to 40IIIBa201 Cucurbitaceae/Asteraceae hair and 40IIIBa202 Croton fraseri (Euphorbiaceae) hair.
Diagnostic level: family

Image N396



Description

Multicellular hair; Straight tip; Large; Armed; Segmented;
Base is 40 IV D.

Entered by Meghann O'Brien

Updated 02/23/2005

MUno 40IIIBa1

Recno 4

Family Asteraceae

Genus Lipochaeta

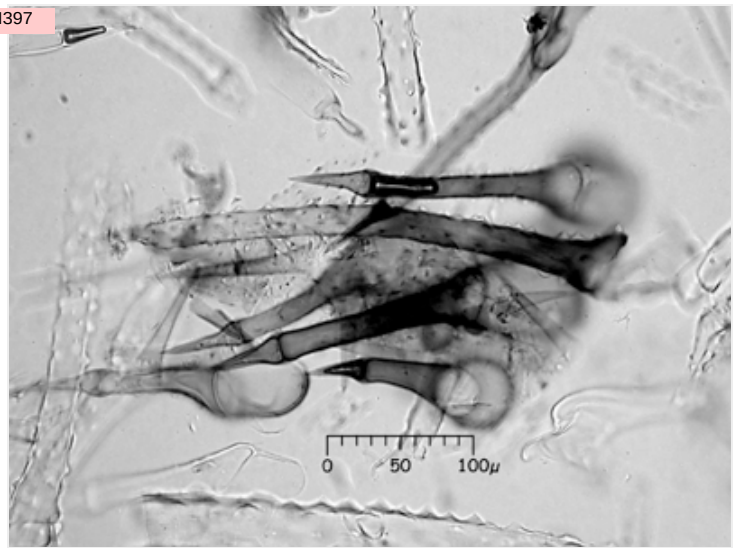
Species sp.

Authority

Comments

Asteraceae hairs tend to be armed. Compare to 40IIIBa201 Cucurbitaceae/Asteraceae hair and 40IIIBa202 Croton fraseri (Euphorbiaceae) hair. May occur with some hairs segmented and unarmed: type 40IIIBa201 (see lower right) Sometimes occluded as shown, or blackened.
Diagnostic level: family

Image N397



Description

Multicellular hair; Straight tip; Large; Armed; Segmented; Base is 40 IV D.

Entered by Meghann O'Brien

Updated 02/23/2005

MUno 40IIIBa201

Recno 6

Family Asteraceae

Genus Lipochaeta

Species sp.

Authority

Comments

Be careful of confusion with other Asteraceae multicellular hair types such as armed hairs (40IIIBa1) and 40IIIBa202, Croton fraseri (Euphorbiaceae) hair.
Diagnostic level: Asteraceae/Cucurbitaceae

Image N401

Description

Multicellular hair; Large; Unarmed; Segmented.

Entered by Shawn K. Collins

Updated 3/1/2005

MUno 40IIIBa1

Recno 1

Family Asteraceae

Genus Lipochaeta

Species sp.

Authority

Comments

Asteraceae hairs tend to be armed.
Compare to 40IIIBa201
Cucurbitaceae/Asteraceae hair and
40IIIBa202 Croton fraseri
(Euphorbiaceae) hair.
Diagnostic level: family

Image Z138

Description

Multicellular hair; Straight tip; Large; Armed; Segmented;
Base is 40 IV D.

Entered by Meghann O'Brien

Updated 02/23/2005

MUno 40IIIBa1

Recno 2

Family Asteraceae

Genus Lipochaeta

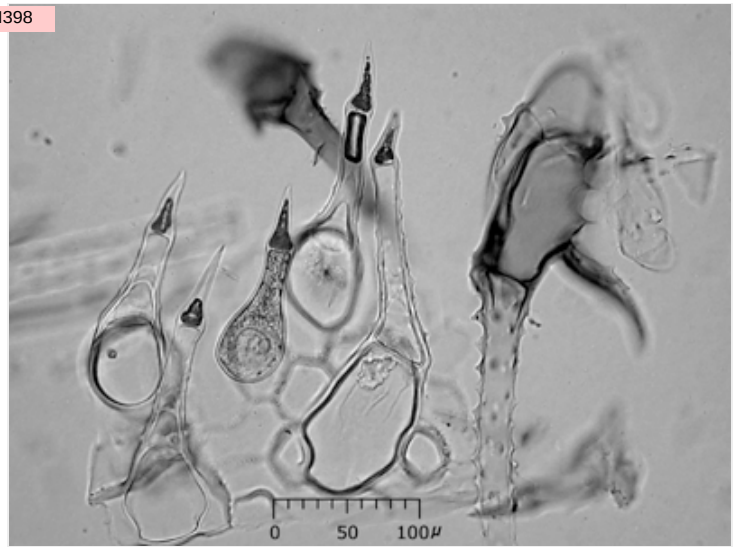
Species sp.

Authority

Comments

Asteraceae hairs tend to be armed.
Compare to 40IIIBa201
Cucurbitaceae/Asteraceae hair and
40IIIBa202 Croton fraseri
(Euphorbiaceae) hair.
Diagnostic level: family

Image N398



Description

Multicellular hair; Curved or bent tip; Large; Armed; Base is 40 IV D.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 60IIFa

Recno 7

Family Bataceae

Genus Batis

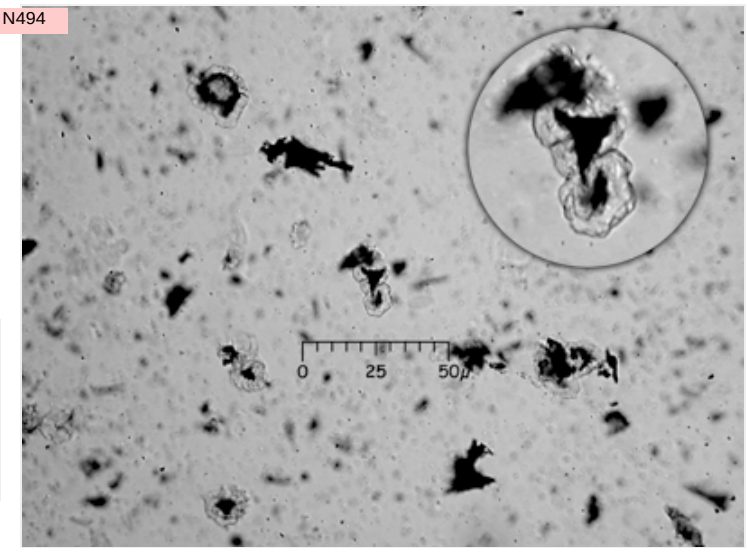
Species maritima

Authority L.

Comments

Unknown origin in tissue. Perhaps a cystolith with occluded fragments in interior.
Diagnostic level: family

Image N494



Description

- Round or oval sphere
- Bumpy surface
- Dark center with projection
- Sphere often faintly silicified
- Small

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVFa

Recno 230

Family Bignoniaceae

Genus Tecoma

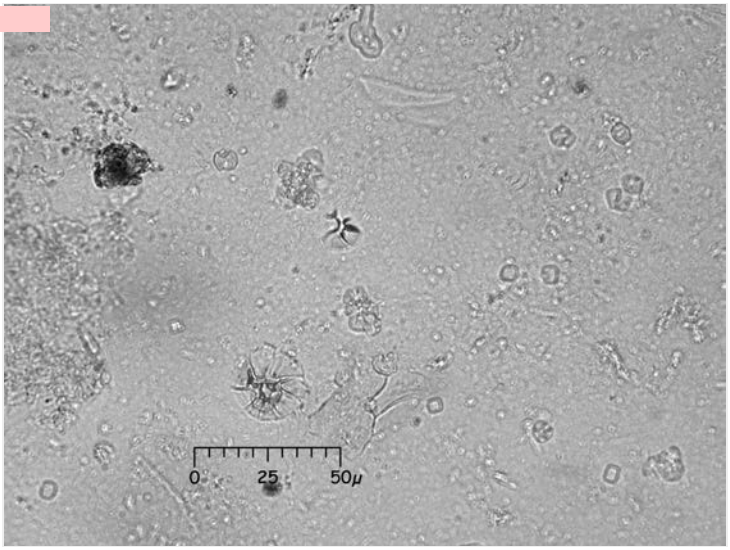
Species gandichiandi

Authority

Comments

Slide E101.
Diagnostic level: family

Image



Description

Hair base; Stellate center; Projections short or mere points.

Entered by Meghann O'Brien

Updated 2/23/2005

MUno 22IBd

Image Z2127

Recno

Family Bixaceae

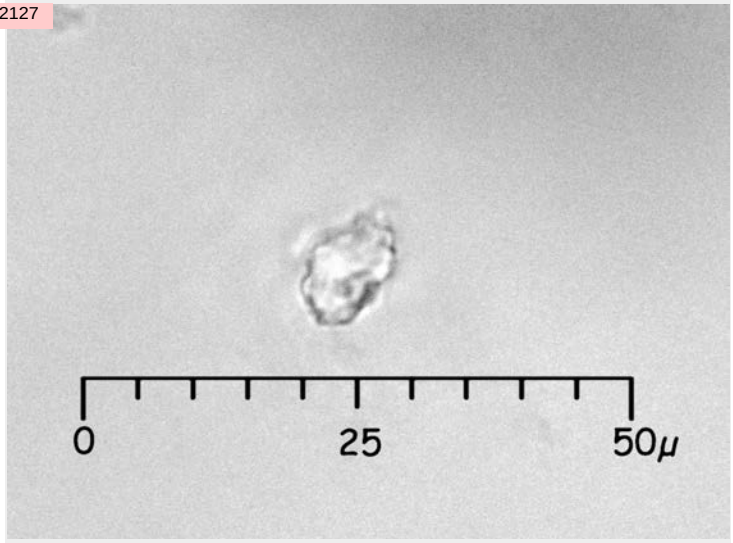
Genus Bixa

Species orellana

Authority

Comments

Diagnostic level under investigation. Observed in Bixa orellana (PC1691).



Description

Irregularly shaped seed epidermal non-quadrilateral. Small projections on surface, shape very irregular. Surface rugulose.

Entered by Deborah M. Pearsall

Updated 8/21/2012

MUno 22IBd

Image Z2128

Recno

Family Bixaceae

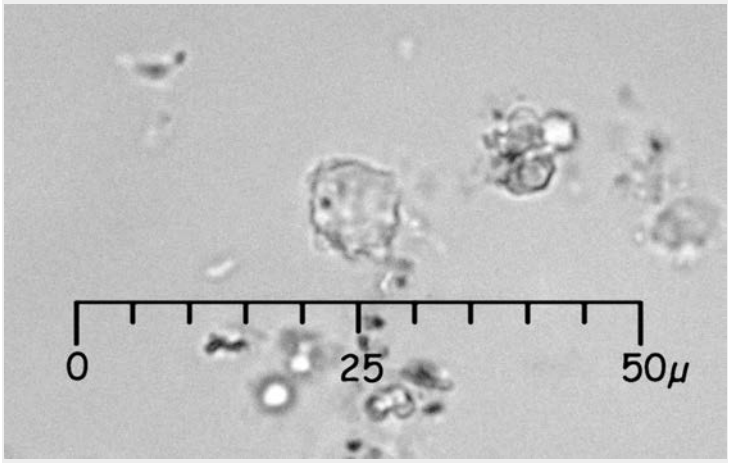
Genus Bixa

Species orellana

Authority

Comments

Diagnostic level under investigation. Observed in Bixa orellana (PC1691)



Description

Irregularly shaped seed epidermal non-quadrilateral. Small projections on surface, shape very irregular. Surface rugulose.

Entered by Deborah M. Pearsall

Updated 8/21/2012

MUno 11IBa2

Recno 336

Family Bixaceae

Genus Bixa

Species orellana

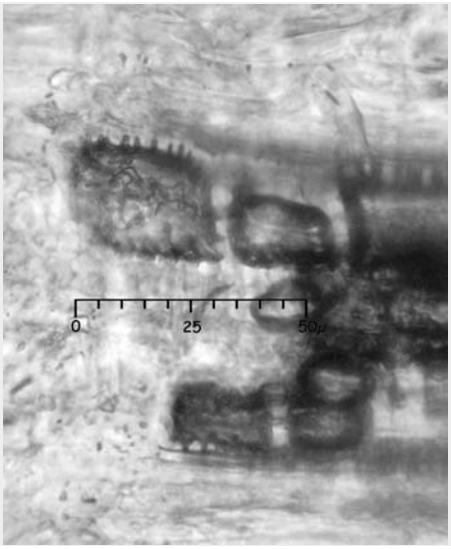
Authority

Comments

Projections are not speculate, ie, not 22VIII.

Not diagnostic

Image Z2139



Description

epidermal quadrilateral three-dimensional (”blocky”). Slightly undulating edges, smooth surface, long, thin, irregularly placed projections. Not speculate.

Entered by Deborah M. Pearsall

Updated 8/29/2012

MUno 150I

Recno 255

Family Bixaceae

Genus Bixa

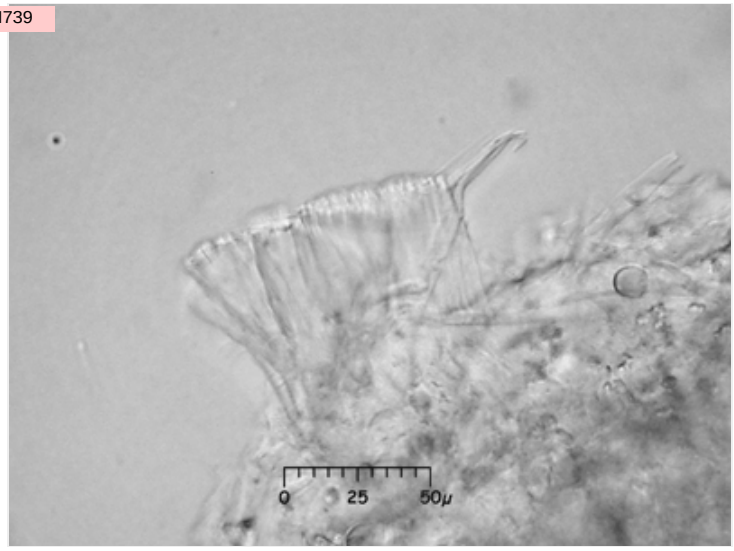
Species orelliana

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: fruit/seed

Image N739



Description

Fiber bundles: Groupings of long, small diameter fibers, packed closely in off-set ranks.

Entered by Emily Sternberg

Updated 2/8/2005

MUno 100VA

Recno 331

Family Bombacaceae

Genus Ceiba

Species

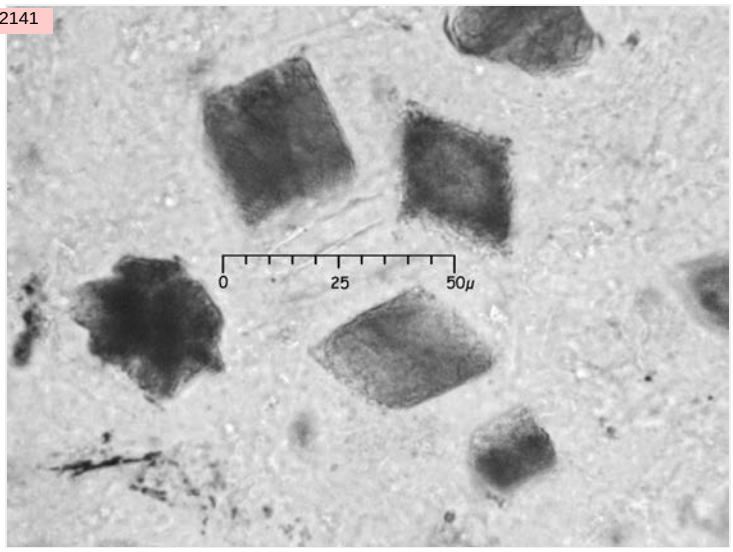
Authority

Comments

PC2866, wood specimen

Diagnostic level: under study

Image Z2141



Description

tabular crystals with granular surfaces. Probably calcium carbonate.
Acute and obtuse angles form edges.

Entered by Deborah M. Pearsall

Updated 8/28/2012

MUno 120IIB

Recno 154

Family Bombacaceae

Genus Huberodendron

Species patinoi

Authority Cuatrec.

Comments

See top view (Record #155) of this body .
Not diagnostic

Image N270

Description

- Stomata, with 2 subsidiary cells
- Surface granular
- Side view shows two simple, blocky subsidiary cells surrounding stomate are almost as thick as body is wide
- Overall body is longer than wide

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 120IIB

Recno 155

Family Bombacaceae

Genus Huberodendron

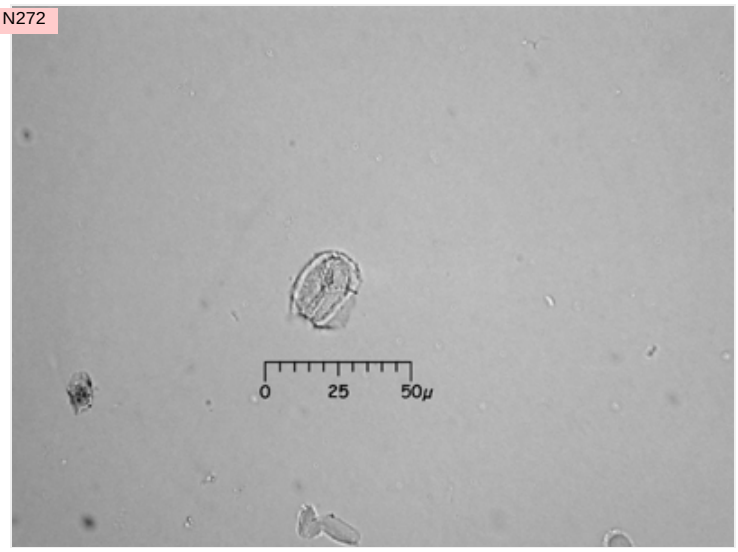
Species patinoi

Authority Cuatrec.

Comments

See side view (Record #154) of this body.
Not diagnostic

Image N272



Description

Stomata, with 2 subsidiary cells; Surface granular; Side view shows two simple, blocky subsidiary cells surrounding stomate are almost as thick as body is wide; Overall body is longer than wide.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 40IVBa201c

Recno 224

Family Bombacaceae

Genus Huberodendron

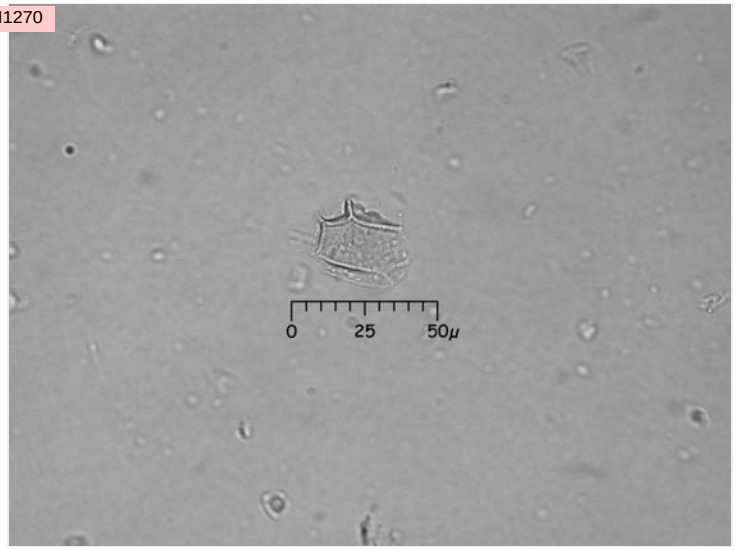
Species patinoi

Authority L.

Comments

Slide 1372a.
Diagnostic level: genus

Image N1270



Description

Hair base; Rounded cells; Large central cell with smaller surrounding epidermal cells; One row attached cells.

Entered by Meghann O'Brien

Updated 2/23/2005

MUno 80ICa1

Recno 326

Family Bombacaceae

Genus Matisia

Species cf. alata

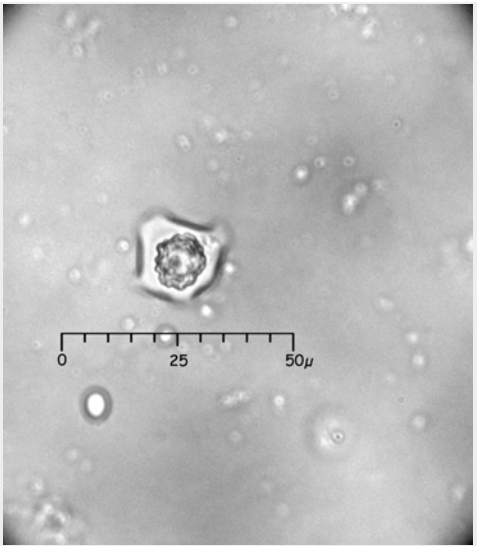
Authority

Comments

Nodular spheres occur in moderate levels in Matisia cf. alata. Size range: 8 -22 microns. Overlaps with Marantaceae nodular spheres.

Marantaceae/Bombacaceae mixed type

Image Z4270



Description

nodular sphere: projections are nodular: obtuse tip, not evenly pointed, often rounded.

Entered by Deborah M. Pearsall

Updated 8/27/2012

MUno 80ICa1

Recno 327

Family Bombacaceae

Genus Matisia

Species cf. alata

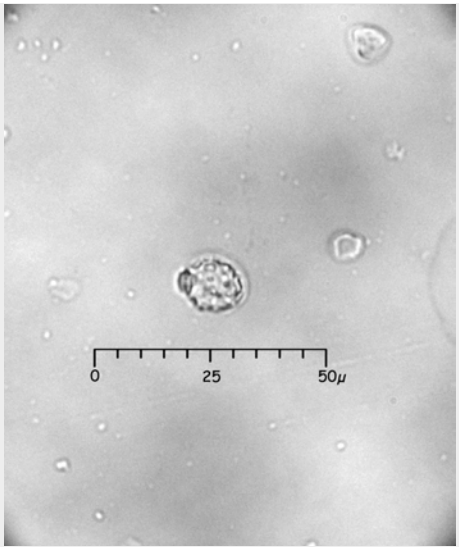
Authority

Comments

Nodular spheres occur in moderate levels in Matisia cf. alata. Size range: 8 -22 microns. Overlaps with Marantaceae nodular spheres.

Marantaceae/Bombacaceae mixed type

Image Z4266



Description

nodular sphere: projections are nodular: obtuse tip, not evenly pointed, often rounded.

Entered by

Updated 8/27/2012

MUno 80IIIB

Recno 324

Family Bombacaceae

Genus Matisia

Species cordata

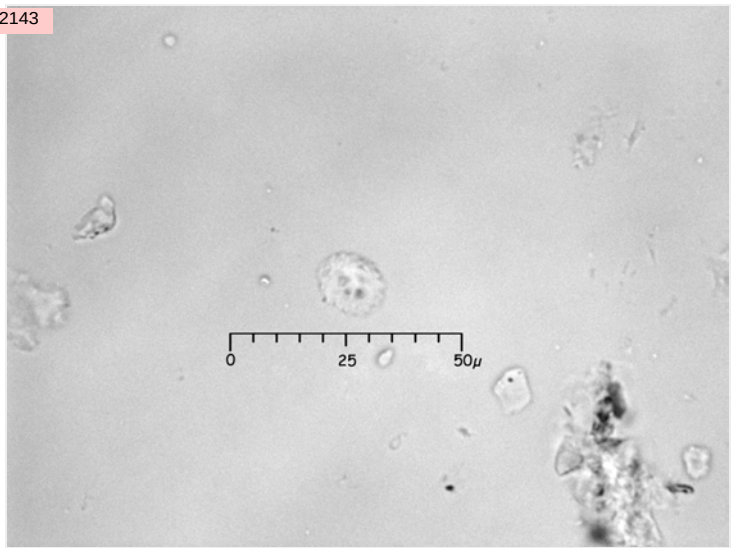
Authority

Comments

80IIIB has been considered is a Marantaceae family diagnostic. Occurs rarely in PC2127, Matisia cordata, Bombacaceae.

Marantaceae/Bombacaceae mixed type

Image Z2143



Description

Conical (hat-shaped) body (when viewed in rotation). Bottom is rugulose. Top has 3 nodular projections.

Entered by Deborah M. Pearsall

Updated 8/21/2012

MUno 80IIIB

Recno 324

Family Bombacaceae

Genus Matisia

Species cordata

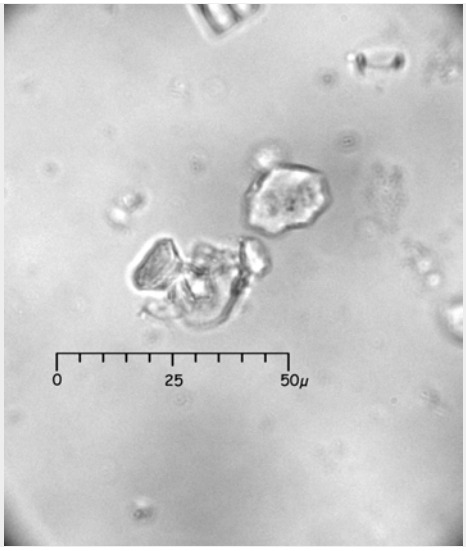
Authority

Comments

80IIIB has been considered is a Marantaceae family diagnostic. Occurs rarely in PC2127, Matisia cordata, Bombacaceae.
This image shows the rugulose bottom.

Marantaceae/Cannaceae/Bombacacea e mixed type

Image Z2143



Description

Conical (hat-shaped) body (when viewed in rotation). Bottom is rugulose. Top has 3 nodular projections.

Entered by Deborah M. Pearsall

Updated 8/27/2012

MUno 120IIA

Recno 106

Family Bombacaceae

Genus Matisia

Species longipes

Authority Little

Comments

Stomate.
Diagnostic level: family

Image

Description

Stomate has very large, full (turgid) guard cells present
At four sides, a small band or spine wraps around guard cells.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 100ID

Recno 107

Family Bombacaceae

Genus Matisia

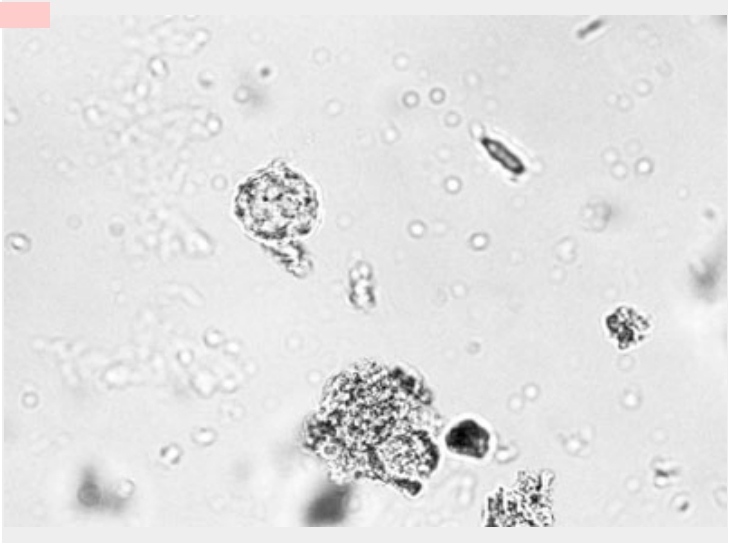
Species longipes

Authority Little

Comments

Cystolith with stalk
Diagnostic level: generalized arboreal indicator

Image



Description

Bulbous end of cystolith is rugulose to nodular, as is elongate stalk.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IIIAa202Ba2

Recno 167

Family Bombacaceae

Genus Matisia

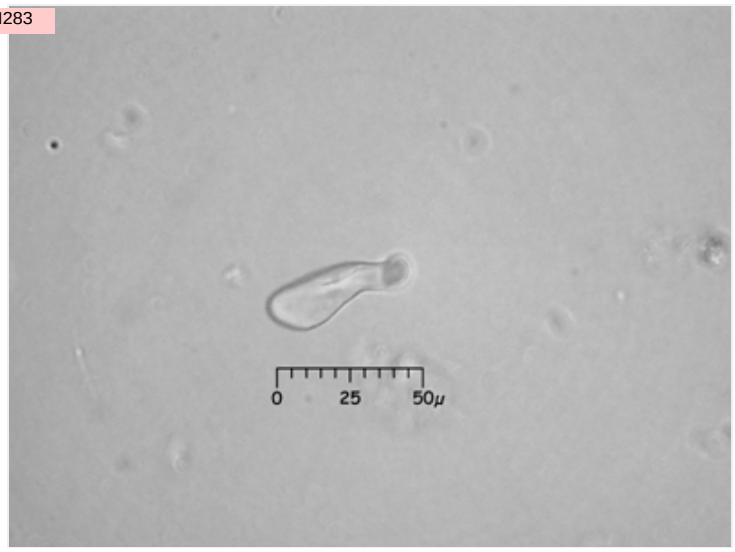
Species longipes

Authority Little

Comments

Note flat tip of hair. Occur rarely. Slide 1366.
Diagnostic level: species

Image N283



Description

Hair, unicellular; Short to medium length; Curving; No interior space; Blunt tip; Smooth surface; Simple base.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IIIAb200Ab2

Recno 168

Family Bombacaceae

Genus Matisia

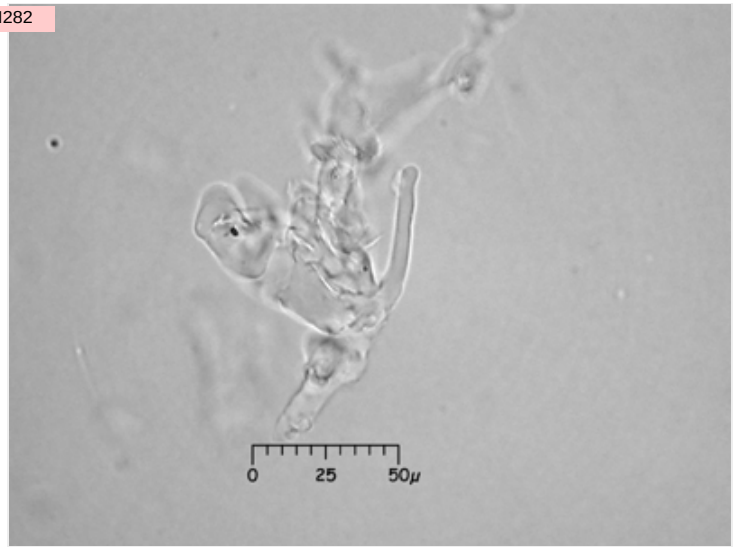
Species longipes

Authority Little

Comments

Slide 1366 leaf.
Diagnostic level: species

Image N282



Description

Unicellular hairs, sometimes connected to base (as in photo); Simple base is a separate cell; Long, curved; Unarmed, smooth surface; No interior space; Tip smooth and blunt.

Entered by Meghann O'Brien

Updated 02/23/2005

MUno 80ICa1

Recno 77

Family Bombacaceae

Genus Ochroma

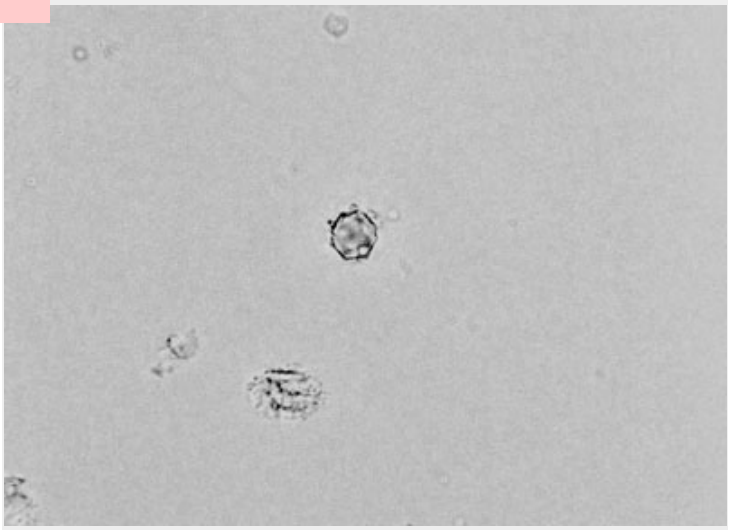
Species pyramidalis

Authority Urb.

Comments

Category currently overlaps with Marantaceae nodular spheres. Diagnostic level: Marantaceae/Bombacaceae

Image



Description

- Spheroidal body, highly variable shape
- Nodular projections
- Projections irregularly shaped and spaced
- Size range very small to large (8 - 29 microns)

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80ICa1

Recno 78

Family Bombacaceae

Genus Ochroma

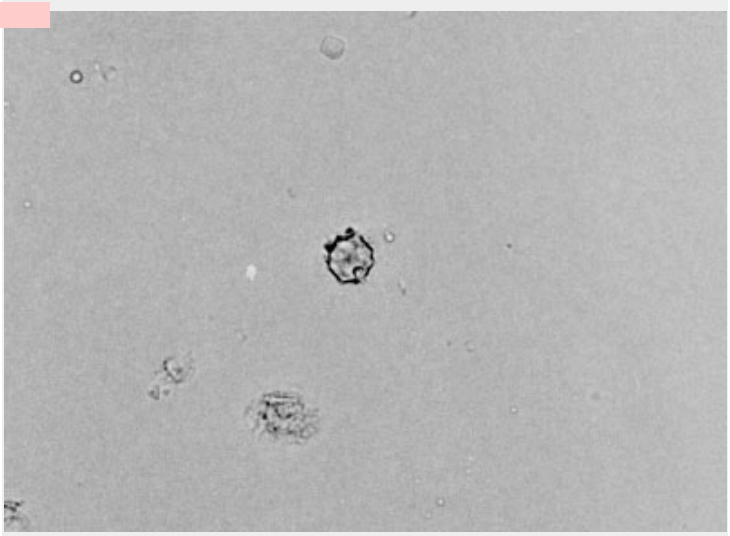
Species pyramidalis

Authority Urb.

Comments

Category currently overlaps with Marantaceae nodular spheres. Diagnostic level: Marantaceae/Bombacaceae

Image



Description

- Spheroidal, highly variable shape
- Nodular projections
- Projections irregularly shaped and spaced
- Size very small to large (8 - 29 microns)

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 120IIA

Recno 146

Family Bombacaceae

Genus Pachira

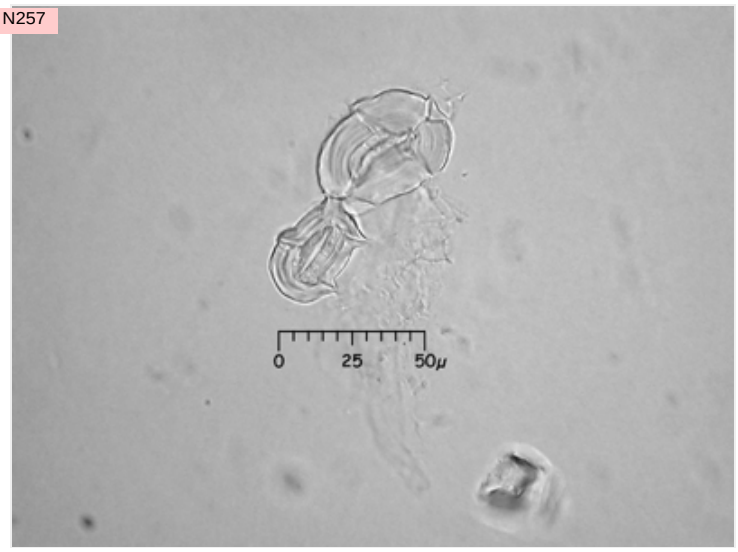
Species aquatica

Authority Aubl.

Comments

Diagnostic level: family
Note the “corners” of the body, where angular structure cups rounded interior. When broken, forms 20VD
See also Record #147, 148 and 149.
Note angular structure. From the bottom, it forms one stripe across length of back and two crossing body from side to side. In this top view, they appear as angular bands crossing

Image N257



Description

Stomate with four subsidiary cells outside guard cells

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 120IIA

Recno 147

Family Bombacaceae

Genus Pachira

Species aquatica

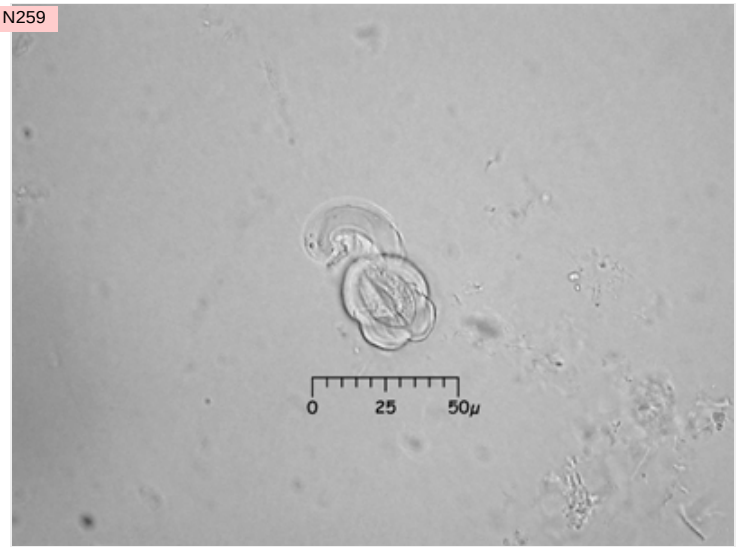
Authority Aubl.

Comments

Top view. Note attached filament.
See also Record #146, 148 and 149.

Angular structure that forms one stripe across length of back and two crossing body from side to side is not in focus in this view.
Diagnostic level: family

Image N259



Description

Stomate with four subsidiary cells outside guard cells

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 120IIA

Recno 148

Family Bombacaceae

Genus Pachira

Species aquatica

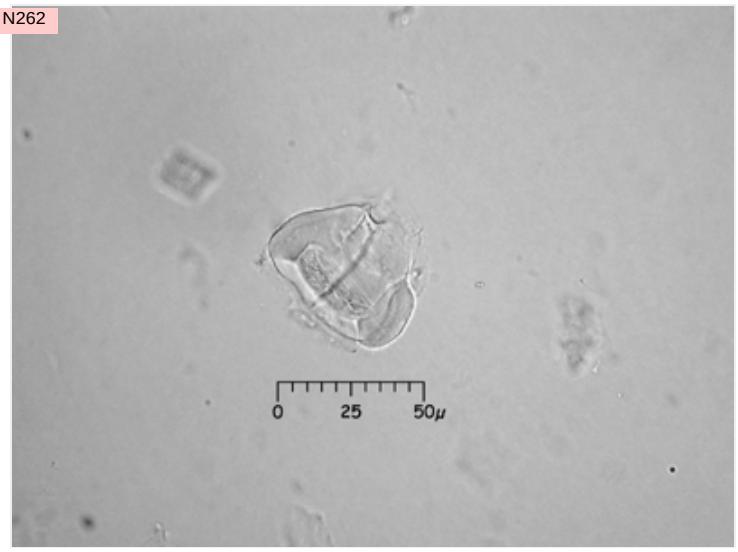
Authority Aubl.

Comments

Side view.
See also Record #146,147 and 149.

Diagnostic level: family
Note angular structure that forms one stripe across length of back and two crossing body from side to side. These appear in "top" of body as angular bands crossing subsidiary cells. In this side view they appear as angular

Image N262



Description

Stomate with four subsidiary cells outside guard cells

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 120IIA

Recno 149

Family Bombacaceae

Genus Pachira

Species aquatica

Authority Aubl.

Comments

Note the "corners" of the body, where angular structure cups rounded interior. When broken, forms 20VD.

Bottom view.
See also Record #146,147 and 148.
Note angular structure that forms one stripe across length of back and two crossing body from side to side. These are visible from "top" of body as angular

Image N263

Description

Stomate with four subsidiary cells outside guard cells

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 20VD

Recno 150

Family Bombacaceae

Genus Pachira

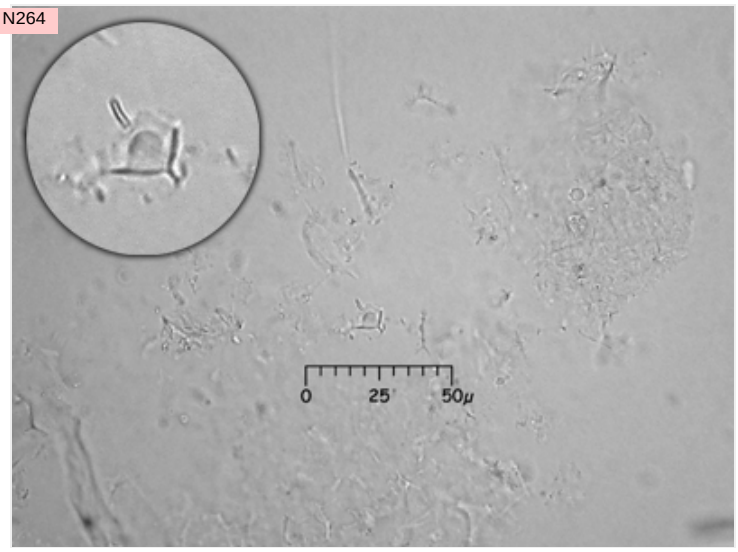
Species aquatica

Authority Aubl.

Comments

Body is very faint. Notice y-shaped triangular cup around interior rounded part of body.
Diagnostic level: family

Image N264



Description

Triangular-cupped epidermal body, non-quadrilateral; Round or triangular, depending on view; Round edges are faint, cuplike triangular edges more heavily silicified; Originates as part of 120IIA Stomata.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20VD

Recno 151

Family Bombacaceae

Genus Pachira

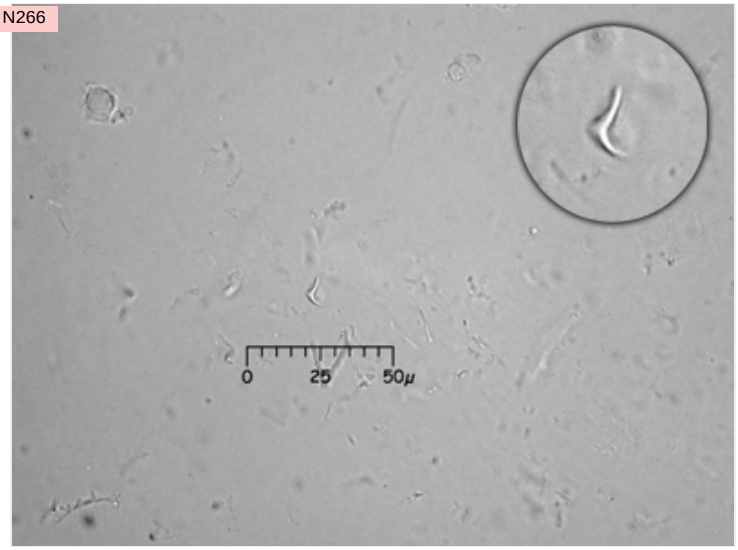
Species aquatica

Authority Aubl.

Comments

Body is very faint. This view shows the triangular rim.
Diagnostic level: family

Image N266



Description

- Triangular-cupped epidermal body, non-quadrilateral
- Round or triangular, depending on view
- Round edges are faint, cuplike triangular edges more heavily silicified
- Originates as part of 120IIAa Stomata

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVAa300

Recno 152

Family Bombacaceae

Genus Pachira

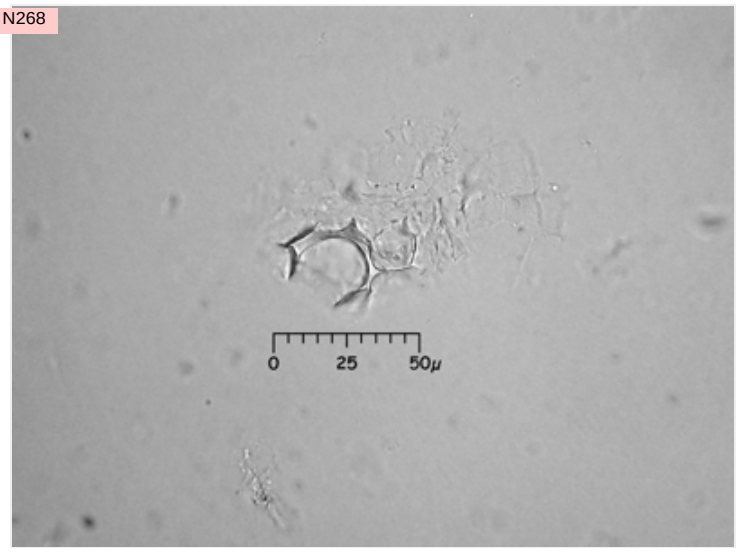
Species aquatica

Authority Aubl.

Comments

See alternate view (Record #153) to see bottom of hair cell base.
Diagnostic level: genus

Image N268



Description

- Hair cell base with radiating appendages
- Discernable center is smoothly rounded on surface, polygonal rim/outline
- Short, regular appendages surround the angular rim

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVAa300

Recno 153

Family Bombacaceae

Genus Pachira

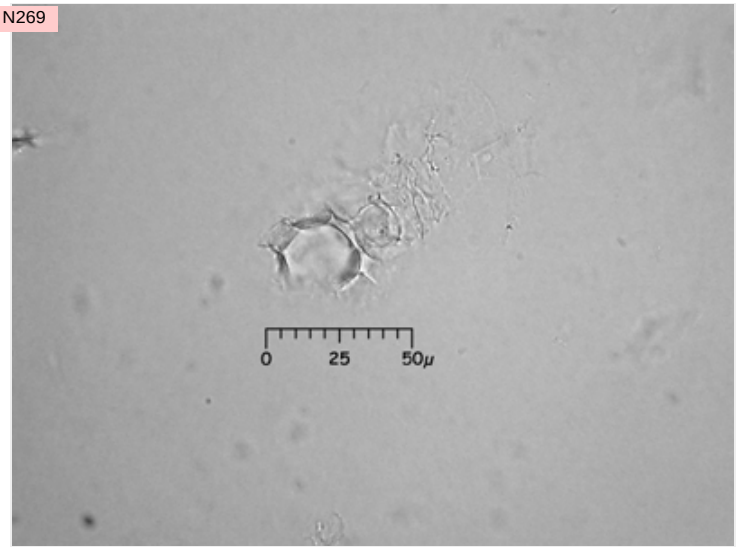
Species aquatica

Authority Aubl.

Comments

Hair cell base, view of bottom.
See image of hair cell base top also (Record #152).
Diagnostic level: genus

Image N269



Description

- Hair cell base with radiating appendages
- Discernable center is smoothly rounded on surface, polygonal rim/outline
- Short, regular appendages surround the angular rim

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 120IIA

Recno 226

Family Bombacaceae

Genus Pachira

Species aquatica

Authority L.

Comments

Slide 1367c.
Diagnostic level: family

Note the “corners” of the body, where angular structure cups rounded interior. When broken, forms 20VD
See also Record #147, 148 and 149.
Note angular structure. From the bottom, it forms one stripe across length of back and two crossing body

Image

Description

Stomate with four subsidiary cells outside guard cells

Entered by Meghann O’Brien

Updated 2/23/2005

MUno 120IIA

Recno 236

Family Bombacaceae

Genus Pachira

Species aquatica

Authority L.

Comments

Slide 1367c.
Diagnostic level: family
Note the “corners” of the body, where angular structure cups rounded interior. When broken, forms 20VD
See also Record #147, 148 and 149.
Note angular structure. From the bottom, it forms one stripe across length of back and two crossing body from side to side. In this top view, they

Image

Description

Stomate with four subsidiary cells outside guard cells

Entered by Meghann O’Brien

Updated 3/2/2005

MUno 40IIBc3

Recno 47

Family Bombacaceae

Genus Pseudobombax

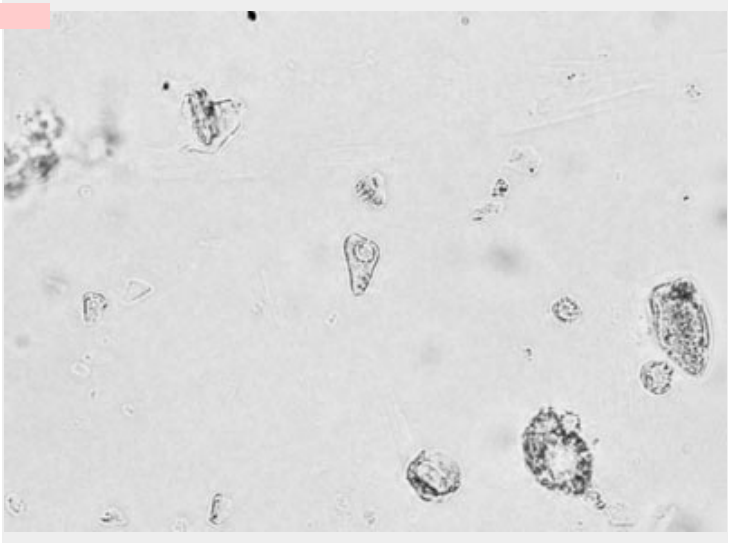
Species millei

Authority (Standl.) A.Robyns

Comments

This is a verrucose cystolith encased in a short, broad trichome. Slide 813. Diagnostic level: genus

Image



Description

- Short, small trichome
- Single outline
- Non-armed, smooth surface
- Uneven conical shape with small, rounded base
- Interior space with spherical, verrucose cystolith inside

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80ICc

Recno 48

Family Bombacaceae

Genus Pseudobombax

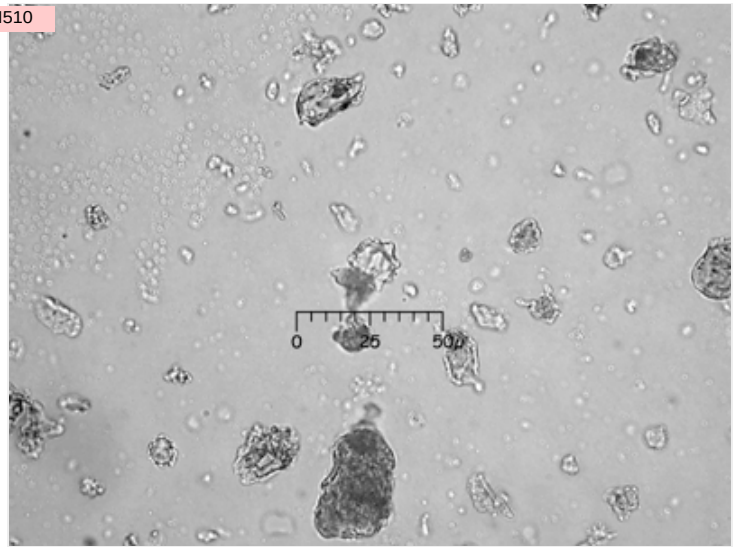
Species millei

Authority (Standl.) A.Robyns

Comments

Also occurs in the Zingiberaceae Diagnostic level: mixed, Zingiberaceae, Bombacaceae. There are subtle differences in the smoothness and abundance of nodules between the two families.

Image N510



Description

- spheres with nodular projections
- nodule surfaces are both smooth and ruminate (roughened, chewed--old term was serrate)
- Nodular-tip is obtuse, sides uneven
- Nodules regularly arranged, almost spirally ranked

Entered by Karol Chandler-Ezell

Updated 2/7/2008

MUno 80ICc

Recno 49

Family Bombacaceae

Genus Pseudobombax

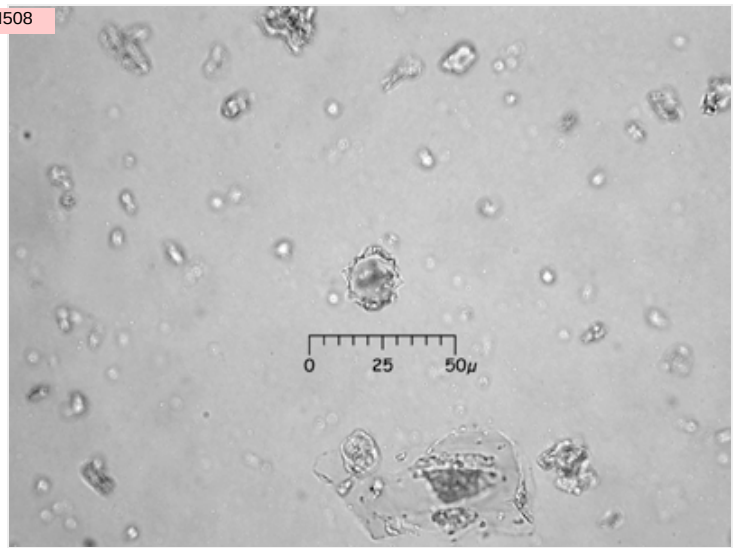
Species millei

Authority (Standl.) A.Robyns

Comments

Also occurs in the Zingiberaceae Diagnostic level: mixed, Zingiberaceae, Bombacaceae. There are subtle differences in the smoothness and abundance of nodules between the two families.

Image N508



Description

- spheres with nodular projections
- nodule surfaces are both smooth and ruminate (roughened, chewed--old term was serrate)
- Nodular-tip is obtuse, sides uneven
- Nodules regularly arranged, almost spirally ranked

Entered by Karol Chandler-Ezell

Updated 2/7/2008

MUno 100ID

Recno 50

Family Bombacaceae

Genus Pseudobombax

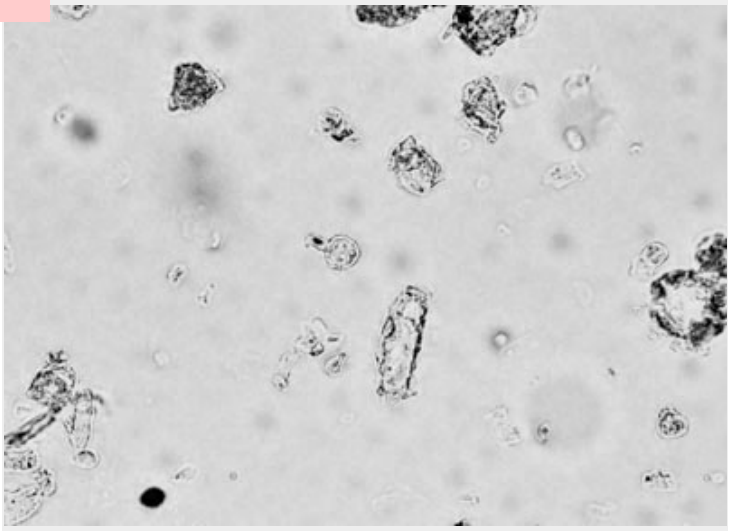
Species millei

Authority (Standl.) A.Robyns

Comments

Type is not diagnostic to Bombacaceae alone. Cystolith body may be very rugulose, verrucose, or nearly smooth. Diagnostic level: generalized arboreal

Image



Description

Cystoliths; Bulbose sphere attached to “stalk” or shaft.; Surface uneven to highly nodular.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 80ICa1

Recno 51

Family Bombacaceae

Genus Pseudobombax

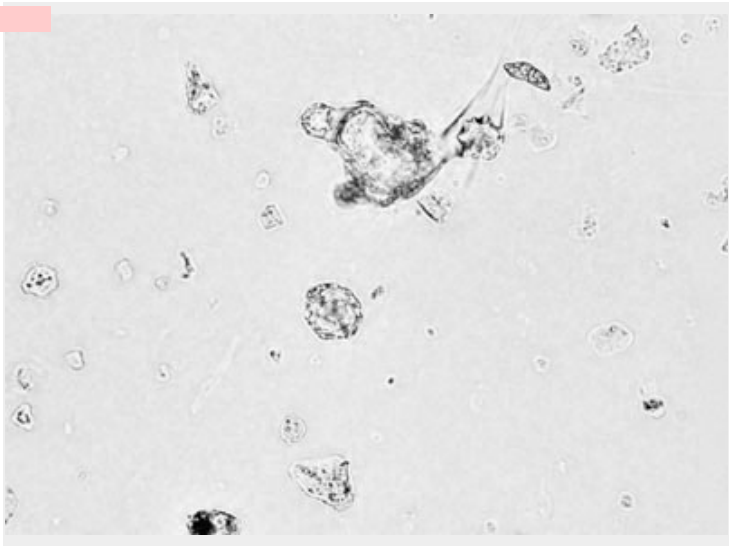
Species millei

Authority (Standl.) A.Robyns

Comments

Small nodular spheres overlap with Marantaceae
Diagnostic level:
Marantaceae/Bombacaceae

Image



Description

- Spheroidal, highly variable shape
- Surface nodular to rugulose
- Projections irregularly shaped and spaced
- Size very small to large (8 - 29 microns)

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 40IIBc3

Recno 72

Family Bombacaceae

Genus Pseudobombax

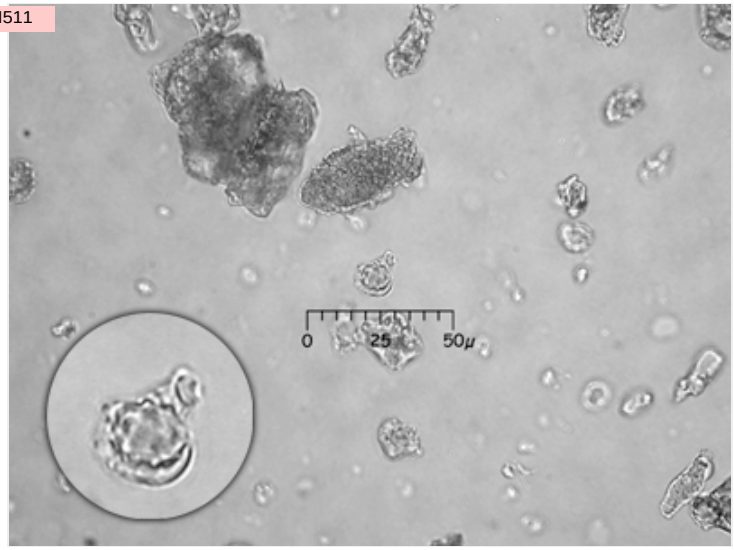
Species millei

Authority (Standl.) A.Robyns

Comments

This is a verrucose cystolith encased in a short, broad trichome.

Image N511



Description

short, small trichome
single outline
non-armed, smooth surface
uneven conical shape with small, rounded base
interior space with spherical, verrucose cystolith in side.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 100ID

Recno 73

Family Bombacaceae

Genus Pseudobombax

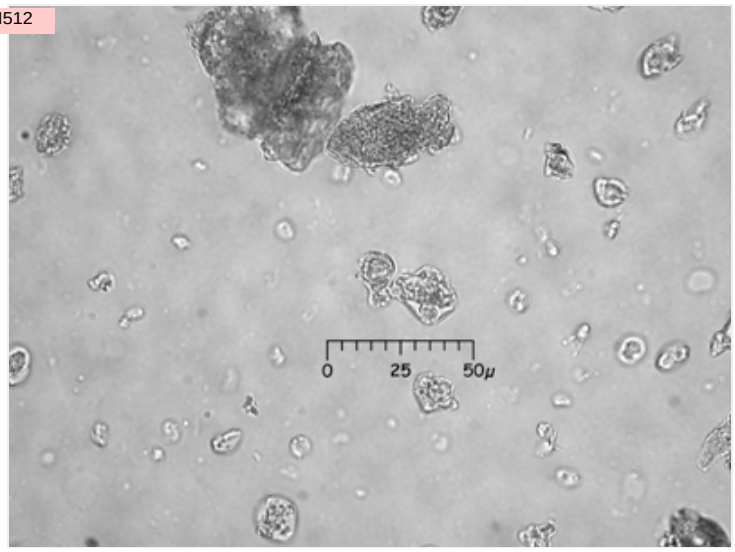
Species millei

Authority (Standl.) A.Robyns

Comments

Diagnostic level: generalized arboreal

Image N512



Description

Cystolith; Bulbose sphere attached to “stalk” or shaft; Surface uneven to highly nodular.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 100ID

Recno 74

Family Bombacaceae

Genus Pseudobombax

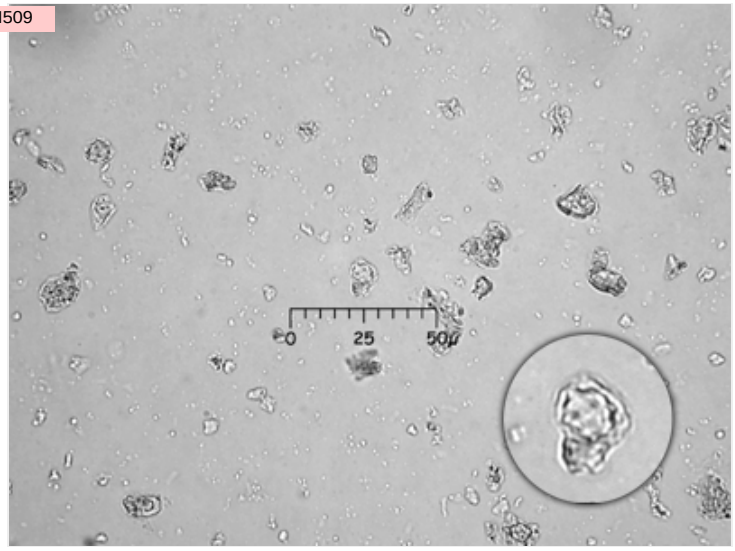
Species millei

Authority (Standl.) A.Robyns

Comments

Diagnostic level: generalized arboreal

Image N509



Description

- Cystolith
- Bulbose sphere attached to “stalk” or shaft
- Surface uneven to highly nodular

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80ICc

Recno 75

Family Bombacaceae

Genus Pseudobombax

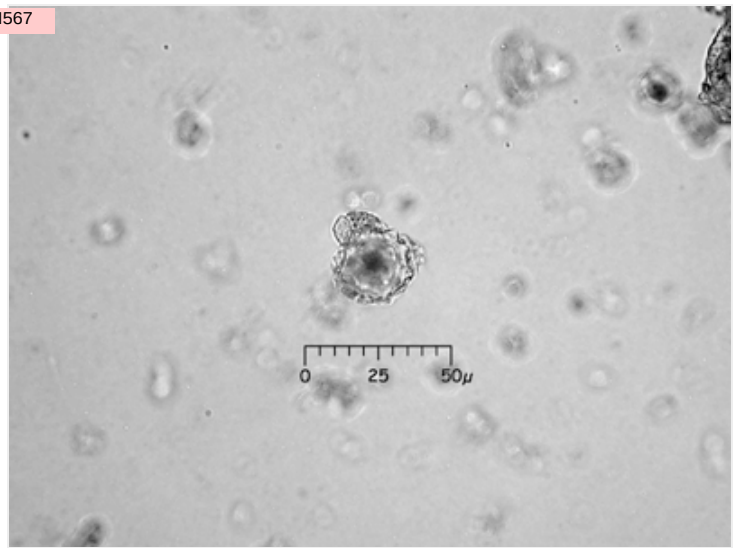
Species millei

Authority (Standl.) A.Robyns

Comments

Also occurs in the Zingiberaceae Diagnostic level: mixed, Zingiberaceae, Bombacaceae. There are subtle differences in the smoothness and abundance of nodules between the two families.

Image N567



Description

- spheres with nodular projections
- nodule surfaces are both smooth and ruminate (roughened, chewed--old term was serrate)
- Nodular-tip is obtuse, sides uneven
- Nodules regularly arranged, almost spirally ranked

Entered by Karol Chandler-Ezell

Updated 2/7/2008

MUno 80IFb202

Recno 145

Family Bombacaceae

Genus Pseudobombax

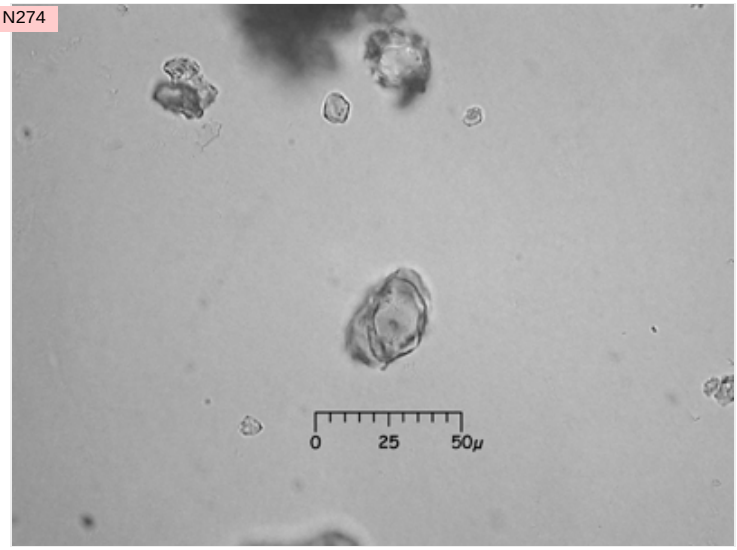
Species millei

Authority

Comments

Also observed in Matisia longipes leaf. Diagnostic level: family

Image N274



Description

- Hemisphere with irregular concavities, large
- Hemisphere often has stipled surface

Entered by Karol Chandler-Ezell

Updated 2/11/2008

MUno 40IIIBa203A

Image N279

Recno 170

Family Bombacaceae

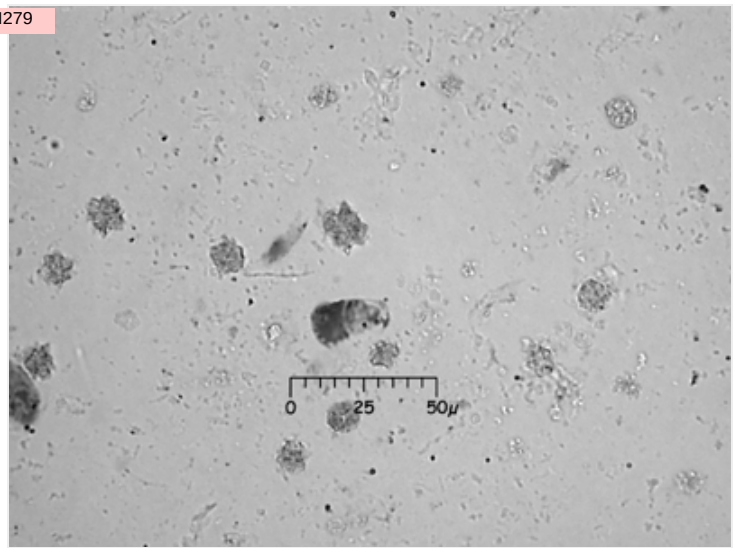
Genus Quarariba

Species cf. grandifolia

Authority (Little) Cuatrec.

Comments

See Record #171 to compare.
Very broad obtuse tip (rarely pointed) and overall broad, short nature of hair distinguishes type.
Diagnostic level: genus



Description

Multicellular hairs; Segmented; Tip blunt and broad, rarely pointed; Overall hair shortened and broad.

Entered by Meghann O'Brien

Updated 2/12/2008

MUno 40IVAa201Aa

Image N278

Recno 172

Family Bombacaceae

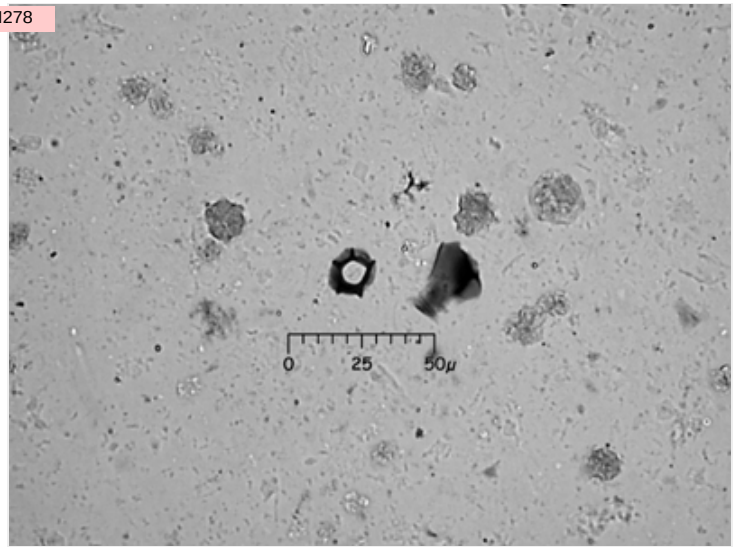
Genus Quarariba

Species cf. grandifolia

Authority (Little) Cuatrec.

Comments

Unusual because of it's very dark, occluded rim and attached tissue.
Diagnostic level: genus



Description

Hair cell base; Radiating appendages (5-6); Appendages are long, regular, acute; Appendages plus rim of base are very dark, set upon a slightly lighter circular base of tissue.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 100IA

Recno 169

Family Bombacaceae

Genus Quararibea

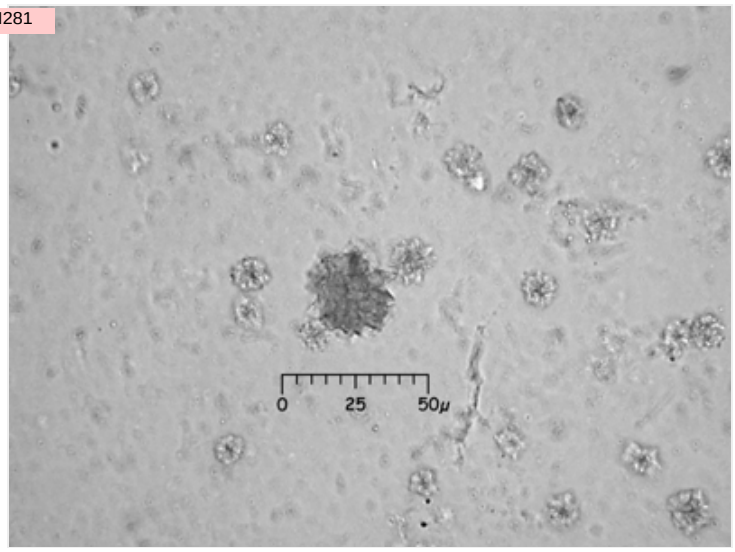
Species grandifolia

Authority (Little) Cuatrec.

Comments

See size variation in cystoliths.
Diagnostic level: generalized arboreal

Image N281



Description

Crystalline bodies, cystoliths; Spherical in shape; No visible surface--covered in angular projections.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IIIBa203A

Recno 171

Family Bombacaceae

Genus Quararibea

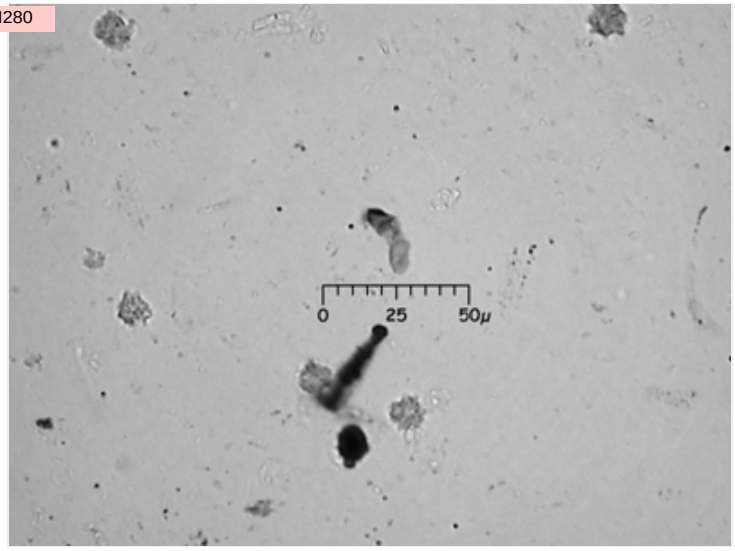
Species grandifolia

Authority (Little) Cuatrec.

Comments

See Record #170 to compare.
Very broad obtuse tip (rarely pointed) and overall broad, short nature of hair distinguishes type.
Diagnostic level: genus

Image N280



Description

Multicellular hairs; Segmented; Tip blunt and broad, rarely pointed; Overall hair shortened and broad.

Entered by Meghann O'Brien

Updated 2/12/2008

MUno 110

Recno 173

Family Bombacaceae

Genus Quararibea

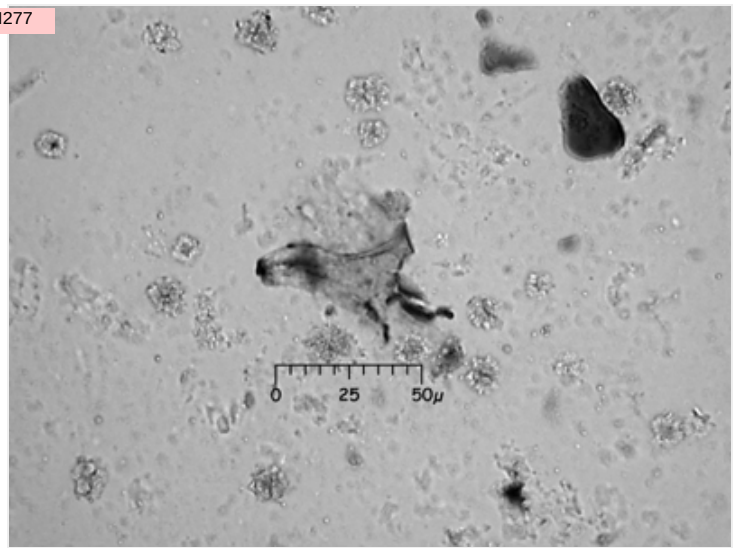
Species grandifolia

Authority (Little) Cuatrec.

Comments

Schlerids occur widely in woody plants.
Note distinctive central ridge in this body that identifies schlerids.
Diagnostic level: generalized arboreal

Image N277



Description

- Schlerid

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVBb1

Recno 229

Family Boraginaceae

Genus Cordia

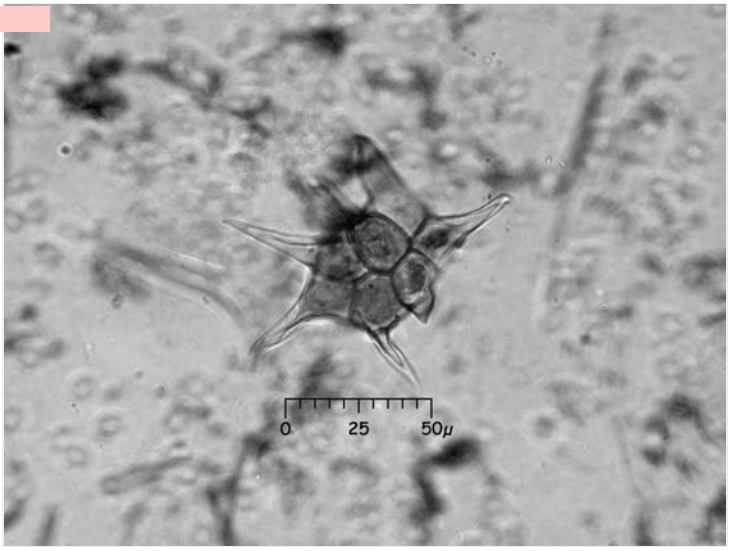
Species cf. polyantha

Authority

Comments

Slide E1030.
Diagnostic level: species?

Image



Description

Hair base; Rounded cells; Multiple cells, rounded, more uniform size; Darkened (highly silicified); Simple elongated hairs may be unattached.

Entered by Meghann O'Brien

Updated 3/2/2005

MUno 40IVBa402B2

Recno 108

Family Boraginaceae

Genus Cordia

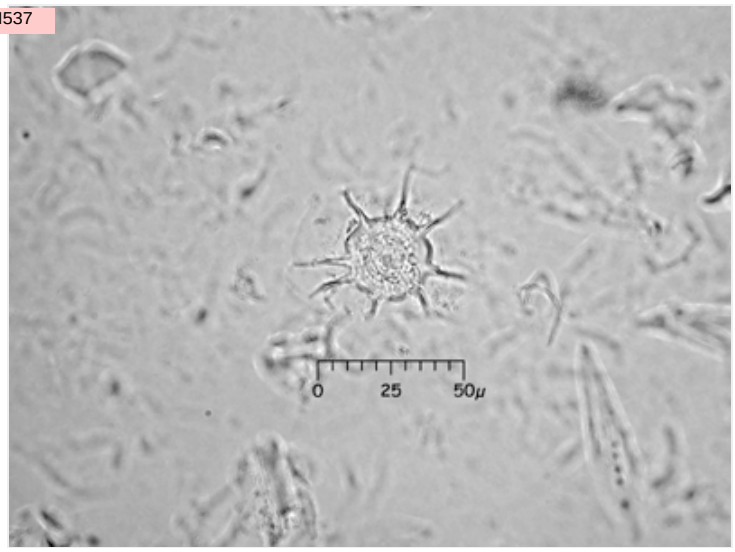
Species hebeclada

Authority I.M.Johnst.

Comments

Rotate to see rounded concavity in base where hair inserts. Slide 468 leaf. Type defined by Cesar Veintimilla 06/1991. Diagnostic level: species

Image N537



Description

Hair base; Concentric ring pattern; Smooth outline; Projections in a regular pattern.

Entered by Karol Chandler-Ezell

Updated 3/3/2005

MUno 40IAb

Recno 110

Family Boraginaceae

Genus Cordia

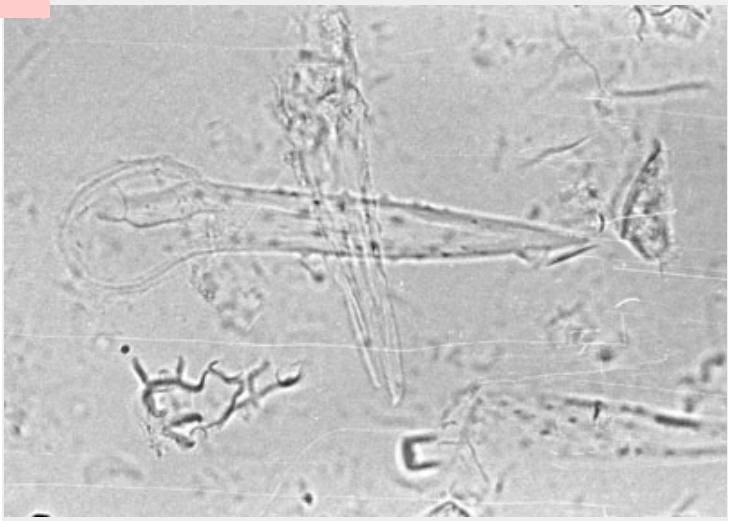
Species hebeclada

Authority I.M.Johnst.

Comments

Diagnostic level: Cordia/Heliotropium

Image



Description

Unicellular trichome; double outline; armed.

Entered by

Updated 10/7/2002

MUno 40IVBa402B2

Recno 211

Family Boraginaceae

Genus Cordia

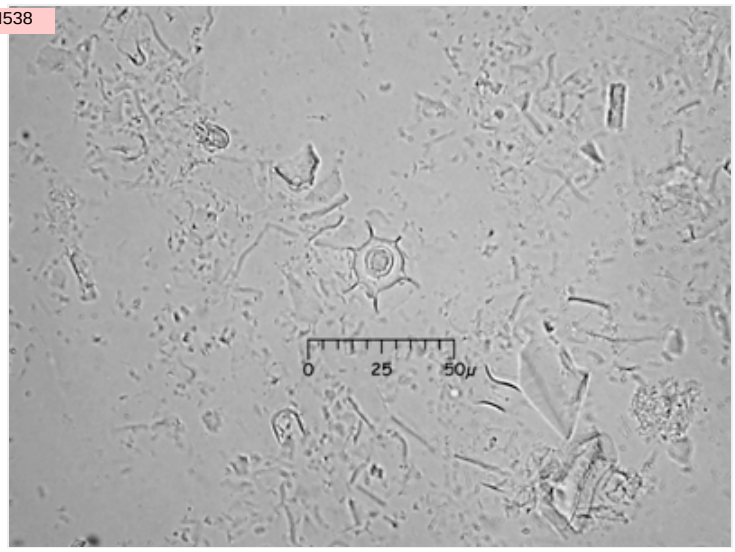
Species hebeclada

Authority I.M.Johnst.

Comments

Slide 468 leaf. Type defined by Cesar Veintimilla 06/1991. See also Record #108.

Image N538



Description

Hair base; Concentric ring pattern; Smooth outline; Projections in a regular pattern.

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 40IVBa402B2

Recno 213

Family Boraginaceae

Genus Cordia

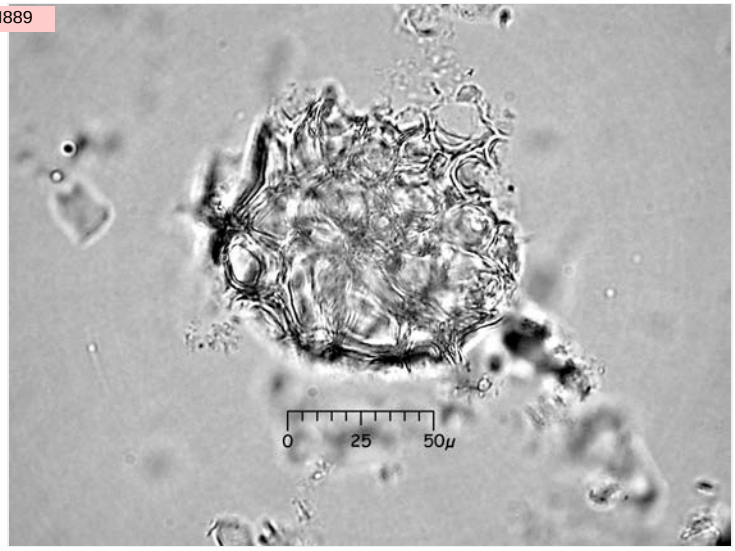
Species hebeclada

Authority (Huber) Ducke

Comments

Slide 1772a leaf. Type defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image N889



Description

Hair cell base; Rounded or elliptic cells; Small, multiple central cells; Highly silicified central cells; From the side, the hair base is two layers thick.

Entered by Meghann O'Brien

Updated 3/8/2005

MUno 40IVBa402B2

Recno 214

Family Boraginaceae

Genus Cordia

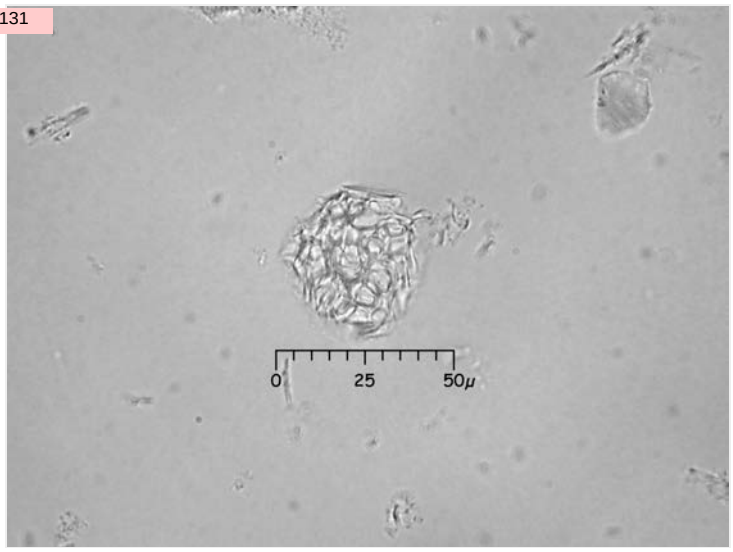
Species hebeclada

Authority (Huber) Ducke

Comments

Slide 1772a leaf. Type defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image Z131



Description

Hair cell base; Rounded or elliptic cells; Small, multiple central cells; Highly silicified central cells; From the side, the hair base is two layers thick.

Entered by Meghann O'Brien

Updated 3/8/2005

MUno 40IAb

Recno 218

Family Boraginaceae

Genus Cordia

Species hebeclada

Authority

Comments

Occurs in leaf. Also occurs in *Cordia lutea* (fruit) and *Heliotropium*. Type defined by Cesar Veintimilla.
Diagnostic level: Cordia/Heliotropium

Image

Description

Epidermal appendage; Unicellular trichome; Double outline; Armed.

Entered by Meghann O'Brien

Updated 2/22/2005

MUno 40IVBa402B2

Recno 228

Family Boraginaceae

Genus Cordia

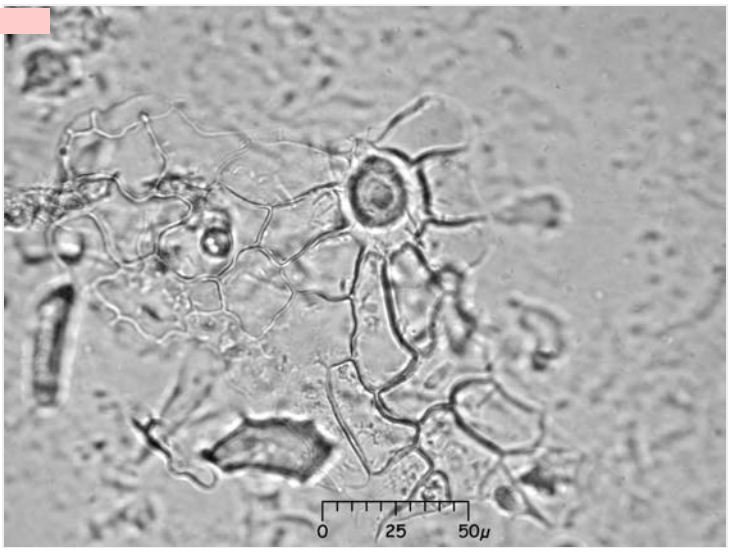
Species hebeclada

Authority

Comments

Slide 468 leaf. Type defined by Cesar Veintimilla 06/1991.
Diagnostic level: species

Image



Description

Hair base; Concentric ring pattern; Smooth outline; Projections in a regular pattern.

Entered by Meghann O'Brien

Updated 2/23/2005

MUno 40IAb

Recno 239

Family Boraginaceae

Genus Cordia

Species hebeclada

Authority

Comments

Occurs in leaf. Also occurs in *Cordia lutea* (fruit) and *Heliotropium*. Type defined by Cesar Veintimilla.
Diagnostic level: family

Image

Description

Epidermal appendage; Unicellular trichome; Double outline; Armed.

Entered by Meghann O'Brien

Updated 3/2/2005

MUno 120IIB

Recno 29

Family Boraginaceae

Genus Cordia

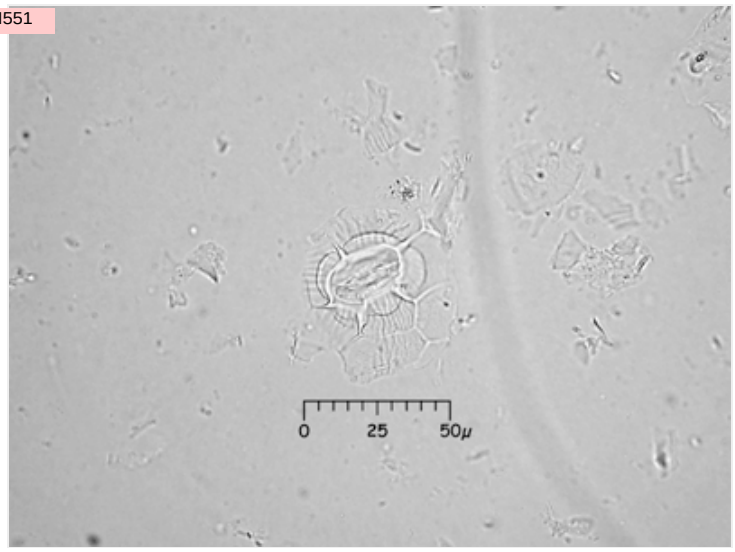
Species lutea

Authority Lam.

Comments

These simple stomata are not diagnostic to family or even order level at this time.
Diagnostic level: not diagnostic

Image N551



Description

- Stomata
- 2 subsidiary cells present outside guard cells
- Dicot epidermal cells attached to subsidiary cells

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IAb

Recno 109

Family Boraginaceae

Genus Cordia

Species lutea

Authority Lam.

Comments

Diagnostic level: Cordia/Heliotropium

Image

Description

Unicellular trichome; double outline; armed.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IAb

Recno 111

Family Boraginaceae

Genus Cordia

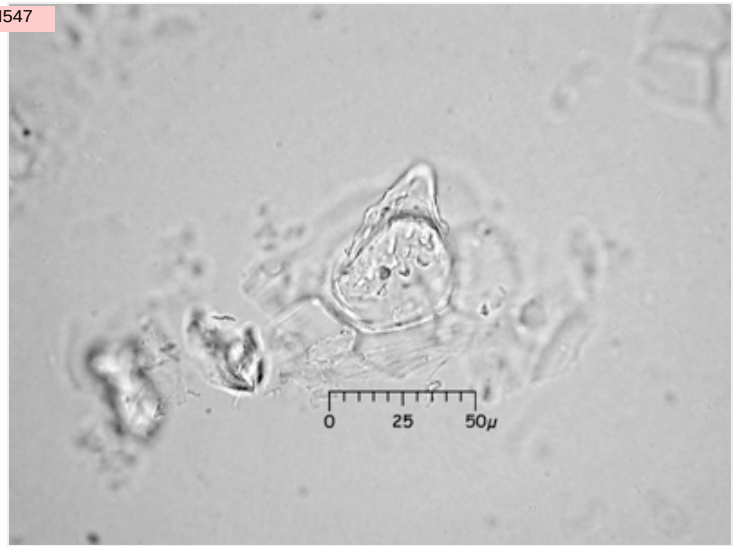
Species lutea

Authority Lam.

Comments

Diagnostic level: Cordia/Heliotropium

Image N547



Description

Unicellular trichome; double outline; armed.

Entered by Karol Chandler-Ezell

Updated 3/3/2005

MUno 40IVBa200

Recno 112

Family Boraginaceae

Genus Cordia

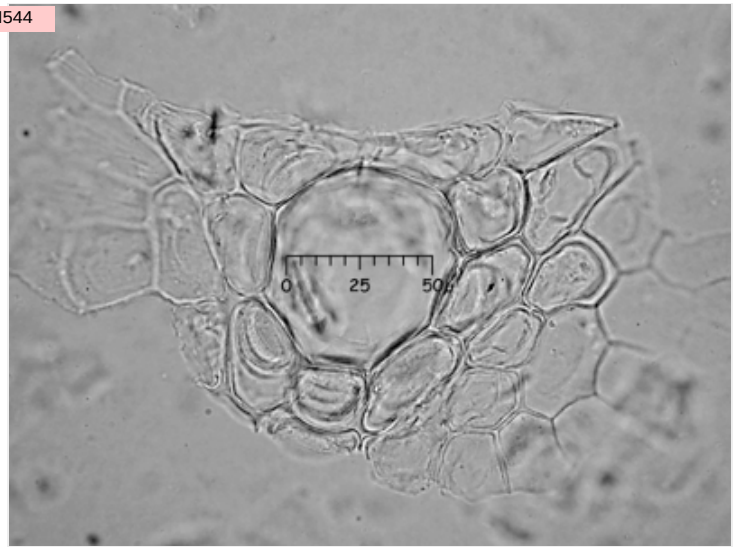
Species lutea

Authority Lam.

Comments

Type defined by Cesar Veintimilla 05/1991.
Diagnostic level: species

Image N544



Description

Hair cell base; Very large central cell is rounded or elliptic with smaller and elongated cells surrounding; Multiple rows of attached cells.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 20IVCd

Image N548

Recno 203

Family Boraginaceae

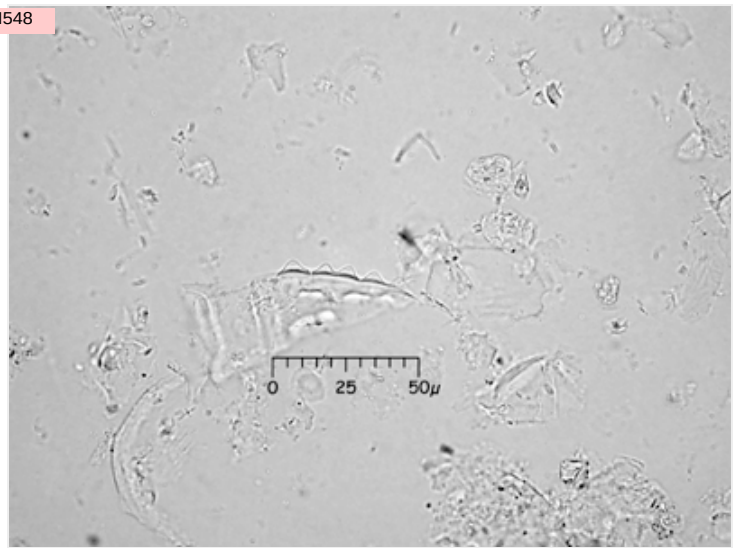
Genus Cordia

Species lutea

Authority Lam.

Comments

Side view.
See Cordia lutea hairs (40IIIAb100), conical bodies may come from projections on hair surface.
Diagnostic level: species



Description

- Epidermal non-quadrilateral
- Surface projection, conical shape
- Bottom NOT elongated
- Oval in rotation
- Lightly silicified
- Often occur in series

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 20IVCd40IIIAb10

Image N550

Recno 204

Family Boraginaceae

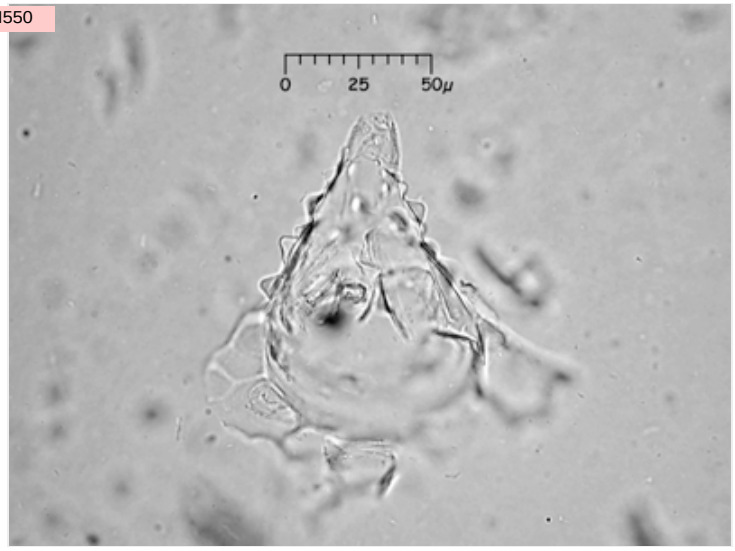
Genus Cordia

Species lutea

Authority Lam.

Comments

Top view shows a Cordia lutea hair (40IIIAb100) with conical projections.
Conical bodies (20VCd) may come from projections on hair surface.
Diagnostic level (both): species



Description

- Epidermal non-quadrilateral
- Surface projection, conical shape
- Bottom NOT elongated
- Oval in rotation
- Lightly silicified
- Often occur in series

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 40IVBa200

Recno 212

Family Boraginaceae

Genus Cordia

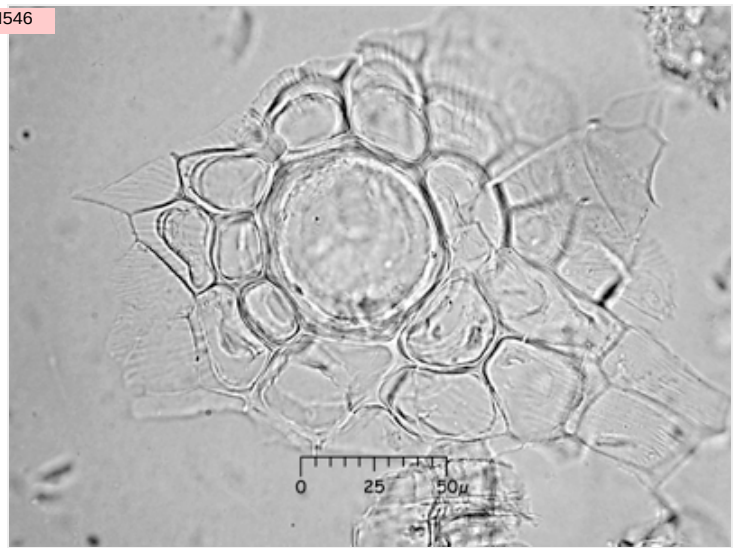
Species lutea

Authority Lam.

Comments

See Record #112 for another view.
See other Cordia lutea types (20VCd), conical bodies may be derived from hair surface. Type defined by Cesar Veintimilla 05/1991.
Diagnostic level: species

Image N546



Description

Hair cell base; Very large central cell is rounded or elliptic with smaller and elongated cells surrounding; Multiple rows of attached cells.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 40IIIAb100

Recno 220

Family Boraginaceae

Genus Cordia

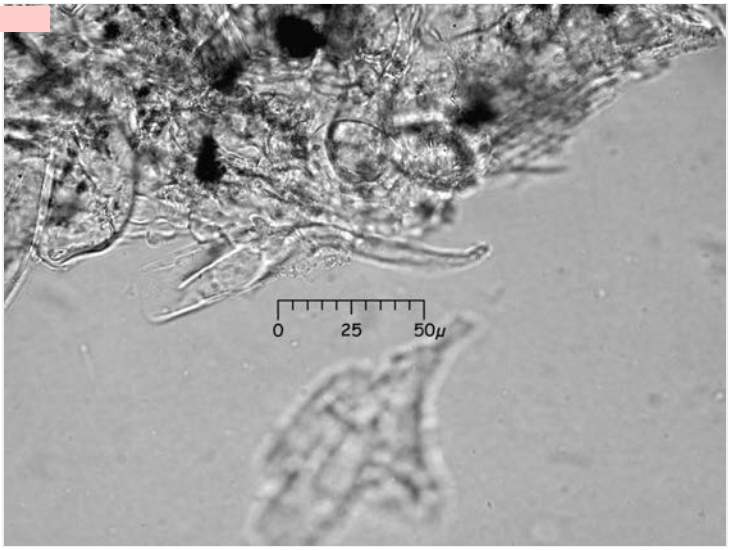
Species lutea

Authority

Comments

Occurs in fruit. Type defined by Cesar Veintimilla.
Diagnostic level: species

Image



Description

Unicellular hair; Long; Curving; Interior space; Armed.

Entered by Meghann O'Brien

Updated 2/22/2005

MUno 40IAb

Recno 238

Family Boraginaceae

Genus Cordia

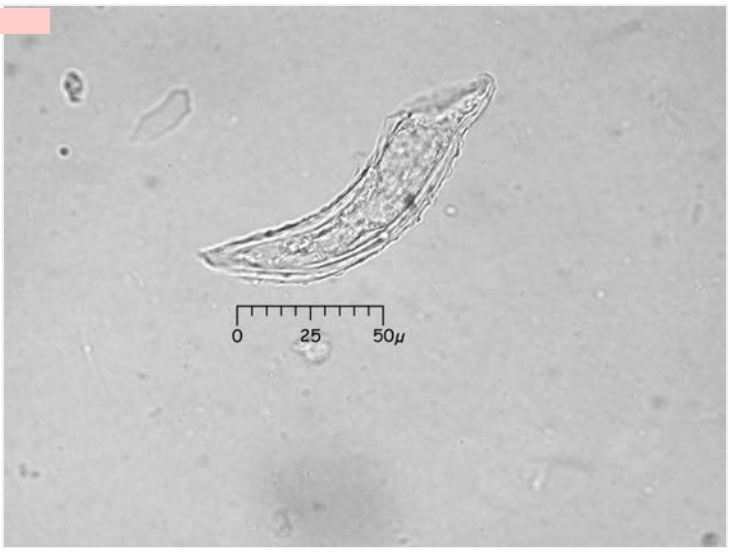
Species lutea

Authority

Comments

Occurs in leaf. Also occurs in *Cordia hebeclada* (fruit) and *Heliotropium*.
Type defined by Cesar Veintimilla.
Diagnostic level: family

Image



Description

Epidermal appendage; Unicellular trichome; Double outline; Armed.

Entered by Meghann O'Brien

Updated 3/2/2005

MUno 40IIIAb201

Recno 223

Family Boraginaceae

Genus Heliotropium

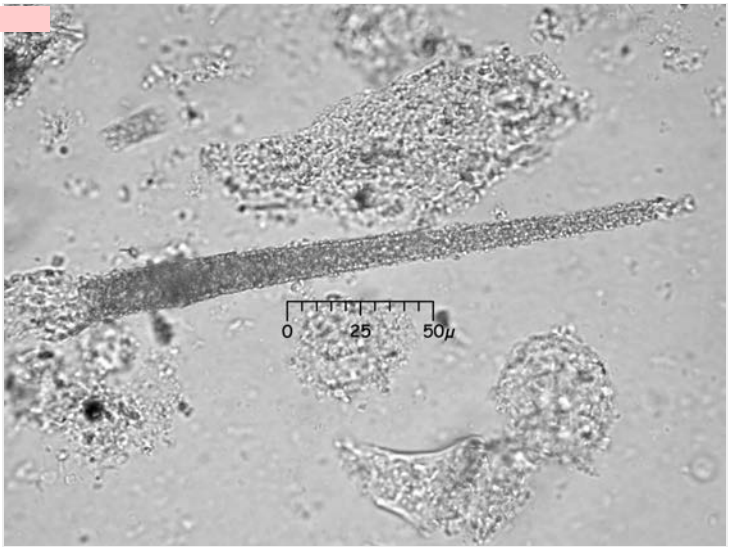
Species angiospermum

Authority

Comments

Slide E227.
Diagnostic level: genus

Image



Description

Unicellular hair; Long; Non-armed; Grainy surface.

Entered by Meghann O'Brien

Updated 2/23/2005

MUno 40IVBa402A2

Recno 227

Family Boraginaceae

Genus Heliotropium

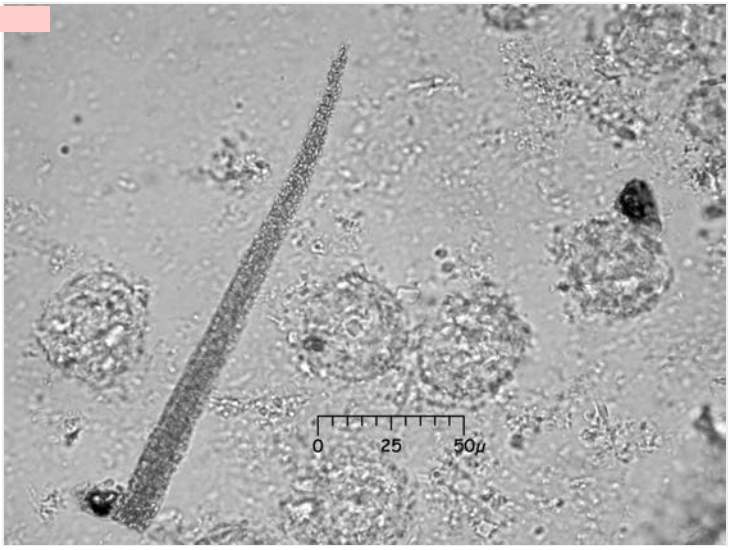
Species angiospermum

Authority

Comments

Slide E227. Several hair bases occur in picture next to unicellular hair (40IIIAb201). Concentric ring pattern not easily seen in picture.
Diagnostic level: genus

Image



Description

Hair cell base; Concentric ring pattern; Rugulose, grainy surface; Sinuous outline; Discernable center.

Entered by Meghann O'Brien

Updated 2/23/2005

MUno 40IVBa402A2

Recno 235

Family Boraginaceae

Genus Heliotropium

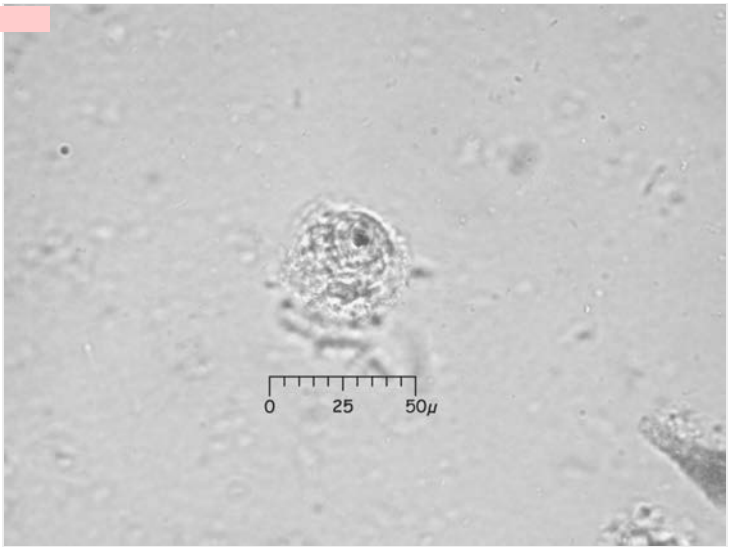
Species angiospermum

Authority

Comments

Slide E227.
Diagnostic level: genus

Image



Description

Hair cell base; Concentric ring pattern; Rugulose, grainy surface; Sinuous outline; Discernable center.

Entered by Meghann O'Brien

Updated 3/2/2005

MUno 40IIIAb200Bc

Recno 291

Family Boraginaceae

Genus Lithospermum

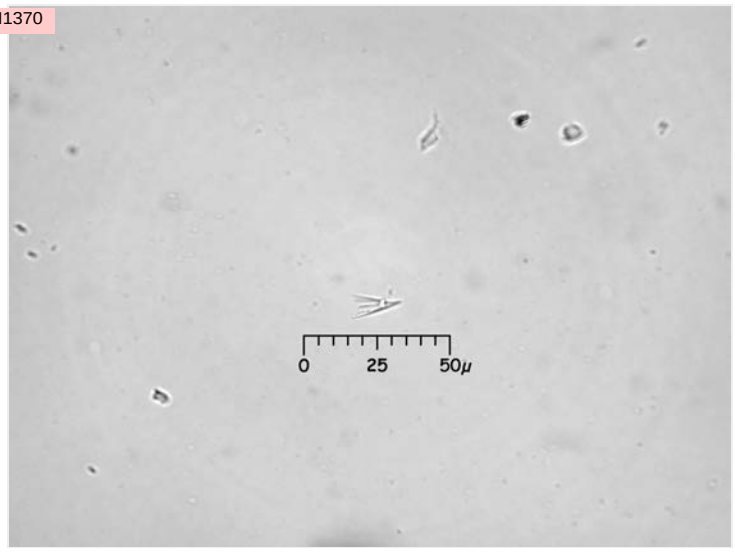
Species carolinense

Authority

Comments

Slide 1723a. Leaf.
Hair tip.

Image N1370



Description

Unicellular hair; Interior space; Double-outline; Long, un-armed; 3 times longer than wide; Base is often attached to hair and spherical in shape; Tips often break off.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIAb200Bc

Recno 292

Family Boraginaceae

Genus Lithospermum

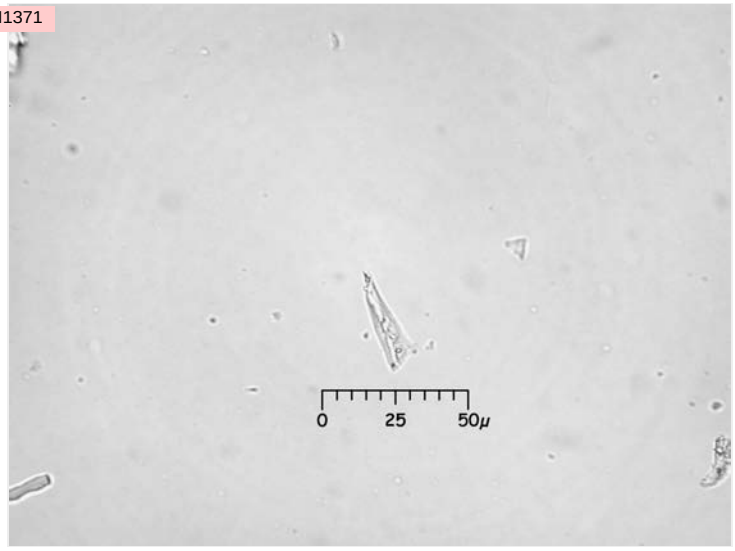
Species carolinense

Authority

Comments

Slide 1723a. Leaf.
Hair tip.

Image N1371



Description

Unicellular hair; Interior space; Double-outline; Long, un-armed; 3 times longer than wide; Base is often attached to hair and spherical in shape; Tips often break off.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIAb200Bc

Recno 293

Family Boraginaceae

Genus Lithospermum

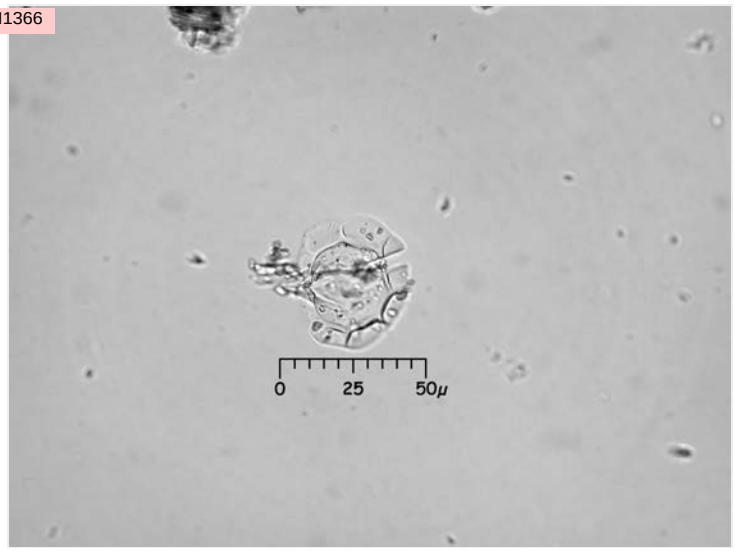
Species carolinense

Authority

Comments

Slide 1723a. Leaf.
Hair with base.

Image N1366



Description

Unicellular hair; Interior space; Double-outline; Long, un-armed; 3 times longer than wide; Base is often attached to hair and spherical in shape; Tips often break off.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIAb200Bc

Recno 294

Family Boraginaceae

Genus Lithospermum

Species carolinense

Authority

Comments

Slide 1723b. Leaf.
Hair with partial base attached and tip broken off.

Image N1372

Description

Unicellular hair; Interior space; Double-outline; Long, un-armed; 3 times longer than wide; Base is often attached to hair and spherical in shape; Tips often break off.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVAa202

Recno 295

Family Boraginaceae

Genus Lithospermum

Species carolinense

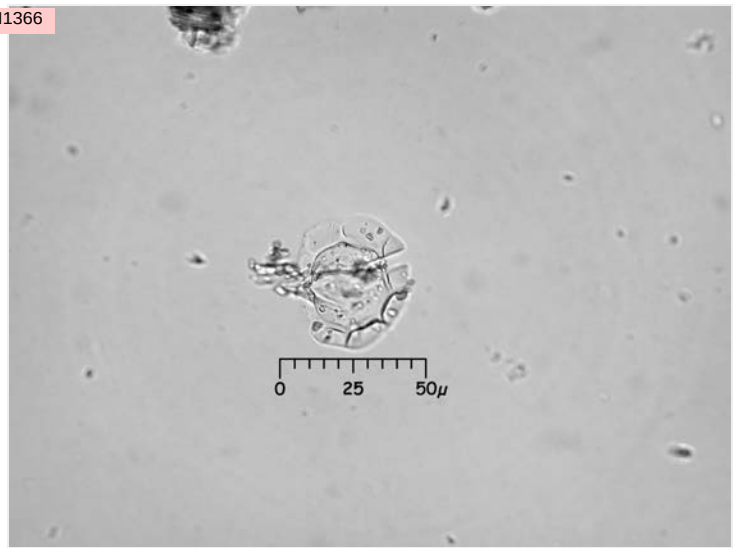
Authority

Comments

Slide 1723a. Leaf.
Hair with base attached.

Diagnostic level: mixed Guazuma, Erythrina, Lithospermum

Image N1366



Description

Hair base with discernable center and surrounding cells; Center has long, acute, radiating appendages; Surrounding cells are lightly silicified; Center is large and circular.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVAa202

Recno 296

Family Boraginaceae

Genus Lithospermum

Species carolinense

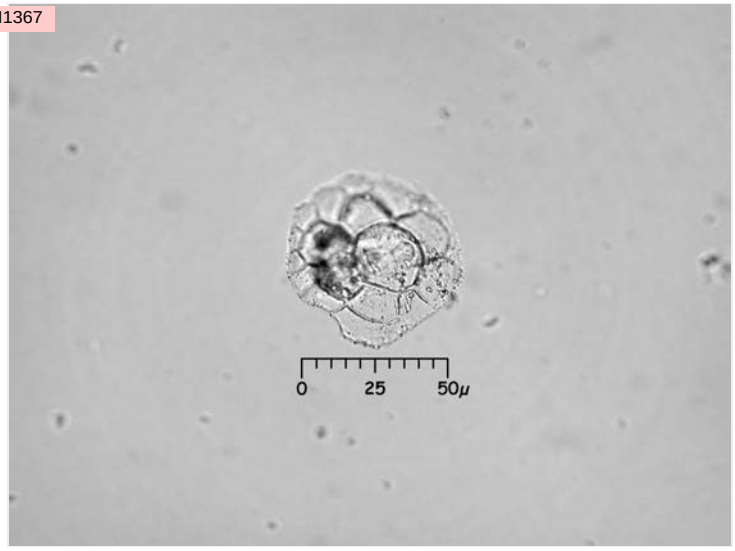
Authority

Comments

Slide 1723a. Leaf.

Diagnostic level: mixed Guazuma, Erythrina, Lithospermum

Image N1367



Description

Hair base with discernable center and surrounding cells; Center has long, acute, radiating appendages; Surrounding cells are lightly silicified; Center is large and circular.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVAa202

Image N1384

Recno 298

Family Boraginaceae

Genus Lithospermum

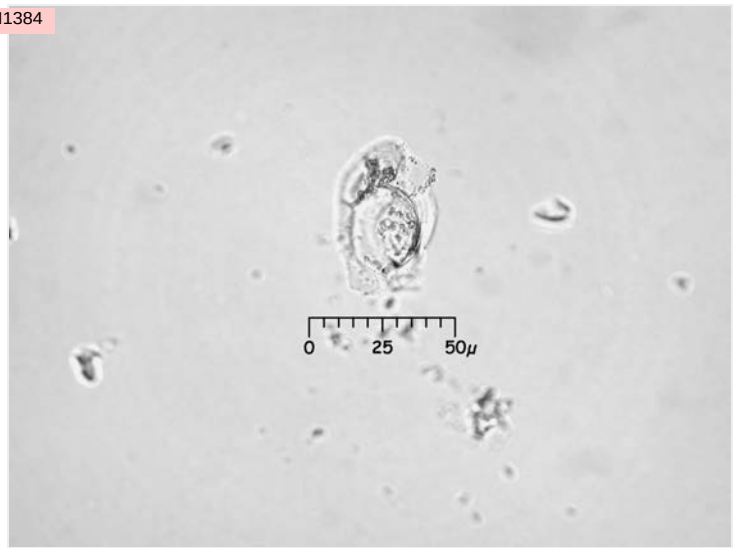
Species carolinense

Authority

Comments

Slide 1723c. Leaf.

Diagnostic level: mixed Guazuma, Erythrina, Lithospermum



Description

Hair base with discernable center and surrounding cells; Center has long, acute, radiating appendages; Surrounding cells are lightly silicified; Center is large and circular.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVAa202

Image N1385

Recno 299

Family Boraginaceae

Genus Lithospermum

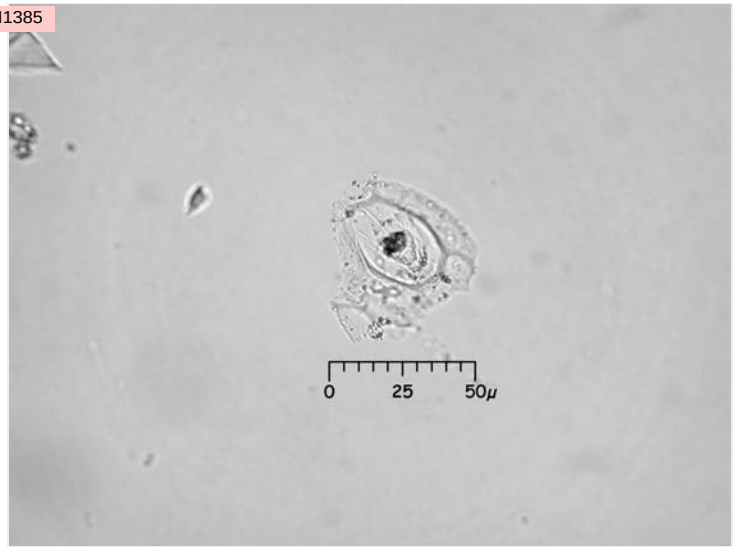
Species carolinense

Authority

Comments

Slide 1723c. Leaf.

Diagnostic level: mixed Guazuma, Erythrina, Lithospermum



Description

Hair base with discernable center and surrounding cells; Center has long, acute, radiating appendages; Surrounding cells are lightly silicified; Center is large and circular.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVAa202

Recno 300

Family Boraginaceae

Genus Lithospermum

Species carolinense

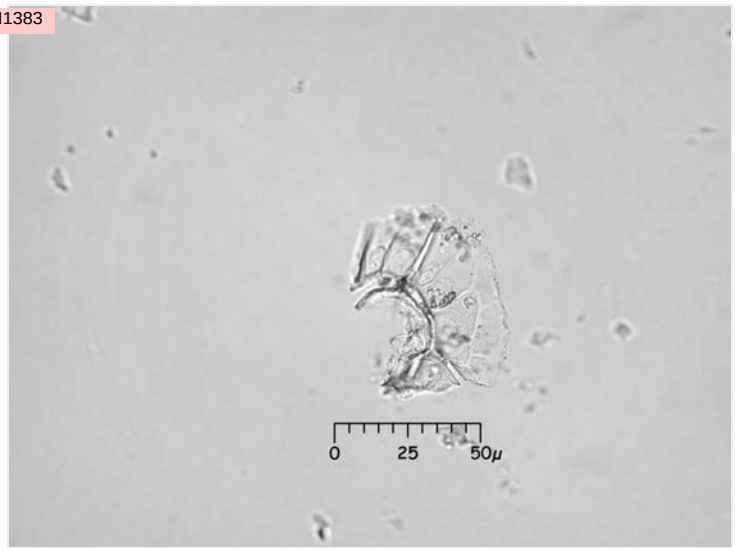
Authority

Comments

Slide 1723c. Leaf.
Partial hair base, shows radiating appendages.

Diagnostic level: mixed Guazuma, Erythrina, Lithospermum

Image N1383



Description

Hair base with discernable center and surrounding cells; Center has long, acute, radiating appendages; Surrounding cells are lightly silicified; Center is large and circular.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 80IFb200

Recno 241

Family Burseraceae

Genus Dacryodes

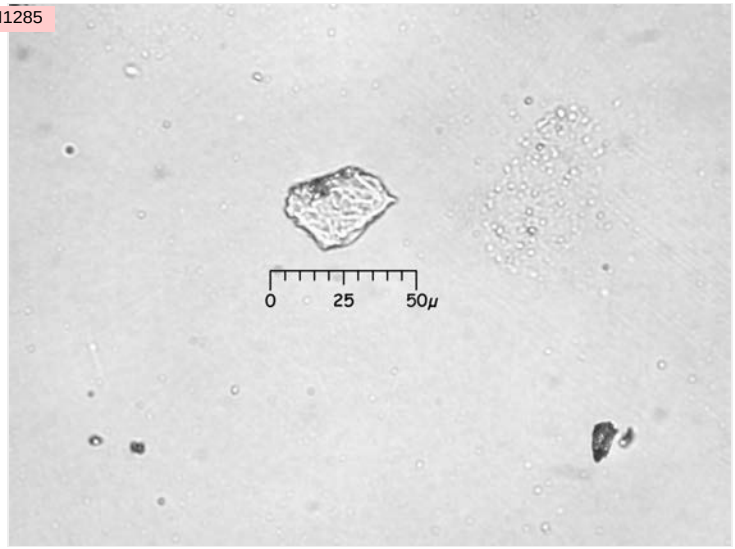
Species occidentalis

Authority

Comments

Slide 58. Also occurs in*Trattinnickia glaziouii,* slide 64.
Diagnostic level: family

Image N1285



Description

Faceted/scalloped bodies, hemispherical or elliptical.

Entered by Meghann O'Brien

Updated 3/7/2005

MUno 22ID

Recno 162

Family Burseraceae

Genus Protium

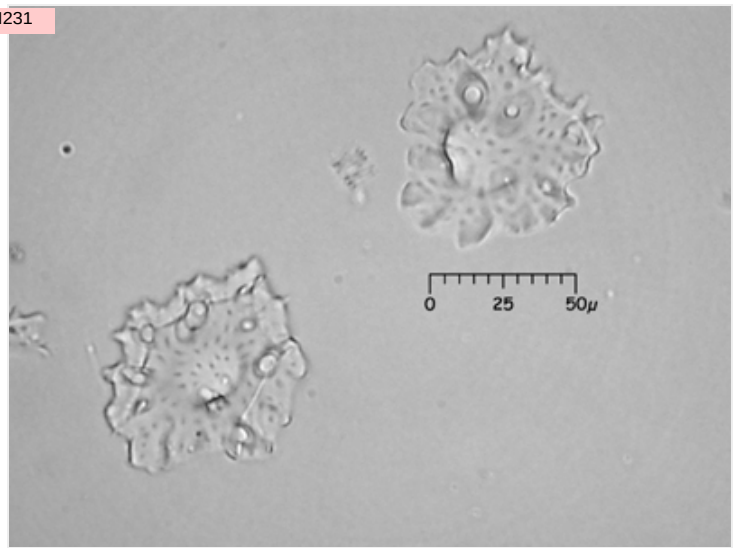
Species fimbriatum

Authority Swart

Comments

See other rotations (Records 163 and 164) to get an idea of the three-dimensional shape. This body is very tall with a very ruffled or undulating edge.
Diagnostic level: family

Image N231



Description

- Epidermal non-quadrilateral cells
- Projections on both sides
- Large rounded central projection on one side
- Undulating circular shape forms a “brim” around the central projection

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22ID

Recno 163

Family Burseraceae

Genus Protium

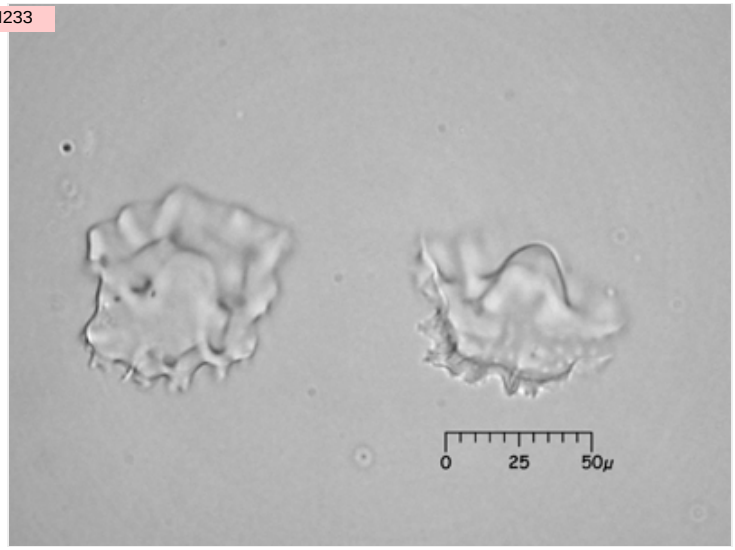
Species fimbriatum

Authority Swart

Comments

See other rotations (Records 162 and 164) to get an idea of the three-dimensional shape. This body is very tall with a very ruffled or undulating edge.
Diagnostic level: family

Image N233



Description

- Epidermal non-quadrilateral cells
- Projections on both sides
- Large rounded central projection on one side
- Undulating circular shape forms a “brim” around the central projection

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IFb200

Recno 231

Family Burseraceae

Genus Trattinnickia

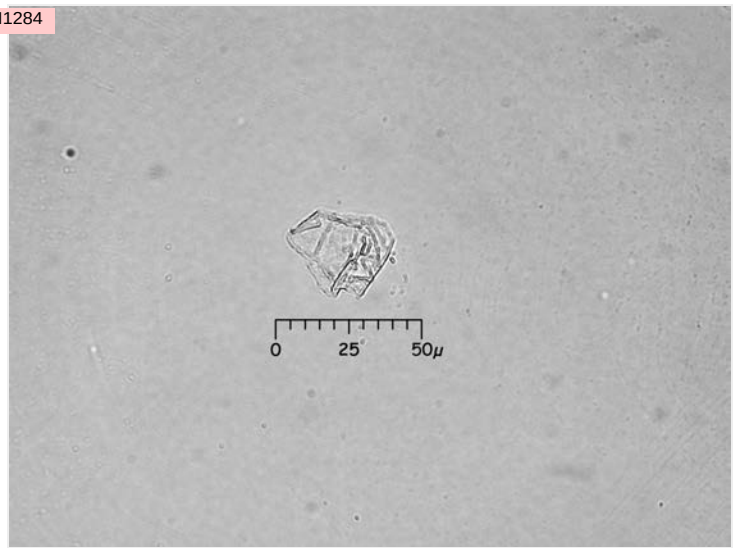
Species glaziouii

Authority

Comments

Slide 64. Also occurs in *Dacryodes occidentalis,* slide 58.
Diagnostic level: family

Image N1284



Description

Faceted/scalloped bodies, hemispherical or elliptical.

Entered by Meghann O'Brien

Updated 2/23/2005

MUno 22IC

Recno 8

Family Burseraceae

Genus Trattinnickia

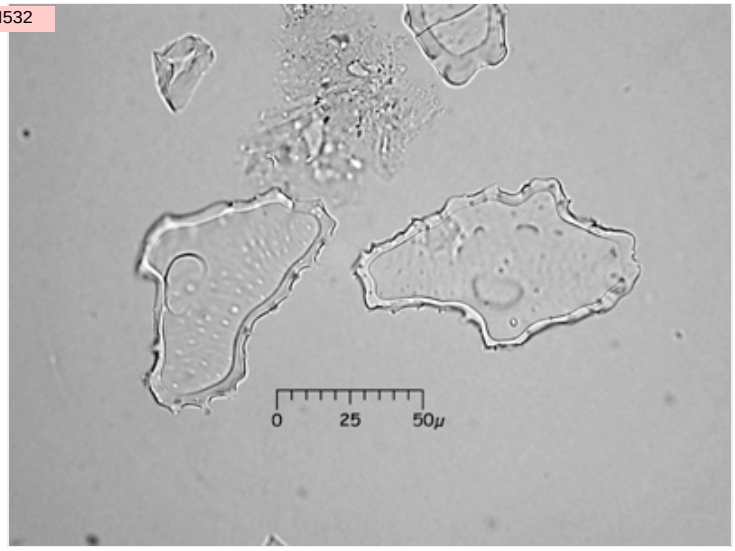
Species glaziovii

Authority Swart

Comments

Seed epidermis. Projection is not centered and may not be present on all fragments. The projection is often very low. Surface decoration not always evident unless focus is moved up and down.
Diagnostic level: family

Image N532



Description

Seed epidermis; Non-quadrilateral; Often sinous double outline; Prominent rounded, low projection and fine surface decoration.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22IC

Recno 9

Family Burseraceae

Genus Trattinnickia

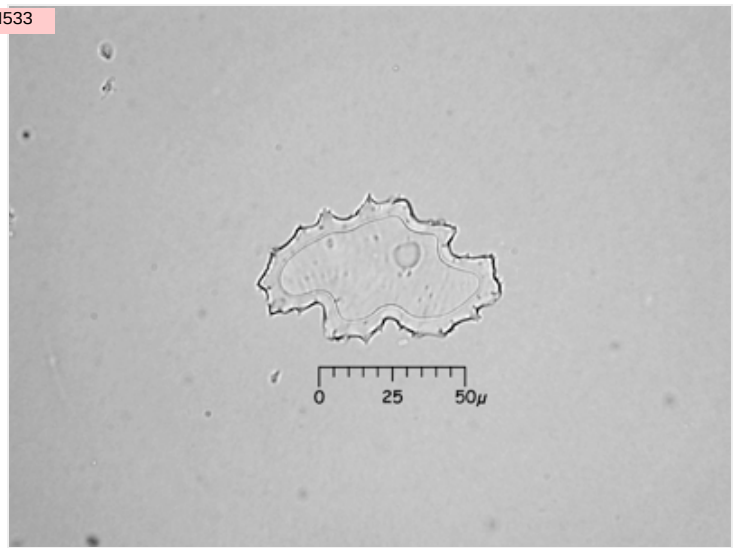
Species glaziovii

Authority Swart

Comments

Seed epidermis. Projection is not centered and may not be present on all fragments. The projection is often very low. Surface decoration not always evident unless focus is moved up and down.
Diagnostic level: family

Image N533



Description

- Seed epidermis
- Non-quadrilateral
- Often sinous double outline
- Prominent rounded, low projection and surface decoration

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVAa201B

Recno 133

Family Burseraceae

Genus Trattinnickia

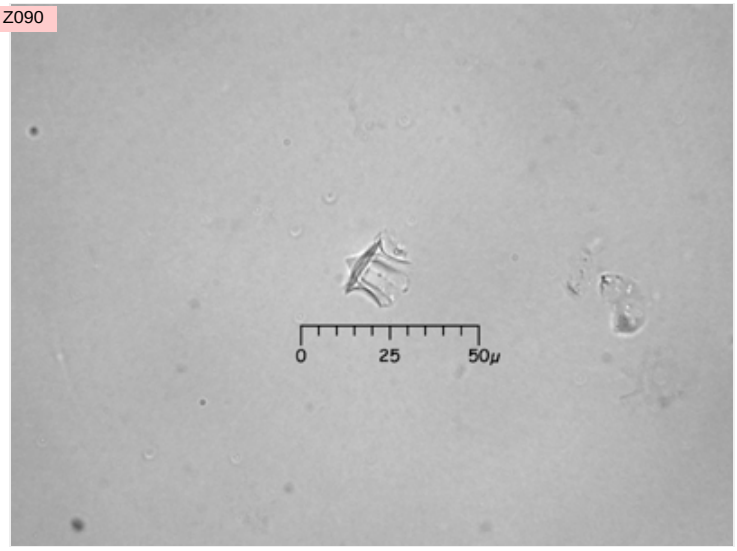
Species peruviana

Authority Loes.

Comments

Side view; see Record #134 for top view.
Occurs in the leaf.
Diagnostic level: genus

Image Z090



Description

- Epidermal appendage
- Hair cell base
- Radiating appendages
- Discernable center
- Surrounding epidermal cells attached to form disk-- may be lightly silicified

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 40IVAa201B

Image Z091

Recno 134

Family Burseraceae

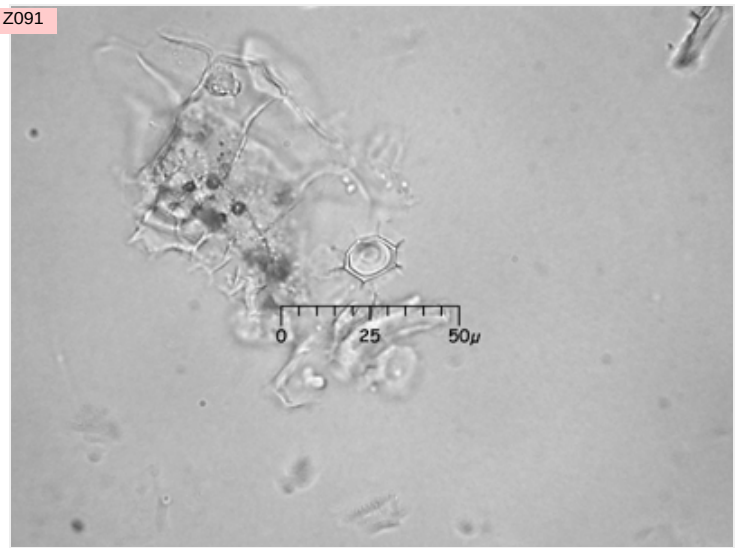
Genus Trattinnickia

Species peruviana

Authority Loes.

Comments

Top view; see Record #133 for side view.
Occurs in the leaf.
Diagnostic level: genus



Description

- Epidermal appendage
- Hair cell base
- Radiating appendages
- Discernable center
- Surrounding epidermal cells attached to form disk-- may be lightly silicified

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 40IBf

Image Z092

Recno 135

Family Burseraceae

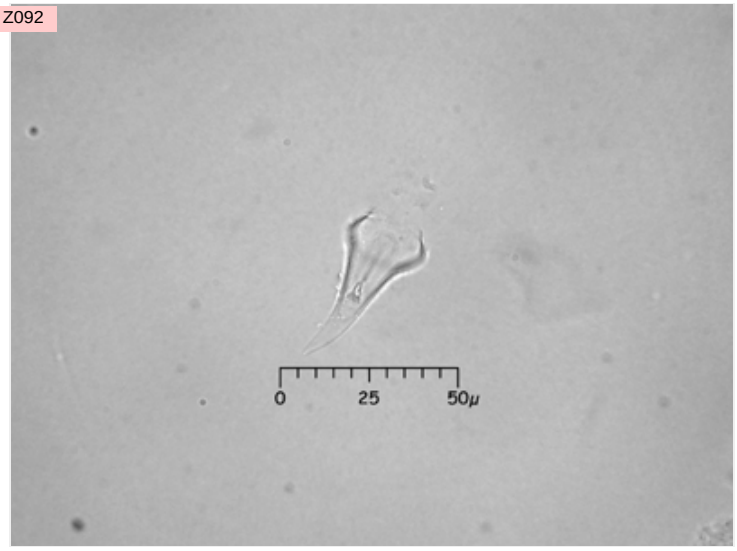
Genus Trattinnickia

Species peruviana

Authority Loes.

Comments

Occurs in the leaf.
Diagnostic level: genus



Description

- Epidermal appendage
- Double-outline trichome
- Non-armed
- Base is angular of obtuse angles

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 40IVAa200Ba

Recno 136

Family Burseraceae

Genus Trattinnickia

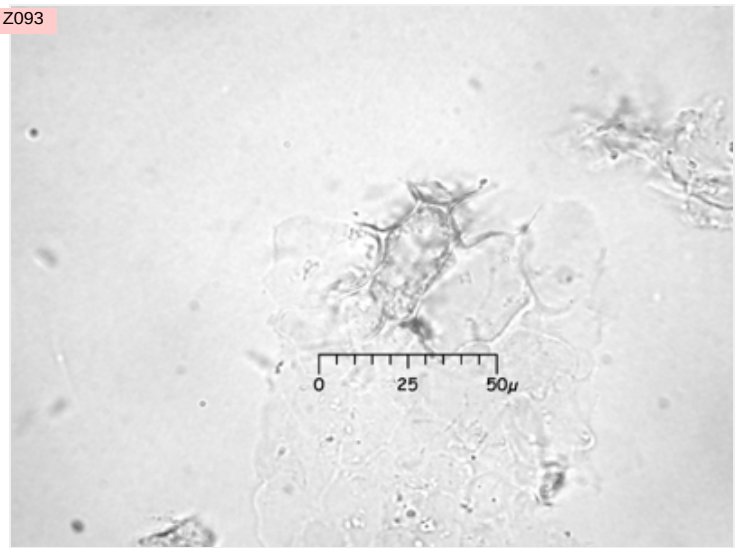
Species peruviana

Authority Loes.

Comments

Top view; see Record #137 for side view.
The small cells that overlay the large central cell appear as a “corona” when viewed from the side.
Occurs in the leaf.
Diagnostic level: genus

Image Z093



Description

- Epidermal appendage
- Hair base
- Radiating appendages
- Discernable center
- Long, regualr appendages; acute
- No surrounding epidermal cells (or lightly silicified if present)

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 40IVAa200Ba

Recno 137

Family Burseraceae

Genus Trattinnickia

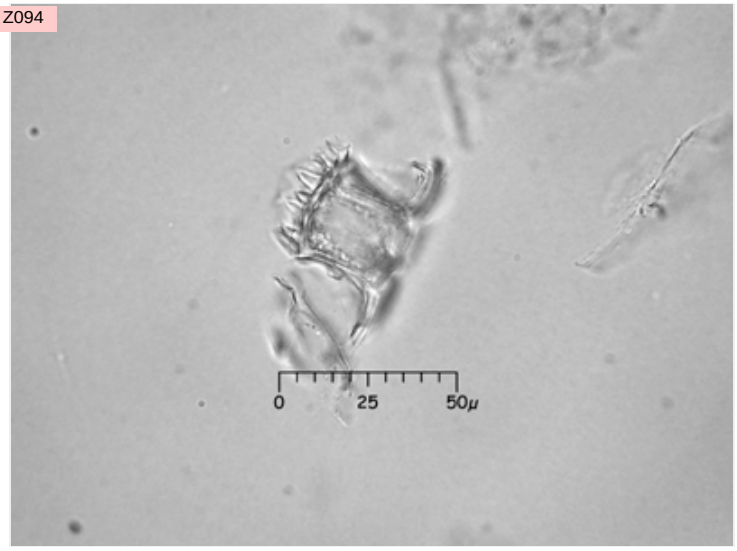
Species peruviana

Authority Loes.

Comments

Side view; see Record #136 for top view.
The small cells that overlay the large central cell appear as a “corona” when viewed from the side. Occurs in the leaf.
Large, 30-50 microns.
Diagnostic level: genus

Image Z094



Description

- Epidermal appendage
- Hair base
- Radiating appendages
- Discernable center
- Long, regular appendages; acute
- No surrounding epidermal cells (or lightly silicified if present)

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 22ID

Recno 164

Family Burseraceae

Genus Protium

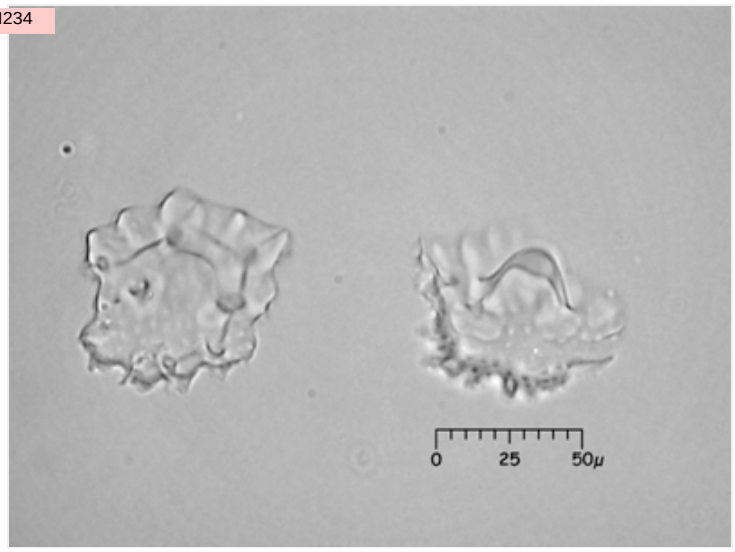
Species fimbriatum

Authority Swart

Comments

See other rotations (Records 162 and 163) to get an idea of the three-dimensional shape. This body is very tall with a very ruffled or undulating edge.
Diagnostic level: family

Image N234



Description

- Epidermal non-quadrilateral cells
- Projections on both sides
- Large rounded central projection on one side
- Undulating circular shape forms a “brim” around the central projection

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IAa200

Recno 11

Family Cannaceae

Genus Canna

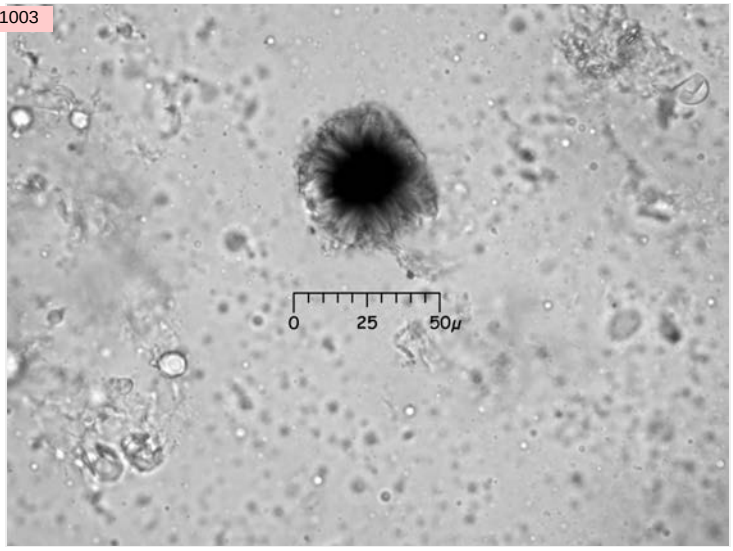
Species edulis

Authority Ker Gawl.

Comments

Spheres produced by Canna range from smooth to rugulose to irregularly angled or folded. Type 80IAa200 is based on an archaeological specimen of Canna edulis leaf, from the coast of Peru. Diagnostic level: Unknown. Does not occur in chemically extracted specimens; probably not silica.

Image Z1003



Description

Imperfect spheres; thick, opaque, darkened in center; large; smooth to roughened surface; often occur in chains; type is 21-30 microns and larger.

Entered by Neil A. Duncan

Updated 2/24/2005

MUno 80IBb

Recno 202

Family Cannaceae

Genus Canna

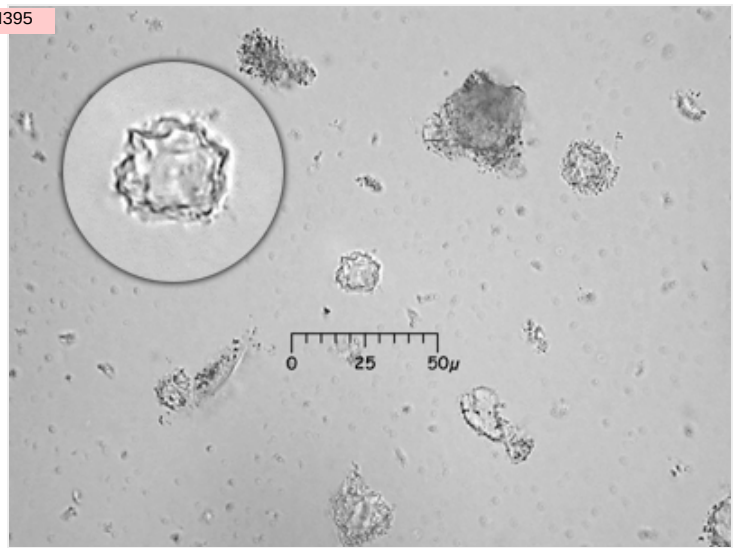
Species edulis

Authority Ker Gawl.

Comments

Large rugulose sphere (10-30 microns). Rugulose spheres occur in many taxa, such as the Marantaceae, Bombacaceae, Cannaceae, Heliconiaceae, and Chrysobalanaceae. Large spheres (10-30 microns) characterize Marantaceae and Cannaceae. Diagnostic level: Marantaceae/Cannaceae

Image N395



Description

- Rugulose spheres
- Regular or very irregular in overall shape (may not be strictly spherical)
- Surface bumpy, rough (pock marks) with irregular projections in between

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 80IAa201

Recno 233

Family Cannaceae

Genus Canna

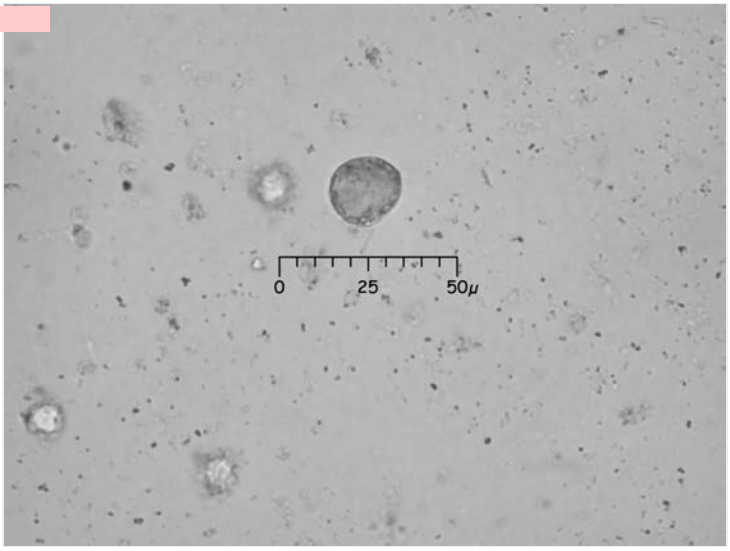
Species edulis

Authority

Comments

Spheres produced by Canna range from smooth to rugulose to irregularly angled or folded. Type 80IAa201 is based on a modern specimen of Canna edulis leaf. Ephemeral spherical bodies are not included in this type.
Diagnostic level: genus

Image



Description

Sphere with smooth but roughened surface. Highly silicified. Shape can be irregulary spherical. Size range from 8-28 microns.

Entered by Neil A. Duncan

Updated 3/2/2005

MUno 80IEa, 80IBb

Recno 343

Family Cannaceae

Genus Canna

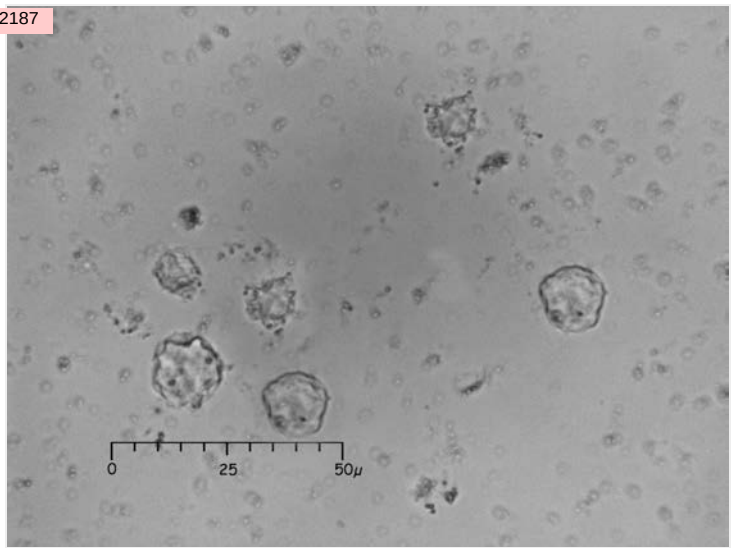
Species indica

Authority

Comments

PC1390, leaf. Contrast irregularly angled and folded spheres (80IEa left above scale bar) and rugulose spheres (80IBb right above scale bar).

Image Z2187



Description

Entered by Deborah M. Pearsall

Updated 8/30/2012

MUno 80IBa

Recno 12

Family Cannaceae

Genus Canna

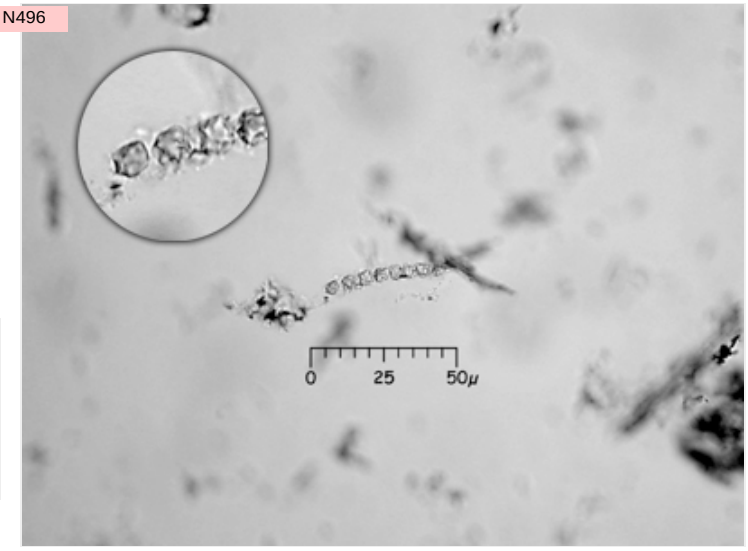
Species jaegeriana

Authority Urb.

Comments

Small rugulose spheres (< 10 microns) that are well silicified (i.e., opaque). According to Iriarte and Piperno, characteristic of woody dicots. Also occur in Canna and Marantaceae. Diagnostic level: woody dicot, with above qualification.

Image N496



Description

Small; Spherical; Thick, opaque; rugulose; Often occur in linear chains, often darkened; Usually imperfect, i.e., not perfectly spheroidal.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 80IIIB

Recno 337

Family Cannaceae

Genus Canna

Species tuerckheimii (=edulis)

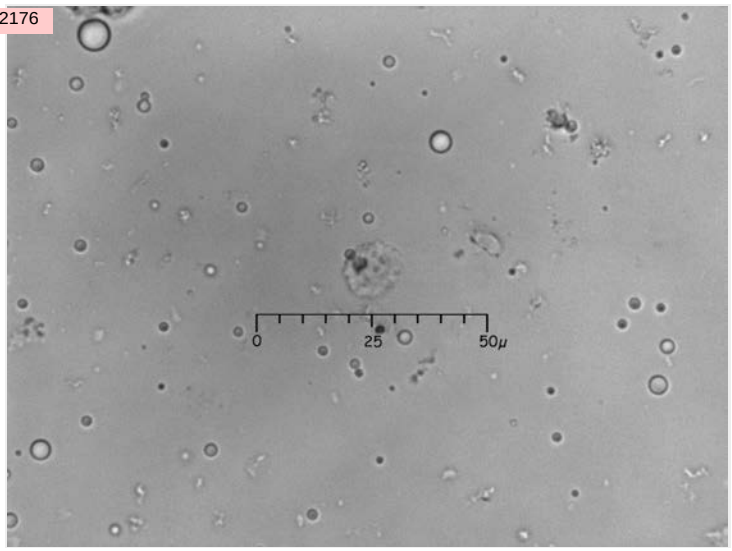
Authority Kraenzl.

Comments

80IIIB has been considered is a Marantaceae family diagnostic. Occurs rarely in PC2127, Matisia cordata, Bombacaceae; VR in PC961 Canna tuerckheimii (epidermis)

Marantaceae/Cannaceae/Bombacacea e mixed type

Image Z2176



Description

Conical (hat-shaped) body (when viewed in rotation). Bottom is rugulose. Top has nodular projections.

Entered by Deborah M. Pearsall

Updated 8/30/2012

MUno 80IIIB

Recno 338

Family Cannaceae

Genus Canna

Species tuerckheimii (=edulis)

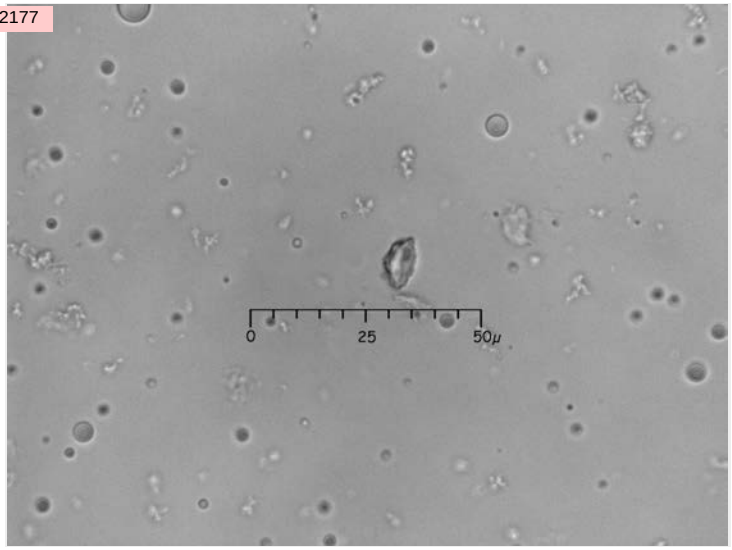
Authority Kraenzl.

Comments

80IIIB has been considered is a Marantaceae family diagnostic. Occurs rarely in PC2127, Matisia cordata, Bombacaceae; VR in PC961 Canna tuerckheimii (epidermis)

Marantaceae/Cannaceae/Bombacacea e mixed type

Image Z2177



Description

Conical (hat-shaped) body (when viewed in rotation). Bottom is rugulose. Top has nodular projections. Side view

Entered by Deborah M. Pearsall

Updated 8/30/2012

MUno 80ICa1

Recno 339

Family Cannaceae

Genus Canna

Species tuerckheimii (=edulis)

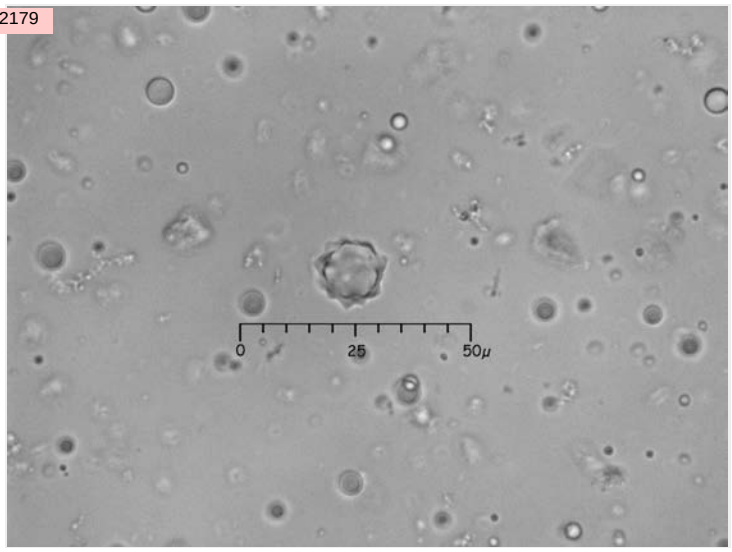
Authority Kraenzl.

Comments

PC961 (epidermis). Small nodular spheres, moderate in occurrence, variable in size and height of projections. This is a larger example, but smaller than 18 microns. Compare to 80ICc, 80ICa2.

Overlaps with Marantaceae/Bombacaceae type

Image Z2179



Description

nodular sphere: projections are nodular: obtuse tip, not evenly pointed, often rounded.

Entered by Deborah M. Pearsall

Updated 8/30/2012

MUno 80ICa1

Recno 340

Family Cannaceae

Genus Canna

Species tuerckheimii (=edulis)

Authority Kraenzl.

Comments

PC961 (epidermis). Nodular spheres moderate in occurrence, variable in size and height of projections. Compare to 80ICc, 80ICa2.

Overlaps with Marantaceae/Bombacaceae type

Image Z2182

Description

nodular sphere: projections are nodular: obtuse tip, not evenly pointed, often rounded.

Entered by Deborah M. Pearsall

Updated 8/30/2012

MUno 80IEa

Recno 341

Family Cannaceae

Genus Canna

Species tuerckheimii (=edulis)

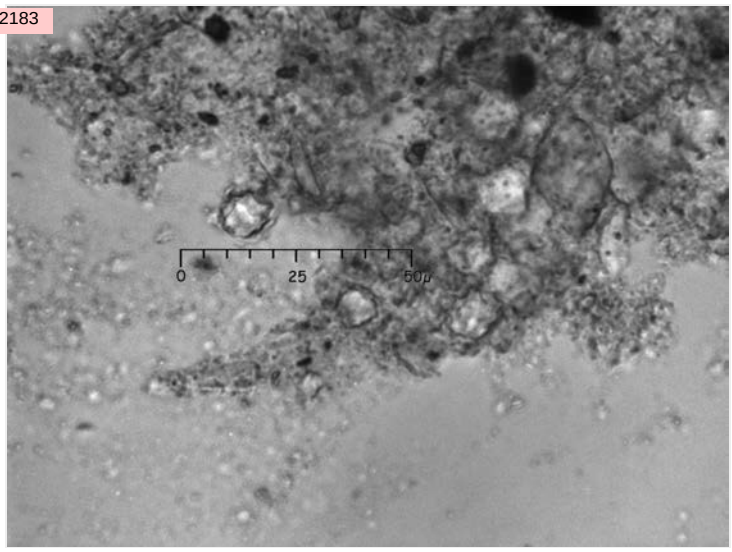
Authority Kraenzl.

Comments

PC2592, seed. Folded and angled spheres in situ in tissue. Typical size is 10-15 microns.

Diagnostic: Zingiberales

Image Z2183



Description

sphere with irregularly angled/folded surface. Original 80IE.

Entered by Deborah M. Pearsall

Updated 8/30/2012

MUno 80IEa

Recno 342

Family Cannaceae

Genus Canna

Species tuerckheimii (=edulis)

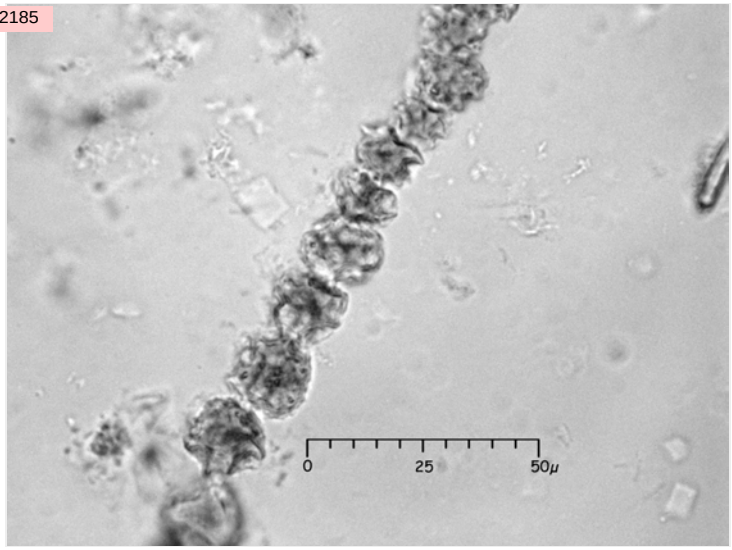
Authority Kraenzl.

Comments

OS511, leaf. Chain of irregularly folded/angled spheres

Diagnostic: Zingiberales

Image Z2185



Description

sphere with irregularly angled/folded surface. Original 80IE

Entered by Deborah M. Pearsall

Updated 8/30/2012

MUno 80IEa

Recno 10

Family Cannaceae

Genus Canna

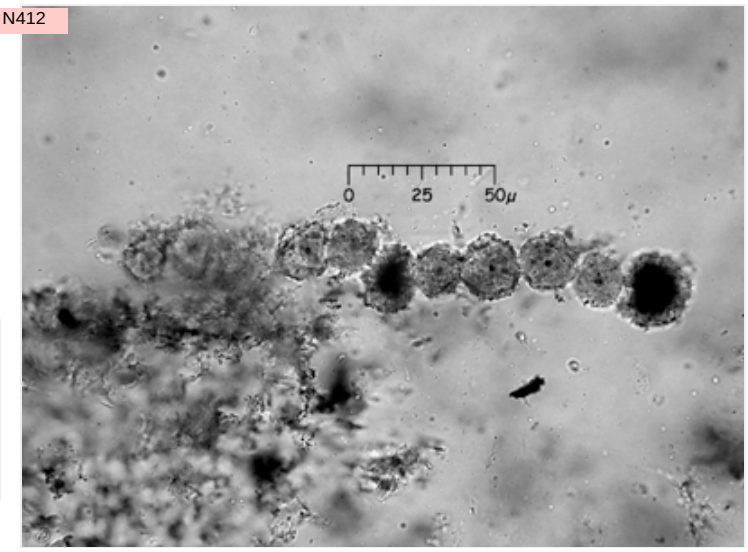
Species edulis

Authority Ker Gawl.

Comments

Canna produces smooth, rugulose, and irregularly folded and angled spheres. Diagnostic level (irregularly folded and angled): order Zingiberales

Image N412



Description

Irregularly folded and angular spheres; Thick, opaque; Can occur singly or in long chains; This type tends to be in sinous or gently curving chains, not straight chains with linear tissue attached.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 22VI

Recno 159

Family Chloranthaceae

Genus Hedyosmum

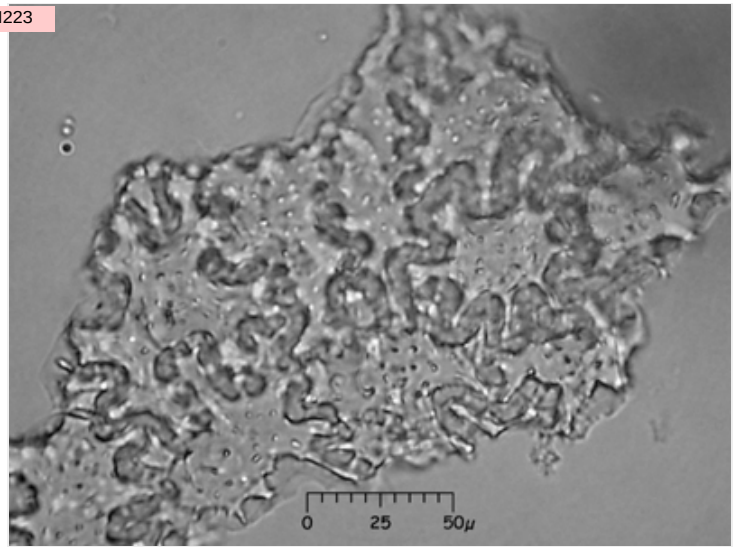
Species goudotianum

Authority Solms

Comments

Note how robust and thick bodies are. Diagnostic level: family

Image N223



Description

- Epidermal non-quadrilaterals
- Seed epidermis (beadlike surface decoration, irregular outline)
- Radial appendages

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VI

Recno 160

Family Chloranthaceae

Genus Hedyosmum

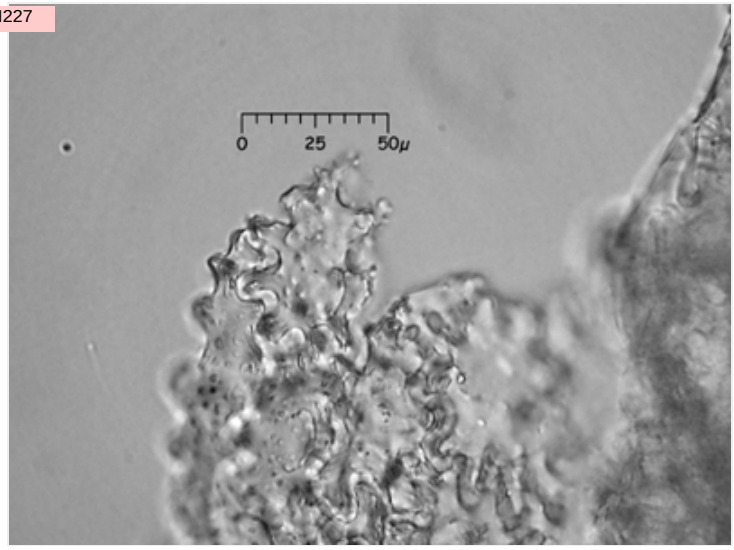
Species goudotianum

Authority Solms

Comments

Note that bodies are not flat or smooth in rotation. In this view, they are almost "puffed" and irregularly thick.
Diagnostic level: family

Image N227



Description

- Epidermal non-quadrilaterals
- Seed epidermis (beadlike surface decoration, irregular outline)
- Radial appendages

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 60III

Recno 165

Family Chloranthaceae

Genus Hedyosmum

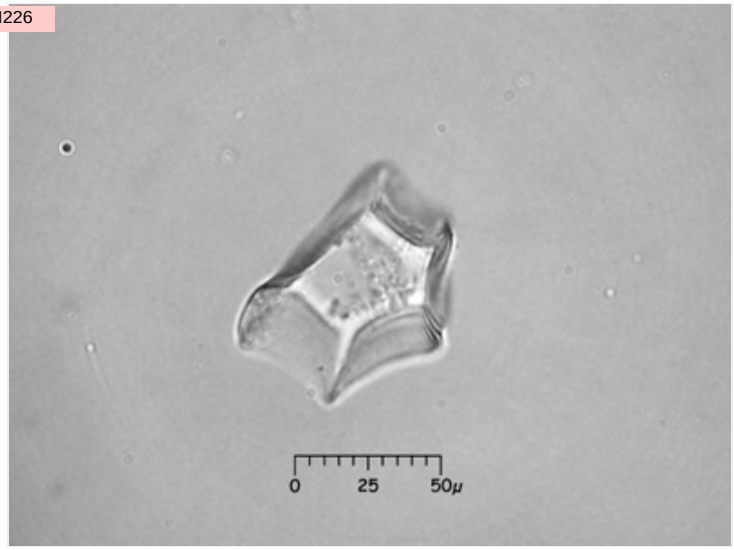
Species goudotianum

Authority Solms

Comments

Note large size of these polyhedral bodies.
Diagnostic level: family

Image N226



Description

- Non-transparent
- Large three-dimensional blocky bodies
- Unknown origin
- Polyhedral in outline

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 60III

Recno 166

Family Chloranthaceae

Genus Hedyosmum

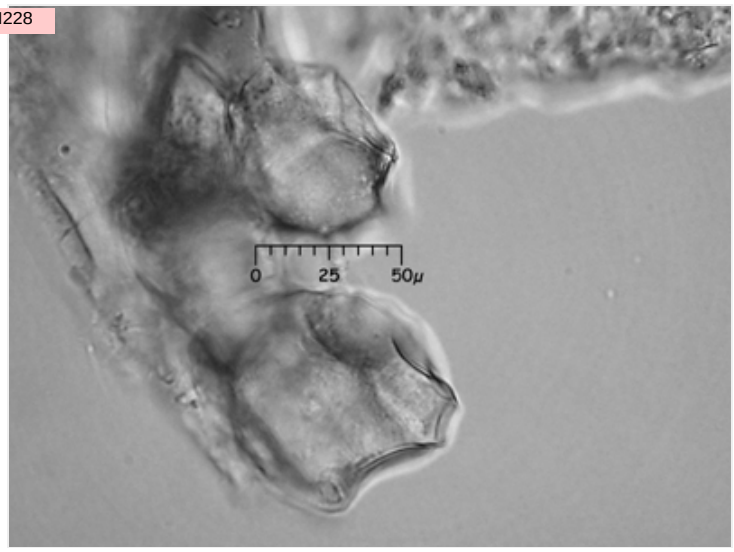
Species goudotianum

Authority Solms

Comments

Note large size of these polyhedral bodies. See double outline of “plates” or faces on polyhedron.
Diagnostic level: family

Image N228



Description

- Non-transparent
- Large three-dimensional blocky bodies
- Unknown origin
- Polyhedral in outline

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IIBb

Recno 264

Family Chrysobalanaceae

Genus Chrysobalanus

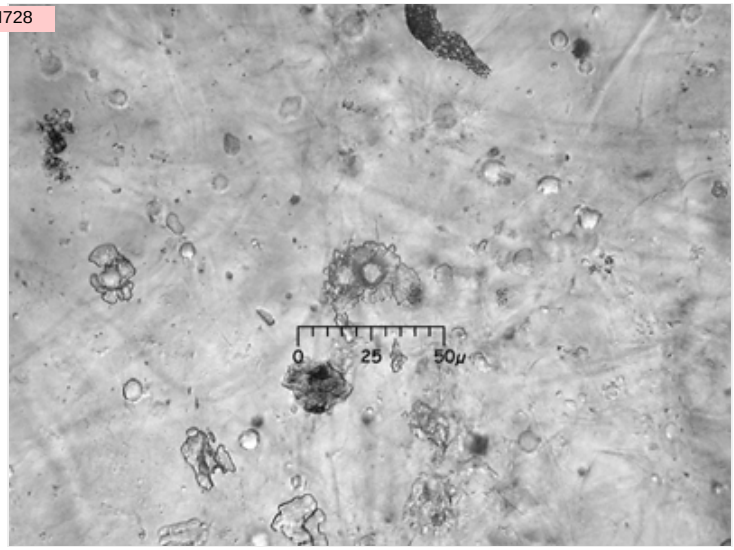
Species icaco

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: not diagnostic

Image N728



Description

Verrucate trough body: decorated, textured verrucate platform with a multi-outlined pit in the center of one side. Seeds, fruit, and root cortex.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 140I

Recno 266

Family Chrysobalanaceae

Genus Chrysobalanus

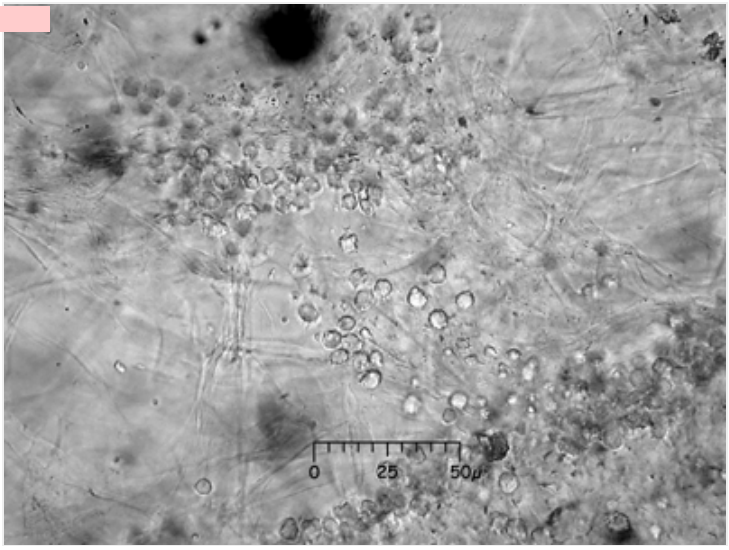
Species icaco

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: fruit/seed

Image



Description

Undulating transport elements: Silica casts of transport elements (xylem and phloem) observed in a number of taxa, predominantly in fruits and seeds. Type includes thin-walled, smooth, undulating tubes without end plates.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 80IAa1

Recno 13

Family Chrysobalanaceae

Genus Hirtella

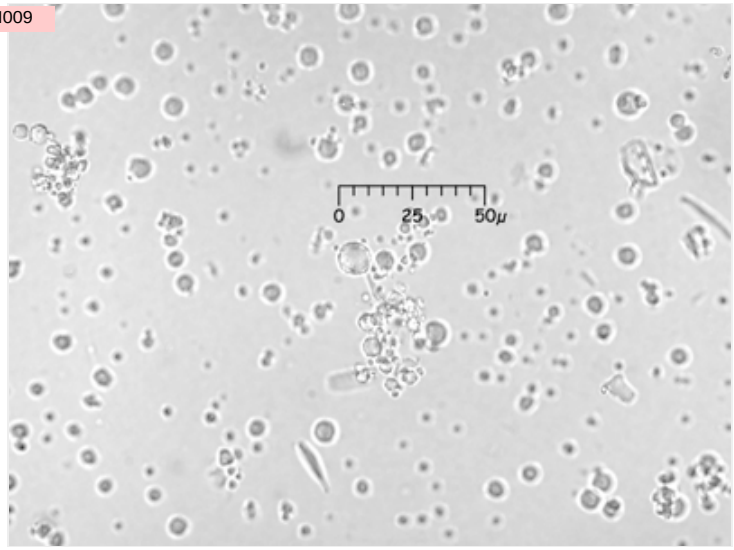
Species carbonaria

Authority Little

Comments

Sphere, small. Often very difficult to notice in archaeological samples. Also produced in Canna, Bixa orellana.
Diagnostic level: mixed: Chrysobalanaceae/Cannaceae/Bixa

Image N009



Description

- Nearly smooth
- Transparent
- Small spheres
- Usually <10 microns diameter

Entered by Karol Chandler-Ezell

Updated 2/7/2008

MUno 80IAa1

Image Z2802

Recno

Family Chrysobalanaceae

Genus Hirtella

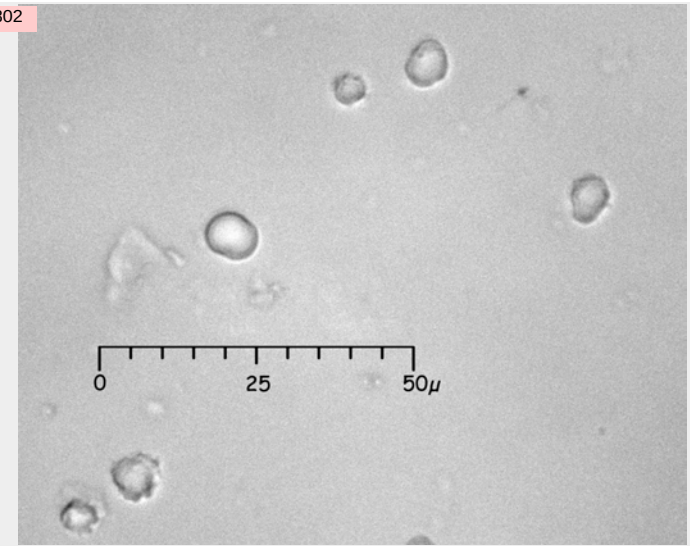
Species carbonaria

Authority

Comments

A very smooth example of 80IAa1 that appears to be two conjoined disks, as in the original description of the Chrysobalanaceae type by Piperno. Appear somewhat elongated.

Chrysobalanaceae/Cannaceae mixed type



Description

small (12 microns or less; typical size 4-6 microns) smooth sphere. Smooth to slightly irregular (not rugulose; irregularity may be localized); may angled, indented (sometimes crater-like), flattened, elongated, or appear as two joined disks (PC152 Hirtella). Well silicified; opaque when viewed overlapping another phytolith.

Entered by Deborah M. Pearsall

Updated 7/27/2012

MUno 80IAa1

Image Z2792

Recno

Family Chrysobalanaceae

Genus Licania

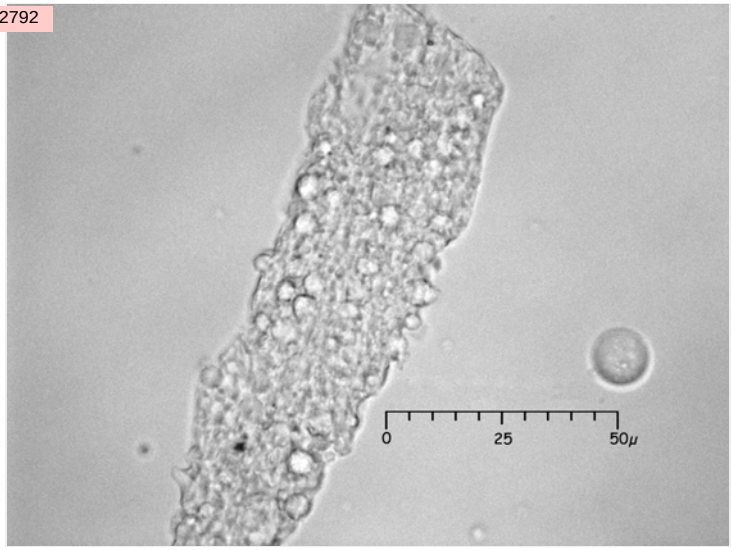
Species celiae

Authority

Comments

A sheet of 80IAa1. Spheres are not completely smooth.

Chrysobalanaceae/Cannaceae mixed type



Description

small (12 microns or less; typical size 4-6 microns) smooth sphere. Smooth to slightly irregular (not rugulose; irregularity may be localized); may angled, indented (sometimes crater-like), flattened, elongated, or appear as two joined disks (PC152 Hirtella). Well silicified; opaque when viewed overlapping another phytolith.

Entered by Deborah M. Pearsall

Updated 7/27/2012

MUno 20IBa

Recno 161

Family Chrysobalanaceae

Genus Licania

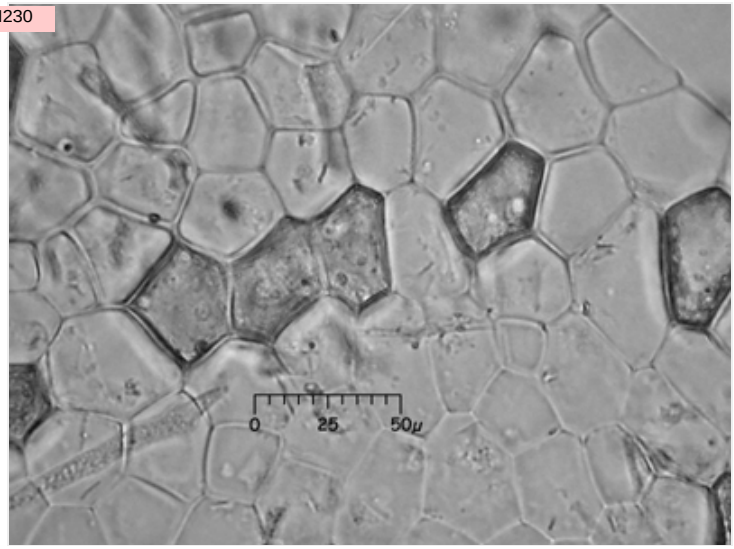
Species longistyla

Authority Fritsch

Comments

Darkened cells in center of image.
Diagnostic level: dicot epidermis

Image N230



Description

- Epidermal non-quadrilateral cells
- Smooth surface
- Polyhedral cells with smooth suface
- Granular decoration to surface

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IAa1

Recno

Family Chrysobalanaceae

Genus Licania

Species longistyla

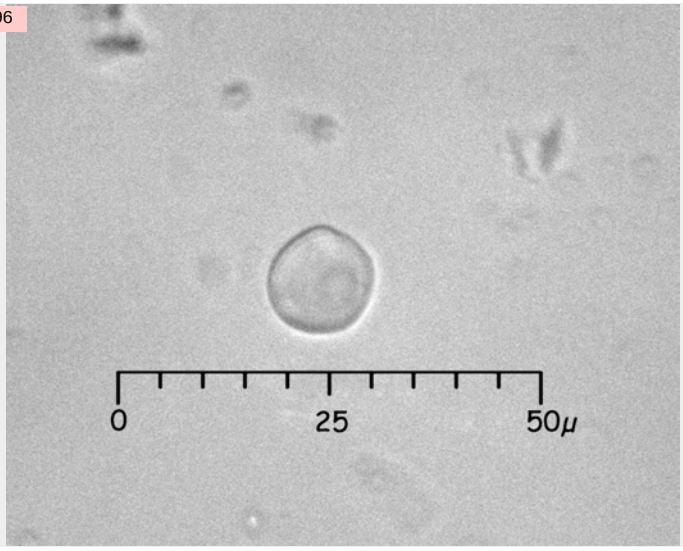
Authority

Comments

80IAa1 showing slight irregularity on edge. Slightly flattened in rotation. The irregularity can look like an inclusion until the sphere is rotated.

Chrysobalanaceae/Cannaceae mixed type

Image Z2796



Description

small (12 microns or less; typical size 4-6 microns) smooth sphere. Smooth to slightly irregular (not rugulose; irregularity may be localized); may angled, indented (sometimes crater-like), flattened, elongated, or appear as two joined disks (PC152 Hirtella). Well silicified; opaque when viewed overlapping another phytolith.

Entered by Deborah M. Pearsall

Updated 7/27/2012

MUno 80IAa1

Recno

Family Chrysobalanaceae

Genus Licania

Species longistyla

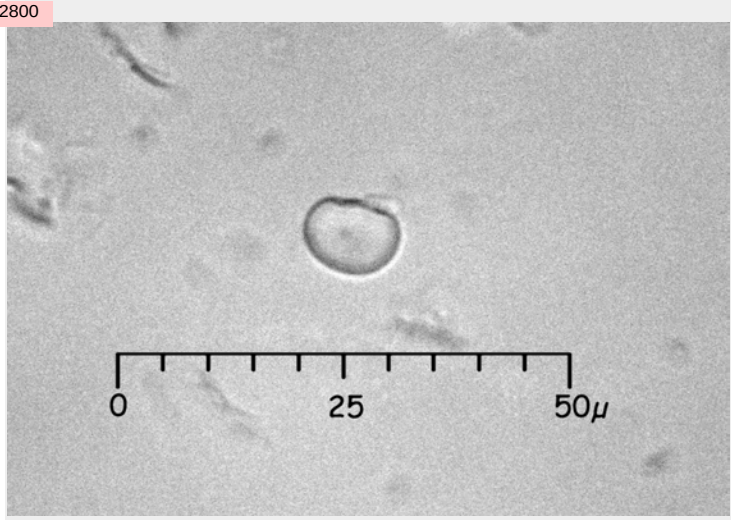
Authority

Comments

Same 80IAa1 sphere as image Z2796 rotated to show the slight flattening and irregularity.

Chrysobalanaceae/Cannaceae mixed type

Image Z2800



Description

small (12 microns or less; typical size 4-6 microns) smooth sphere. Smooth to slightly irregular (not rugulose; irregularity may be localized); may angled, indented (sometimes crater-like), flattened, elongated, or appear as two joined disks (PC152 Hirtella). Well silicified; opaque when viewed overlapping another phytolith.

Entered by Deborah M. Pearsall

Updated 7/27/2012

MUno 80IAa1

Recno 234

Family Chrysobalanaceae

Genus Licania

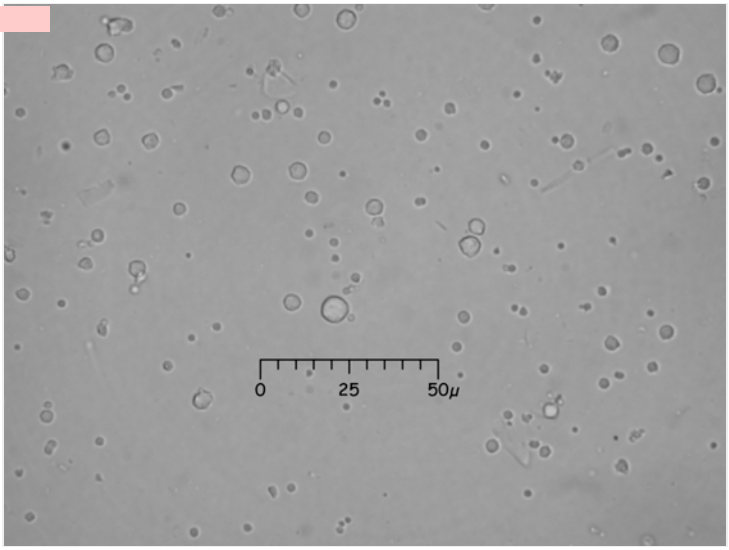
Species platypus

Authority

Comments

Sphere, small. Often very difficult to notice in archaeological samples. Also produced in Canna, Bixa.
Diagnostic level: mixed, Chrysobalanaceae/Canna/Bixa

Image



Description

Nearly smooth; Transparent; Small spheres; Usually <10 microns diameter.

Entered by Neil A. Duncan

Updated 2/7/2008

MUno 40IIIAa300C

Recno 450

Family Commelinaceae

Genus Commelina

Species coelestis

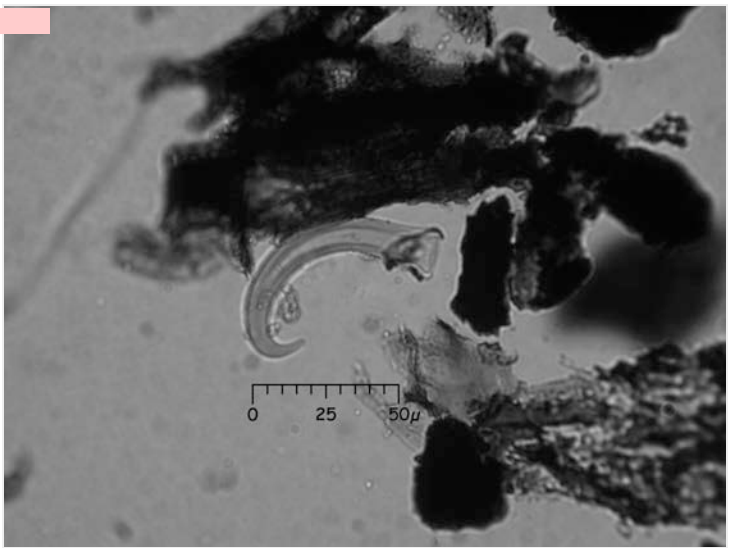
Authority

Comments

PC3154 leaf
Described by Neil Duncan. Common to abundant in this species and common in C. erecta. Larger and more hooked than similar Phaseolus hairs, but would be confusers where Commelina also grows.

Diagnostic level: genus (in absence of Phaseolus)

Image



Description

Hooked hair, double outline
small rounded interior shape

Entered by Deborah M. Pearsall

Updated 6/25/2015

MUno 40IIIAa300C

Recno 451

Family Commelinaceae

Genus Commelina

Species coelestis

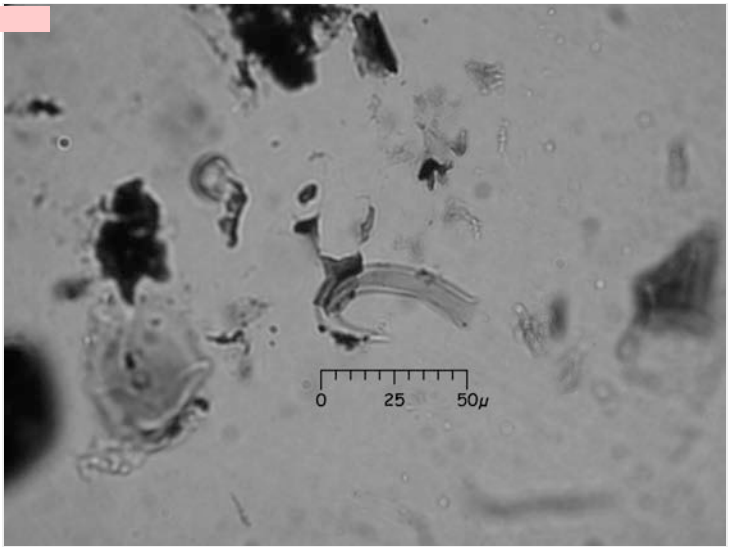
Authority

Comments

PC3154 leaf
Described by Neil Duncan. Common to abundant in this species and common in C. erecta. Larger and more hooked than similar Phaseolus hairs, but would be confusers where Commelina also grows.

Diagnostic level: genus (in absence of Phaseolus)

Image



Description

Hooked hair, double outline
small rounded interior shape

Entered by Deborah M. Pearsall

Updated 6/25/2015

MUno 110

Recno 452

Family Commelinaceae

Genus Commelina

Species dianthafolia

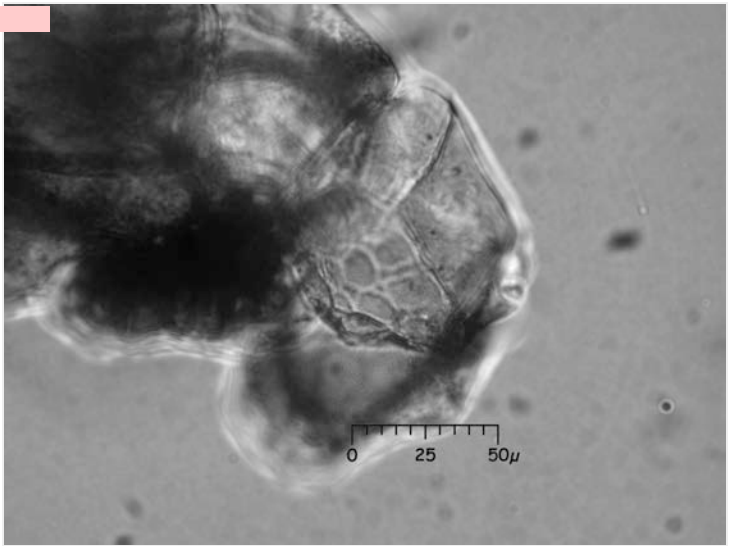
Authority

Comments

PC3155, leaf
Described by Neil Duncan.
The scallops on these schlerids are somewhat similar to those of Cucurbita spheres. The quadrilateral form distinguishes them. Common. Also common in C. robusta.

Diagnostic level: not diagnostic

Image



Description

quadrilateral schlerid with scalloped surface

Entered by Deborah M. Pearsall

Updated 6/25/2015

MUno 26IAb

Recno 425

Family Commelinaceae

Genus Commelina

Species erecta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
C. erecta photos by Neil Duncan, 2011

Side view of flat domed rhizome cylinder, potential Calathea “confuser.” Note small size.

Image

Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section.

Entered by Deborah M. Pearsall

Updated 10/18/2012

MUno 26IAb

Recno 426

Family Commelinaceae

Genus Commelina

Species erecta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004

C. erecta photos by Neil Duncan, 2011

Side view of flat domed rhizome cylinder, potential Calathea “confuser.” Note smaller size.

Image

Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section.

Entered by Deborah M. Pearsall

Updated 10/18/2012

MUno 26IAb

Recno 427

Family Commelinaceae

Genus Commelina

Species erecta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004

C. erecta photos by Neil Duncan, 2011

Bottom view (base of ciliate or beaded cylinder) of flat domed rhizome cylinder

Image

Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section.

Entered by Deborah M. Pearsall

Updated 10/18/2012

MUno 26IAb

Recno 428

Family Commelinaceae

Genus Commelina

Species erecta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004

C. erecta photos by Neil Duncan, 2011

A group of cylinders in partial rotation; note decoration of base

Image

Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section.

Entered by Deborah M. Pearsall

Updated 10/18/2012

MUno 26IAb

Recno 429

Family Commelinaceae

Genus Commelina

Species erecta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004

C. erecta photos by Neil Duncan, 2011

A cylinder in partial rotation; note smooth, transparent head

Image

Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section.

Entered by Deborah M. Pearsall

Updated 10/18/2012

MUno 110

Recno 453

Family Commelinaceae

Genus Commelina

Species erecta

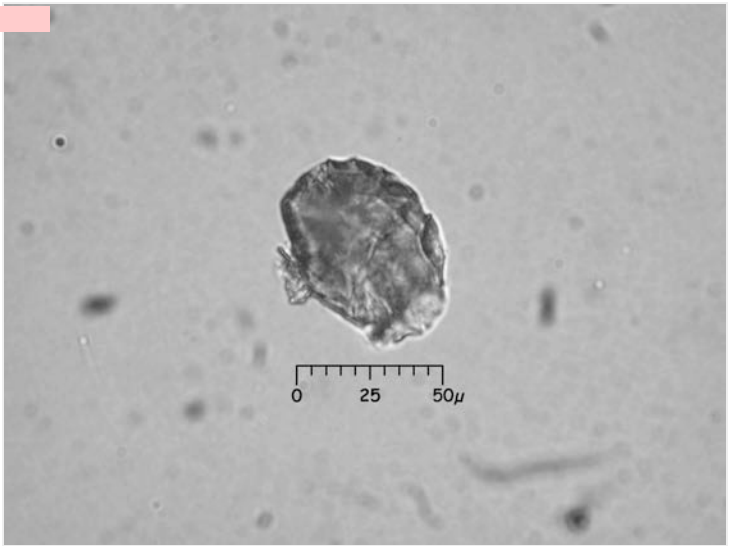
Authority

Comments

PC3157, leaf
Described by Neil Duncan.
The scallops on these schlerids are somewhat similar to those of Cucurbita spheres. The quadrilateral form distinguishes them. Smaller, less robust, and rarer in this species.

Diagnostic level: not diagnostic

Image



Description

quadrilateral schlerid with scalloped surface

Entered by Deborah M. Pearsall

Updated 11/1/2016

MUno 40IIIAa100

Recno 454

Family Commelinaceae

Genus Commelina

Species erecta

Authority

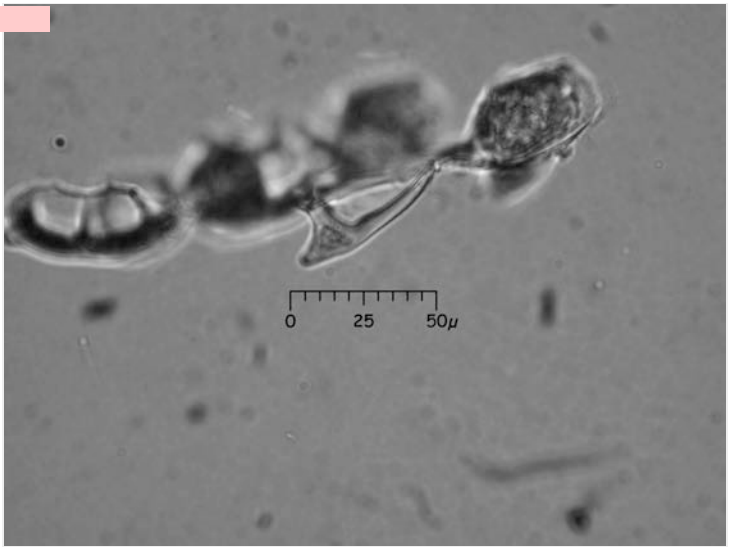
Comments

PC3157, leaf
Described by Neil Duncan.

Unicellular hairs. Rare to moderate abundance.

Diagnostic level: not diagnostic

Image



Description

Unicellular hair, straight edges, rounded tip

Entered by Deborah M. Pearsall

Updated 11/1/2016

MUno 40IIIAa100

Recno 455

Family Commelinaceae

Genus Commelina

Species scabra

Authority

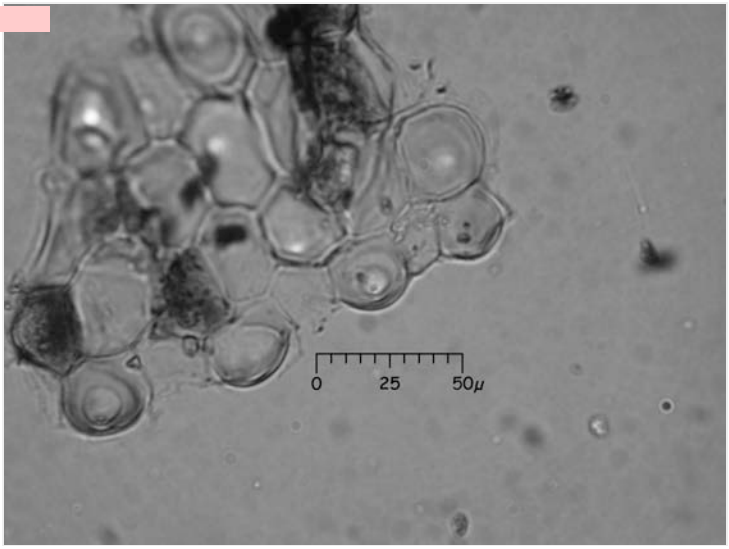
Comments

PC3160, leaf
Described by Neil Duncan.

Unicellular hairs, more “hat-shaped” than the hairs in C. erecta.

Diagnostic level: not diagnostic

Image



Description

Unicellular hair, straight edges, rounded tip

Entered by Deborah M. Pearsall

Updated 11/1/2016

MUno 80IFb101Ba

Recno 174

Family Cucurbitaceae

Genus Cucurbita

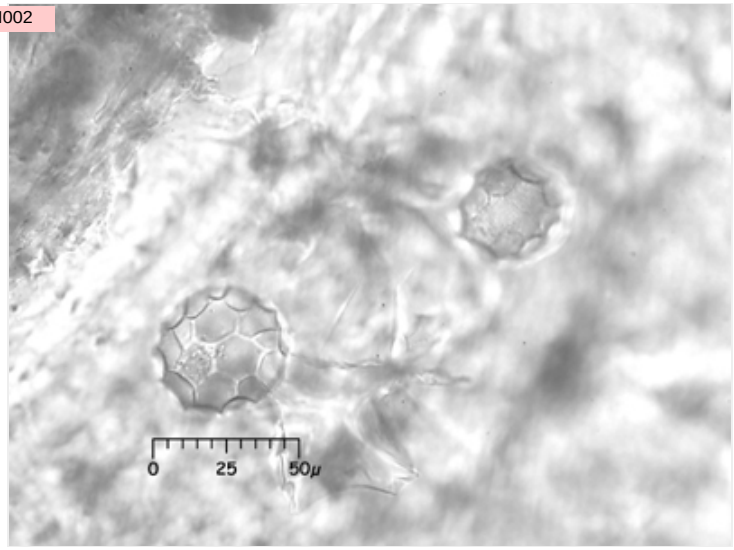
Species pepo var. ozarkana

Authority D.S.Decker-Walters

Comments

Diagnostic level: genus, domesticated
Larger hemisphere of spheres is visible in this view.
See Piperno’s 2000 Journal Archaeological Science article: “Phytoliths in Cucurbita and other neotropical Cucurbitaceae .....” for extensive discussion of the spheres produced by this family.

Image N002



Description

Cucurbita sp. (domesticated, large) type; Large spherical phytoliths with deeply scalloped surfaces of contiguous concavities; Clean demarcation between 2 hemispheres of different size; Larger hemisphere has larger, round scallops and takes 1/2 to 2/3 of total sphere volume; Scallops are rounded, very distinct, larger, and regularly distributed; Smaller hemisphere is often less than 1/3 of sphere and has smaller, less

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IFb101Ba

Image N005

Recno 175

Family Cucurbitaceae

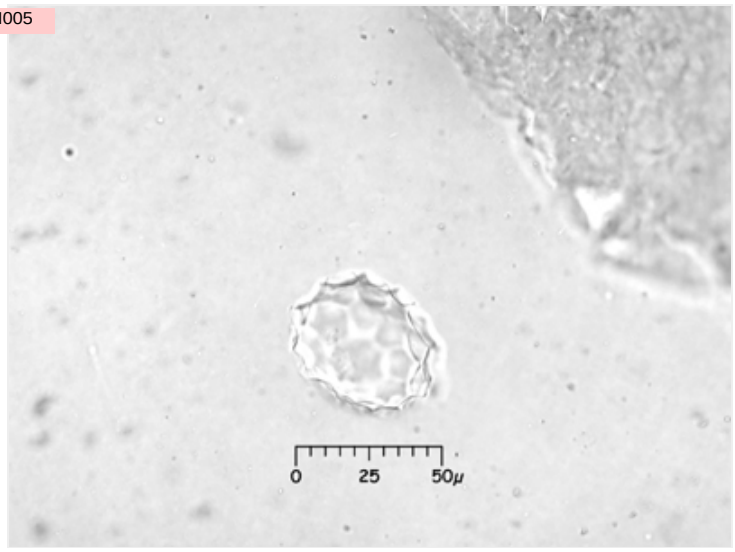
Genus Cucurbita

Species pepo var. ozarkana

Authority D.S.Decker-Walters

Comments

Diagnostic level: genus, domesticated
In this view, you can see the difference between “large” and “small” hemispheres
See Piperno’s 2000 Journal Archaeological Science article: “Phytoliths in Cucurbita and other neotropical Cucurbitaceae .....” for extensive discussion of the spheres produced by this family.



Description

Cucurbita sp. (domesticated, large) type; Large spherical phytoliths with deeply scalloped surfaces of contiguous concavities; Clean demarcation between 2 hemispheres of different size; Larger hemisphere has larger, round scallops and takes 1/2 to 2/3 of total sphere volume; Scallops are rounded, very distinct, larger, and regularly distributed; Smaller hemisphere is often less than 1/3 of sphere and has smaller, less

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVD

Image N401

Recno 14

Family Cucurbitaceae

Genus Cucurbita

Species sp.

Authority

Comments

Hair base. Central cell often not obvious unless phytolith is rotated. Cells are transparent, allowing you to look down or through the base.
Diagnostic level: Asteraceae/Cucurbitaceae

Description

Spherical hair base; large central cell is surrounded by smaller rounded epidermal cells; Transparent.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 40IVD

Recno 15

Family Cucurbitaceae

Genus Cucurbita

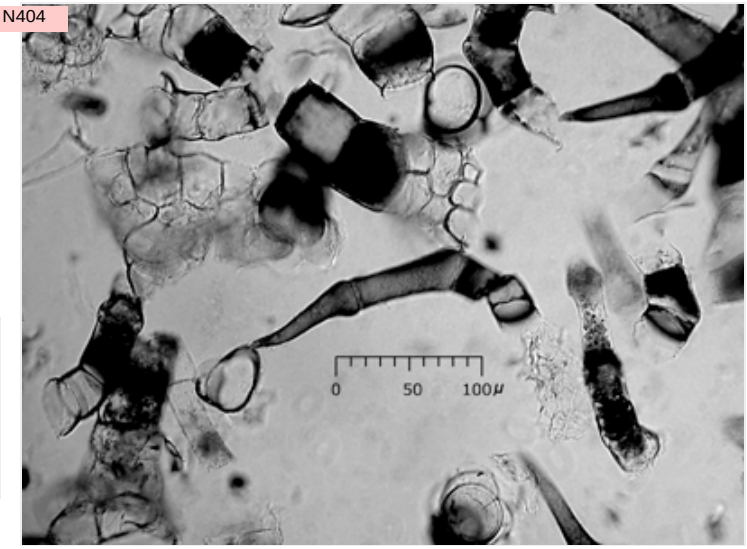
Species sp.

Authority

Comments

In some cases, base of hair is still inserted, making central cell very dark and obvious
Diagnostic level:
Asteraceae/Cucurbitaceae

Image N404



Description

Spherical hair cell base; Large central cell; surrounded by small, rounded cells; Transparent.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 40IIIBa201

Recno 16

Family Cucurbitaceae

Genus Cucurbita

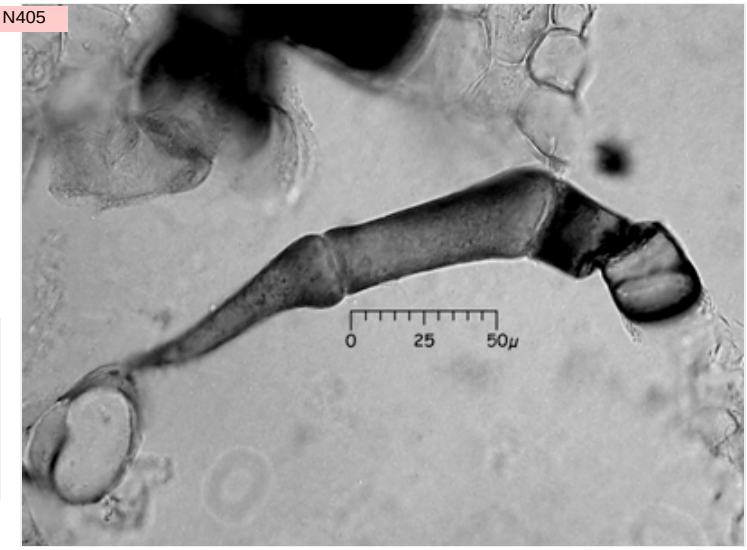
Species sp.

Authority

Comments

Number of joints varies.
Diagnostic level:
Cucurbitaceae/Asteraceae

Image N405



Description

Multicellular hair; Segmented, hooked or bent tip; Often darkened, joints of segments often rounded or bulging.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 40IVD

Recno 18

Family Cucurbitaceae

Genus Cucurbita

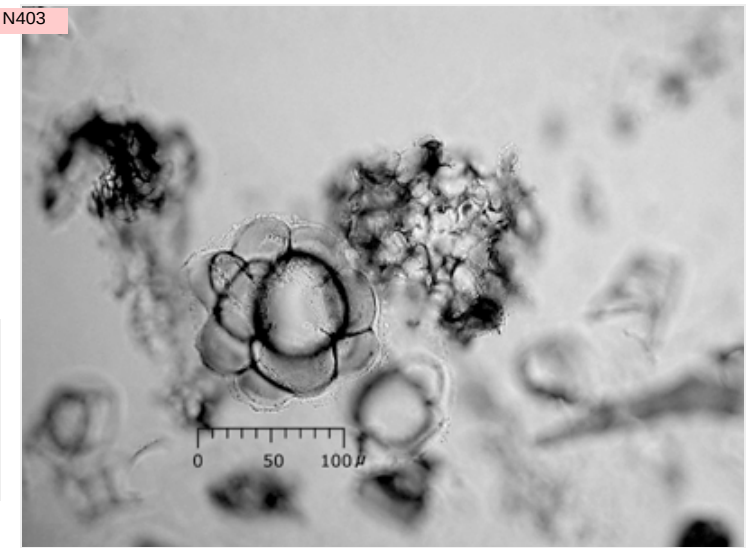
Species sp.

Authority

Comments

Hairbase and attached cells form a large sphere. This particular base is darkened/occluded.
Also visible in image: A rotated, partial hairbase.
Diagnostic level: Cucurbitaceae/Asteraceae

Image N403



Description

Central cell spherical; Rounded, regular surrounding cells; Central cell darkened; Adjacent cells attached.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 40IIIBa201

Recno 21

Family Cucurbitaceae

Genus Cucurbita

Species sp.

Authority

Comments

Diagnostic level: Cucurbitaceae/Asteraceae

Image N401

Description

Multicellular non-armed hair; Segmented; Straight tip; Large; No interior space.

Entered by Shawn K. Collins

Updated 3/1/2005

MUno 40IIIBa201

Recno 22

Family Cucurbitaceae

Genus Cucurbita

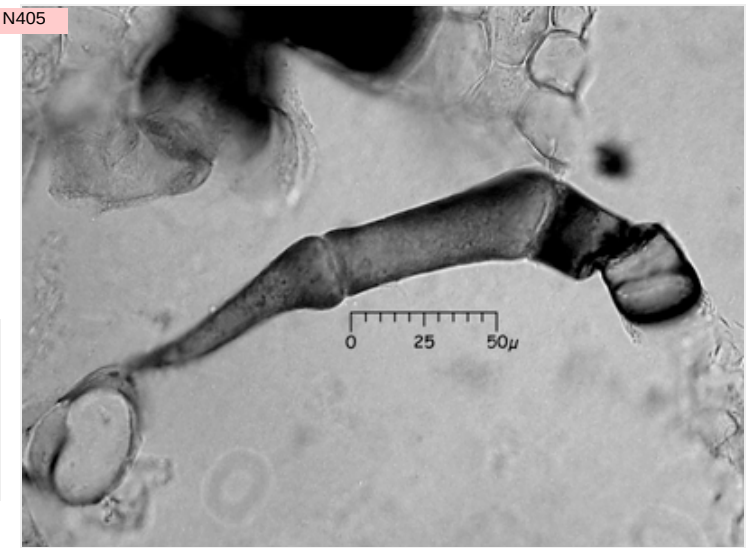
Species sp.

Authority

Comments

Diagnostic level: Cucurbitaceae/Asteraceae

Image N405



Description

Multicellular non-armed hair; Segmented; Straight tip; Large; No interior space.

Entered by Shawn K. Collins

Updated 3/1/2005

MUno 40IIIBa201

Recno 17

Family Cucurbitaceae

Genus Lagenaria

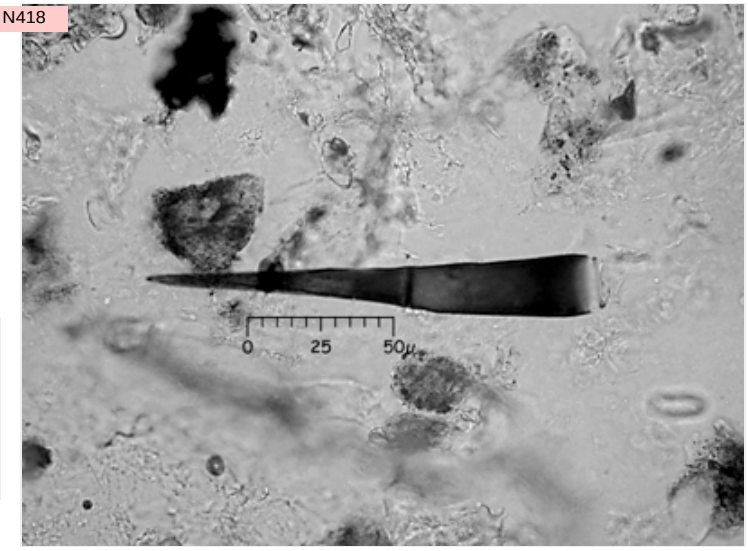
Species siceraria

Authority (Molina) Standl.

Comments

Diagnostic level: Cucurbitaceae/Asteraceae

Image N418



Description

Multicellular hair; Segmented; unarmed; joints of segments often rounded or bulging.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 80IFb100

Recno 19

Family Cucurbitaceae

Genus Lagenaria

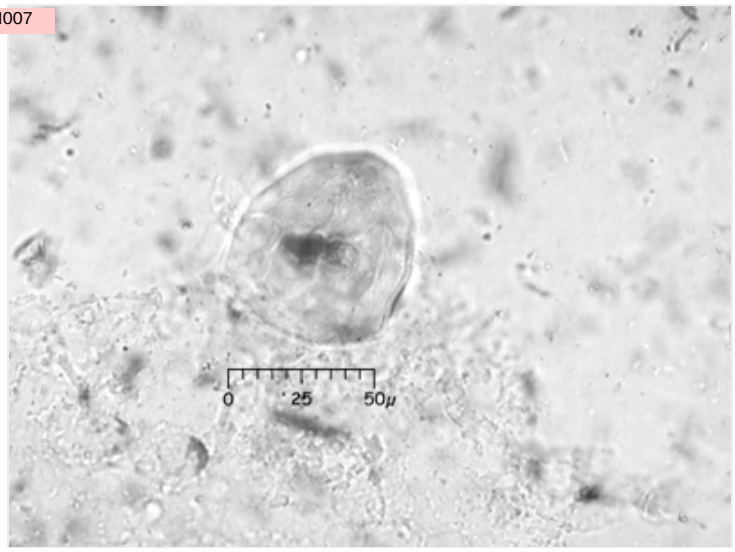
Species siceraria

Authority (Molina) Standl.

Comments

The presence of elongated facets/scallops, that are irregularly distributed,are the diagnostic features of gourd. See Piperno et al. 2000. Diagnostic level: species

Image N007



Description

Large faceted/scalloped sphere; can be hemispherical (1/2 to almost full globes with one flattened side); large, elongated scallops are distributed in an irregular manner; the undecorated or flattened side is often smooth

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 80IFb100

Recno 20

Family Cucurbitaceae

Genus Lagenaria

Species siceraria

Authority (Molina) Standl.

Comments

The presence of elongated facets/scallops, that are irregularly distributed,are the diagnostic features of gourd. See Piperno et al. 2000. Diagnostic level: species

Image N008

Description

Large faceted/scalloped sphere; can be hemispherical (1/2 to almost full globes with one flattened side); large, elongated scallops are distributed in an irregular manner; the undecorated or flattened side is often smooth.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 90IIC

Recno 301

Family Cyatheaceae

Genus Cyathea

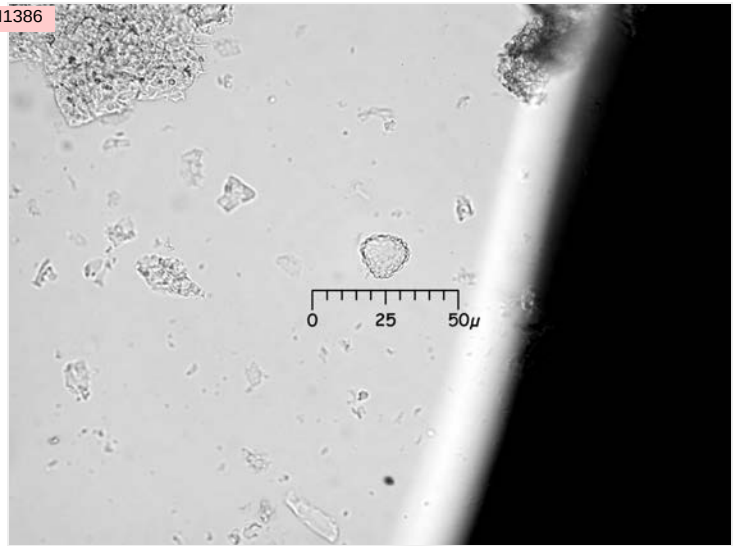
Species pallescens

Authority

Comments

Slide 2229a. Leaf.

Image N1386



Description

Spore with coarse verrucae; Surface composed of small nodules; Sphere is hollow and often torn.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 90IIC

Recno 302

Family Cyatheaceae

Genus Cyathea

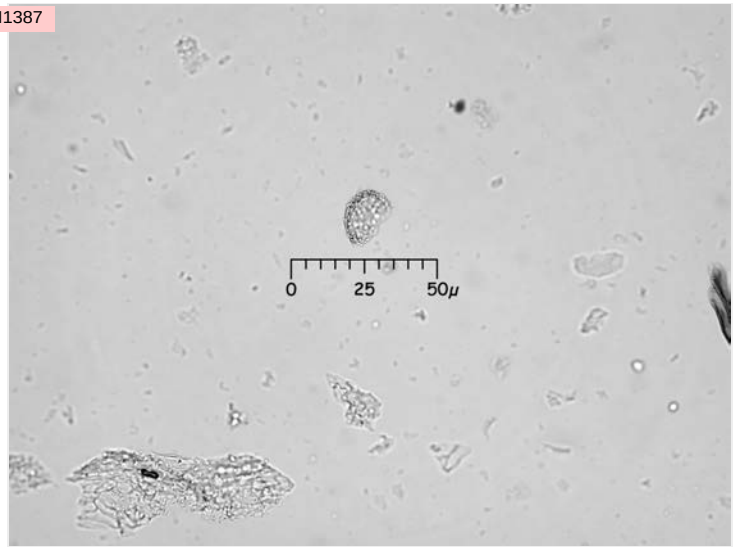
Species pallescens

Authority

Comments

Slide 2229a. Leaf.

Image N1387



Description

Spore with coarse verrucae; Surface composed of small nodules; Sphere is hollow and often torn.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 90IIC

Recno 303

Family Cyatheaceae

Genus Cyathea

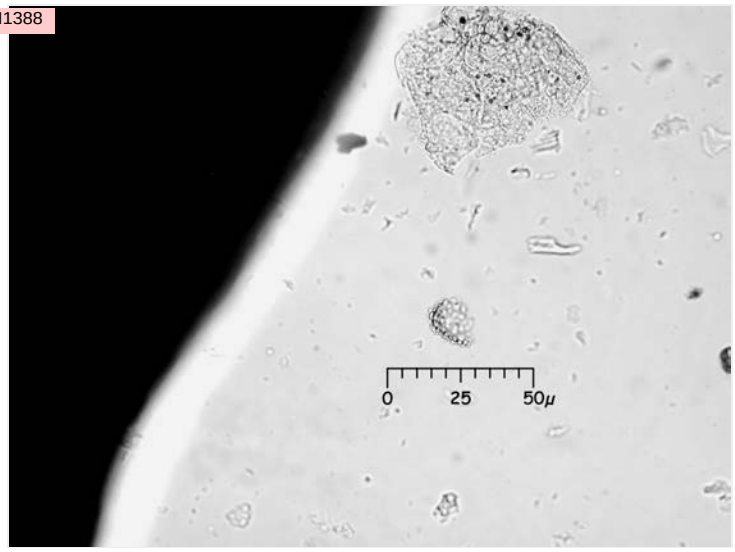
Species pallescens

Authority

Comments

Slide 2229a. Leaf.

Image N1388



Description

Spore with coarse verrucae; Surface composed of small nodules; Sphere is hollow and often torn.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 90IIC

Recno 304

Family Cyatheaceae

Genus Cyathea

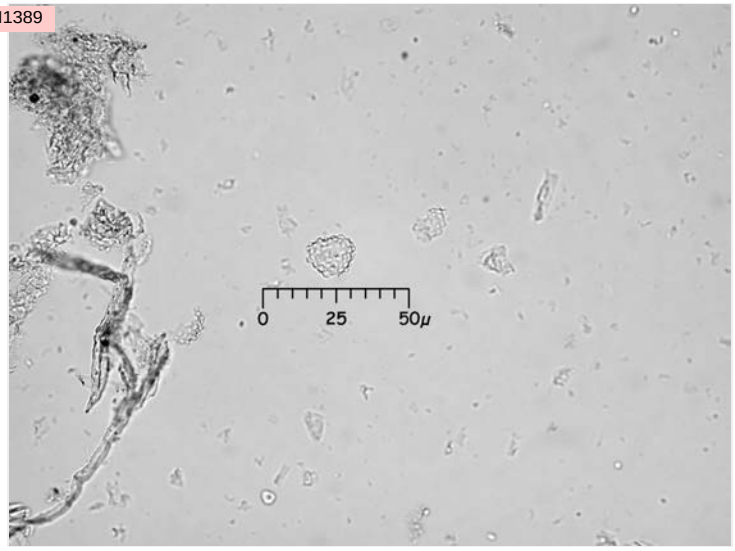
Species pallescens

Authority

Comments

Slide 2229a. Leaf.

Image N1389



Description

Spore with coarse verrucae; Surface composed of small nodules; Sphere is hollow and often torn.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 80IV

Recno 305

Family Cyatheaceae

Genus Cyathea

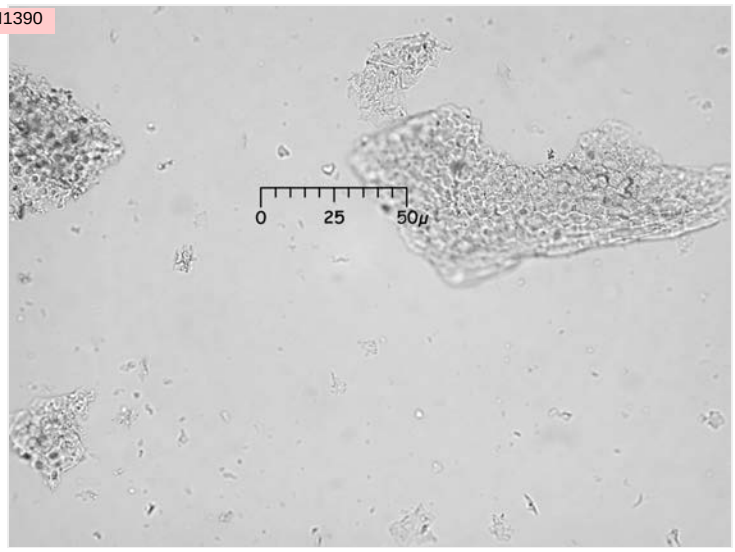
Species pallescens

Authority

Comments

Slide 2229a. Leaf.

Image N1390



Description

Hemisphere; Not faceted; Smooth surface.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 80IV

Recno 306

Family Cyatheaceae

Genus Cyathea

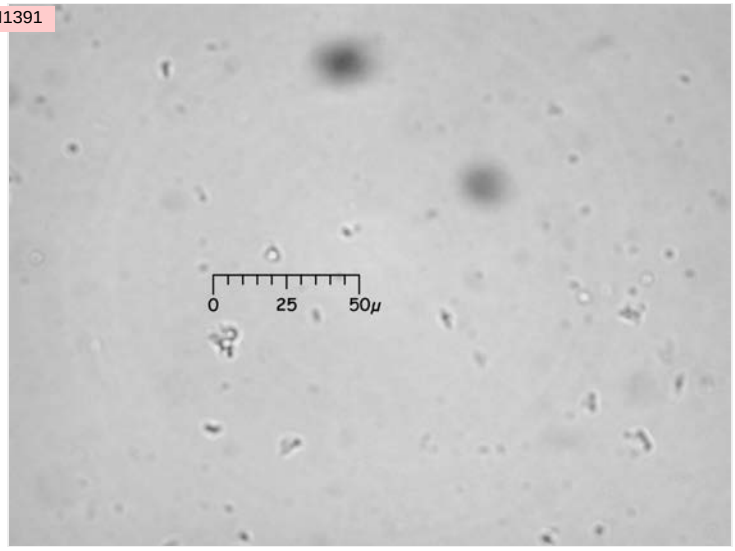
Species pallescens

Authority

Comments

Slide 2229a. Leaf.

Image N1391



Description

Hemisphere; Not faceted; Smooth surface.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 80IV

Recno 307

Family Cyatheaceae

Genus Cyathea

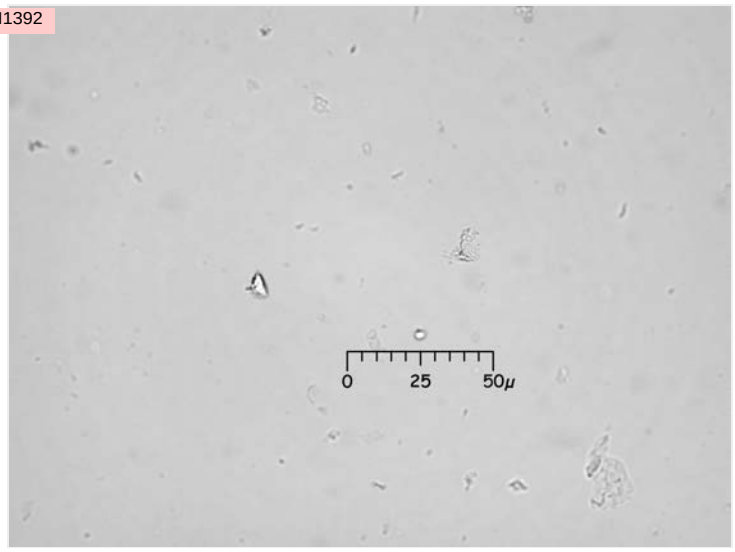
Species pallescens

Authority

Comments

Slide 2229a. Leaf.

Image N1392



Description

Hemisphere; Not faceted; Smooth surface.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 80IV

Recno 308

Family Cyatheaceae

Genus Cyathea

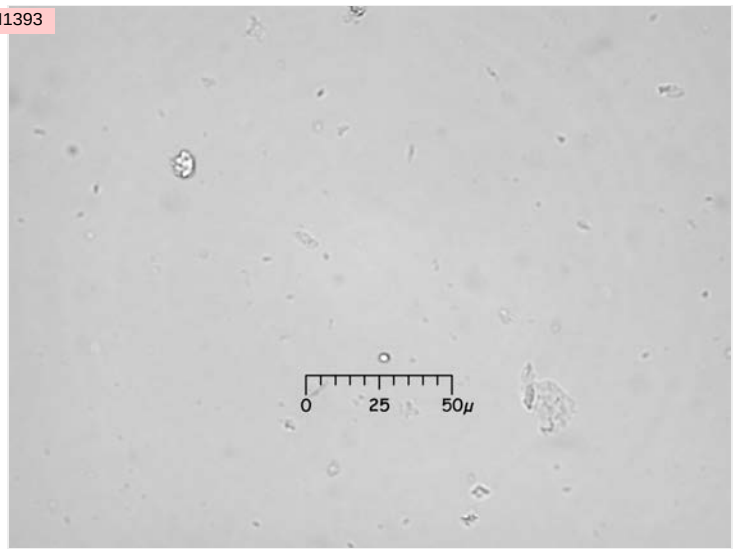
Species pallescens

Authority

Comments

Slide 2229a. Leaf.

Image N1393



Description

Hemisphere; Not faceted; Smooth surface.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 20VA

Recno 435

Family Cyperaceae

Genus Cyperus

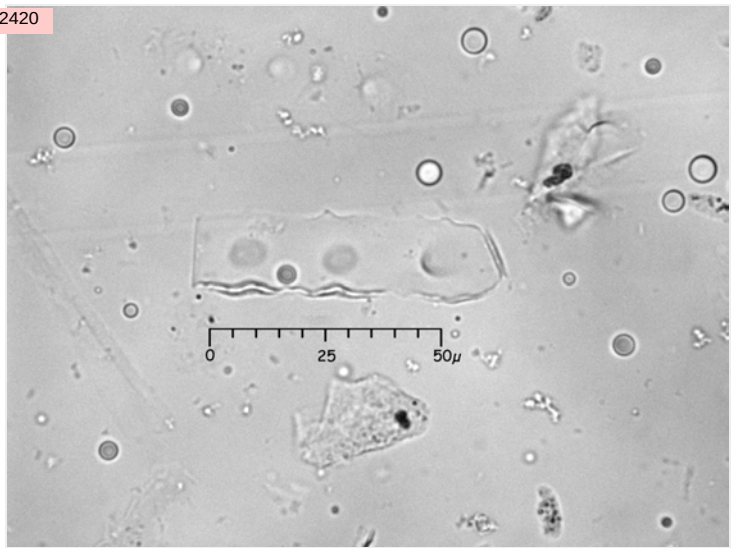
Species esculentus

Authority

Comments

PC628, leaf
Often occur in lines or ranks.
Often conical in top view, but non-quadrilateral in side view.
In side view, conical projections with "shoulders".
Diagnostic level: family

Image Z2420



Description

- Epidermal cells, small
- Conical or "hat-shaped" bodies
- Hat-shaped
- May occur in files
- Tend to be quadrilateral in top view

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 20VA

Recno 436

Family Cyperaceae

Genus Cyperus

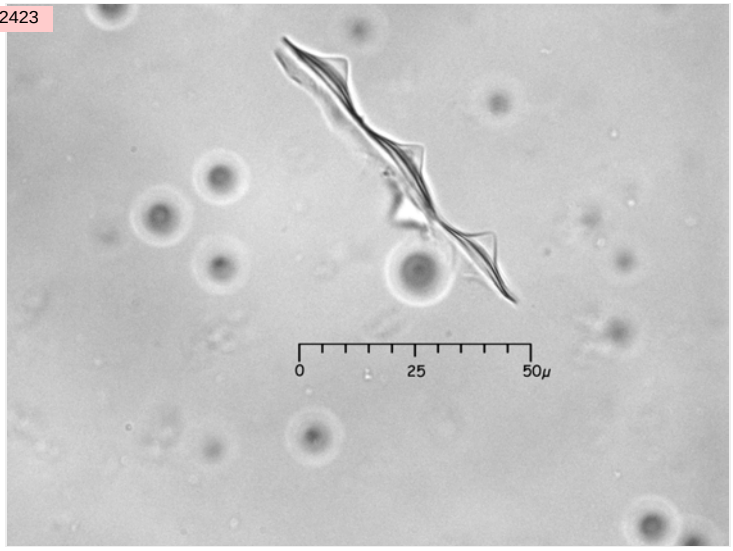
Species esculentus

Authority

Comments

PC628, leaf
Often occur in lines or ranks.
Often conical in top view, but non-quadrilateral in side view.
In side view, conical projections with "shoulders".
Diagnostic level: family

Image Z2423



Description

- Epidermal cells, small
- Conical or "hat-shaped" bodies
- Hat-shaped
- May occur in files
- Tend to be quadrilateral in top view

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IFb

Recno 437

Family Cyperaceae

Genus Cyperus

Species esculentus

Authority

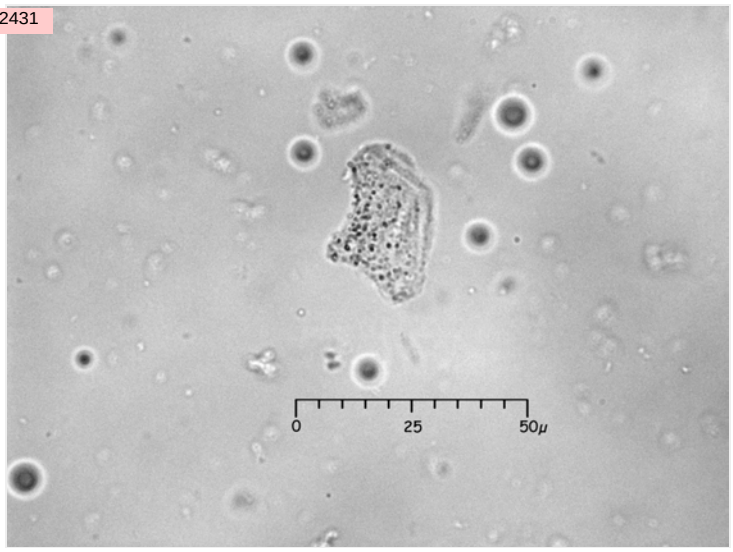
Comments

PC629 inflorescence

Some examples have edge projections

Diagnotic level: under study

Image Z2431



Description

Epidermal non-quadrilateral, seed or fruit epidermis
irregularly shaped
angled to irregularly quadrilateral, surface grainy
no projections on edges, flat to undulating grainy surface

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IFb

Recno 438

Family Cyperaceae

Genus Cyperus

Species esculentus

Authority

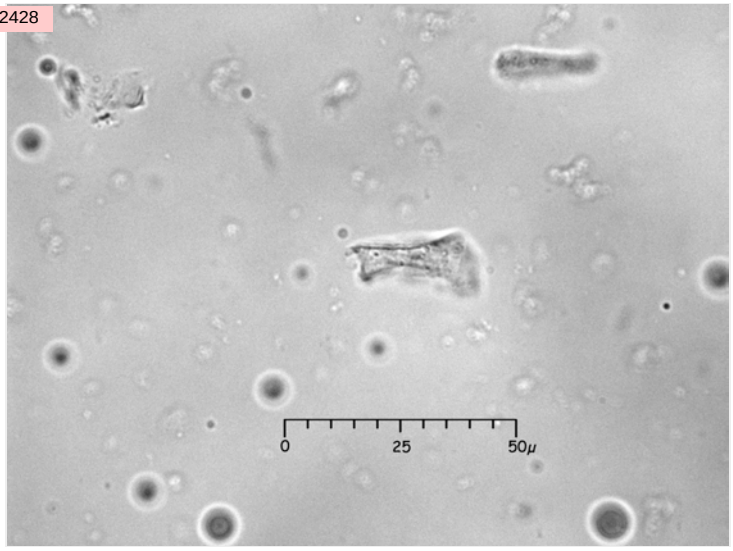
Comments

PC629 inflorescence

Some examples have edge projections
This photo shows a side view

Diagnotic level: under study

Image Z2428



Description

Epidermal non-quadrilateral, seed or fruit epidermis
irregularly shaped
angled to irregularly quadrilateral, surface grainy
no projections on edges, flat to undulating grainy surface

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IFb

Recno 439

Family Cyperaceae

Genus Cyperus

Species esculentus

Authority

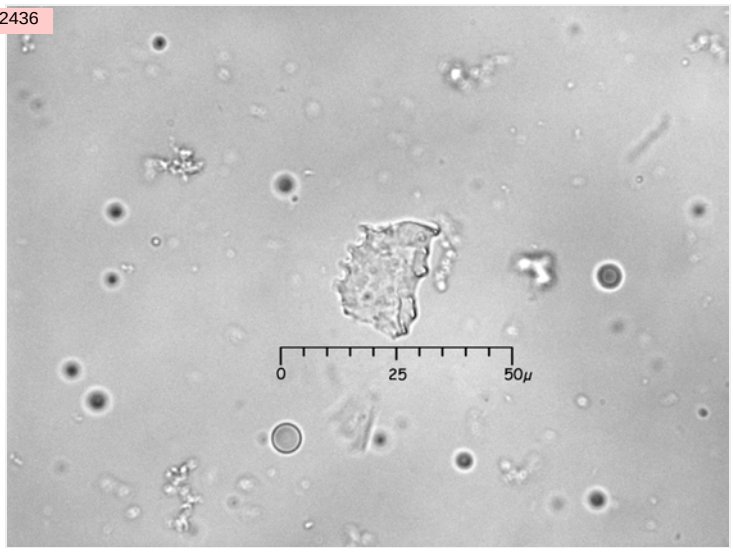
Comments

PC629 inflorescence

Some examples have edge projections
This photo shows edge projections.

Diagnotic level: under study

Image Z2436



Description

Epidermal non-quadrilateral, seed or fruit epidermis
irregularly shaped
angled to irregularly quadrilateral, surface grainy
no projections on edges, flat to undulating grainy surface

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IIC

Recno 440

Family Cyperaceae

Genus Cyperus

Species esculentus

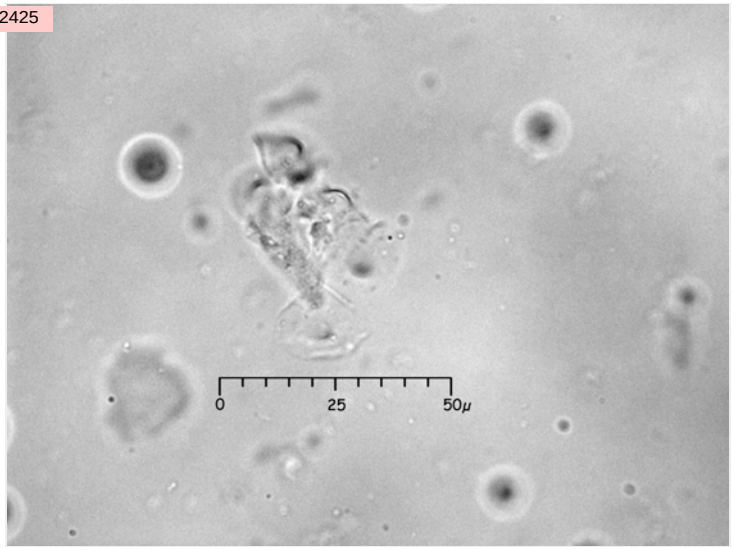
Authority

Comments

PC629 inflorescence

Diagnostic level: under study

Image Z2425



Description

Epidermal non-quadrilateral, seed or fruit epidermis
polyhedral in top view with conical projections
undecorated; projection short, surface curved or undulating, polyhedral to quatrilateral

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IIAa

Recno 441

Family Cyperaceae

Genus Cyperus

Species esculentus

Authority

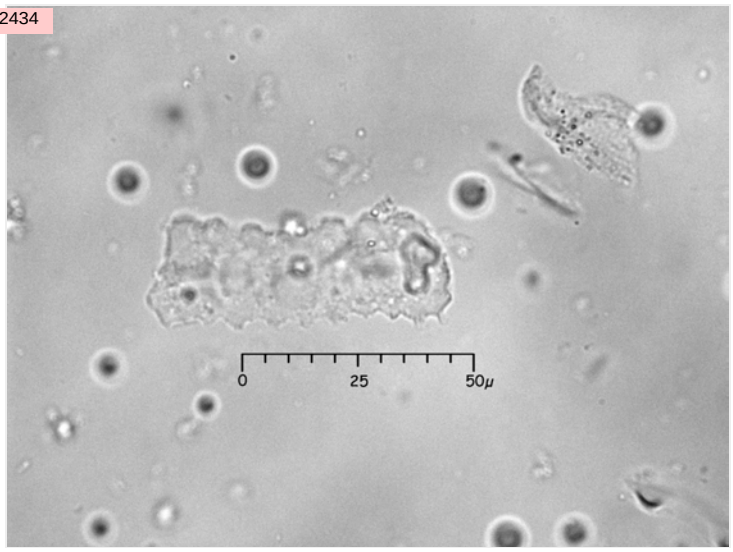
Comments

PC629 inflorescence

This example (viewed from the bottom) has edge decoration/projections

Diagnostic level: genus

Image Z2434



Description

Epidermal non-quadrilateral, seed or fruit epidermis
polyhedral cell in top view, with conical projections
entire upper surface decorated

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 20VA

Recno 430

Family Cyperaceae

Genus Cyperus

Species esculentus var.

Authority

Comments

PC626, leaf
Often occur in lines or ranks.
Often conical in top view, but non-quadrilateral in side view.
In side view, conical projections with "shoulders".
Diagnostic level: family

Image Z2410

Description

- Epidermal cells, small
- Conical or "hat-shaped" bodies
- Hat-shaped
- May occur in files
- Tend to be quadrilateral in top view

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 20VA

Recno 431

Family Cyperaceae

Genus Cyperus

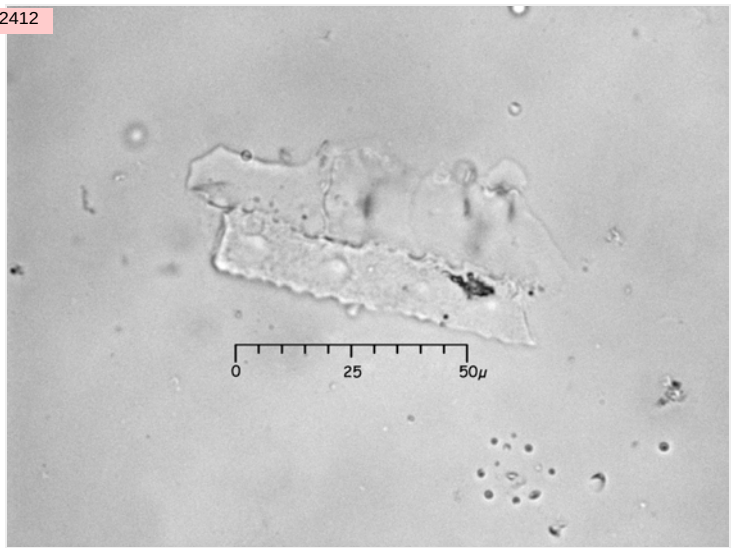
Species esculentus var.

Authority

Comments

PC626, leaf
Often occur in lines or ranks.
Often conical in top view, but non-quadrilateral in side view.
In side view, conical projections with "shoulders".
Diagnostic level: family

Image Z2412



Description

- Epidermal cells, small
- Conical or "hat-shaped" bodies
- Hat-shaped
- May occur in files
- Tend to be quadrilateral in top view

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IIAa

Recno 432

Family Cyperaceae

Genus Cyperus

Species esculentus var.

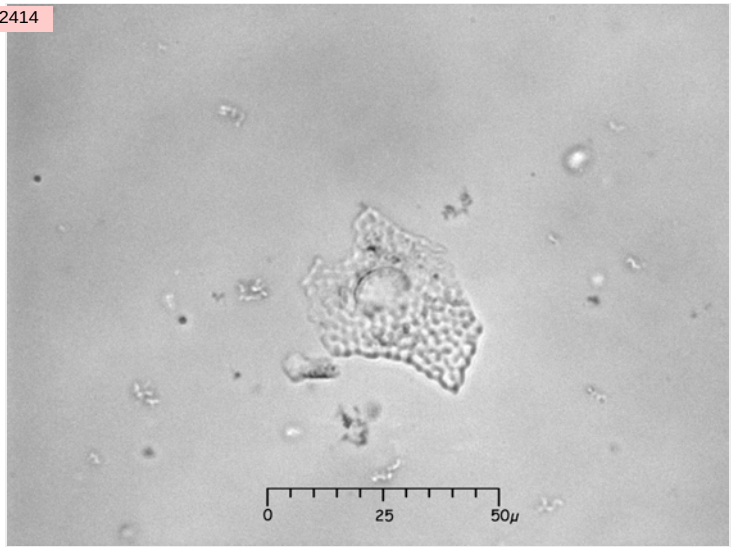
Authority

Comments

PC627 inflorescence

Diagnostic level: genus

Image Z2414



Description

Epidermal non-quadrilateral, seed or fruit epidermis polyhedral cell in top view, with conical projections entire upper surface decorated

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IIAa

Recno 433

Family Cyperaceae

Genus Cyperus

Species esculentus var.

Authority

Comments

PC627 inflorescence

Diagnostic level: genus

Image Z2416

Description

Epidermal non-quadrilateral, seed or fruit epidermis
polyhedral cell in top view, with conical projections
entire upper surface decorated

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IIAa

Recno 434

Family Cyperaceae

Genus Cyperus

Species esculentus var.

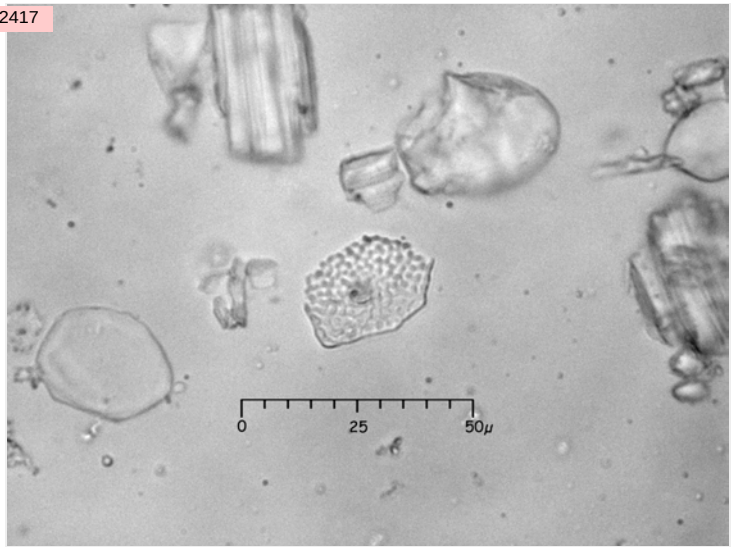
Authority

Comments

PC627 inflorescence

Diagnostic level: genus

Image Z2417



Description

Epidermal non-quadrilateral, seed or fruit epidermis
polyhedral cell in top view, with conical projections
entire upper surface decorated

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 20VA

Recno 442

Family Cyperaceae

Genus Cyperus

Species hermaphroditus

Authority

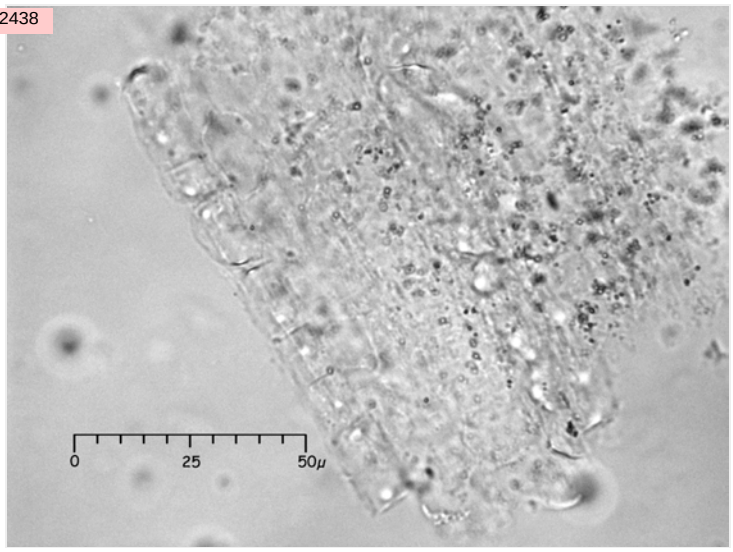
Comments

PC2996 leaf

Epidermal sheet with 20VA in situ

Often occur in lines or ranks.
Often conical in top view, but non-quadrilateral in side view.
In side view, conical projections with "shoulders".
Diagnostic level: family

Image Z2438



Description

- Epidermal cells, small
- Conical or "hat-shaped" bodies
- Hat-shaped
- May occur in files
- Tend to be quadrilateral in top view

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 20VA

Recno 443

Family Cyperaceae

Genus Cyperus

Species hermaphroditus

Authority

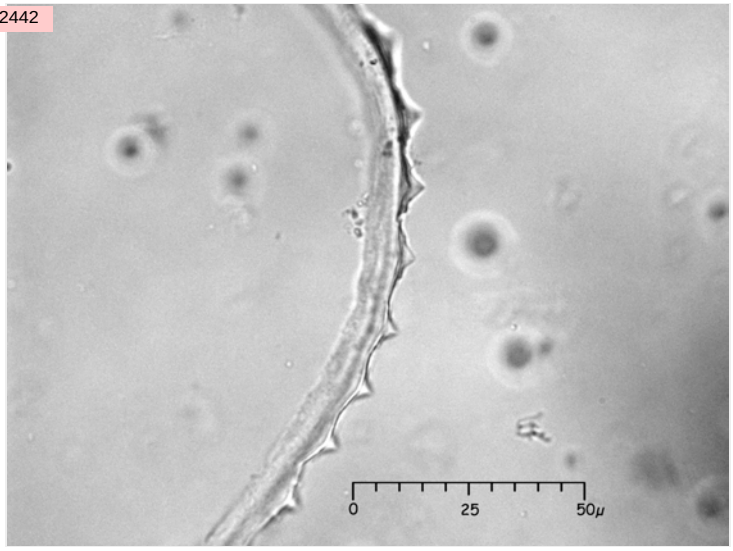
Comments

PC2996 leaf

Side view of group of 20VA

Often occur in lines or ranks.
Often conical in top view, but non-quadrilateral in side view.
In side view, conical projections with "shoulders".
Diagnostic level: family

Image Z2442



Description

- Epidermal cells, small
- Conical or "hat-shaped" bodies
- Hat-shaped
- May occur in files
- Tend to be quadrilateral in top view

Entered by Deborah M. Pearsall

Updated 11/8/2012

MUno 22IIAa

Recno 444

Family Cyperaceae

Genus Cyperus

Species hermaphroditus

Authority

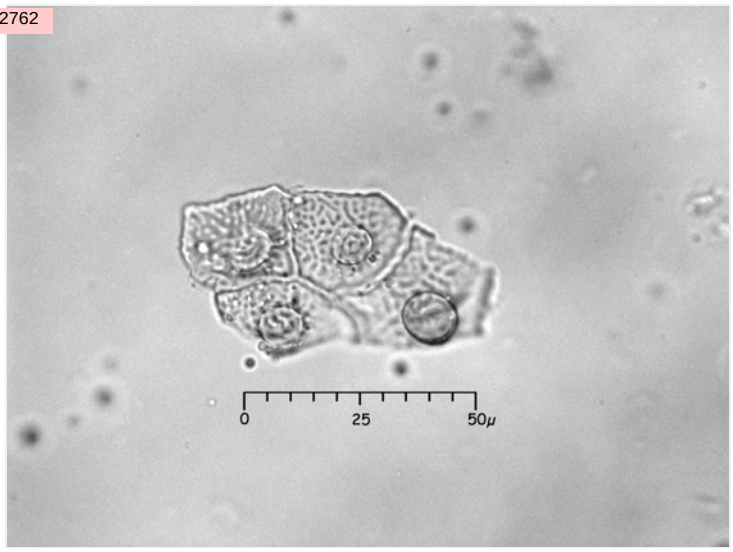
Comments

PC2997

This variant has flat-topped rather than conical projections. Both flat and conical are present in the specimen; flat tend to occur in epidermal sheets

Diagnostic level: genus

Image Z2762



Description

polyhedral epidermal cells, decorated on the entire surface.

Entered by Deborah M. Pearsall

Updated 2/4/2013

MUno 22IIAa

Recno 445

Family Cyperaceae

Genus Cyperus

Species hermaphroditus

Authority

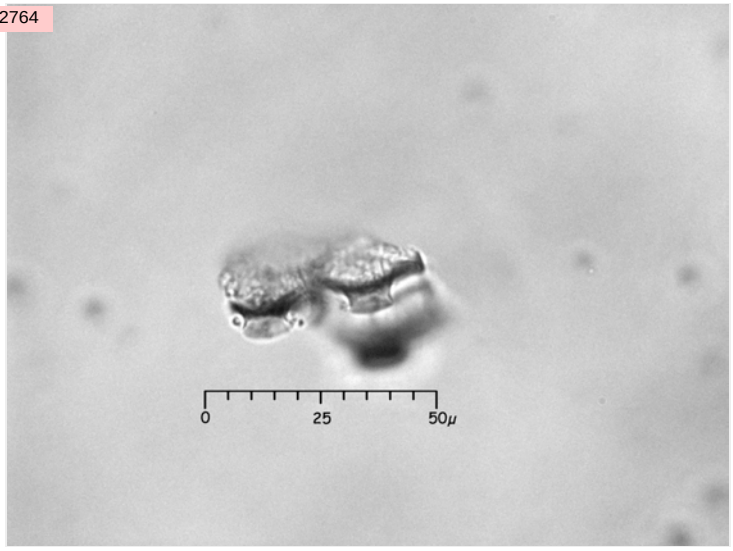
Comments

PC2997

This variant has flat-topped rather than conical projections. Both flat and conical are present in the specimen; flat tend to occur in epidermal sheets

Diagnostic level: genus

Image Z2764



Description

polyhedral epidermal cells, decorated on the entire surface.

Entered by Deborah M. Pearsall

Updated 2/4/2013

MUno 22IIAa

Recno 446

Family Cyperaceae

Genus Cyperus

Species hermaphroditus

Authority

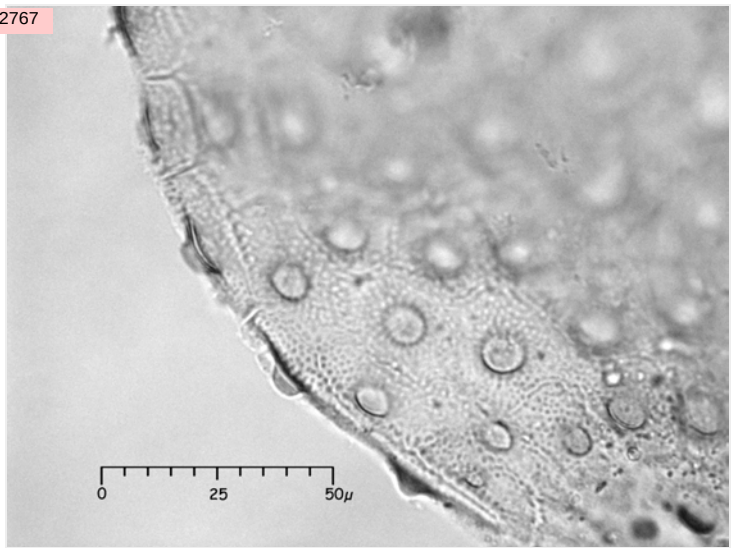
Comments

PC2997

This variant has flat-topped rather than conical projections. Both flat and conical are present in the specimen; flat tend to occur in epidermal sheets

Diagnostic level: genus

Image Z2767



Description

polyhedral epidermal cells, decorated on the entire surface.

Entered by Deborah M. Pearsall

Updated 2/4/2013

MUno 40IBb1

Recno 448

Family Cyperaceae

Genus Cyperus

Species hermaphroditus

Authority

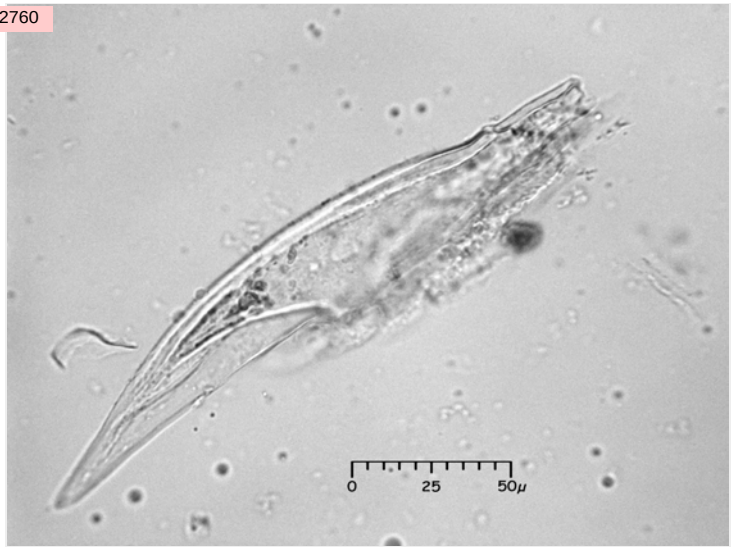
Comments

PC2996, leaf

double-outline trichome

Not diagnostic

Image Z2760



Description

Double-outline trichome
non-armed
curved tip/outer edge
length of base greater than or equal to 1/2 length of tip (outer edge)

Entered by Deborah M. Pearsall

Updated 2/7/2013

MUno 40IBa101

Recno 449

Family Cyperaceae

Genus Cyperus

Species hermaphroditus

Authority

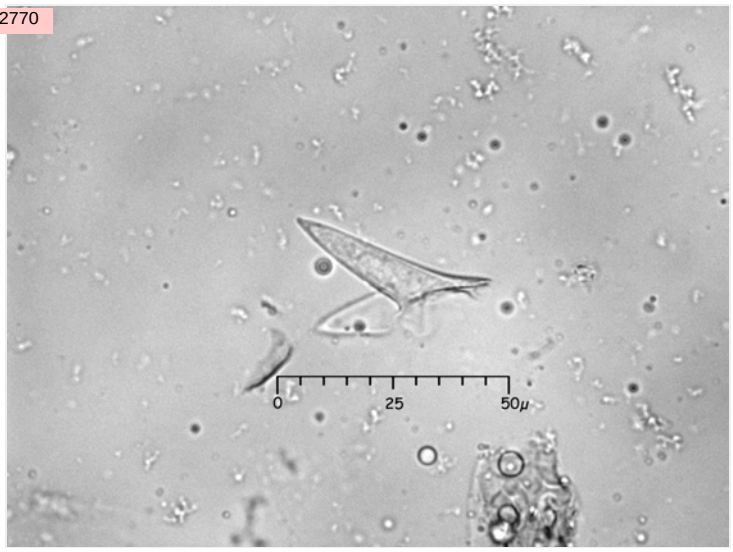
Comments

PC2997, inflorescence

double-outline trichome

Not diagnostic

Image Z2770



Description

Double-outline trichome
non-armed
outer edge straight
acute tip
moderate size

Entered by Deborah M. Pearsall

Updated 2/7/2013

MUno 22IIB

Recno 113

Family Cyperaceae

Genus Scirpus

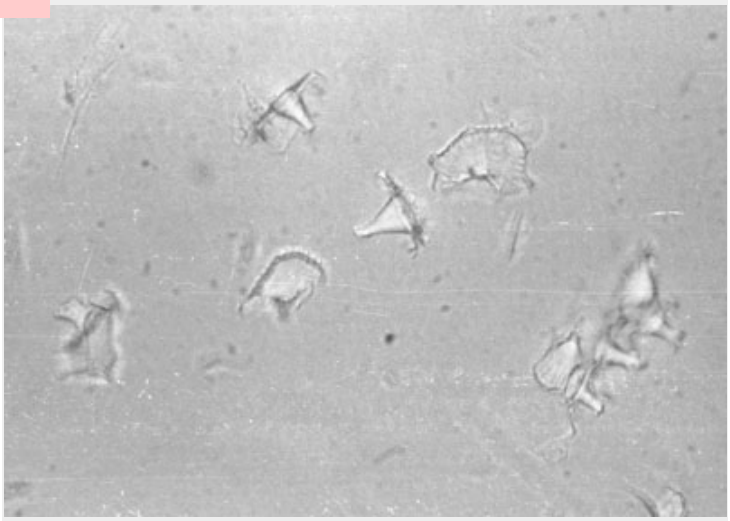
Species sp.

Authority

Comments

Epidermal seed phytolith
The genus Scirpus is distinct for its very tall conical projection and tall, pointed "sombrero" apperance.
Diagnostic level: genus

Image



Description

Polyhedral to rounded in outline. Surface and edge may undulate.
Sometimes edges are decorated with undulations, beadlike nodules, or grainy surface.
Central projection of Scirpus spp. is very tall and thin.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22IIB

Recno 114

Family Cyperaceae

Genus Scirpus

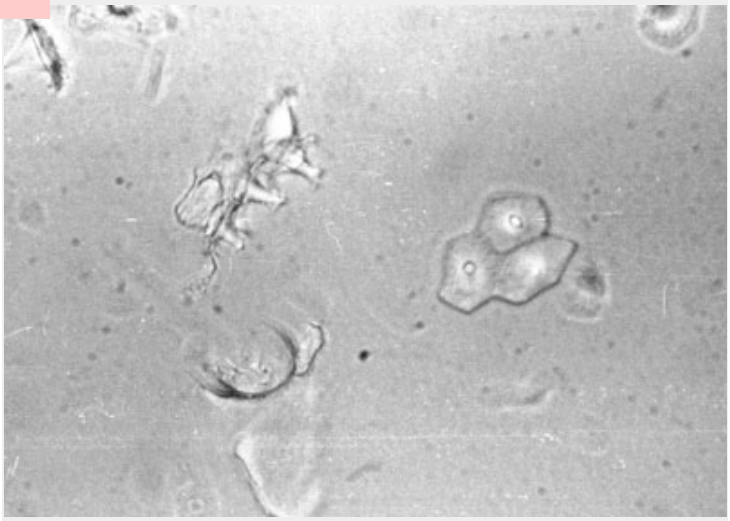
Species sp.

Authority

Comments

The genus Scirpus is distinct for its very tall conical projection and tall, pointed "sombrero" apperance.
Diagnostic level: genus

Image



Description

Polyhedral to rounded in outline. Surface and edge may undulate. Sometimes edges are decorated with undulations, beadlike nodules, or grainy surface.
Central projection of Scirpus spp. is very tall and thin.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20VA

Recno 447

Family Cyperaceae

Genus Scirpus

Species totora

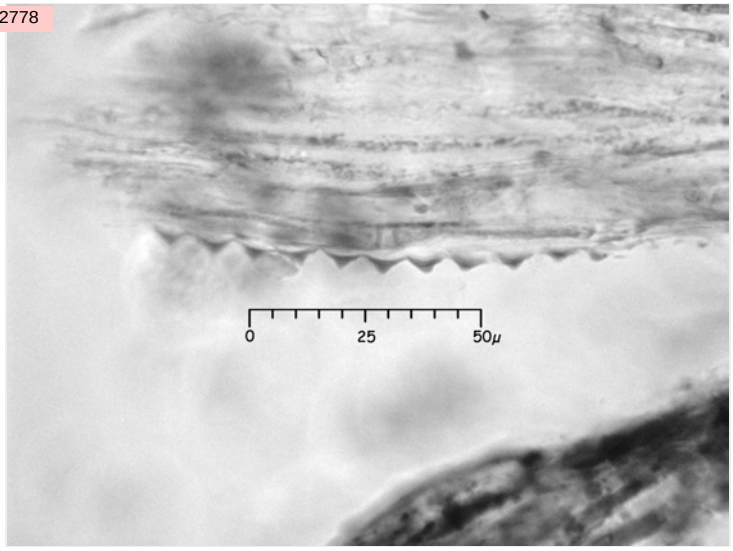
Authority

Comments

PC644 leaf
Epidermal sheet with 20VA in situ

Often occur in lines or ranks.
Often conical in top view, but non-quadrilateral in side view.
In side view, conical projections with "shoulders".
Diagnostic level: family

Image Z2778



Description

- Epidermal cells, small
- Conical or "hat-shaped" bodies
- Hat-shaped
- May occur in files
- Tend to be quadrilateral in top view

Entered by Deborah M. Pearsall

Updated 2/4/2013

MUno 20VA

Recno 23

Family Cyperaceae

Genus Torulinium

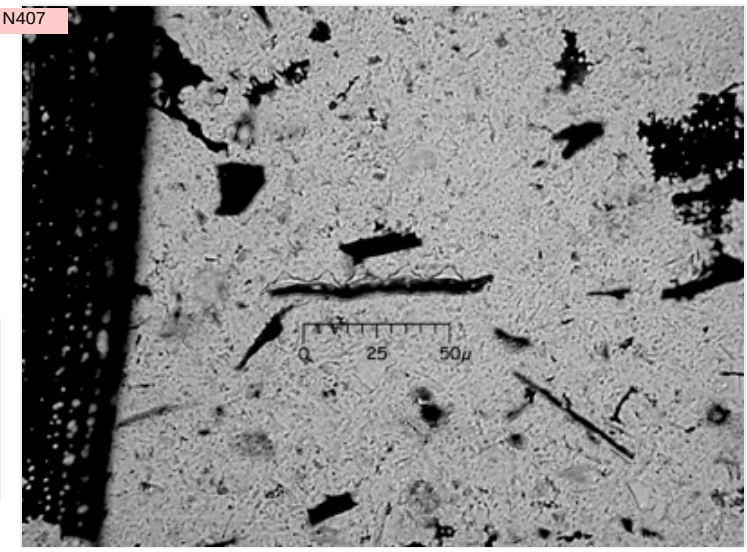
Species odoratum

Authority (L.) Hooper

Comments

Often occur in lines or ranks.
Often conical in top view, but non-quadrilateral in side view.
In side view, conical projections with "shoulders".
Diagnostic level: family

Image N407



Description

- Epidermal cells, small
- Conical or "hat-shaped" bodies
- Hat-shaped
- May occur in files
- Tend to be quadrilateral in top view

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20VA

Recno 24

Family Cyperaceae

Genus Torulinium

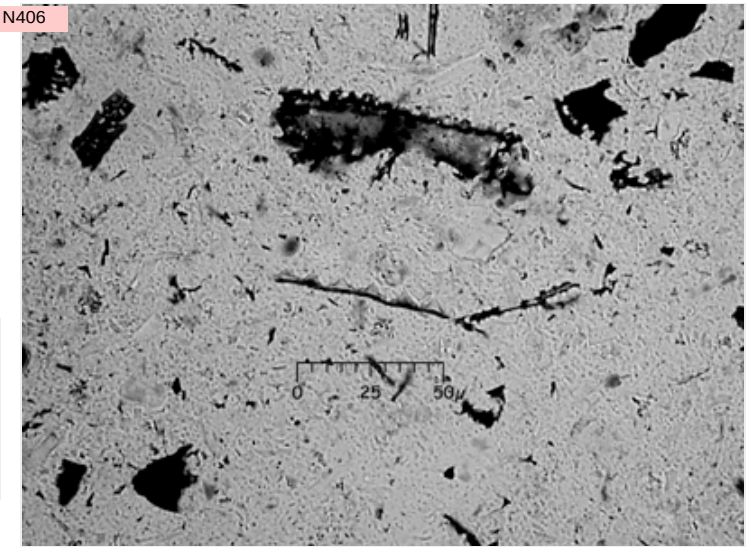
Species odoratum

Authority (L.) Hooper

Comments

Often occur in lines or ranks.
Diagnostic level: family

Image N406



Description

- Epidermal cells, often conical in top view, but non-quadrilateral in side view
- Conical projections with side "shoulders"
- Small epidermal cells
- Hat-shaped
- May occur in files

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 24IIHa

Recno 27

Family Dichapetalaceae

Genus Stephanopodium

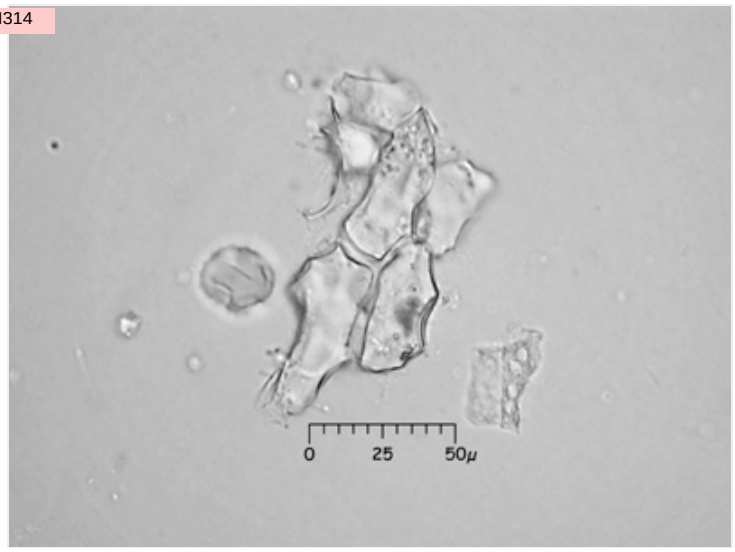
Species longipedicellatum

Authority Prance

Comments

Very variable in appearance, recognizable by the twisted appearance with smooth concave curves next to angular plate junctions.
Diagnostic level: family

Image N314



Description

- Epidermal non-quadrilaterals
- Three dimensional
- Angled, plate-like blocky
- Surface grainy
- broad faceted branches in one plane

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IIHa

Recno 198

Family Dichapetalaceae

Genus Stephanopodium

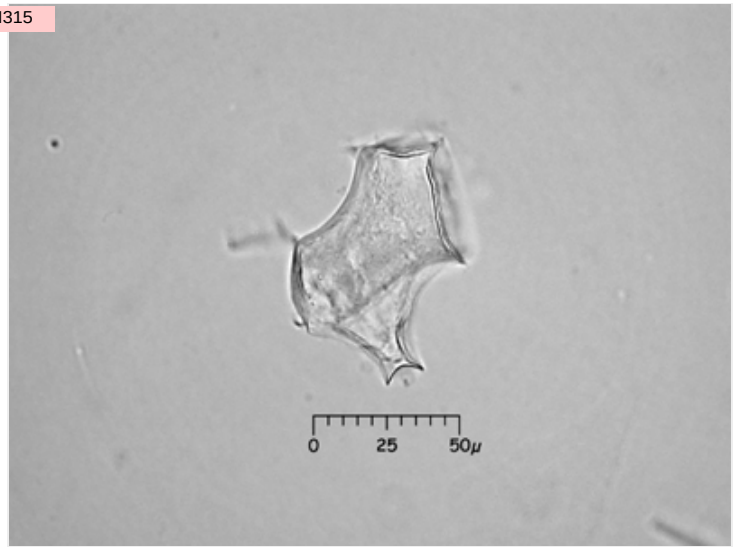
Species longipedicellatum

Authority Prance

Comments

Dichapetalaceae family diagnostic type. Surfaces angled, platelike, yet curving. Dichapetalaceae type has 3 broad branches, surface grainy while other types have thin or pointed branches.
Diagnostic level: family

Image N315



Description

- Epidermal non-quadrilaterals
- Three dimensional, blocky
- Angled shape

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IIHa

Recno 199

Family Dichapetalaceae

Genus Stephanopodium

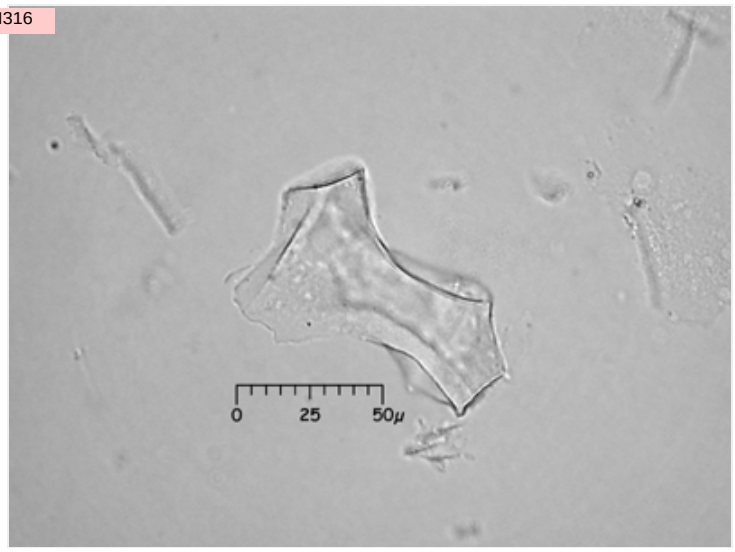
Species longipedicellatum

Authority Prance

Comments

Dichapetalaceae family diagnostic type. Surfaces angled, platelike, yet curving. Dichapetalaceae type has 3 broad branches, surface grainy while other types have thin or pointed branches. Diagnostic level: family

Image N316



Description

- Epidermal non-quadrilaterals
- Three dimensional, blocky
- Angled shape

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IIHa

Recno 26

Family Dichapetalaceae

Genus Stephanopodium

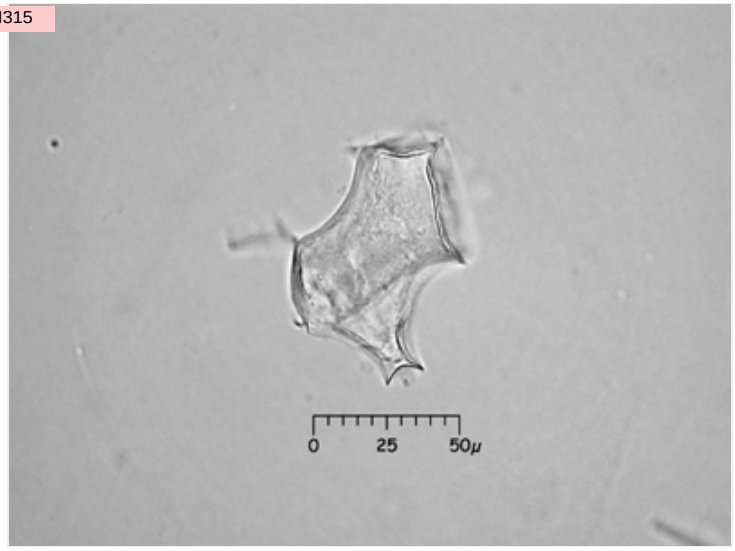
Species peruvianum

Authority Poepp. & Endl.

Comments

Very variable in appearance, recognizable by the twisted appearance with smooth concave curves next to angular plate junctions. Diagnostic level: family

Image N315



Description

- Epidermal non-quadrilaterals
- Three dimensional
- Angled, plate-like blocky
- Surface grainy
- broad faceted branches in one plane

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IIHa

Recno 25

Family Dichapetalaceae

Genus Tapura

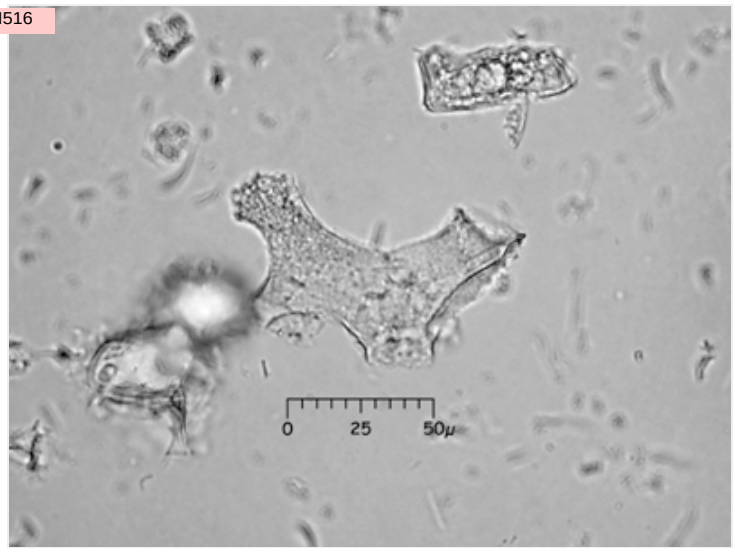
Species peruviana

Authority K.Krause ex Milbr.

Comments

Very variable in appearance, recognizable by the twisted appearance with smooth concave curves next to angular plate junctions.
Diagnostic level: family

Image N516



Description

- Epidermal non-quadrilaterals
- Three dimensional
- Angled, plate-like blocky
- Surface grainy
- broad faceted branches in one plane

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 110

Recno 116

Family Dichapetalaceae

Genus Tapura

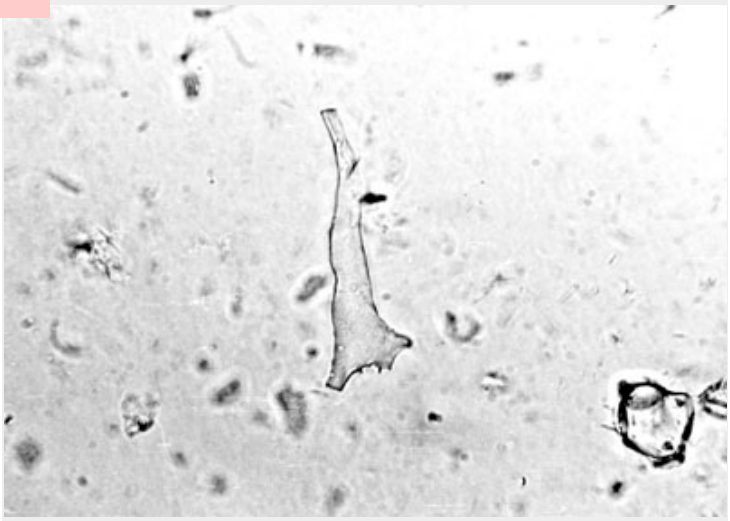
Species peruviana

Authority K.Krause ex Milbr.

Comments

schlerid
This shows a typical elongate schlerid.
Diagnostic level: generalized arboreal

Image



Description

Elongate body with a central spine or ridge. Usually three-sided, with all three sides flat to slightly concave. Schlerids typically have an elongate triangular appearance all-round: three sided, one end wider than the narrow tip. Surface may be smooth, granular, or even striated.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 110

Recno 117

Family Dichapetalaceae

Genus Tapura

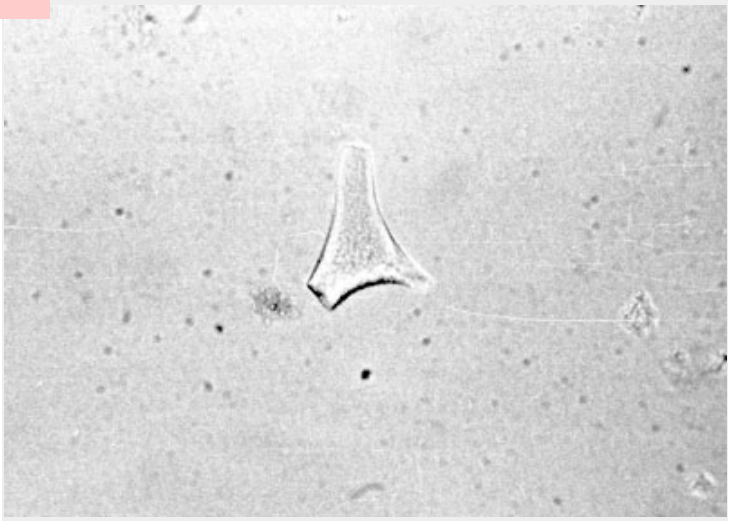
Species peruviana

Authority K.Krause ex Milbr.

Comments

schlerid
This shows a very short, broad, curved example.
Diagnostic level: generalized arboreal

Image



Description

Elongate body with a central spine or ridge. Usually three-sided, with all three sides flat to slightly concave. Schlerids typically have an elongate triangular appearance all-round: three sided, one end wider than the narrow tip. Surface may be smooth, granular, or even striated.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 130l

Recno 249

Family Dioscoreaceae

Genus Dioscorea

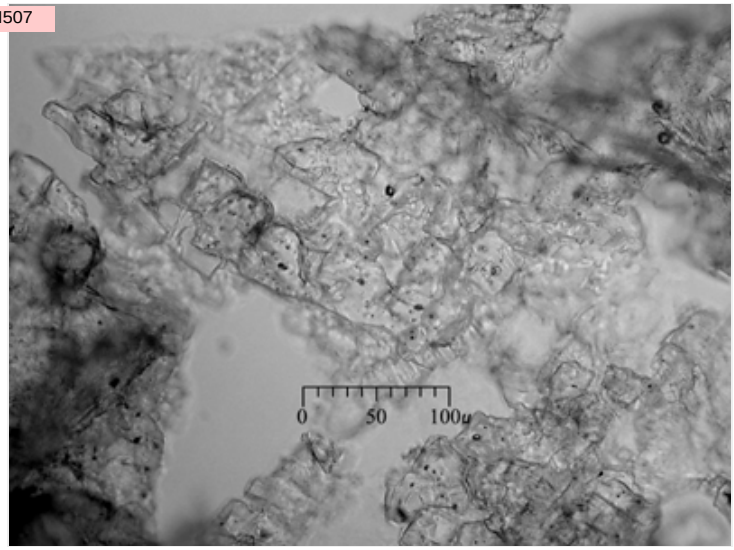
Species

Authority

Comments

Type established by Karol Chandler-Ezell, 2004. Cultivated tuber.
Diagnostic level: root/tuber

Image N507



Description

Blocky parenchyma: large, rounded blocks of silica which are casts of parenchyma cells formed from silica sequestered there. Bodies are very transparent, with flattened or undulating surfaces, and occur in root and tuber cortex tissue.

Entered by Emilly Sternberg

Updated 2/8/2005

MUno 130IIA

Recno 250

Family Dioscoreaceae

Genus Dioscorea

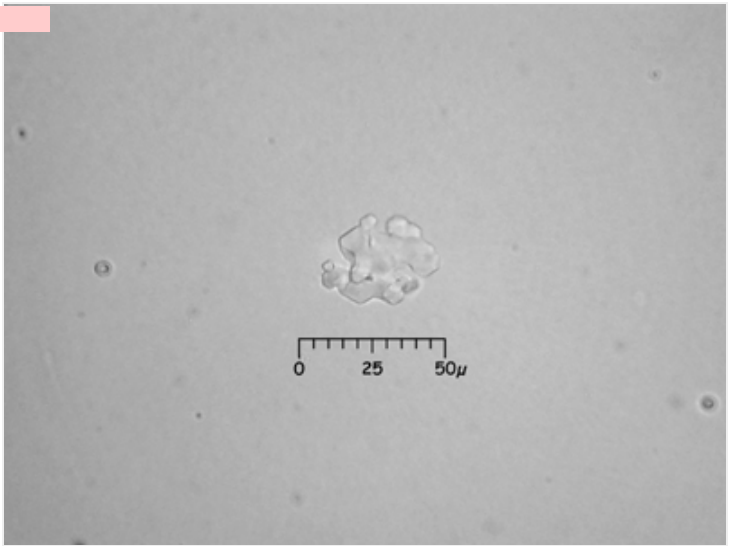
Species

Authority

Comments

Type established by Karol Chandler-Ezell, 2004. Cultivated tuber.
Diagnostic level: root/tuber

Image



Description

Multiple-lobed parenchyma: Silica casts of parenchyma with multiple rounded lobes, such as those formed in rapidly growing tissues, observed in roots and tubers.

Entered by Emily Sternberg

Updated 2/8/2005

MUno 140IIB

Recno 254

Family Dioscoreaceae

Genus Dioscorea

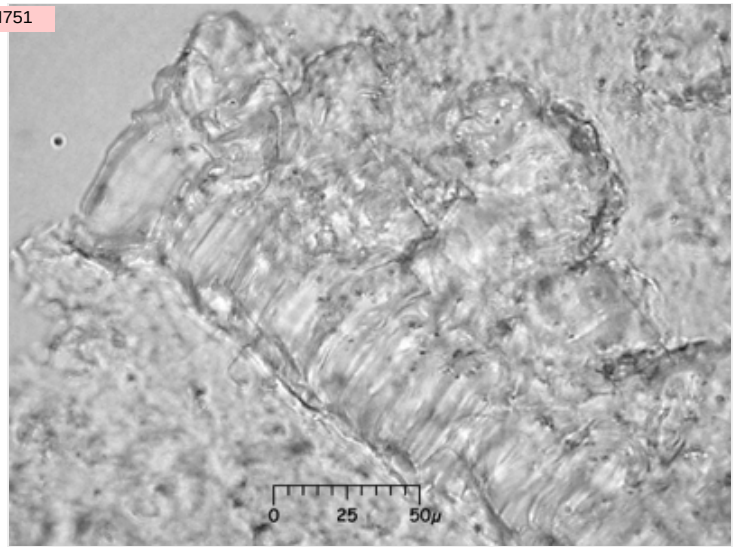
Species

Authority

Comments

Type established by Karol Chandler-Ezell, 2004. Cultivated tuber.
Diagnostic level: not diagnostic

Image N751



Description

Striated, wide transport elements: Open-ended transport elements with striations running perpendicular to the long dimension. Found in roots, fruits, and seeds.

Entered by Emily Sternberg

Updated 2/8/2005

MUno 140IIA

Recno 267

Family Dioscoreaceae

Genus Dioscorea

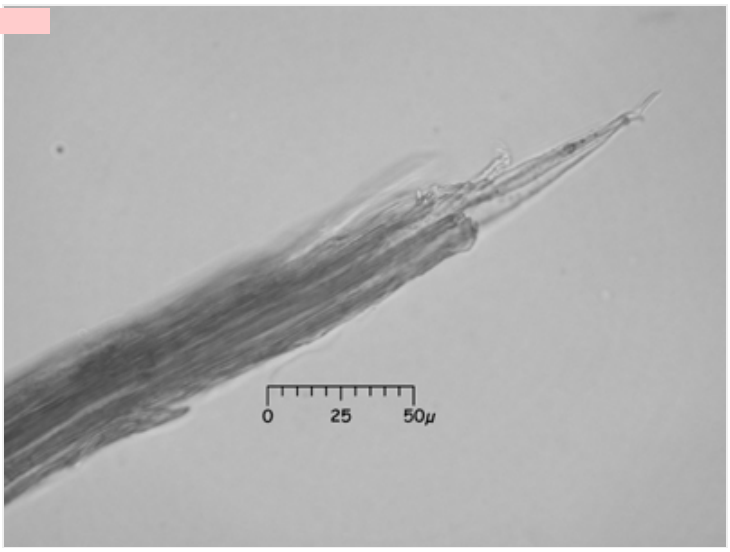
Species

Authority

Comments

Type established by Karol Chandler-Ezell, 2004. Domesticated tuber. Diagnostic level: root/tuber.

Image



Description

Straight transport elements: Straight, silicified transport elements arranged in bundles. Found in roots and tubers.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 80IFb201

Recno 176

Family Ebenaceae

Genus Diospyros

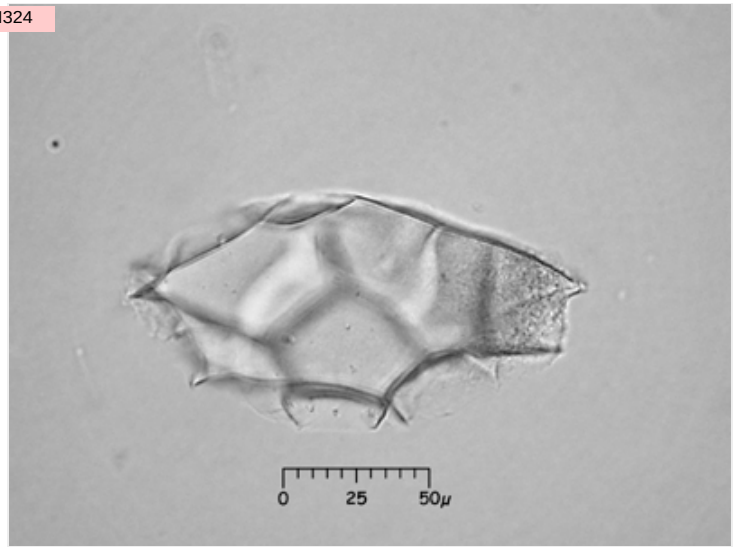
Species virginiana

Authority L.

Comments

Faceted hemisphere, side view (see Record #177 for top view). Diagnostic level: family

Image N324



Description

Spheroidal body; Faceted/scalloped; Large and hemispherical/elliptical; Has a central ventral plane, edges are scalloped.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 80IFb201

Recno 177

Family Ebenaceae

Genus Diospyros

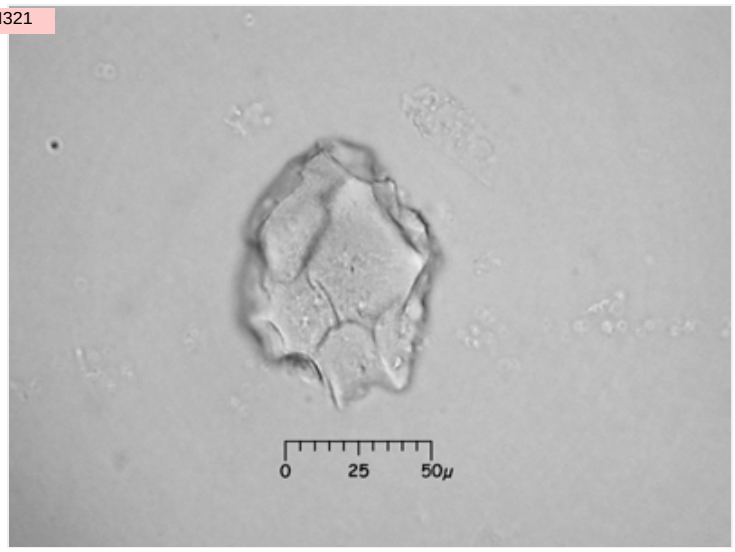
Species virginiana

Authority L.

Comments

Faceted hemisphere, top view (see Record #176 for side view).
Diagnostic level: family

Image N321



Description

Spheroidal body; Faceted/scalloped; Large and hemispherical/elliptical; Has a central ventral plane, edges are scalloped.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 110

Recno 178

Family Ebenaceae

Genus Diospyros

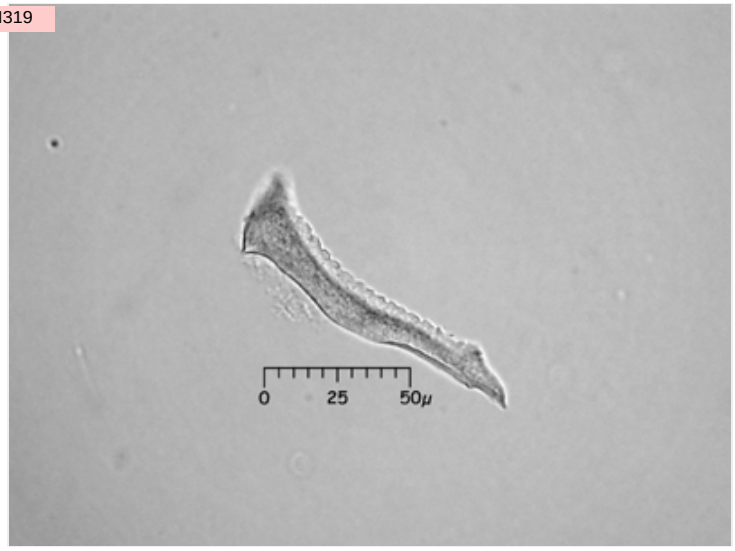
Species virginiana

Authority L.

Comments

Note interesting “ridge” of bumps gives it a scalloped appearance on the dorsal ridge.
Diagnostic level: generalized arboreal

Image N319



Description

- Schlerid

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 110

Recno 196

Family Ericaceae

Genus Macleania

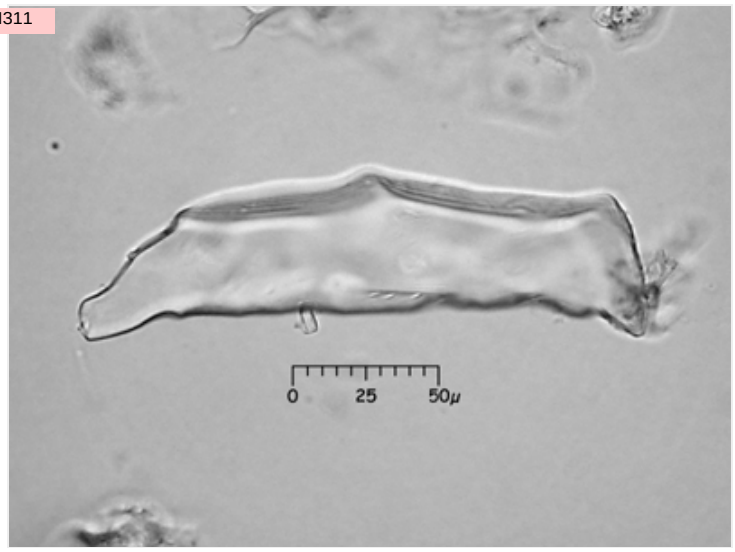
Species sp.

Authority

Comments

Very large schlerid.
Diagnostic level: generalized arboreal

Image N311



Description

- Schlerid

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 110

Recno 197

Family Ericaceae

Genus Macleania

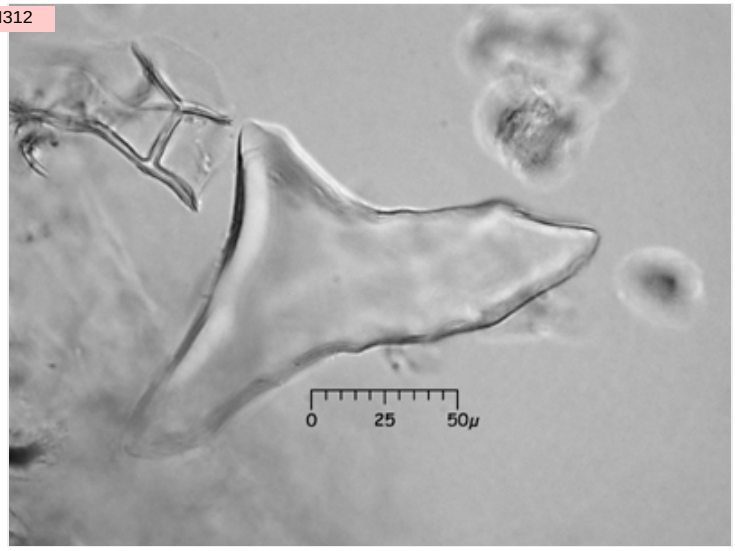
Species sp.

Authority

Comments

Very large schlerid.
Diagnostic level: generalized arboreal

Image N312



Description

- Schlerid

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVF

Recno 194

Family Euphorbiaceae

Genus Acalypha

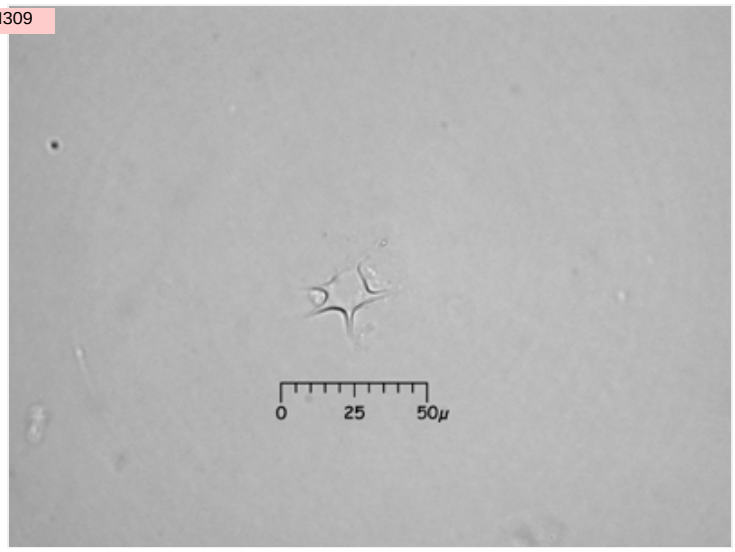
Species diversifolia

Authority Jacq.

Comments

Diagnostic level: not diagnostic

Image N309



Description

- Hair base
- Epidermal cells
- Stellate center

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVF

Recno 195

Family Euphorbiaceae

Genus Acalypha

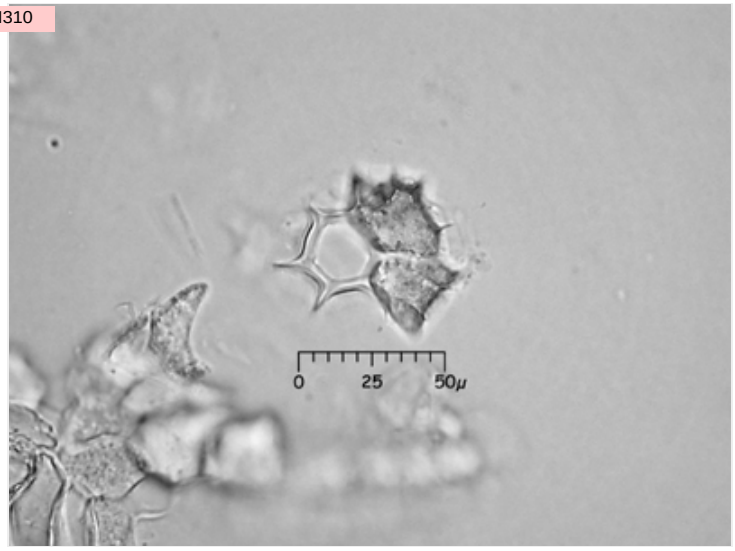
Species diversifolia

Authority Jacq.

Comments

Diagnostic level: not diagnostic

Image N310



Description

- Hair base
- Epidermal cells
- Stellate center

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IC

Recno 55

Family Euphorbiaceae

Genus Amanoa

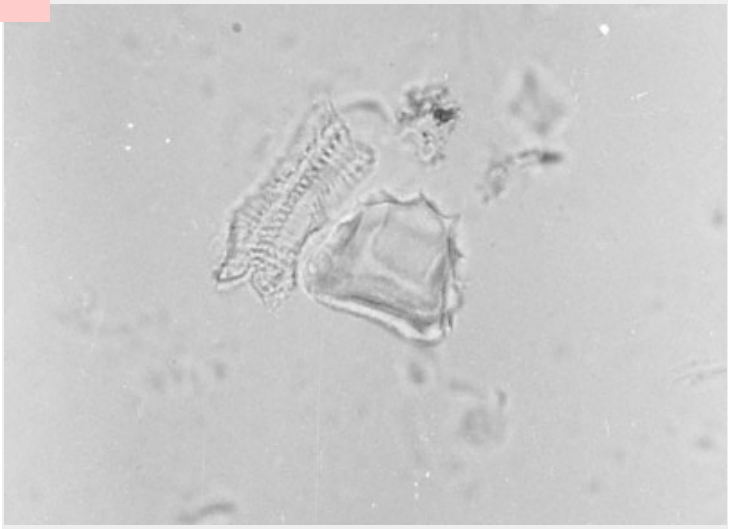
Species anomala

Authority Little

Comments

Be sure to rotate blocky quadrilaterals to see the distinct nature of the projections in this type.
See other Euphorbiaceae taxa to see range of variation of this type across the family.
Diagnostic level: family

Image



Description

- Multifaceted, blocky quadrilateral, on at least one side
- Rounded or spheroidal in rotation
- May have grainy surface
- Projections on some edges
- May be irregular in appearance

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IC

Recno 56

Family Euphorbiaceae

Genus Amanoa

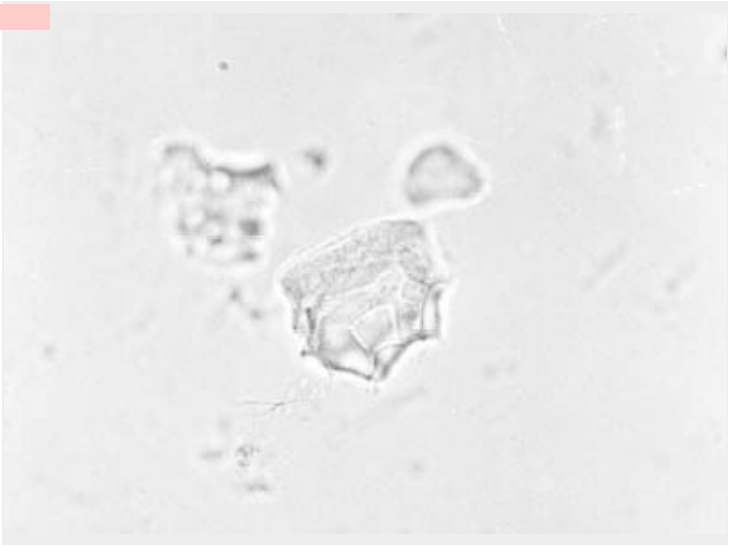
Species anomala

Authority Little

Comments

Diagnostic level: family

Image



Description

- Multifaceted, blocky quadrilateral, on at least one side
- Rounded or spheroidal in rotation
- May have grainy surface
- Projections on some edges
- May be irregular in appearance

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IC

Recno 57

Family Euphorbiaceae

Genus Amanoa

Species anomala

Authority Little

Comments

View of rounded side... projections not visible, facets not distinct in this view.
Be sure to rotate to see both views.
Diagnostic level: family

Image

Description

- Multifaceted, blocky quadrilateral, on at least one side
- Rounded or spheroidal in rotation
- May have grainy surface
- Projections on some edges
- May be irregular in appearance

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20IAa

Recno 28

Family Euphorbiaceae

Genus Croton

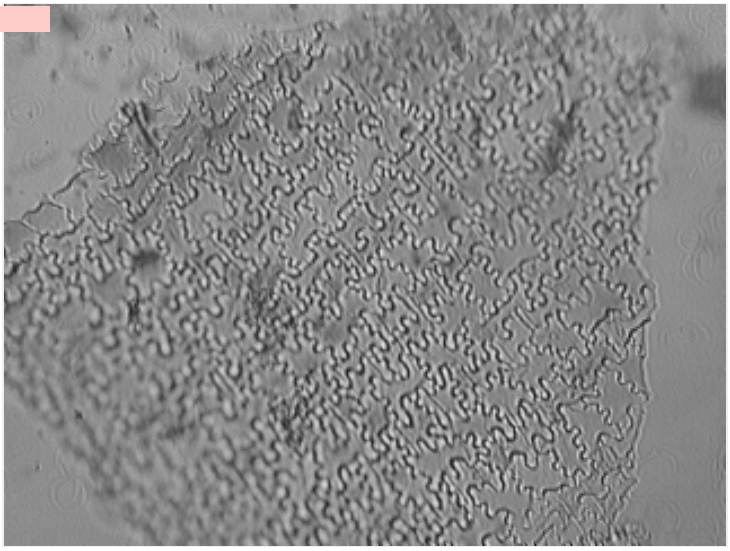
Species fraseri

Authority Muell. Arg.

Comments

This type is not diagnostic of Euphorbiaceae. It is produced in a number of dicots.
May occur singly or in sheets of different sizes. This is a particularly large sheet.
May be occluded.
Diagnostic level: not diagnostic

Image



Description

Epidermal non-quadrilateral (leaf origin)
- Smooth to grainy surface (no projections/no perforations)
- Sinuous shape (anticlinal cells)
- Often double outline
- not elongated

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IC

Recno 30

Family Euphorbiaceae

Genus Croton

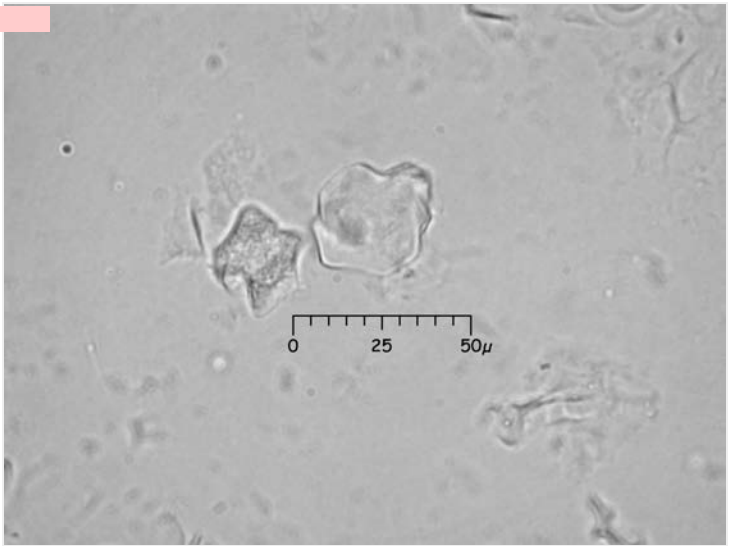
Species fraseri

Authority Muell. Arg.

Comments

Blocky quadrilateral epidermal tissue. In profile, projections and facets on multifaceted face give crown-like appearance. Rotate to spot multifaceted space and distinguish from non-diagnostic 3D epidermal blocks.
Diagnostic level: family

Image



Description

- Rounded
- Multifaceted blocky
- May have grainy surface
- May have some projections on its edges
- May be irregular in appearance

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 24IC

Recno 31

Family Euphorbiaceae

Genus Croton

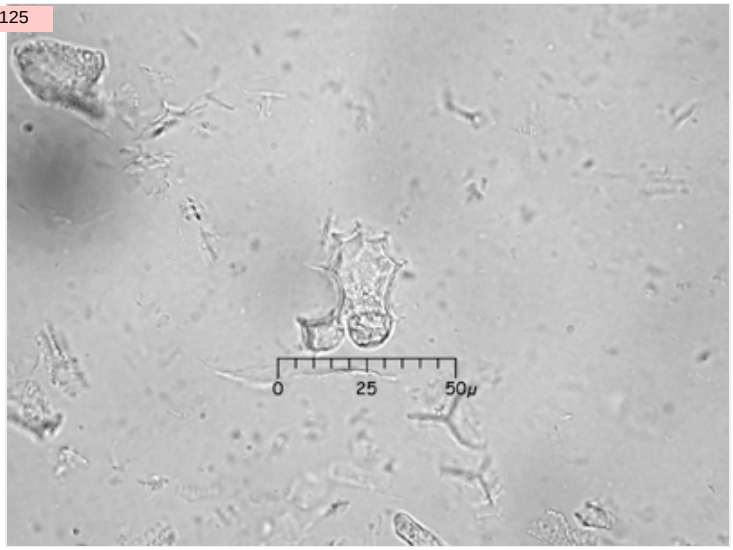
Species fraseri

Authority Muell. Arg.

Comments

Blocky quadrilateral. This example is more flattened than usual, showing range of the type.
Diagnostic level: family

Image Z125



Description

- Rounded
- Multifaceted blocky
- May have grainy surface
- May have some projections on its edges
- May be irregular in appearance

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 40IIIBa202

Recno 58

Family Euphorbiaceae

Genus Croton

Species fraseri

Authority Muell. Arg.

Comments

Can have roughened edges, but many examples are smooth.
Diagnostic level: species

Image N560

Description

- Multicellular hair
- Segmented
- Straight tip
- Interior space visible (each segment has double outline)

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 160I

Recno 257

Family Euphorbiaceae

Genus Manihot

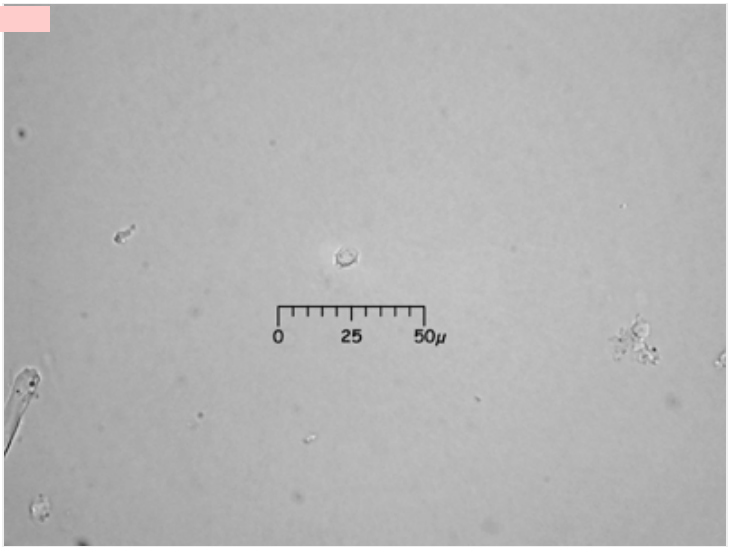
Species esculenta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: genus

Image



Description

***Manihot* secretory body:** *Manihot esculenta* (yuca, manioc) root rind, leaf, stem, and fruit silicify distinctive cells resembling pores or nectaries. These bodies also occur rarely in one wild species tested (*M. hunzikerii*). Bodies are small (5-12 microns in diameter), heart-shaped, with a raised exterior and indented/open interior. A thin, flat marginal flange is sometimes present.

Entered by Emily Sternberg

Updated 2/8/2005

MUno 160I

Recno 269

Family Euphorbiaceae

Genus Manihot

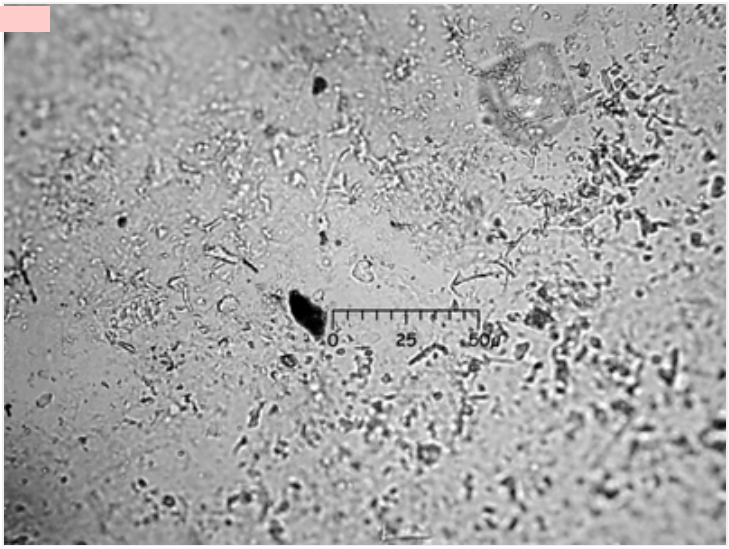
Species esculenta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: genus

Image



Description

***Manihot* secretory body:** *Manihot esculenta* (yuca, manioc) root rind, leaf, stem, and fruit silicify distinctive cells resembling pores or nectaries. These bodies also occur rarely in one wild species tested (*M. hunzikerii*). Bodies are small (5-12 microns in diameter), heart-shaped, with a raised exterior and indented/open interior. A thin, flat marginal flange is sometimes present.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 160I

Family Euphorbiaceae

Genus Manihot

Species esculenta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: genus

Description

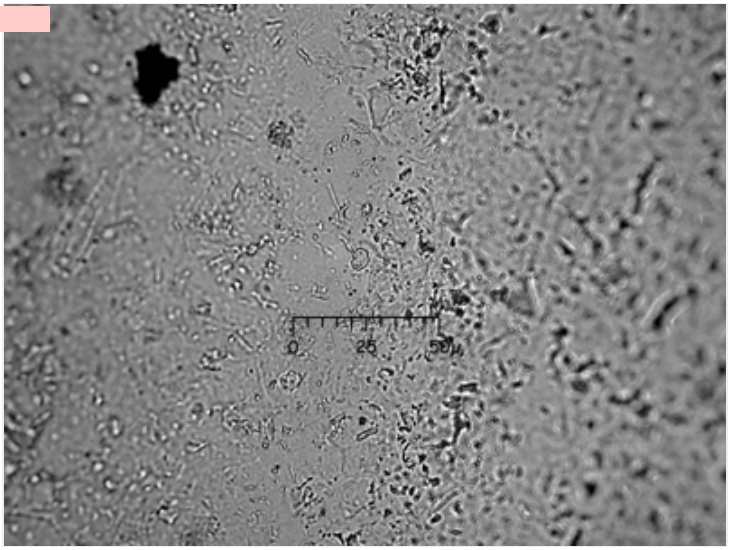
***Manihot* secretory body:** *Manihot esculenta* (yuca, manioc) root rind, leaf, stem, and fruit silicify distinctive cells resembling pores or nectaries. These bodies also occur rarely in one wild species tested (*M. hunzikerii*). Bodies are small (5-12 microns in diameter), heart-shaped, with a raised exterior and indented/open interior. A thin, flat marginal flange is sometimes present.

Entered by Emily Sternberg

Updated 2/22/2005

Recno 270

Image



MUno 160l

Recno 271

Family Euphorbiaceae

Genus Manihot

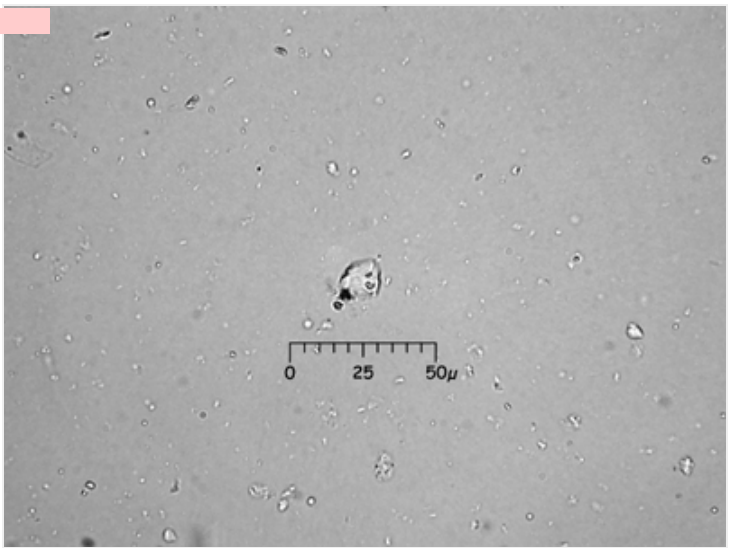
Species esculenta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: genus

Image



Description

***Manihot* secretory body:** *Manihot esculenta* (yuca, manioc) root rind, leaf, stem, and fruit silicify distinctive cells resembling pores or nectaries. These bodies also occur rarely in one wild species tested (*M. hunzikerii*). Bodies are small (5-12 microns in diameter), heart-shaped, with a raised exterior and indented/open interior. A thin, flat marginal flange is sometimes present.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 1601

Recno 272

Family Euphorbiaceae

Genus Manihot

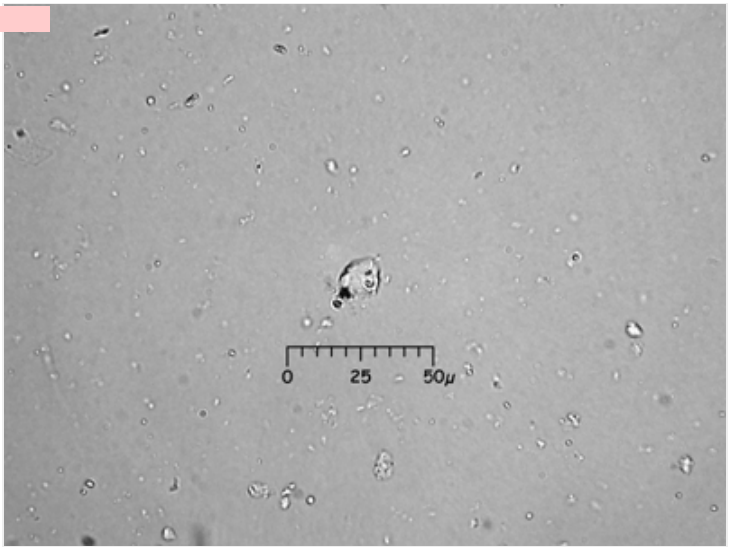
Species esculenta

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: genus

Image



Description

***Manihot* secretory body:** *Manihot esculenta* (yuca, manioc) root rind, leaf, stem, and fruit silicify distinctive cells resembling pores or nectaries. These bodies also occur rarely in one wild species tested (*M. hunzikerii*). Bodies are small (5-12 microns in diameter), heart-shaped, with a raised exterior and indented/open interior. A thin, flat marginal flange is sometimes present.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 150II

Recno 256

Family Fabaceae

Genus Acacia

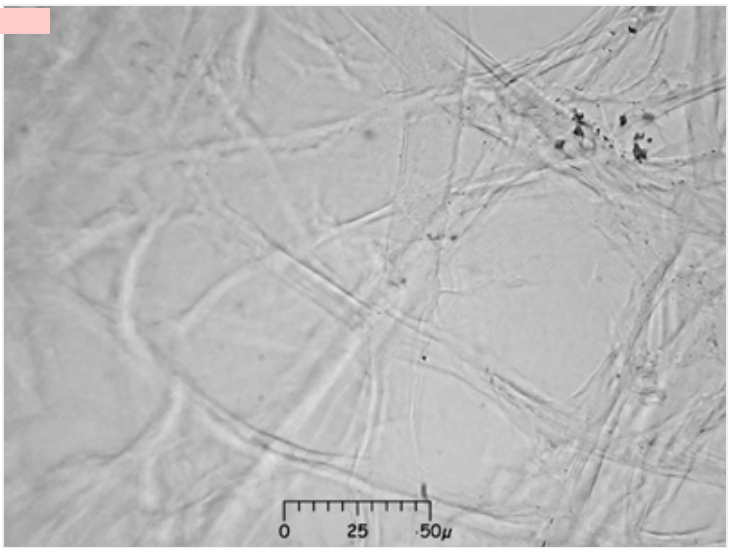
Species macrocantha

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: family, seeds/pods

Image



Description

Fibrous mesh: We observed silicified fibers in irregular masses, mesh-like in appearance, in Fabaceae seeds and pod, including peanut and acacia.

Entered by Emily Sternberg

Updated 2/8/2005

MUno 150II

Recno 268

Family Fabaceae

Genus Arachis

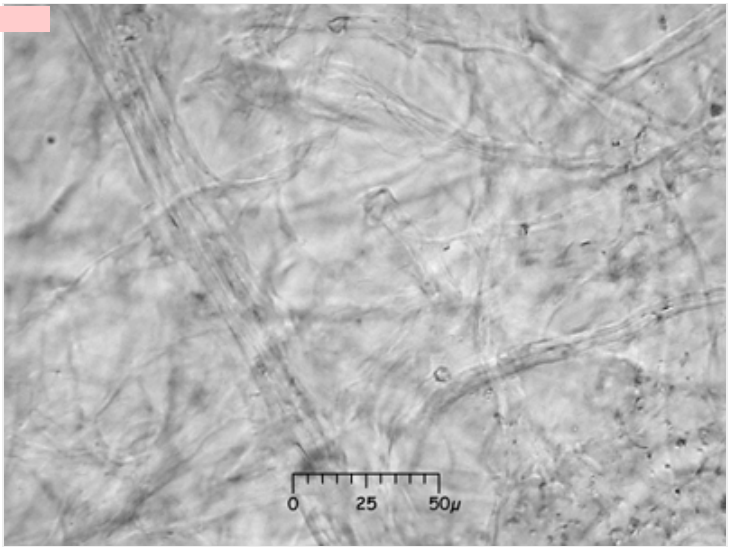
Species hypogaea

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: family

Image



Description

Fibrous mesh: We observed silicified fibers in irregular masses, mesh-like in appearance, in Fabaceae seeds and pod, including peanut and acacia.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 100IV

Recno 65

Family Fabaceae

Genus Brownea

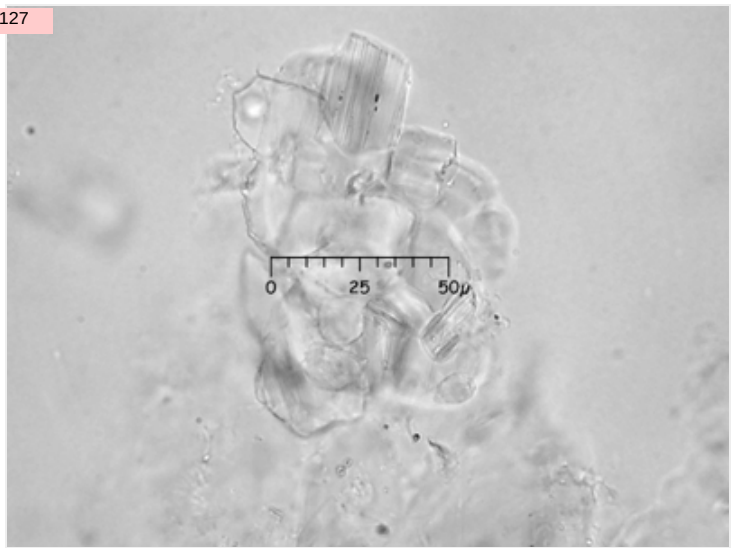
Species grandiceps

Authority Jacq.

Comments

probably calcium carbonate ($CaCO_3$) crystals.
Appear in many of the genera of the Fabaceae, but also present in Musaceae, Flacourtiaceae and Bombacaceae.
Diagnostic level: not diagnostic

Image Z127



Description

Blocky crystals; Irregularly spaced striations; Vary greatly in size; Sometimes show “bubbles” or other effects of weathering; Occur singly or in clusters; Frequently fragmentary.

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 40IVBa201B

Recno 66

Family Fabaceae

Genus Brownea

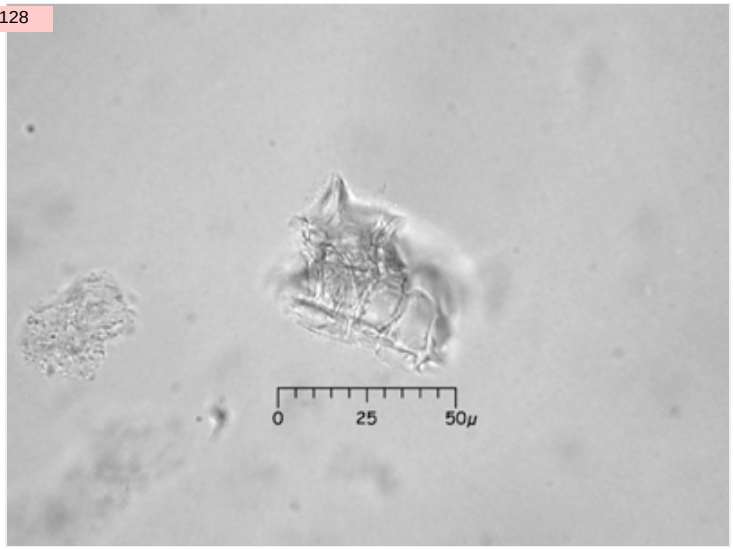
Species ucayalina

Authority (Huber) Ducke

Comments

From the top, this hair base may be confused with a diagnostic produced by *Dalium guianense* (also of the Fabaceae family). Rotate to see the thickness of the hair base. Slide 1772a leaf. Type defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image Z128



Description

Hair cell base; Rounded or elliptic cells; Central cell large; surrounded by smaller cells; From the side, the base is two layers thick.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 40IVBb3

Recno 67

Family Fabaceae

Genus Brownea

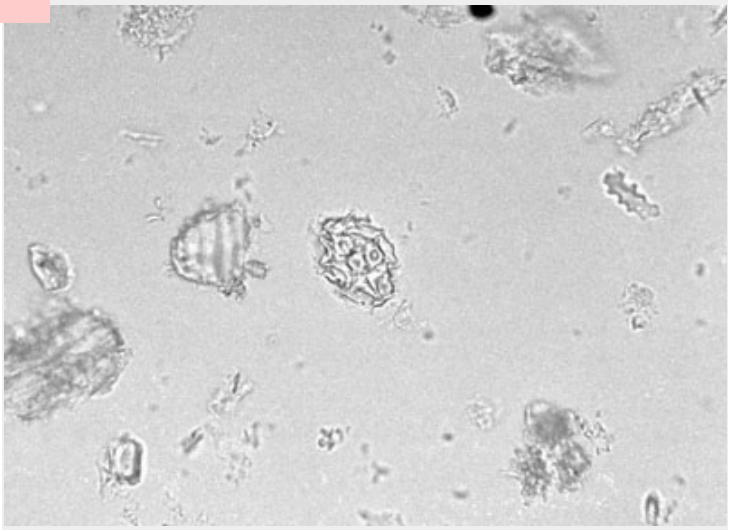
Species ucayalina

Authority (Huber) Ducke

Comments

Slide 1772a leaf. Type defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image



Description

Hair cell base; Rounded or elliptic cells; Small, multiple central cells; Highly silicified central cells; From the side, the hair base is two layers thick.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 10IDd

Recno 215

Family Fabaceae

Genus Brownea

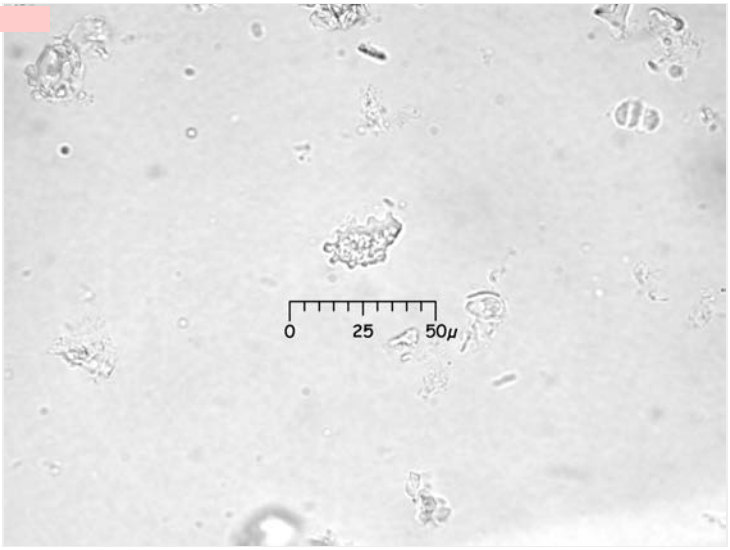
Species ucayalina

Authority

Comments

Slide 1772a leaf. Type defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image



Description

Epidermal quadrilateral; Two to four sinuous edges; Moderately sinuous; Rough, grainy surface

Entered by Meghann O'Brien

Updated 2/22/2005

MUno 40IIIAa101Ba

Recno 68

Family Fabaceae

Genus Dalium

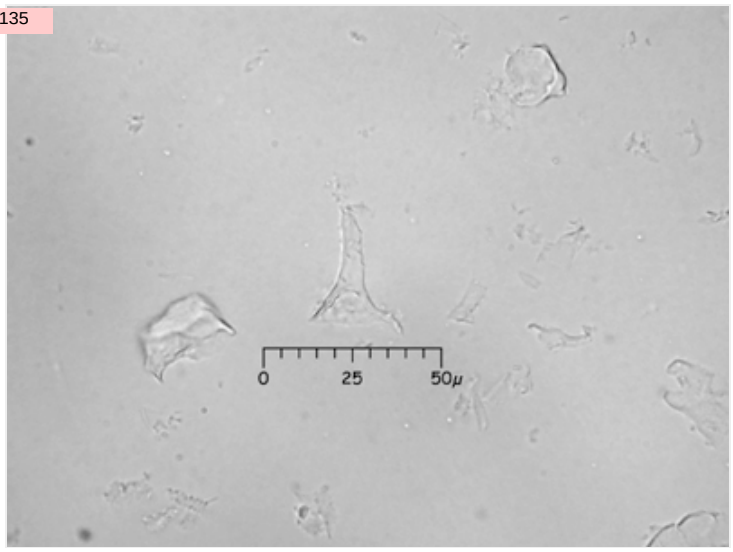
Species guianense

Authority (Aubl.) Sandwith

Comments

Slide 1766e leaf. Type defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image Z135



Description

Armed unicellular hair; Short to medium length; Straight; Acute tip; No interior space.

Entered by Meghann O'Brien

Updated 3/8/2005

MUno 40IIIAa300B

Recno 69

Family Fabaceae

Genus Dialium

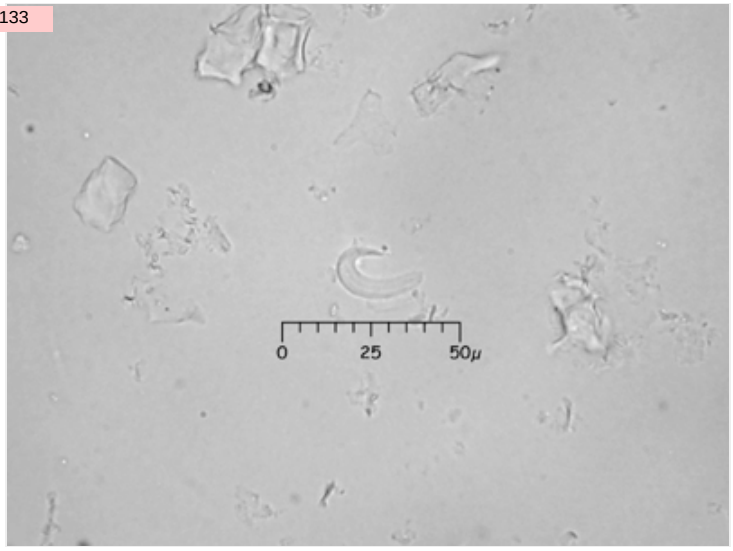
Species guianense

Authority (Aubl.) Sandwith

Comments

Slide 1766e leaf. Type defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image Z133



Description

Unicellular hair; Short to medium in length; Re-curving, doubles back on itself; Interior space rounded; Acute tip; Smooth surface; Interior space has blunt tip, ends before the curve of the hair.

Entered by Meghann O'Brien

Updated 02/23/2005

MUno 40IIIAa202Bc

Recno 70

Family Fabaceae

Genus Dialium

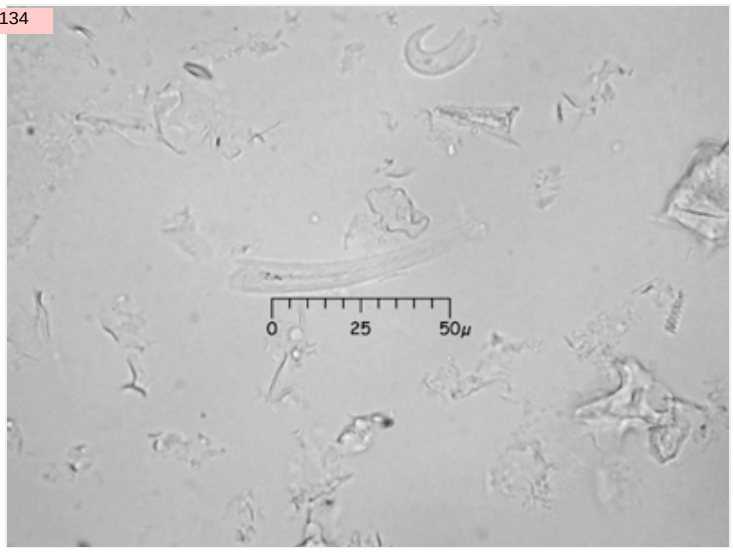
Species guianense

Authority (Aubl.) Sandwith

Comments

Slide 1766e leaf. Type defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image Z134



Description

Unicellular hair; Medium length; Curved; No interior space; Blunt tip; "Scaled" surface (scales may not continue to tip); Frequently fragmentary; Without base.

Entered by Meghann O'Brien

Updated 02/23/2005

MUno 40IVBa201A

Recno 71

Family Fabaceae

Genus Dialium

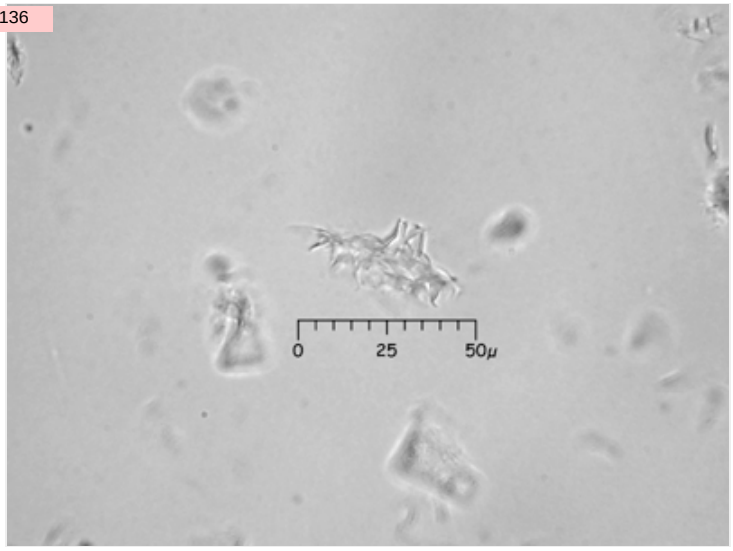
Species guianense

Authority (Aubl.) Sandwith

Comments

Ornamental Indigo.
From the top, this may be confused with *Brownea ucayalina*, rotate to see the thickness of the hair base. Slide 1766e leaf. Typed defined by Shawn Collins 01/1999.
Diagnostic level: genus

Image Z136



Description

Hair cell base; Rounded cells; Large central cell surrounded by small, elongated cells; From the side, the base is ONE layer of cells thick.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 40IVAa202

Recno 297

Family Fabaceae

Genus Erythrina

Species amazonica

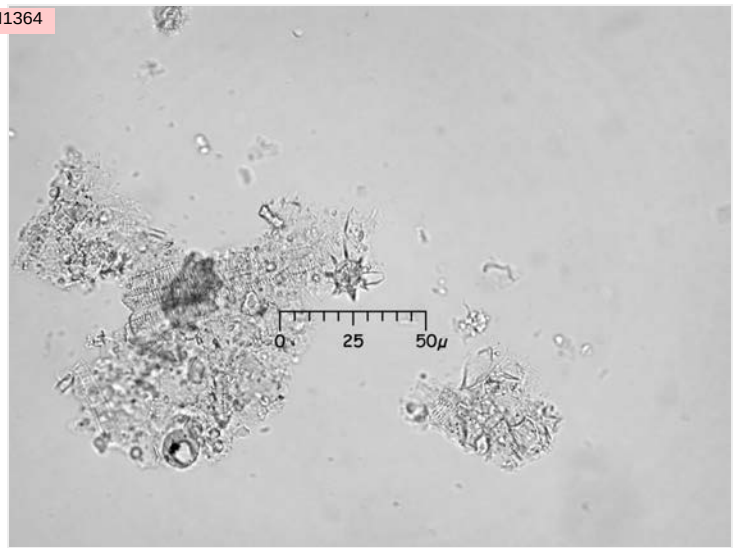
Authority Krukoff

Comments

Slide 1811. Leaf.

Diagnostic level: mixed Guazuma, Erythrina, Lithospermum

Image N1364



Description

Hair base; Distinctive, large, circular central cell with radiating, acute appendages; Surrounding cells are lightly silicified.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 11IAa

Recno 183

Family Fabaceae

Genus Inga

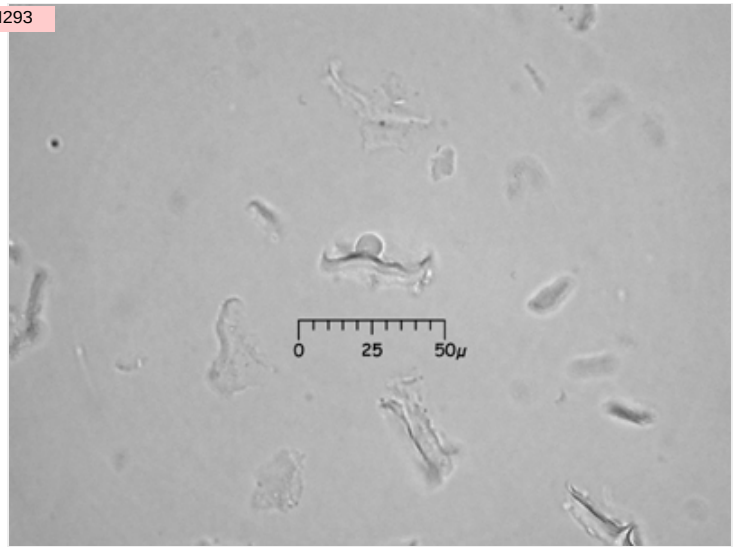
Species densiflora

Authority Benth.

Comments

Diagnostic level: genus

Image N293



Description

- Epidermal quadrilateral
- 3-dimensional
Shape square to rectangular epidermal cell (length less than 2x width) with round/spherical bulb or projection in center of one flattened side. All surfaces smooth, but surface of rectangle and edges are upturned and undulating.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 11IAa

Recno 184

Family Fabaceae

Genus Inga

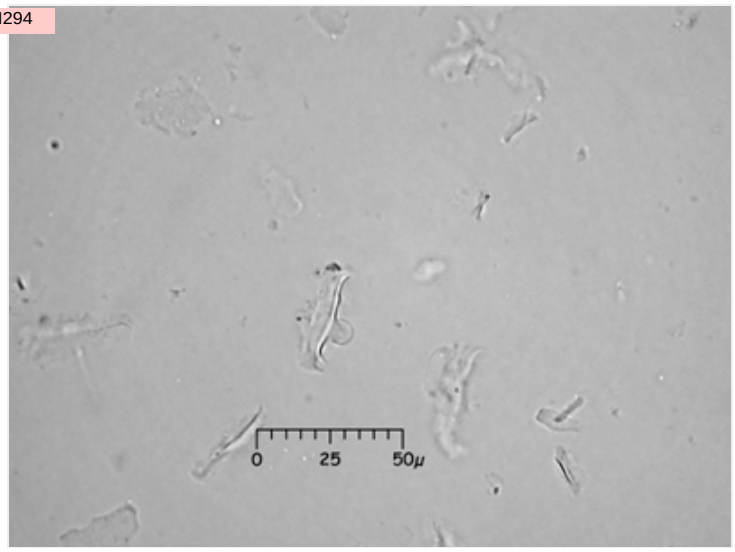
Species densiflora

Authority Benth.

Comments

Diagnostic level: genus

Image N294



Description

- Epidermal quadrilateral
- 3-dimensional

Shape square to rectangular epidermal cell (length less than 2x width) with round/spherical bulb or projection in center of one flattened side. All surfaces smooth, but surface of rectangle and edges are upturned and undulating.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 120

Recno 185

Family Fabaceae

Genus Inga

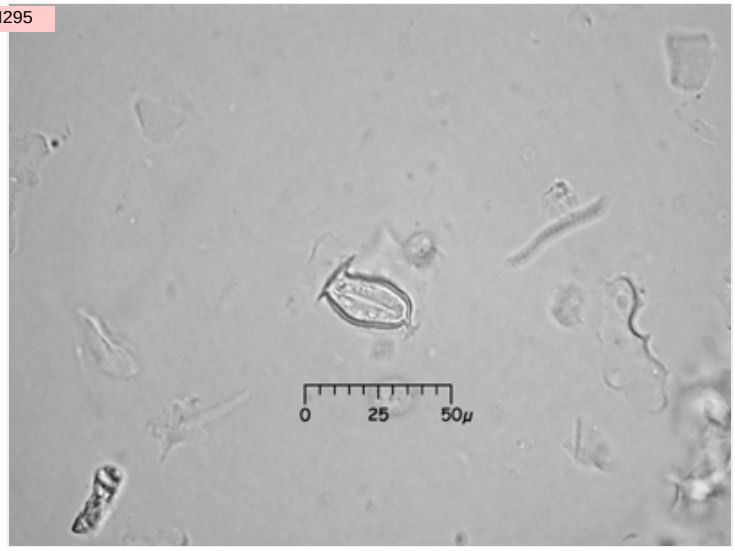
Species densiflora

Authority Benth.

Comments

Diagnostic level: not diagnostic

Image N295



Description

- Stomata

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVAa201Ab

Recno 186

Family Fabaceae

Genus Inga

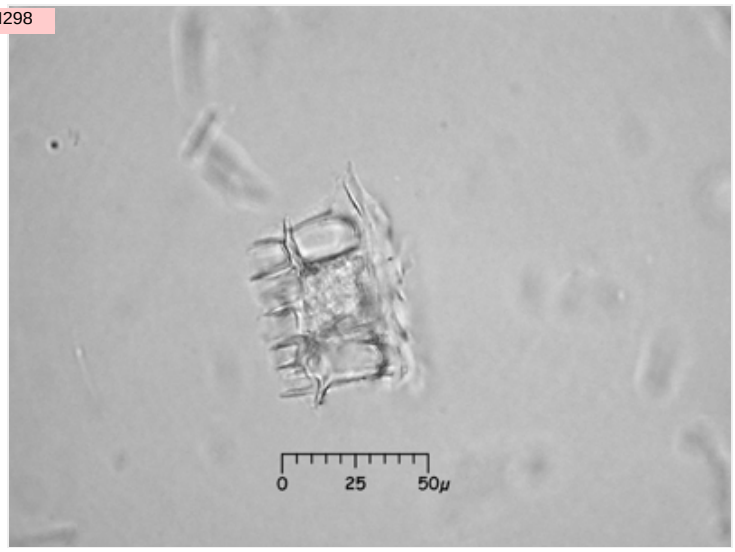
Species densiflora

Authority Benth.

Comments

Side view. See Record #187 for top view.
Diagnostic level: genus

Image N298



Description

- Hair cell base
- Radiating appendages from a discernable center
- Surrounding epidermal cells are attached to form a disk; cells quadrilateral; tall in side view
- Side view shows two layers of surrounding cells

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVAa201Ab

Recno 187

Family Fabaceae

Genus Inga

Species densiflora

Authority Benth.

Comments

Top - 3/4 view.
See side view (Record #186) to see two layers of surrounding cells.
Diagnostic level: genus

Image N299

Description

- Hair cell base
- Radiating appendages from a discernable center
- Surrounding epidermal cells are attached to form a disk; cells quadrilateral; large
- Side view shows two layers of surrounding cells

Entered by Karol Chandler-Ezell

Updated 3/5/2005

MUno 80IIBb

Recno 247

Family Fabaceae

Genus Inga

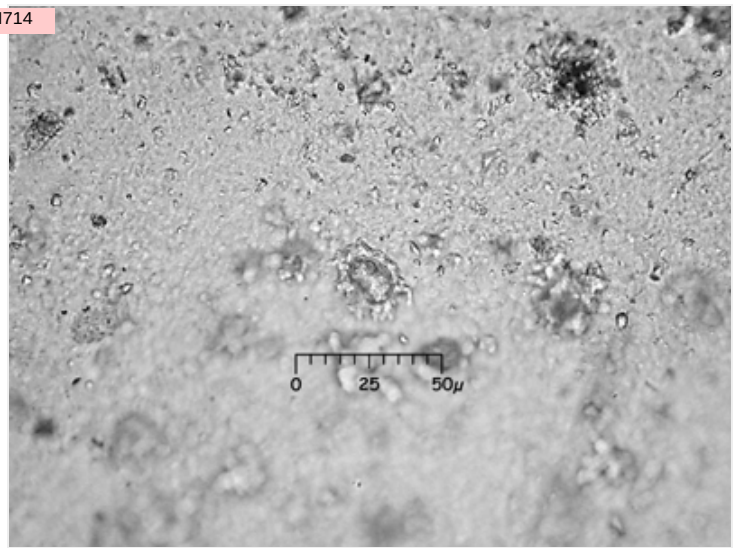
Species spectabilis

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: not diagnostic

Image N714



Description

Verrucate trough body: decorated, textured verrucate platform with a multi-outlined pit in the center of one side. Seeds, fruit, and root cortex.

Entered by Emily Sternberg

Updated 2/3/2005

MUno 130IIB

Recno 251

Family Fabaceae

Genus Inga

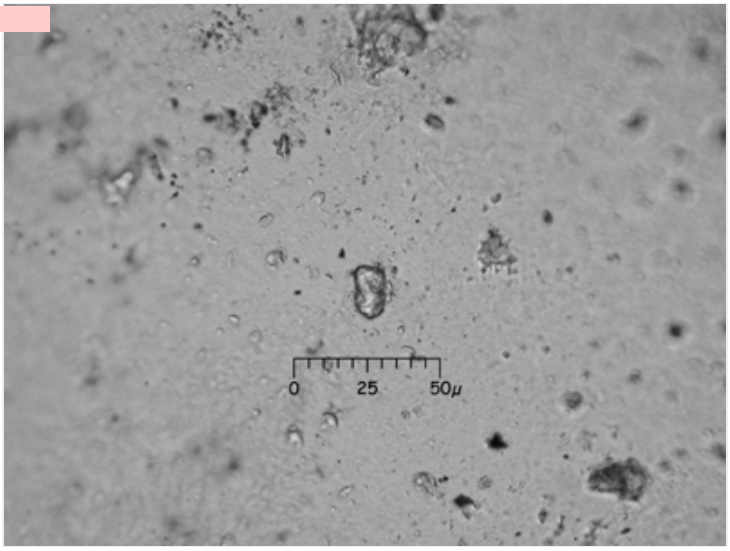
Species spectabilis

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: undetermined

Image



Description

Two-lobed parenchyma: Silica casts of parenchyma limited to two rounded lobes observed in *Inga* seeds. Further comparative research needed to determine the distribution of this type in other Fabaceae taxa.

Entered by Emily Sternberg

Updated 2/8/2005

MUno 140IIA

Recno 253

Family Fabaceae

Genus Pachyrhizus

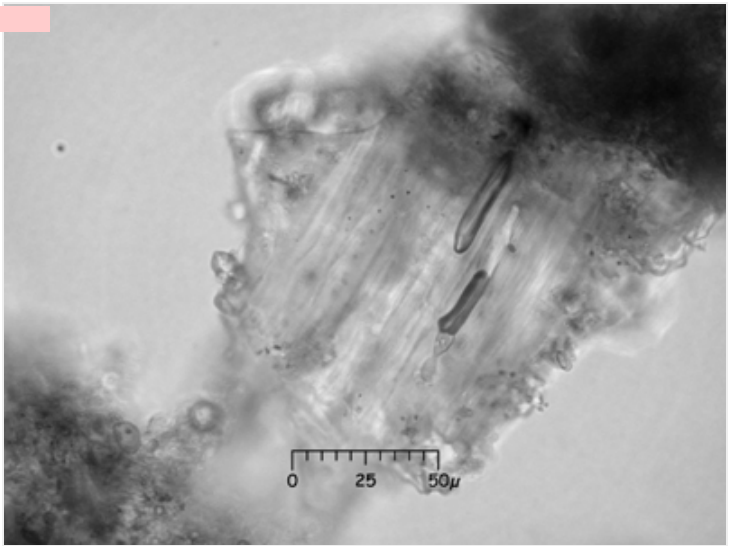
Species erosus

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: root/tuber

Image



Description

Straight transport elements: Straight, silicified transport elements arranged in bundles. Found in roots and tubers.

Entered by Emily Sternberg

Updated 2/8/2005

MUno 40IIIAa300A

Recno 32

Family Fabaceae

Genus Phaseolus

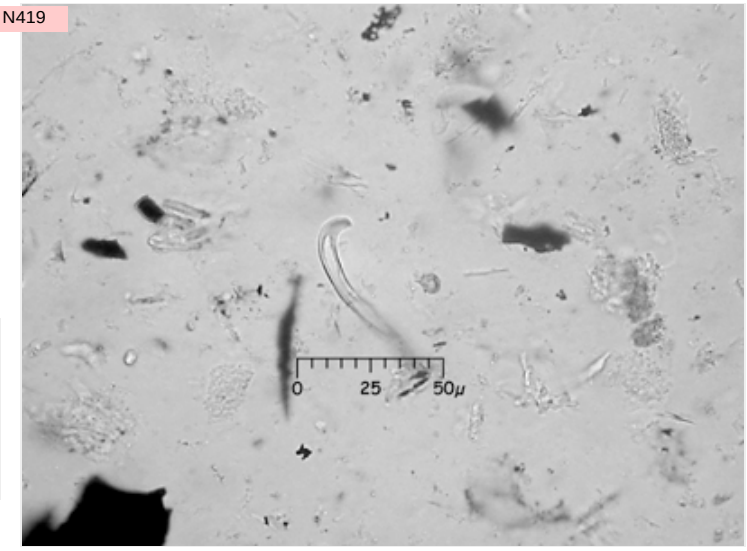
Species lunatus

Authority L.

Comments

Phaseolus hair, small when compared to 40IIIAa301.
Diagnostic level: genus

Image N419



Description

- Unicellular hair
- Short to medium in length
- Hooked end
- Interior space is rounded
- Small (as compared to 40IIIAa301)

Entered by Shawn K. Collins

Updated 3/1/2005

MUno 40IIIAa300A

Recno 33

Family Fabaceae

Genus Phaseolus

Species lunatus

Authority L.

Comments

Phaseolus hair, small when compared to 40IIIAa301.
Diagnostic level: genus

Image N423

Description

- Unicellular hair
- Short to medium in length
- Hooked end
- Interior space is rounded
- Small (as compared to 40IIIAa301)

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 40IIIAa300A

Recno 205

Family Fabaceae

Genus Phaseolus

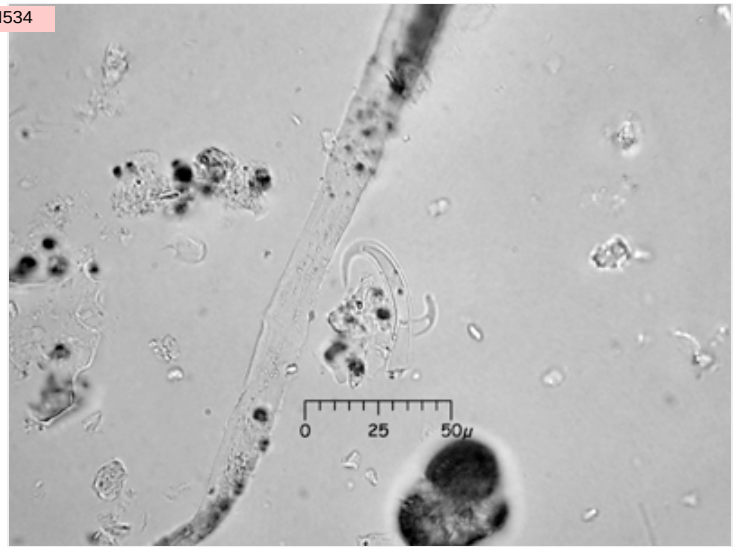
Species vulgaris

Authority L.

Comments

Phaseolus hair, small when compared to 40IIIAa301.
Diagnostic level: genus

Image N534



Description

- Unicellular hair
- Short to medium in length
- Hooked end
- Interior space is rounded
- Small (as compared to 40IIIAa301)

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 40IIIAa300A

Recno 206

Family Fabaceae

Genus Phaseolus

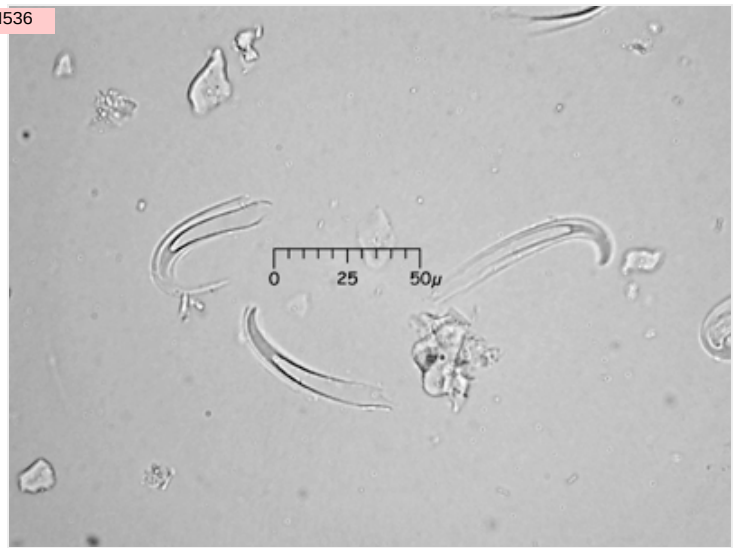
Species vulgaris

Authority L.

Comments

Phaseolus hair, small when compared to 40IIIAa301.
Diagnostic level: genus

Image N536



Description

- Unicellular hair
- Short to medium in length
- Hooked end
- Interior space is rounded
- Small (as compared to 40IIIAa301)

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 40IVAa200Bb

Recno 139

Family Flacourtiaceae

Genus Casearia

Species sylvestris

Authority Sw.

Comments

See Record #140 for a variation of the same body. Occurs in the leaf. Small, tall hair cell base.
Note the decorated schlerids in background-- these are common in the sample.
Diagnostic level: family

Image Z097

Description

Hair cell base, in side view. The small cells that overlay the large central cell appear as a “corona” when viewed from the side. Similar to 40IVAa200Ba, but contricted in the center when viewed from side, and smaller, less than 25 microns. Updated by O’Brien, Duncan, Pearsall.

Entered by Shawn K. Collins

Updated 5/31/2006

MUno 40IVAa200Bb

Recno 140

Family Flacourtiaceae

Genus Casearia

Species sylvestris

Authority Sw.

Comments

Side view (see also Record #139); tall hair base, small. Occurs in the leaf. Note the decorated schlerids in background-- these are common in the sample.
Diagnostic level: family

Image Z098

Description

Hair cell base, in side view. The small cells that overlay the large central cell appear as a “corona” when viewed from the side. Similar to 40IVAa200Ba, but contricted in the center when viewed from side, and smaller. Updated by O’Brien, Duncan, Pearsall.

Entered by Shawn K. Collins

Updated 5/31/2006

MUno 120IIB

Recno 141

Family Flacourtiaceae

Genus Casearia

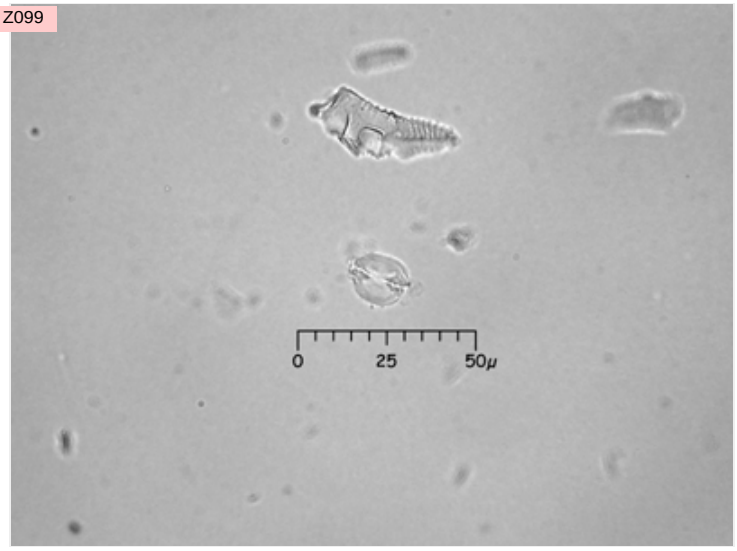
Species sylvestris

Authority Sw.

Comments

Stomate with two subsidiary cells.
Diagnostic level: not diagnostic

Image Z099



Description

Stomate with two subsidiary cells. Updated by O’Brien, Duncan, and Pearsall.

Entered by Shawn K. Collins

Updated 5/31/2006

MUno 40IVAa200Bb

Recno 313

Family Flacourtiaceae

Genus Casearia

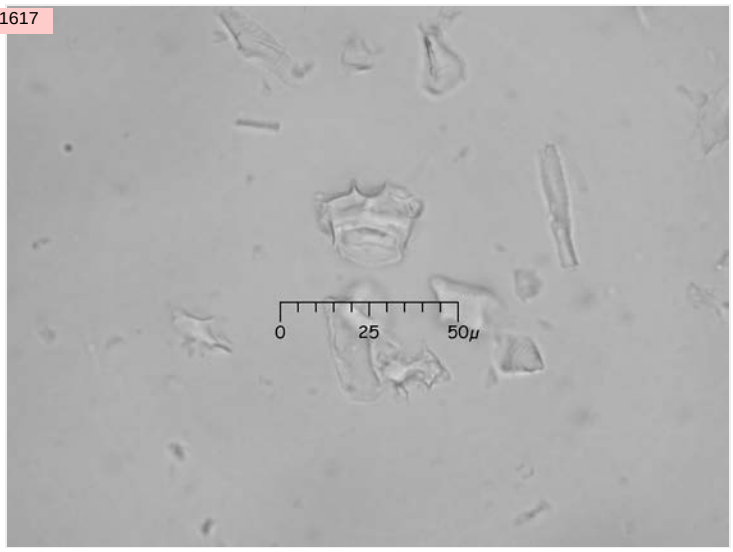
Species sylvestris

Authority

Comments

Top view. See Records #140,139 for a variation of the same body. Occurs in the leaf. Small, tall hair cell base.
Note the decorated schlerids in background-- these are common in the sample.
Diagnostic level: family

Image Z1617



Description

- Epidermal appendage
- Hair base
- Radiating appendages
- Discernable center
- Long, regualr appendages; acute
- less than 25 microns in diameter

Entered by Neil A. Duncan

Updated 5/31/2006

MUno 40IVAa201C

Recno 142

Family Flacourtiaceae

Genus Pleuranthodendron

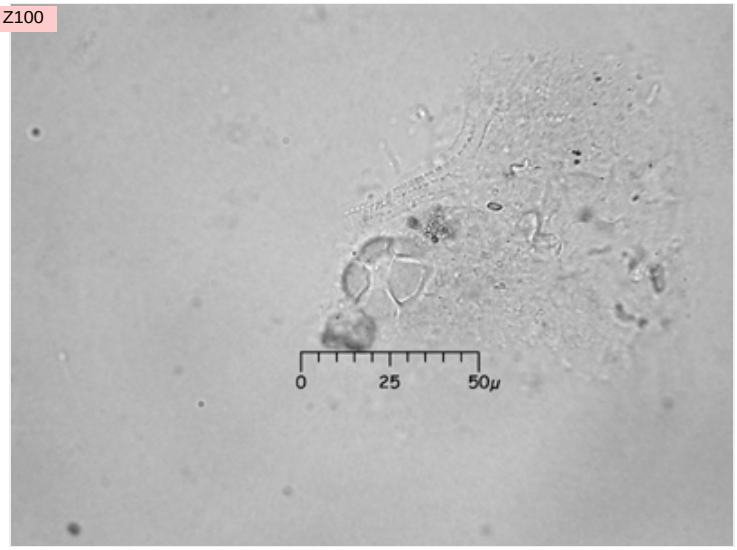
Species lindenii

Authority (Turcz.) Sleumer

Comments

Occurs in the leaf.
Diagnostic level: family

Image Z100



Description

- Epidermal appendage
- Hair base
- Rounded central cell, distinct; central cell is lightly silicified surrounding cells form a disk; cells are angled

Entered by Shawn K. Collins

Updated 3/3/2005

MUno 40IVAa201C

Recno 143

Family Flacourtiaceae

Genus Pleuranthodendron

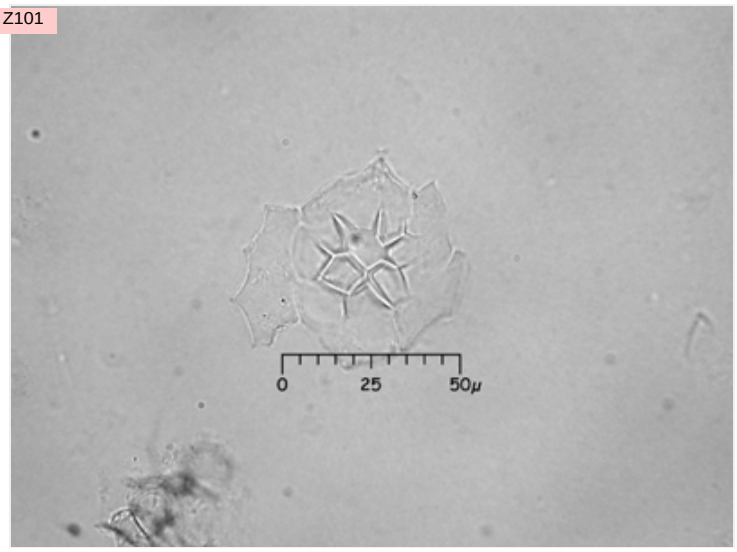
Species lindenii

Authority (Turcz.) Sleumer

Comments

Occurs in the leaf. In this example, the surrounding disk is not completely developed.
Diagnostic level: family

Image Z101



Description

- Epidermal appendage
- Epidermal appendage
- Hair base
- Rounded central cell, distinct; central cell is lightly silicified surrounding cells form a disk; cells are angled

Entered by Shawn K. Collins

Updated 3/3/2005

MUno 40IIIAb200Aa1

Recno 221

Family Flacourtiaceae

Genus Pleuranthodendron

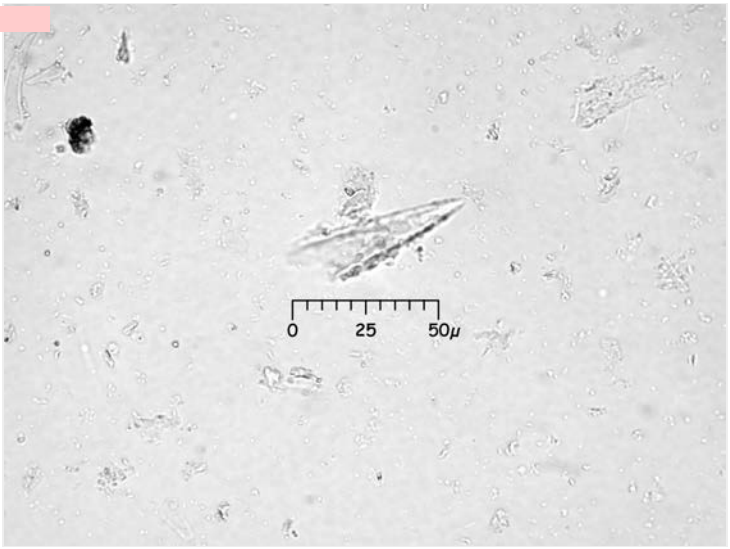
Species lindenii

Authority

Comments

Slide 1377 leaf.
Diagnostic level: family

Image



Description

Long unicellular hair; Double interior space; Acute tip.

Entered by Meghann O'Brien

Updated 2/22/2005

MUno 40IIIAb200Aa1

Recno 115

Family Flacourtiaceae

Genus Pueraria

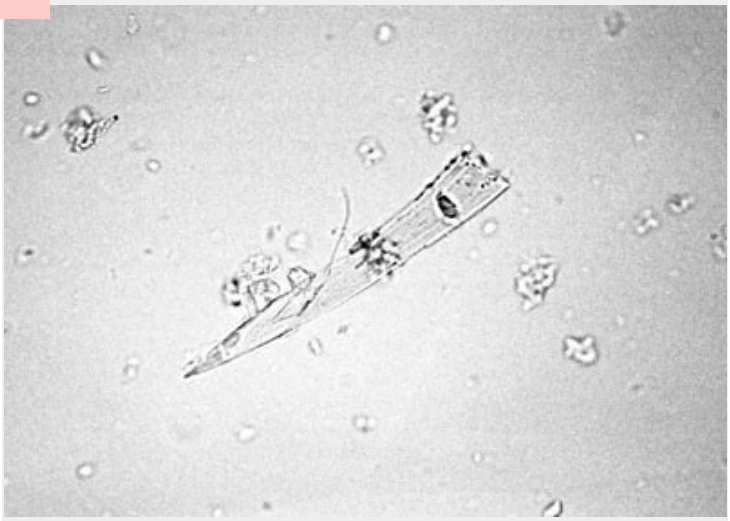
Species phaseoloides var.

Authority (Benth.) Baker

Comments

Moderate to common in abundance.
Diagnostic level: family

Image



Description

Epidermal appendage
long unicellular hair, non-armed, with smooth surface and double interior space
Acute tip, no base

Entered by Shawn K. Collins

Updated 3/3/2005

MUno 40IVAa301

Recno 144

Family Flacourtiaceae

Genus Tetrathylacium

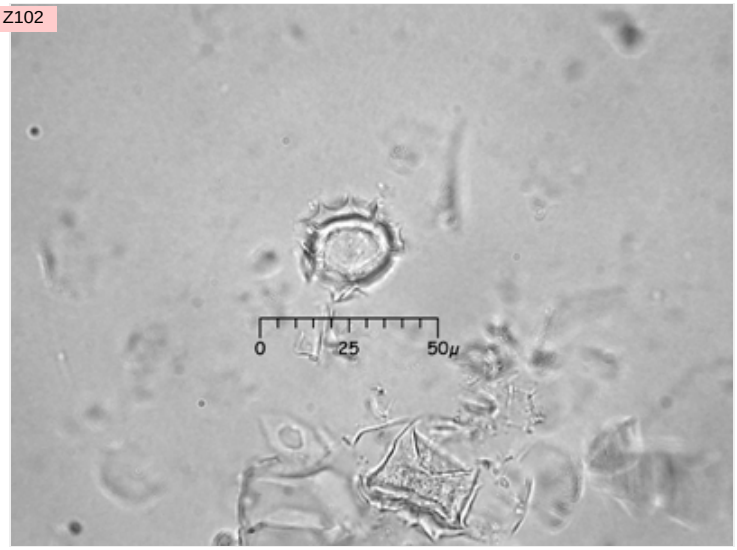
Species macrophyllum

Authority Poepp. & Endl.

Comments

Occurs in the leaf.
Diagnostic level: family

Image Z102



Description

- Epidermal appendage
- Hair base
- Large rounded or elliptic central cell with short regular appendages that surround the angular rim. Rim is external to a ring around the center.

Entered by Shawn K. Collins

Updated 3/3/2005

MUno 20IBc

Recno 216

Family Humiriaceae

Genus Humiriastrum

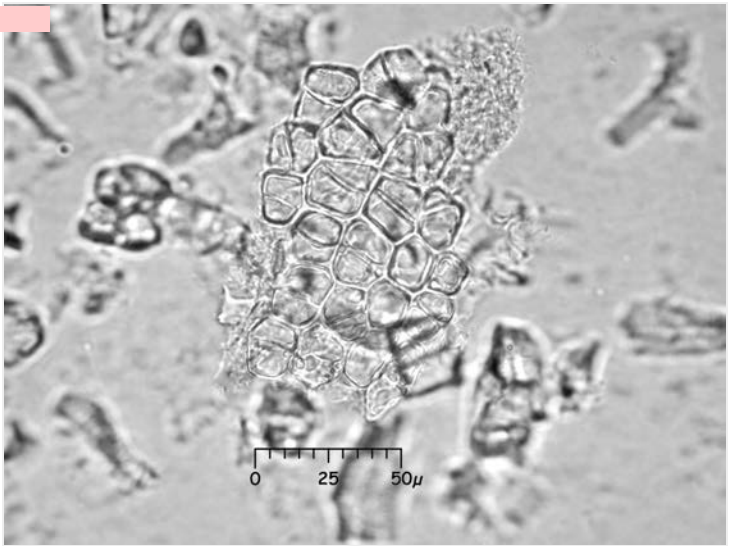
Species procerum

Authority

Comments

Occurs in leaf. Type defined by Cesar Vientimilla 05/1991.
Diagnostic level: family

Image



Description

Epidermal non-quadrilateral; Polyhedral cells; Smooth surface; Surface with perforations and slender divisions; May occur alone or in groups.

Entered by Meghann O'Brien

Updated 2/22/2005

MUno 110

Recno 179

Family Lauraceae

Genus Aniba

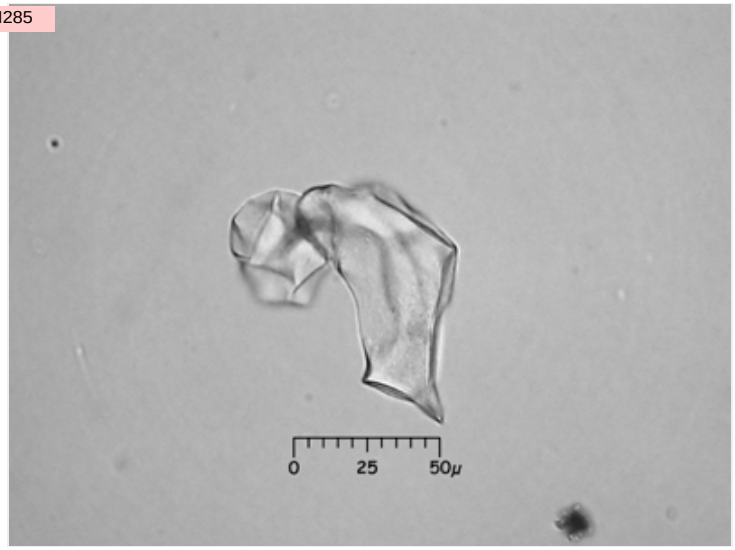
Species hostmanniana

Authority Mez

Comments

2 large examples of schlerids, note variation in facets, shape.
This taxa produces very sculpted, multi-surfaced bodies.
Diagnostic level: generalized arboreal

Image N285



Description

- Schlerids

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 110

Recno 180

Family Lauraceae

Genus Aniba

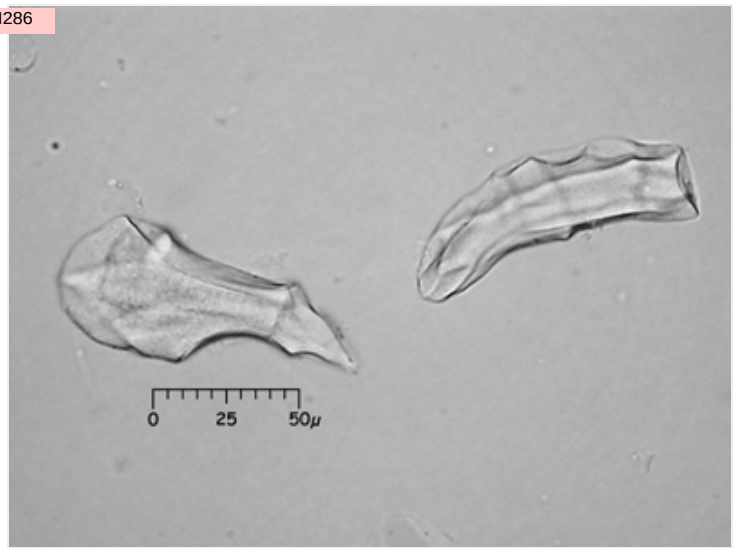
Species hostmanniana

Authority Mez

Comments

2 large examples of schlerids, note variation in facets, shape.
This taxa produces very sculpted, multi-surfaced bodies.
Diagnotic level: generalized arboreal

Image N286



Description

- Schlerid

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 120

Recno 181

Family Lauraceae

Genus Aniba

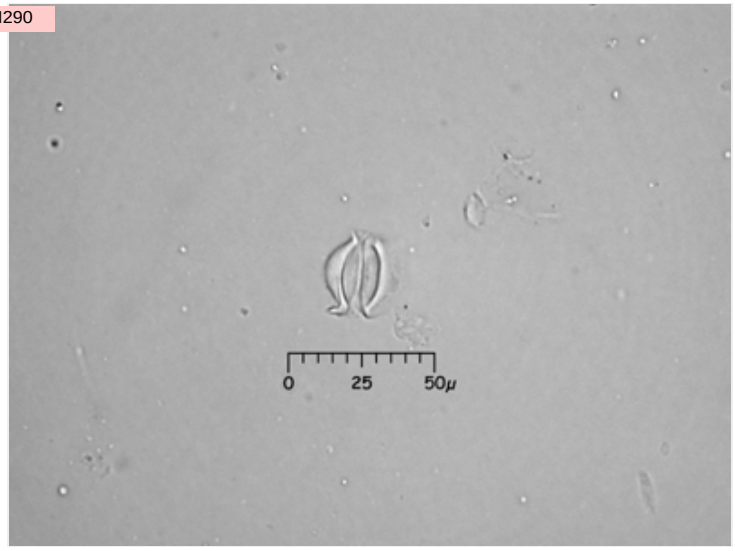
Species hostmanniana

Authority Mez

Comments

Stomate, note guard cells and turgid state of cells.
Diagnostic level: not diagnostic

Image N290



Description

- Stomate

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVAa203

Recno 182

Family Lauraceae

Genus Aniba

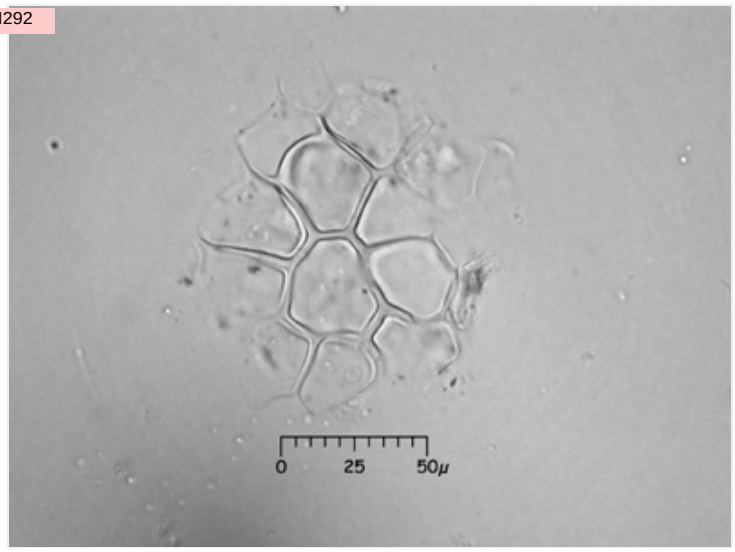
Species hostmanniana

Authority Mez

Comments

Hair base.
Diagnostic level: family

Image N292



Description

- Hair cell base
- Rectangular to oblong, 8 radiating appendages formed by 7 radiating attached cells; center is polyhedral

Entered by Karol Chandler-Ezell

Updated 3/5/2005

MUno 80IAa3

Recno 189

Family Lauraceae

Genus Beilschmiedia

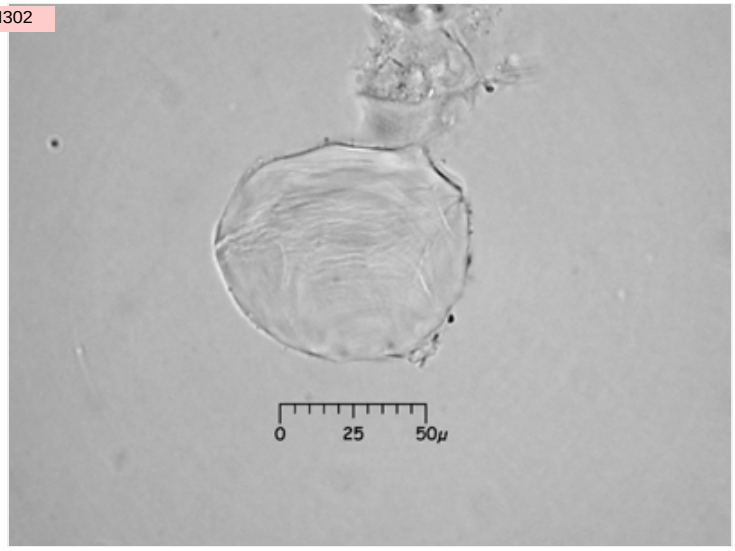
Species alloiophylla

Authority (Rusby) Kosterm.

Comments

Diagnostic level: family

Image N302



Description

- Large striated sphere
- Sphere, smooth, thick (not flattened)
- Very large diameter (>40 microns)

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20VE

Recno 192

Family Lauraceae

Genus Caryodaphnopsis

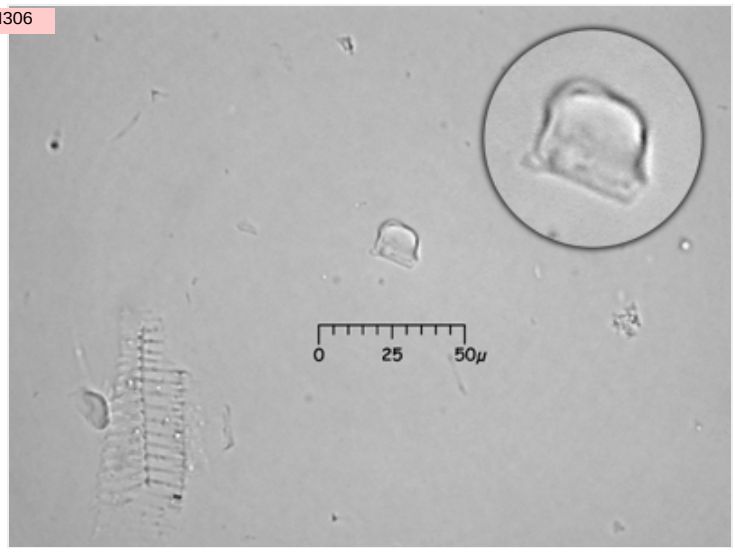
Species fosteri

Authority H.van der Werff

Comments

Side view (see Record #193 for top view).
Diagnostic level: family

Image N306



Description

- Epidermal non-quadrilaterals
- Discrete cells (not fragments)
- Surface projections
- Single rounded projection or “hat” on one side
- Rounded in top view

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20VE

Recno 193

Family Lauraceae

Genus Caryodaphnopsis

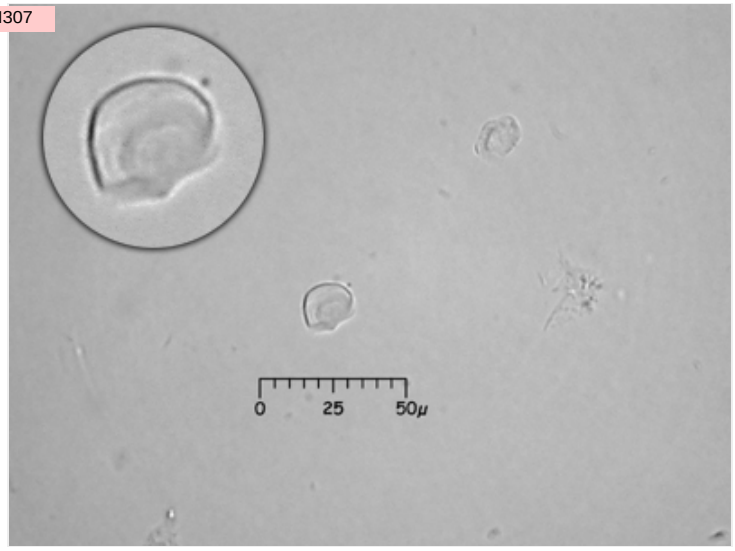
Species fosteri

Authority H.van der Werff

Comments

Top view (see Record #192 for side view).
Diagnostic level: family

Image N307



Description

- Epidermal non-quadrilaterals
- Discrete cells (not fragments)
- Surface projections
- Single rounded projection or “hat” on one side
- Rounded in top view

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22IF

Recno 190

Family Lauraceae

Genus Chlorocardium

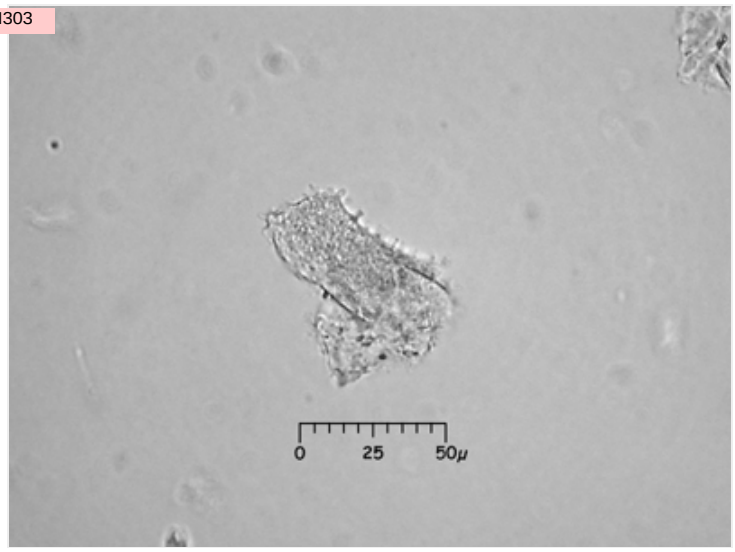
Species venenosum

Authority (Kosterm. & Pinkley) J.G.

Comments

Diagnostic level: family

Image N303



Description

- Seed epidermis, angled to irregularly quadrilateral; surface grainy; small projections on edges
- Surface grainy

Entered by Karol Chandler-Ezell

Updated 3/5/2005

MUno 22IF

Recno 191

Family Lauraceae

Genus Chlorocardium

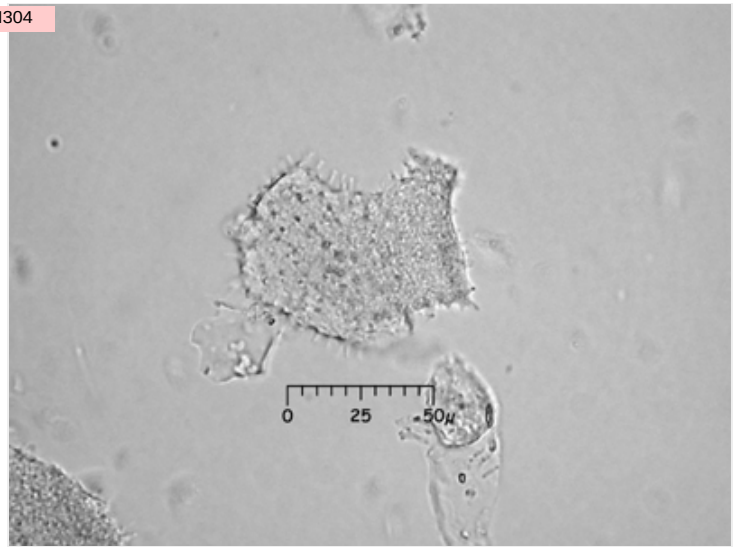
Species venenosum

Authority (Kosterm. & Pinkley) J.G.

Comments

Diagnostic level: family

Image N304



Description

- Seed epidermis, angled to irregularly quadrilateral; surface grainy; small projections on edges
- Surface grainy

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVBb

Recno 188

Family Lauraceae

Genus Nectandra

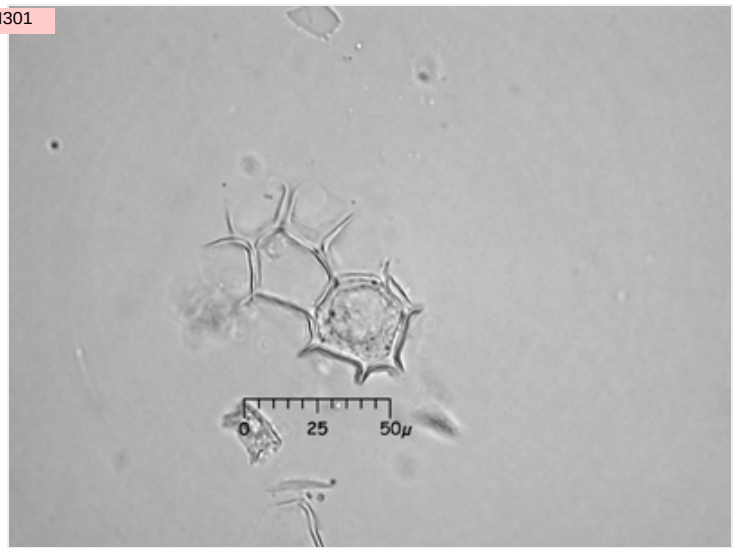
Species globosa

Authority Mez

Comments

Diagnostic level: not diagnostic

Image N301



Description

- Hair cell base
- Formed of rounded cells, similar in size
- Central cell is clearly discernable

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 160II

Recno

Family Malvaceae

Genus Gossypium

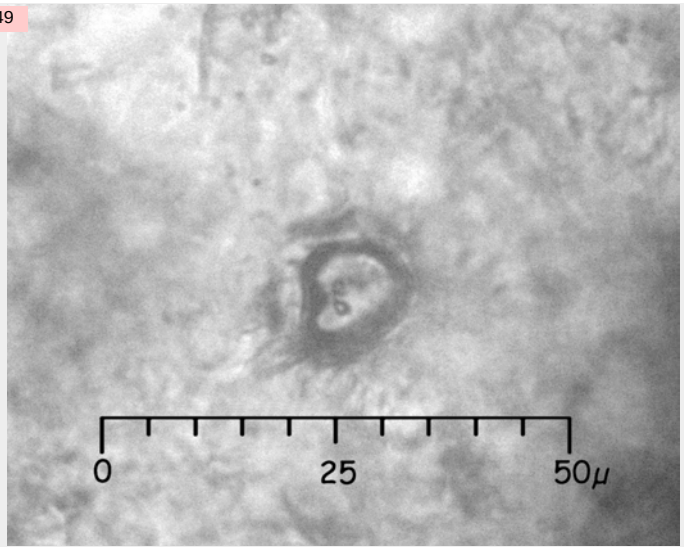
Species

Authority

Comments

Compare to 160I, small heart-shaped secretory body. 160II has a variably shaped center. Observed in Gossypium (PC 2665); diagnostic level under study.

Image Z2149



Description

Secretory body with variably shaped center

Entered by Deborah M. Pearsall

Updated 8/21/2012

MUno 160II

Recno

Family Malvaceae

Genus Gossypium

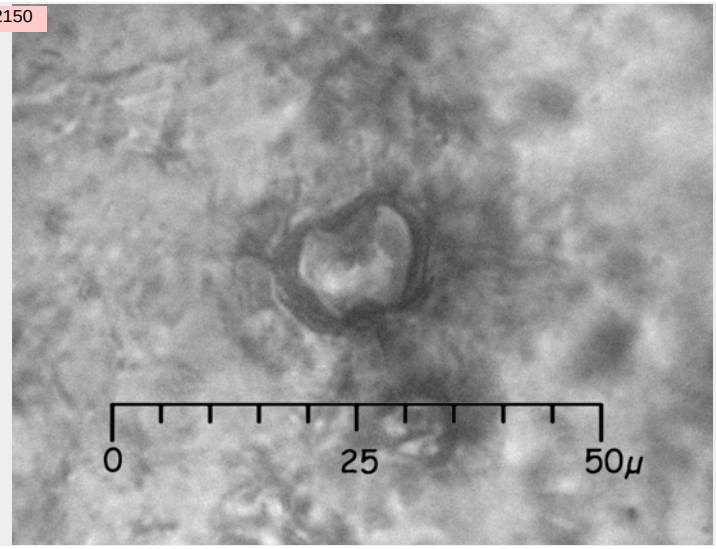
Species

Authority

Comments

Compare to 160I, small heart-shaped secretory body. 160II has a variably shaped center. Observed in Gossypium (PC 2665); diagnostic level under study.

Image Z2150



Description

Secretory body with variably shaped center

Entered by Deborah M. Pearsall

Updated 8/21/2012

MUno 40IIIBb

Recno 328

Family Malvaceae

Genus Gossypium

Species

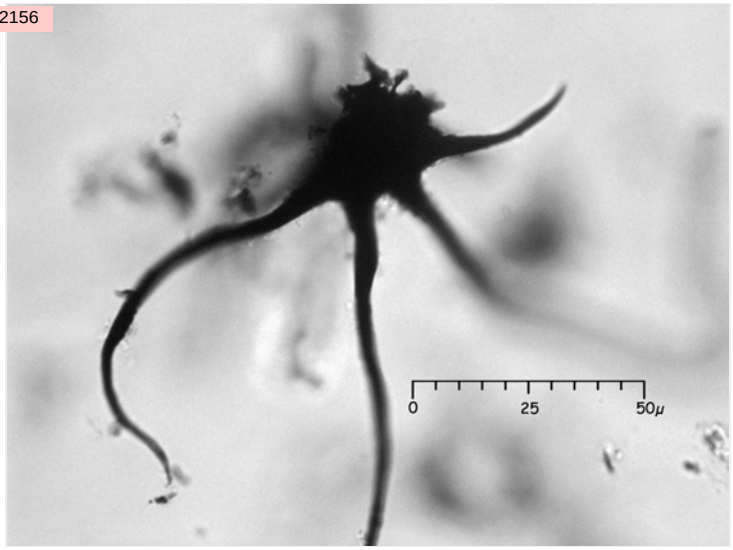
Authority

Comments

In PC E1022, Gossypium. Also observed in PC E1004, Malachra alceifolia, Malvaceae

Diagnostic level: Malvaceae

Image Z2156



Description

Multicellular hair radiating from center. Hair segments narrow and long

Entered by Deborah M. Pearsall

Updated 8/27/2012

MUno 40IIIBb

Recno 329

Family Malvaceae

Genus Gossypium

Species

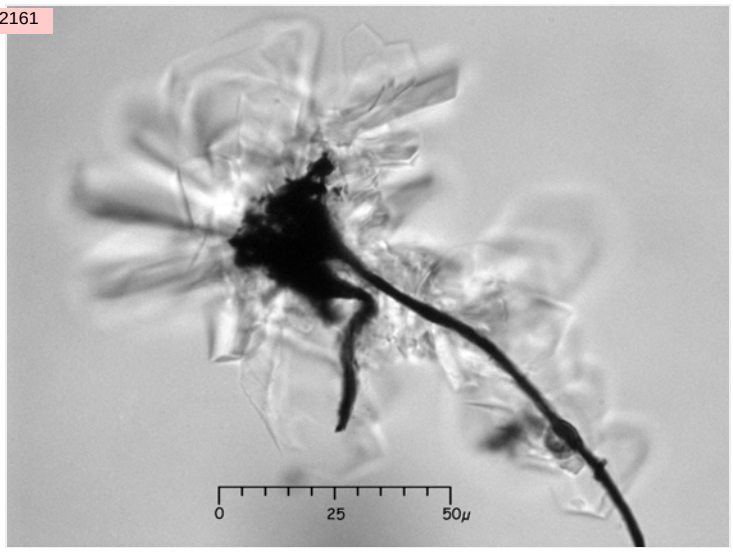
Authority

Comments

PC E1022. This image shows hair base cells, a spherical cystolith of loose structure.

Diagnostic level: Malvaceae

Image Z2161



Description

Multicellular hair radiating from center. Hair segments narrow and long

Entered by Deborah M. Pearsall

Updated 8/27/2012

MUno 100IA

Recno 332

Family Malvaceae

Genus Gossypium

Species

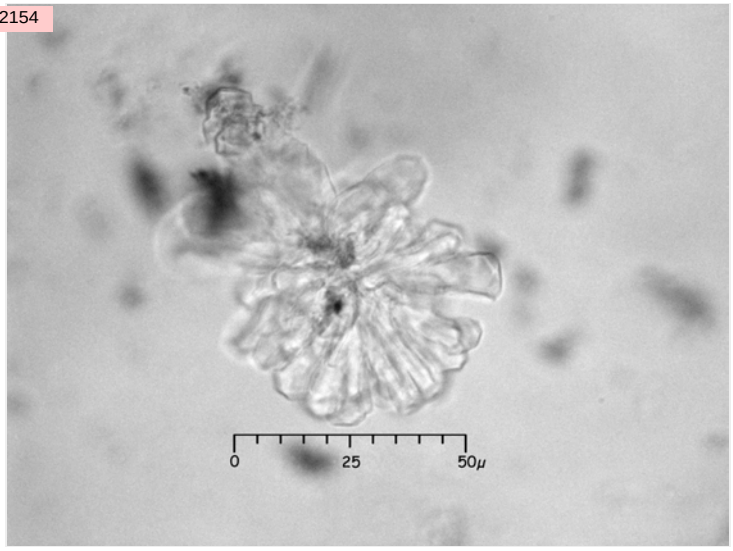
Authority

Comments

See size variation in cystoliths.
Diagnostic level: generalized arboreal

Note that this type formed the base of hair 40IIIBb

Image Z2154



Description

Crystalline bodies, cystoliths; Spherical in shape; made up of angular projections.

Entered by Deborah M. Pearsall

Updated 8/28/2012

MUno 22VIIBc2

Recno 156

Family Marantaceae

Genus Calathea

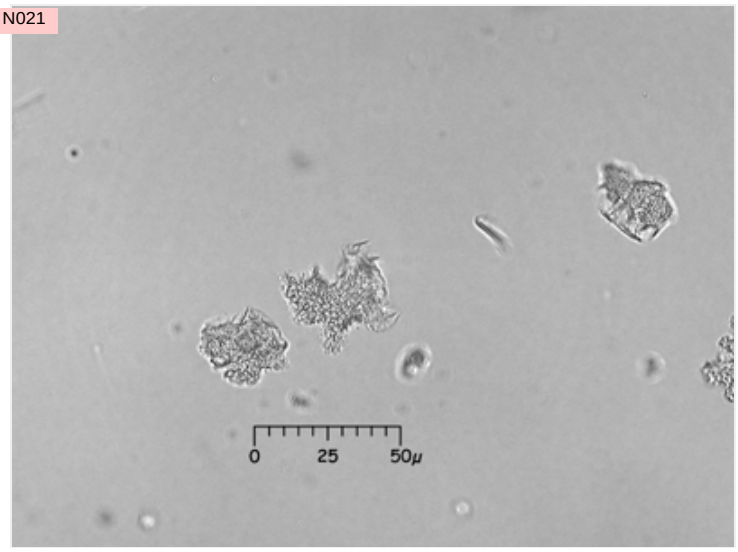
Species allouia

Authority (Aubl.) Lindl.

Comments

Body on left is 22VIIBc2 (no spikes).
Body on right is 22VIIBc3 (spikes).
Diagnostic level: species (both types)

Image N021



Description

- Cylindrical seed bodies, large
- Shaft of cylinder with porous to densely ciliate surface
- Ciliate surface has appearance of abundant 3-dimensional spots or bumps
- Shaft is twisted away from axis, with irregular or broken end
- May be very shortened

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIICc

Recno 157

Family Marantaceae

Genus Calathea

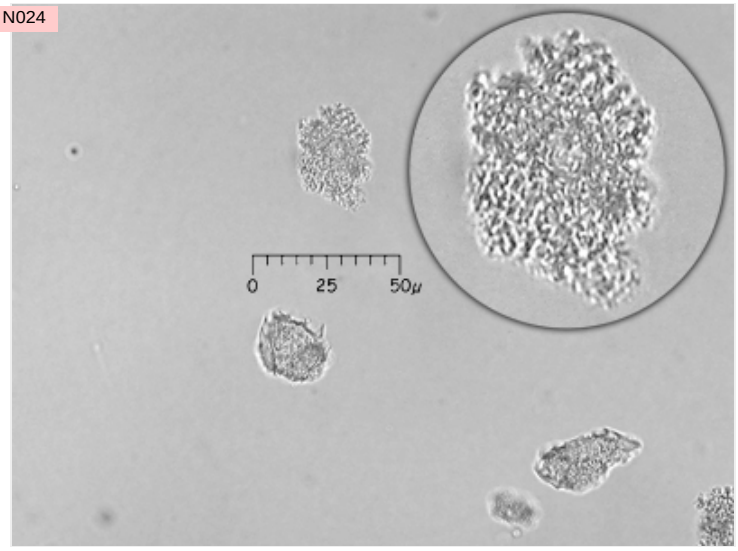
Species allouia

Authority (Aubl.) Lindl.

Comments

"Top" or dome-side view of "tip only" from Calathea allouia.
You can only identify to species if you can match dome and spines. Otherwise identify only to Genus.
Inset shows closeup of underside of C. allouia "tip only" where shaft of cylinder has broken away.

Image N024



Description

- Disks formed with the "tip" or dome breaks away from Marantaceae cylindrical seed bodies
- Large diameter, distinct rim. Underside view (see other record) shows dark, grainy to ciliate or porous remains of cylinder
- "Stalk" present on some taxa and has a grainy surface and variable tip which may be broad/obtuse to acuminate

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIBc3

Recno 158

Family Marantaceae

Genus Calathea

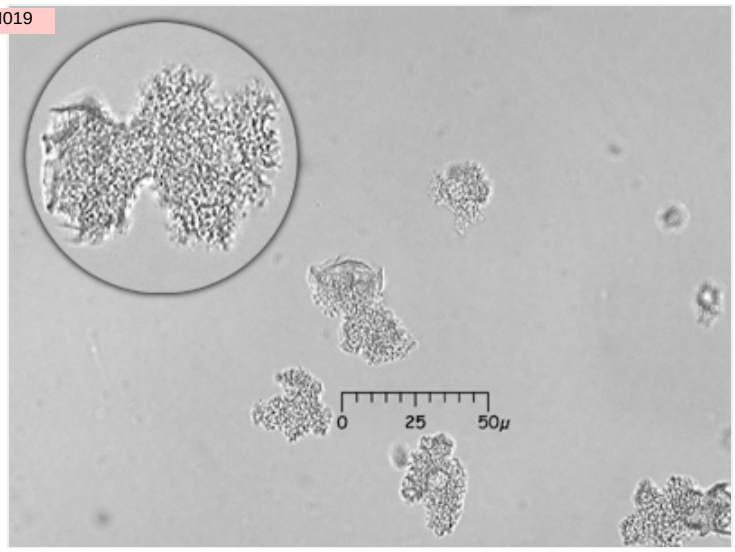
Species allouia

Authority (Aubl.) Lindl.

Comments

Diagnostic level: species
Note that the “tip only” and pieces of cylinder only are also visible in this image (bottom view of “tip only” in bottom right side of field, piece of cylinder only in center left side of field). Inset shows closeup of C.allouia type... Notice the distinctive traits of the thin spines surrounding a flattened dome tip.

Image N019



Description

- Cylindrical seed bodies, large
- Shaft of cylinder with porous to densely ciliate surface
- Ciliate surface has appearance of abundant 3-dimensional spots or bumps
- Shaft is twisted away from axis, with broken end OR short, broad and blunt cylinder

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 26IAa

Recno 242

Family Marantaceae

Genus Calathea

Species allouia

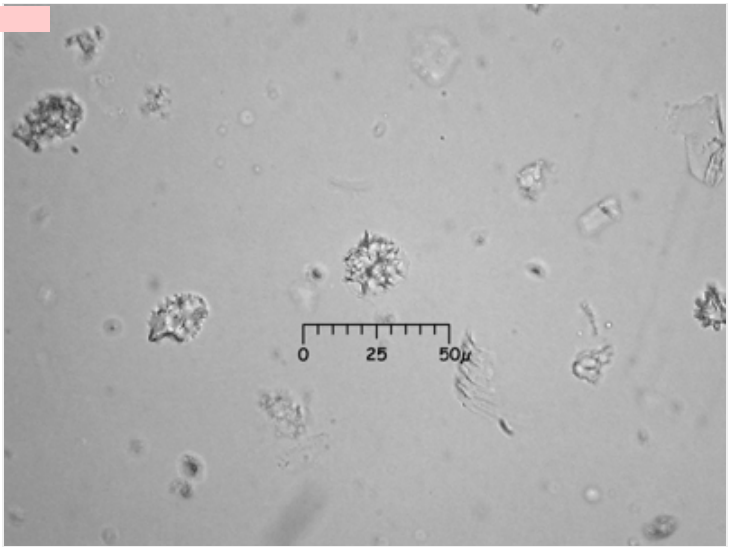
Authority

Comments

The phytolith to the left of the scale shows the tip clearly.

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Calathea rhizomes

Image



Description

Irregular rhizome cylinder: Small cylindrical bodies with undulating, beaded, nodular, or spiked surface decoration. Abruptly narrowed tip or head. Observed in Calathea, but not other genera.

Entered by Emily Sternberg

Updated 2/3/2005

MUno 26IAb

Recno 243

Family Marantaceae

Genus Calathea

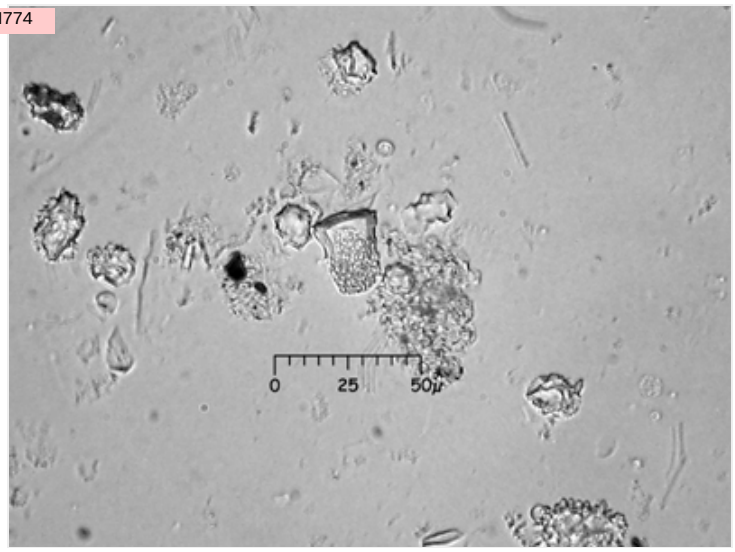
Species allouia

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Calathea rhizomes

Image N774



Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section. Body size is smaller than related Marantaceae inflorescence types. Observed in Calathea; does not occur in other genera.

Entered by Emily Sternberg

Updated 2/3/2005

MUno 26IIB

Recno 245

Family Marantaceae

Genus Calathea

Species allouia

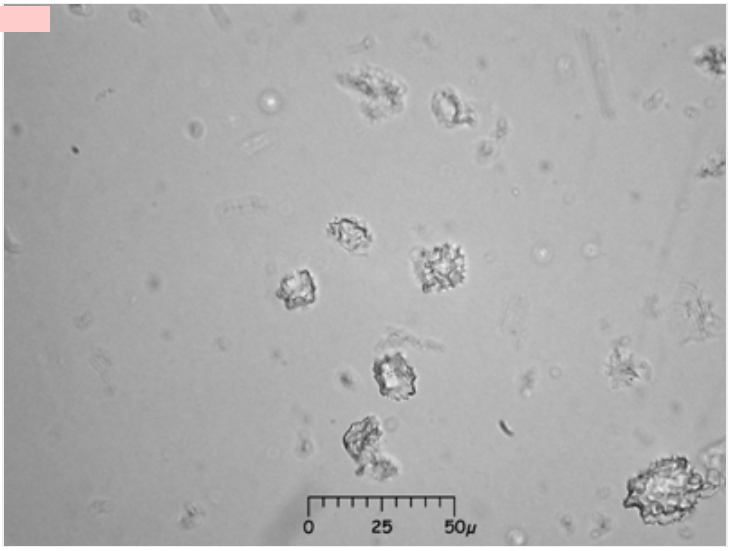
Authority

Comments

Phytoliths above the scale are this type. Phytolith at lower right is 26IAa (see record 258)

Type established by Karol Chandler-Ezell, 2004
Diagnostic level:Calathea genus, rhizome

Image



Description

Flat rhizome type: flattened, somewhat elongated body with a decorated, beaded edge, and an elongate, irregularly stellate center. Center appears somewhat elevated above the ends (platform appearance).

Entered by Emily Sternberg

Updated 2/3/2005

MUno 80IJ

Recno 246

Family Marantaceae

Genus Calathea

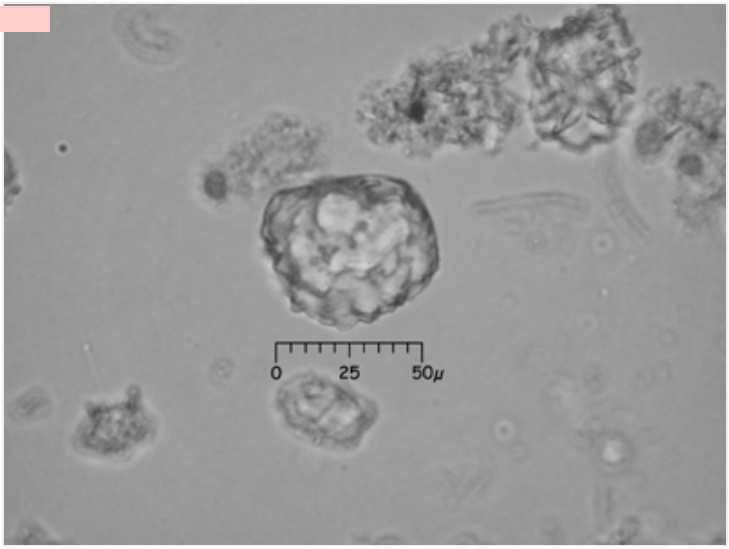
Species allouia

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: genus

Image



Description

Verrucate sphere: spherical to spheroidal bodies, up to 50 microns in diameter, with dense verrucate decoration (irregularly shaped projections).

Entered by Emily Sternberg

Updated 2/3/2005

MUno 26IAa

Recno 258

Family Marantaceae

Genus Calathea

Species allouia

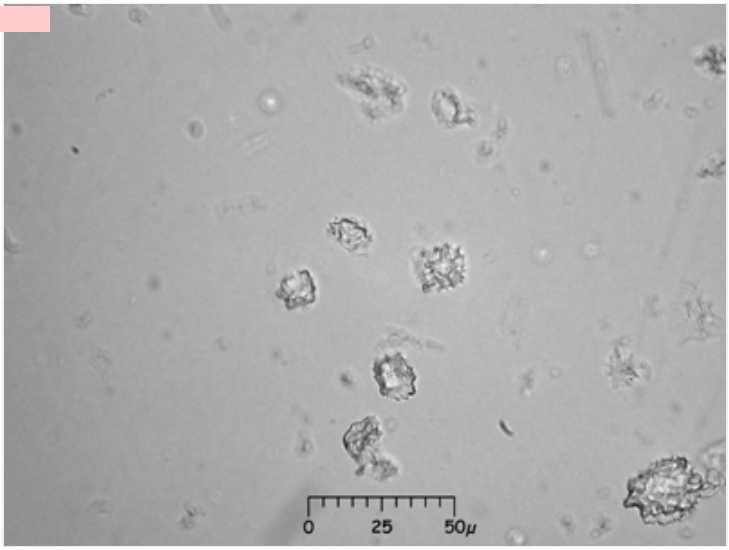
Authority

Comments

See phytolith at lower right. The other forms are 26IIB

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Calathea, rhizome

Image



Description

Irregular rhizome cylinder: Small cylindrical bodies with undulating, beaded, nodular, or spiked surface decoration. Abruptly narrowed tip or head. Does not occur in other genera.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 26IAb

Recno 259

Family Marantaceae

Genus Calathea

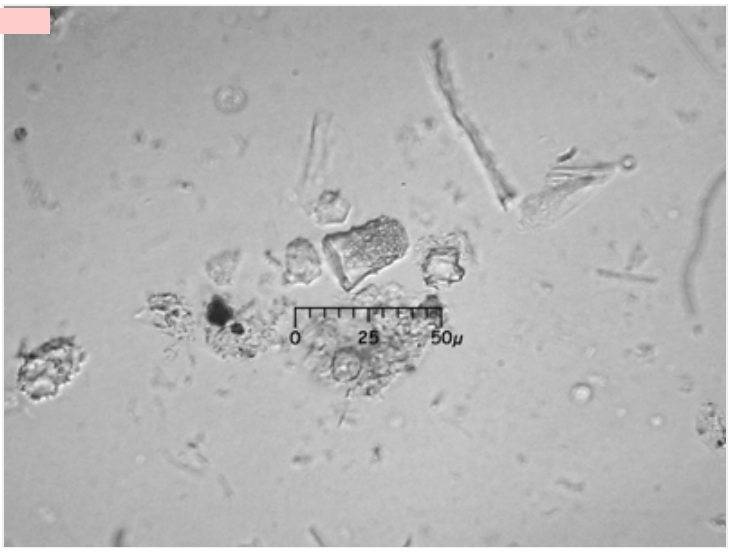
Species allouia

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Calathea, rhizome

Image



Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section. Body size is smaller than related Marantaceae inflorescence types. Does not occur in other genera.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 26IAb

Image

Recno 260

Family Marantaceae

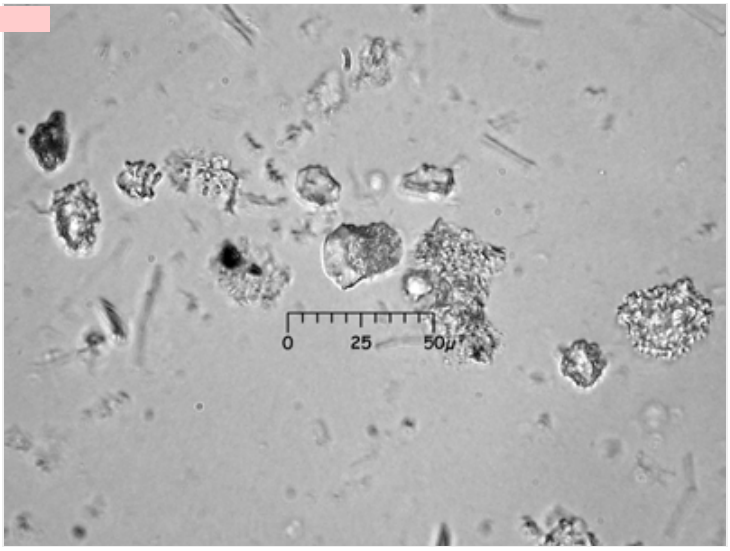
Genus Calathea

Species allouia

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Calathea, rhizome



Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section. Body size is smaller than related Marantaceae inflorescence types. Does not occur in other genera.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 26IAb

Recno 261

Family Marantaceae

Genus Calathea

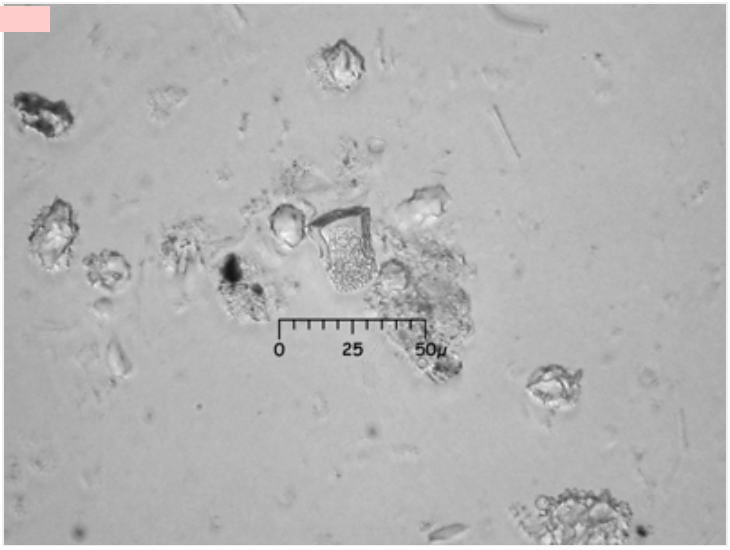
Species allouia

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Calathea, rhizome

Image



Description

Flat domed rhizome cylinder: Cylindrical body with ciliate or beaded decoration along cylinder and a distinctive, smooth head. Overall shape a cylinder which is polygonal in cross section. Body size is smaller than related Marantaceae inflorescence types. Does not occur in other genera.

Entered by Emily Sternberg

Updated 2/22/2005

MUno 26IIB

Recno 262

Family Marantaceae

Genus Calathea

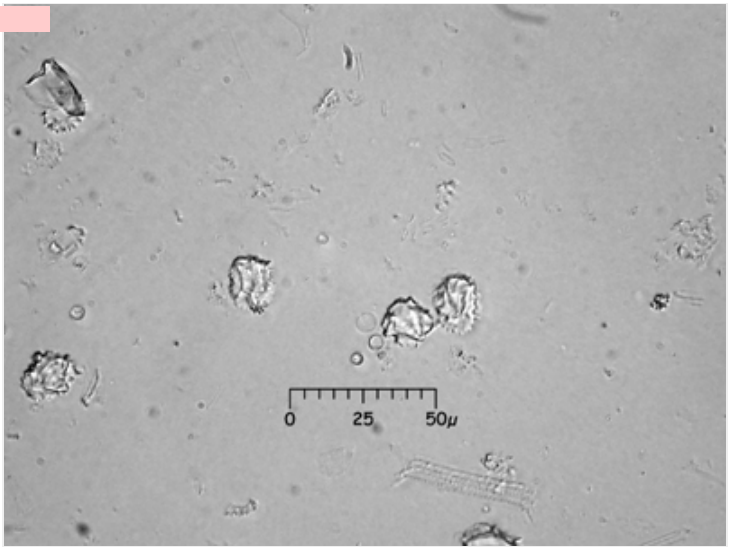
Species allouia

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Calathea genus, rhizome

Image



Description

Flat rhizome type: flattened, somewhat elongated body with a decorated, beaded edge, and an elongate, irregularly stellate center. Center appears somewhat elevated above the ends (platform appearance).

Entered by Emily Sternberg

Updated 2/22/2005

MUno 26IIB

Recno 263

Family Marantaceae

Genus Calathea

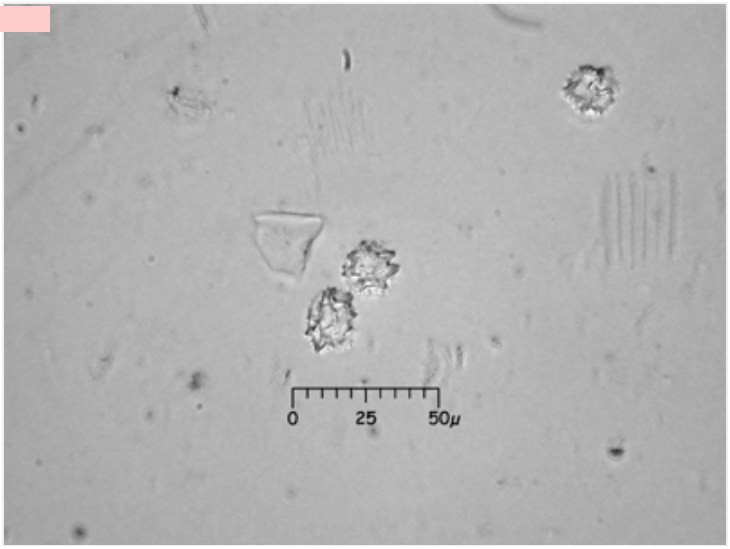
Species allouia

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Calathea genus, rhizome

Image



Description

Flat rhizome type: flattened, somewhat elongated body with a decorated, beaded edge, and an elongate, irregularly stellate center. Center appears somewhat elevated above the ends (platform appearance).

Entered by Emily Sternberg

Updated 2/22/2005

MUno 80IKb

Recno 314

Family Marantaceae

Genus Calathea

Species allouia

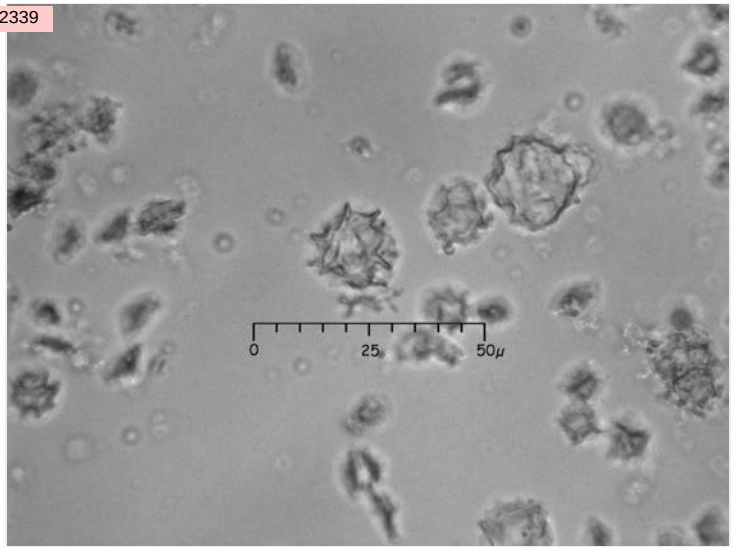
Authority

Comments

PC2458
Diagnostic level: Potential species-level diagnostic. Type overlaps with 80IKa, but is distinguished by size.

Occurs in leaf and less often in inflorescence.

Image Z2339



Description

Sphere with acute, curved, pointed projections. Size range in *Calathea allouia* 7.5 - 25 microns, but 15-20 micron range most common. Compare to 80IKb occuring in *Costus* sp.

Entered by Neil A. Duncan

Updated 4/23/2010

MUno 80IKb

Recno 316

Family Marantaceae

Genus Calathea

Species allouia

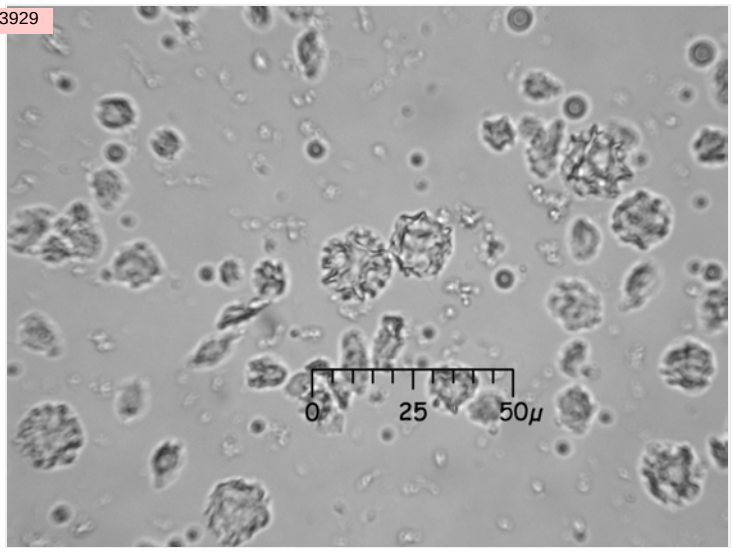
Authority

Comments

PC2458
Diagnostic level: Potential species-level diagnostic. Type overlaps with 80IKa, but is distinguished by size.

Occurs in leaf and less often in inflorescence.

Image Z3929



Description

Sphere with acute, curved, pointed projections. Size range in *Calathea allouia* 7.5 - 25 microns, but 15-20 micron range most common. Compare to 80IKb occuring in *Costus* sp.

Entered by Neil A. Duncan

Updated 4/23/2010

MUno 80IEb

Recno 348

Family Marantaceae

Genus Calathea

Species allouia

Authority

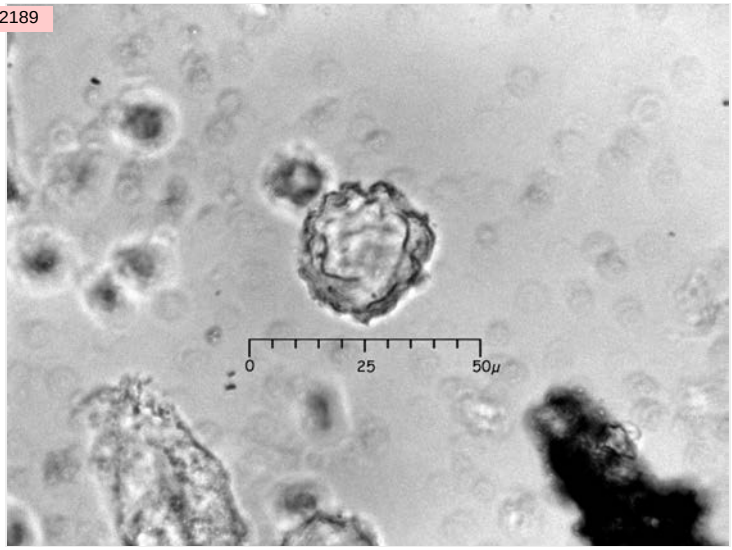
Comments

PC2596 Calathea allouia leaf
These folded/angled spheres have distinctive nodules separate from the folds. Grade into rugulose (bumpy, rough surface) spheres.

Type first defined by Karol Chandler-Ezell

Diagnostic level under study

Image Z2189



Description

angled/folded with nodules separate from the folds. Size tends to be 20 microns or larger.

Entered by Deborah M. Pearsall

Updated 9/11/2012

MUno 80IEb

Recno 349

Family Marantaceae

Genus Calathea

Species allouia

Authority

Comments

PC2596 Calathea allouia leaf
These folded/angled spheres have distinctive nodules separate from the folds. Grade into rugulose (bumpy, rough surface) spheres.

Diagnostic level under study

Image Z2193

Description

angled/folded with nodules separate from the folds. Size tends to be 20 microns or larger.

Entered by Deborah M. Pearsall

Updated 9/11/2012

MUno 24IIFb

Recno 350

Family Marantaceae

Genus Calathea

Species allouia

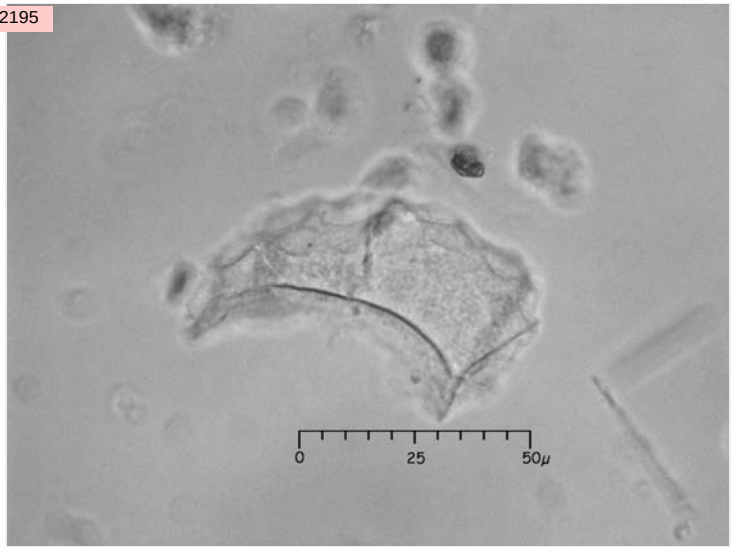
Authority

Comments

PC2597 Calathea allouia stem
some examples are curved, but not hemispherical

Diagnostic level: under study

Image Z2195



Description

epidermal non-quadrilateral
three dimensional/blocky
angled edges with small facets and stipled surface

Entered by Deborah M. Pearsall

Updated 9/11/2012

MUno 24IIFb

Recno 351

Family Marantaceae

Genus Calathea

Species allouia

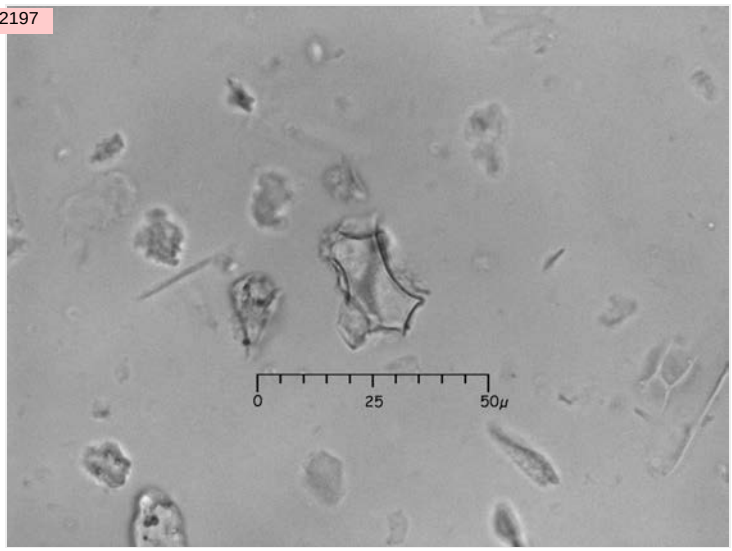
Authority

Comments

PC2597 Calathea allouia stem
some examples are curved, but not hemispherical

Diagnostic level: under study

Image Z2197



Description

epidermal non-quadrilateral
three dimensional/blocky
angled edges with small facets and stipled surface

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 22VIIBc2

Recno 352

Family Marantaceae

Genus Calathea

Species allouia

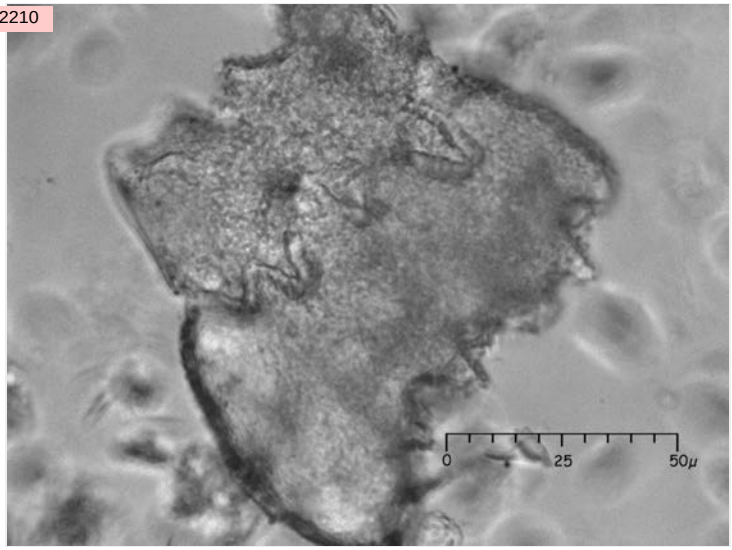
Authority

Comments

PC2598, inflorescence
Note that this type can be quite long; considerable variation is present

Diagnotic level: species

Image Z2210



Description

porous to densely ciliate cylinder shaft; abundant three dimensional spots and bumps;
shaft twisted/broken irregularly, may be very shortened
broad, blunt tip, granular surface

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 22VIIBc3

Recno 353

Family Marantaceae

Genus Calathea

Species allouia

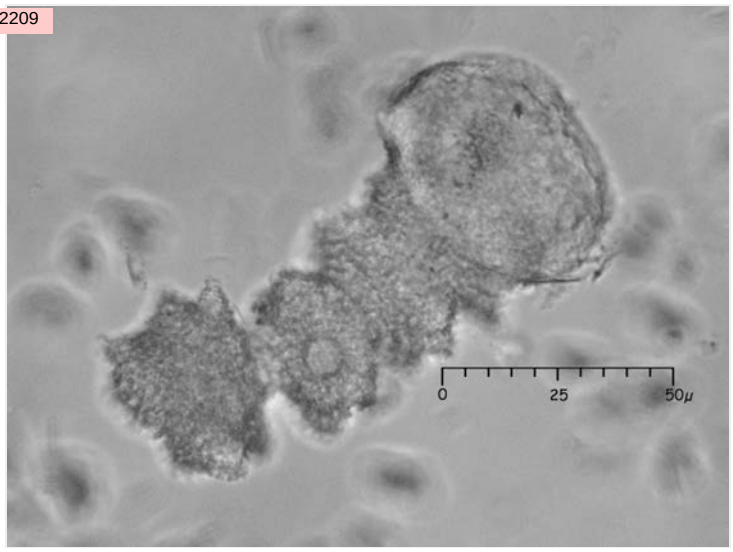
Authority

Comments

PC2598, inflorescence
Note that these inflorescence types can be quite large; size is variable

Diagnostic level: species

Image Z2209



Description

porous to densely ciliate cylinder shaft, abundant three dimensional spots and bumps;
shaft twisted/broken irregularly; may be very shortened;
flattened, grainy “tip” with thin spines around edge of disk

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 22VIIBc3

Recno 354

Family Marantaceae

Genus Calathea

Species allouia

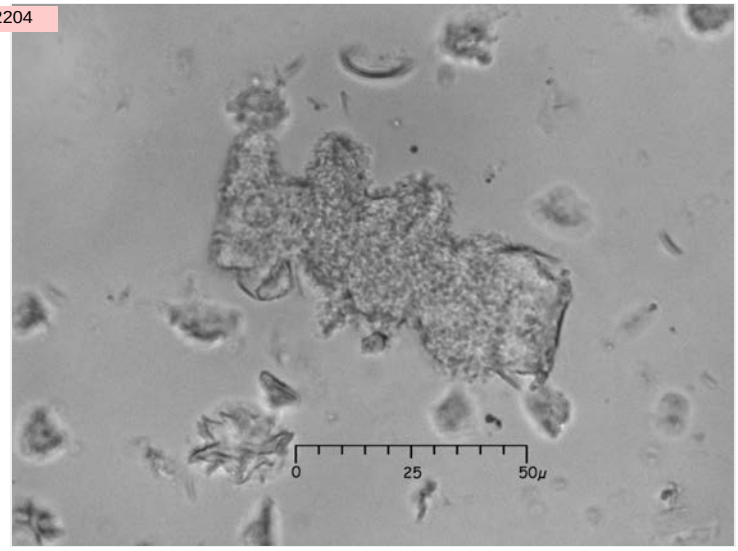
Authority

Comments

PC2598, inflorescence
Note that these inflorescence types can be quite large; size is variable

Diagnostic level: species

Image 2204



Description

porous to densely ciliate cylinder shaft, abundant three dimensional spots and bumps;
shaft twisted/broken irregularly; may be very shortened;
flattened, grainy “tip” with thin spines around edge of disk

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 80IAa201

Recno 355

Family Marantaceae

Genus Calathea

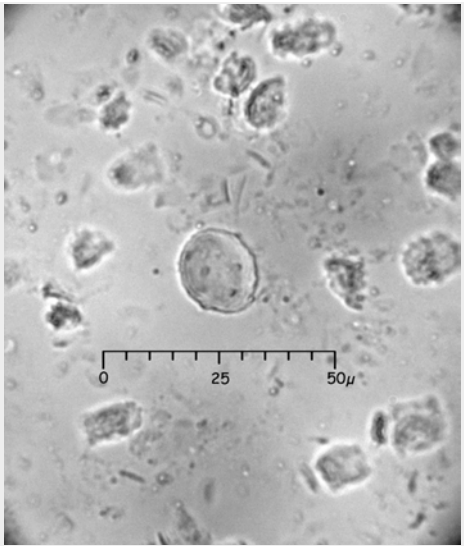
Species allouia

Authority

Comments

PC2598, inflorescence, type occurs rarely
Spheres produced by Canna range from smooth to rugulose to irregularly angled or folded. Type 80IAa201 is based on a modern specimen of Canna edulis leaf. Ephemeral spherical bodies are not included in this type.
Diagnostic level: Canna genus (rare in Calathea)

Image Z4276



Description

Sphere with smooth but roughened surface. Highly silicified. Shape can be irregulary spherical. Size range from 8-28 microns.

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 80ICa2

Recno 356

Family Marantaceae

Genus Calathea

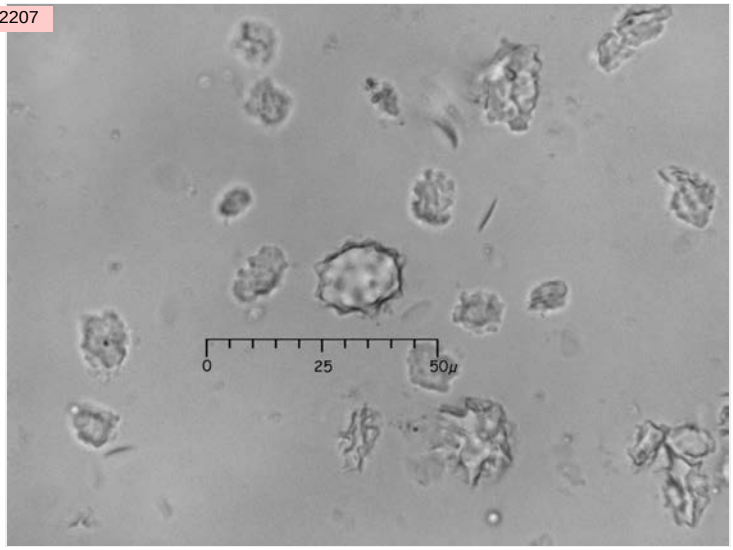
Species allouia

Authority

Comments

PC2598, inflorescence
Nodular spheres moderate in occurrence, variable in size and height of projections. This is a large example (80ICa2); smaller also present (80ICa1)

Image Z2207



Description

nodular sphere: projections are nodular: obtuse tip, not evenly pointed, often rounded.
Large

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 80ICd

Recno 344

Family Marantaceae

Genus Calathea

Species allouia

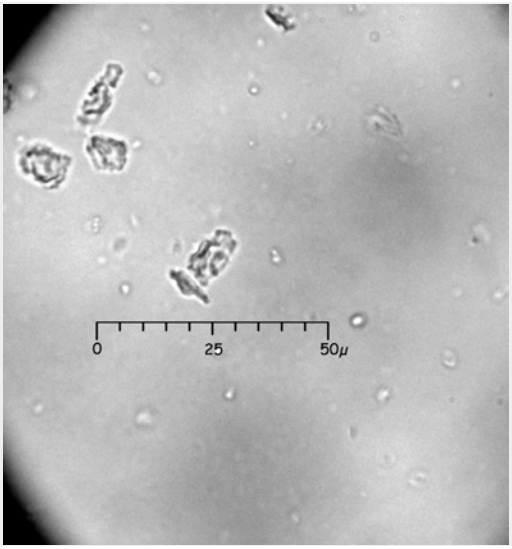
Authority

Comments

type established by Karol Chandler-Ezell
PC2348, C. allouia inflorescence

Diagnostic level: Calathea/Maranta

Image Z4271



Description

rough spheres to irregular flattened bodies with nodules, occasional spinules, and distinctive linear ridges

Entered by Deborah M. Pearsall

Updated 9/11/2012

MUno 80ICd

Recno 345

Family Marantaceae

Genus Calathea

Species allouia

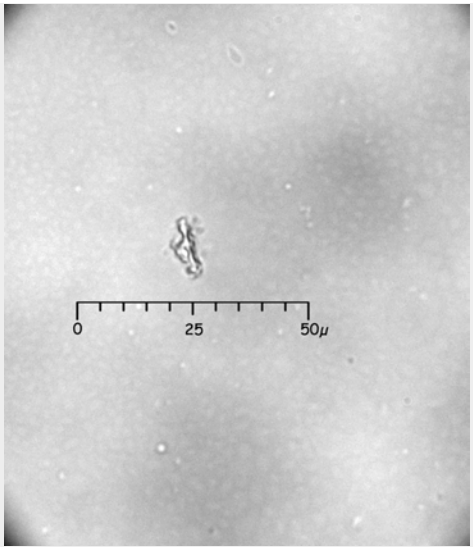
Authority

Comments

type established by Karol Chandler-Ezell
PC2348, C. allouia inflorescence

Diagnostic level: Calathea/Maranta

Image Z4272



Description

rough spheres to irregular flattened bodies with nodules, occasional spinules, and distinctive linear ridges

Entered by Deborah M. Pearsall

Updated 9/11/2012

MUno 22VIIBc1

Recno 94

Family Marantaceae

Genus Calathea

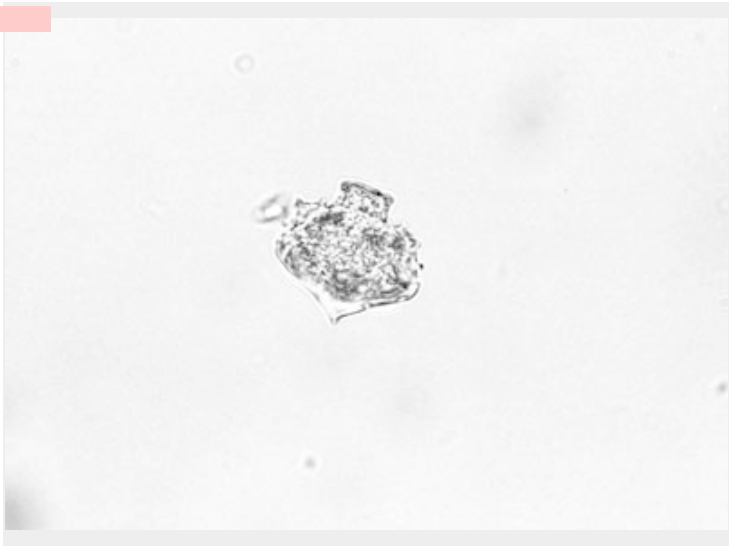
Species altissima

Authority (Poepp. & Endl.) Koern.

Comments

Calathea spp.
seed body, Still has distinct, curved stalk tip of Calathea spp., but cylinder is very short relative to width.
Diagnostic level: genus

Image



Description

Cylindrical seed bodies, large in diameter. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft is twisted away from axis with irregular or broken end OR very shortened.
Tip/stalk is broad with acuminate or acute stalk (often with a sight curve at tip).

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIBc1

Recno 95

Family Marantaceae

Genus Calathea

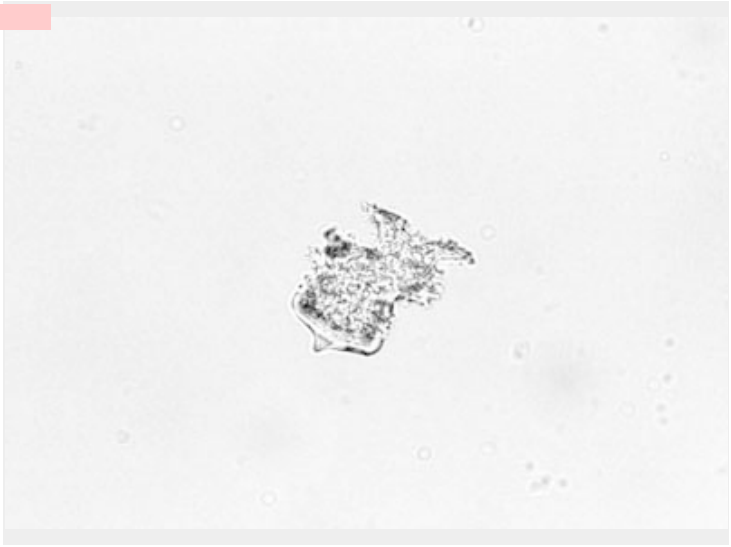
Species altissima

Authority (Poepp. & Endl.) Koern.

Comments

seed body, Still has distinct, curved stalk tip of Calathea spp., but cylinder is very short relative to width.
note “corkskrew” axis of main body shaft. This appears to be a point where the bodies “break” resulting in Tip pieces and base pieces.
Diagnostic level: genus

Image



Description

Cylindrical seed bodies, large in diameter. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft is twisted away from axis with irregular or broken end OR very shortened.
Tip/stalk is broad with acuminate or acute stalk (often with a sight curve at tip).

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIICc

Recno 98

Family Marantaceae

Genus Calathea

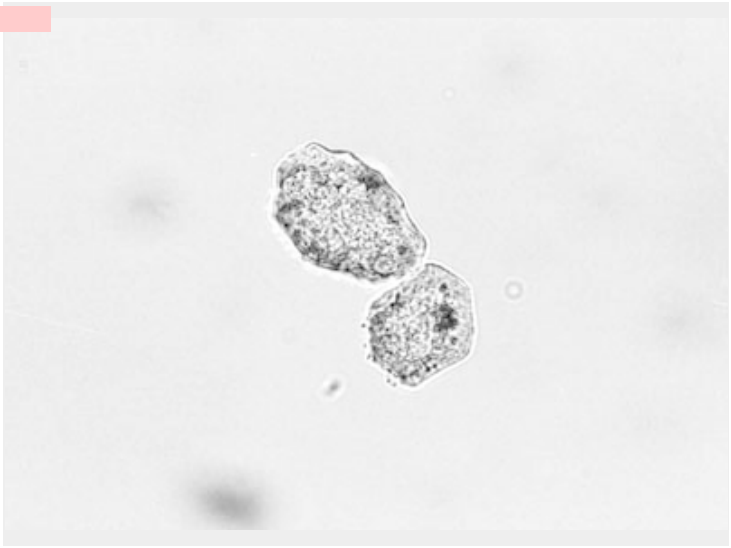
Species altissima

Authority (Poepp. & Endl.) Koern.

Comments

"underside" of seed bodies,
Note flattened, polygonal edges, finely rugulose/granular underside
Diagnostic level: genus

Image



Description

Calathea spp. tips
The disk of the "tip" of the cylindrical seed body ony. Large diameter, distinct rim. Underside shows dark, grainy to ciliate or porous remains of cylinder. "Stalk" has (not seen here) has grainy surface and variable tip -- broad/obtuse to acuminate. May be bulbous with curving accuminate stalk.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIBb

Recno 99

Family Marantaceae

Genus Calathea

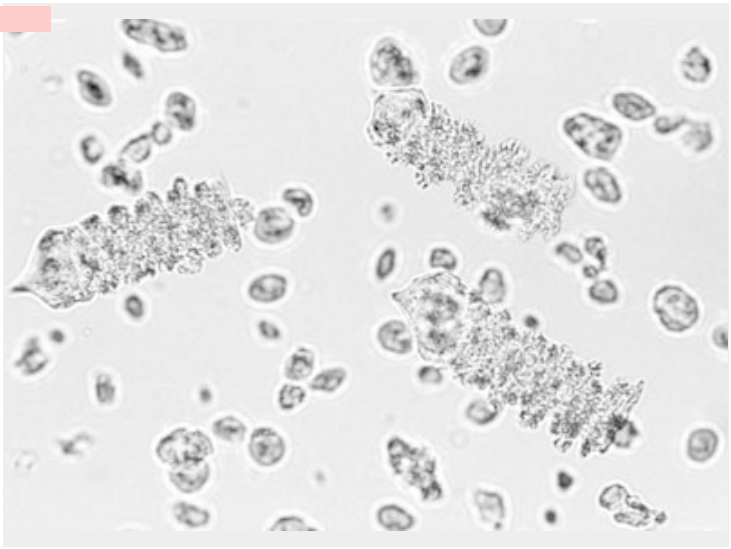
Species crotalifera

Authority S.Watson

Comments

Note the 80IIIB rugulose conical bodies in background....
Especially note bulbous rims of seed body tips.
Diagnostic level: family, wild taxa

Image



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments.
Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIBb

Recno 100

Family Marantaceae

Genus Calathea

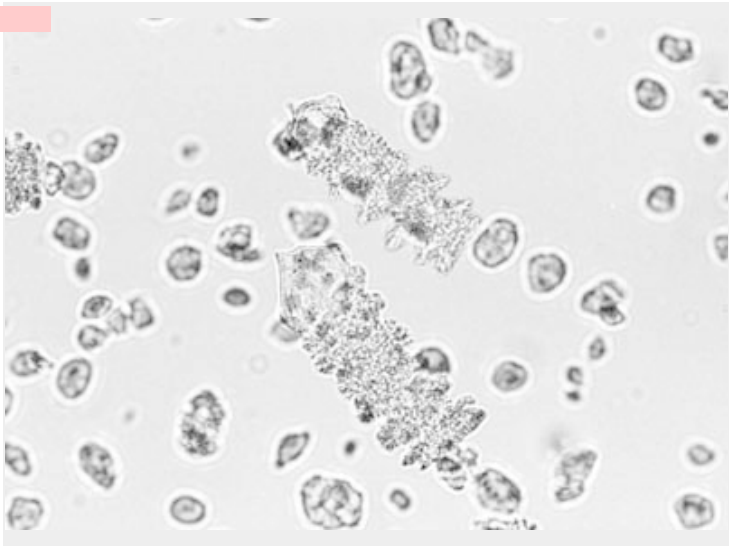
Species crotalifera

Authority S.Watson

Comments

seed bodies, background has rugulose conical bodies
Diagnostic level: family, wild taxa

Image



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments.
Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80ICa1

Recno 101

Family Marantaceae

Genus Calathea

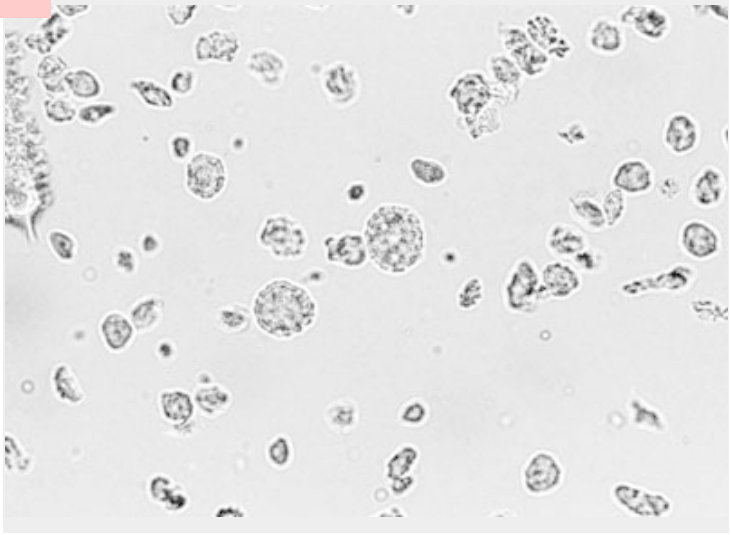
Species crotalifera

Authority S.Watson

Comments

Marantaceae nodular spheres and rugulose conical bodies
Diagnostic level:
Marantaceae/Bombacaceae

Image



Description

80 III B: Conical body. Distinct, dome on top is rugulose to nodular (Convex side). Rugulose on bottom (concave side) Size range 3-14 microns.
80 I Ca: Nodular sphere:
Shape of spheres varies: round to oval to irregular in shape. Average Size varies from 7 - 16 microns.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IIIB

Recno 88

Family Marantaceae

Genus Calathea

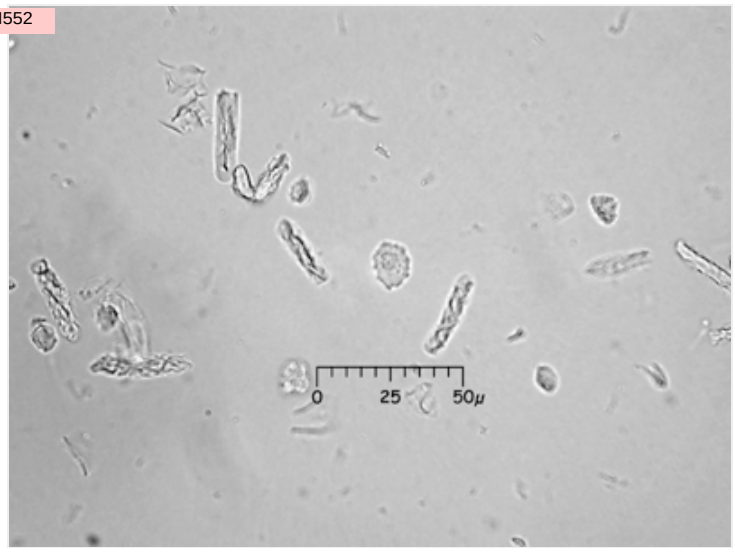
Species lutea

Authority (Aubl.) Schult.

Comments

Marantaceae conical body
Top view. Type is centered above the 25.
Diagnostic level: family

Image N552



Description

- Conical body.
- Distinct dome on top is rugulose to nodular (Convex side).
- Rugulose on bottom (concave side)
- Size range 3-14 microns.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 60IB

Recno 89

Family Marantaceae

Genus Calathea

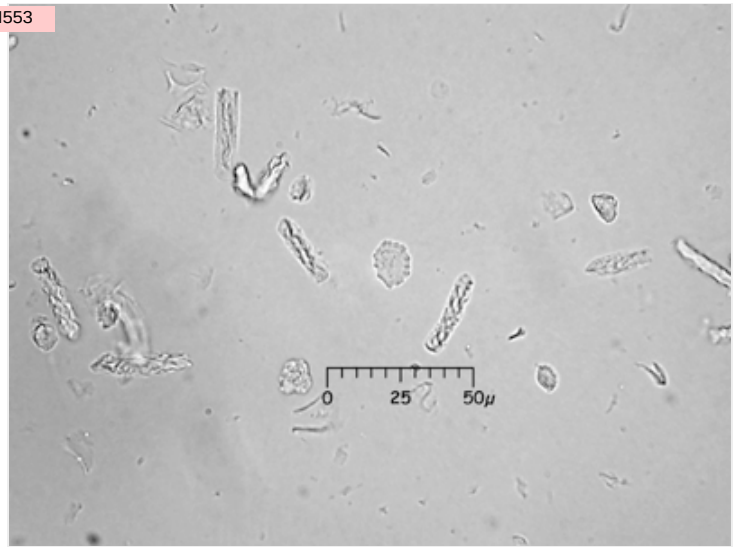
Species lutea

Authority (Aubl.) Schult.

Comments

Length is 27.5 microns
leaf sample.
Body occurs to the right of the 80IIIB example.
Diagnostic level: family

Image N553



Description

- Rectangular body, wider than tall.
- Surface scored by diagonal ridges or scores.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80ICd

Recno 357

Family Marantaceae

Genus Calathea

Species lutea

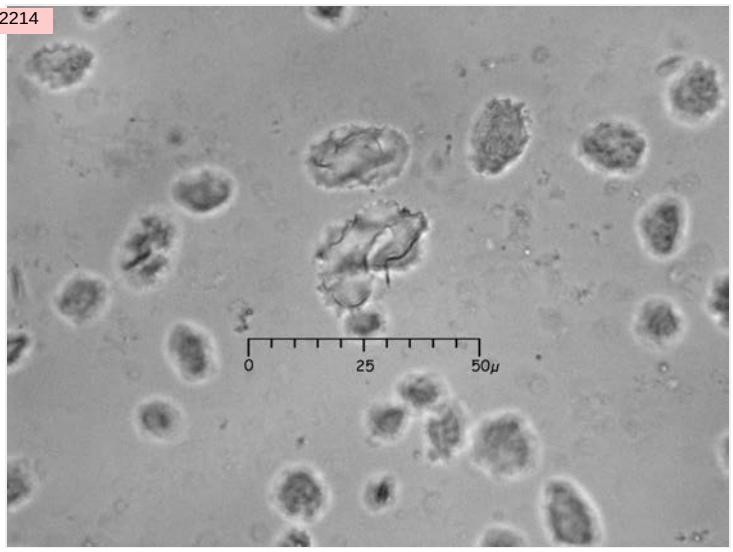
Authority

Comments

PC2594, floret
These are large examples of the type, VA

Diagnostic level: Calathea/Maranta

Image Z2214



Description

rough spheres to irregular flattened bodies with nodules, occasional spinules, and distinctive linear ridges

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 80ICd

Recno 358

Family Marantaceae

Genus Calathea

Species lutea

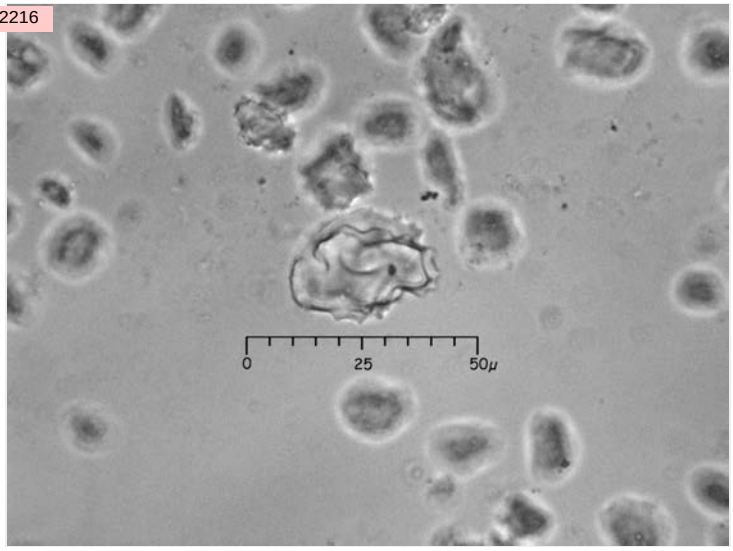
Authority

Comments

PC2594, floret
These are large examples of the type, VA

Diagnostic level: Calathea/Maranta

Image Z2216



Description

rough spheres to irregular flattened bodies with nodules, occasional spinules, and distinctive linear ridges

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 60IB

Recno 359

Family Marantaceae

Genus Calathea

Species lutea

Authority

Comments

PC2595, leaf
This photo shows a string of the bodies

Diagnostic level: family

Image Z2219

Description

- Rectangular body, wider than tall.
- Surface scored by diagonal ridges or scores.

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 20IA

Recno 360

Family Marantaceae

Genus Calathea

Species lutea

Authority

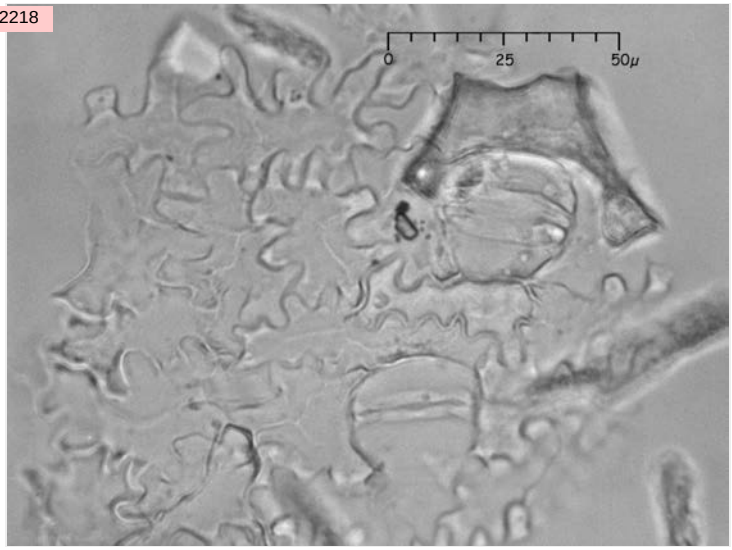
Comments

PC2595, leaf, abundant

Epidermis fragment showing anticlinal cells (20IA), stomata (120), and schlerids (110).

Diagnostic level: not diagnostic

Image Z2218



Description

epidermal non-quadrilateral
smooth surface
sinuous edge (anticlinal cells)
not elongated

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 60IB

Recno 87

Family Marantaceae

Genus Calathea

Species macrosipalia

Authority (Willd. ex Koern.) K.Koch

Comments

Length is 27.5 microns
leaf specimen
Diagnostic level: family

Image

Description

- Rectangular body, wider than tall.
- Surface scored by diagonal ridges or scores.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIBc1

Recno 361

Family Marantaceae

Genus Calathea

Species majestica

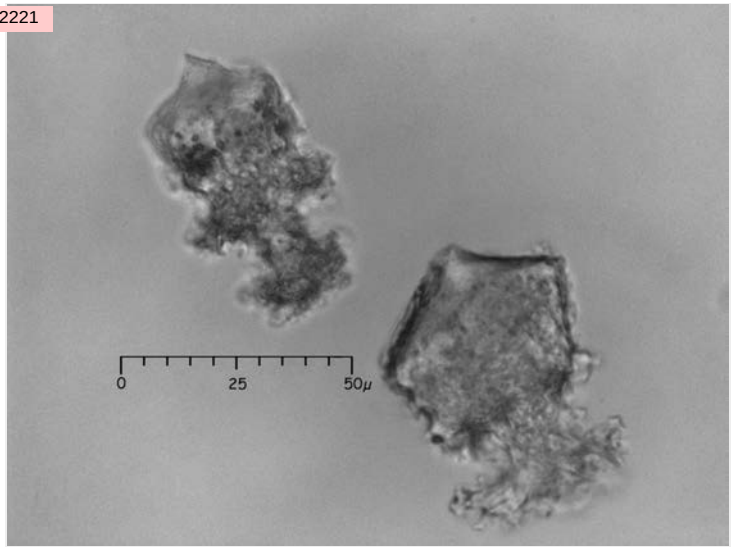
Authority

Comments

PC1385a, fruit, very abundant

seed body, still has distinct, curved stalk tip of Calathea spp., but cylinder is very short relative to width.
note "corkskrew" axis of main body shaft. This appears to be a point where the bodies "break" resulting in Tip pieces and base pieces.
Diagnostic level: genus

Image Z2221



Description

Cylindrical seed bodies, large in diameter. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft is twisted away from axis with irregular or broken end OR very shortened.
Tip/stalk is broad with acuminate or acute stalk (often with a sight curve at tip).

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 22VIIBc1

Recno 362

Family Marantaceae

Genus Calathea

Species majestica

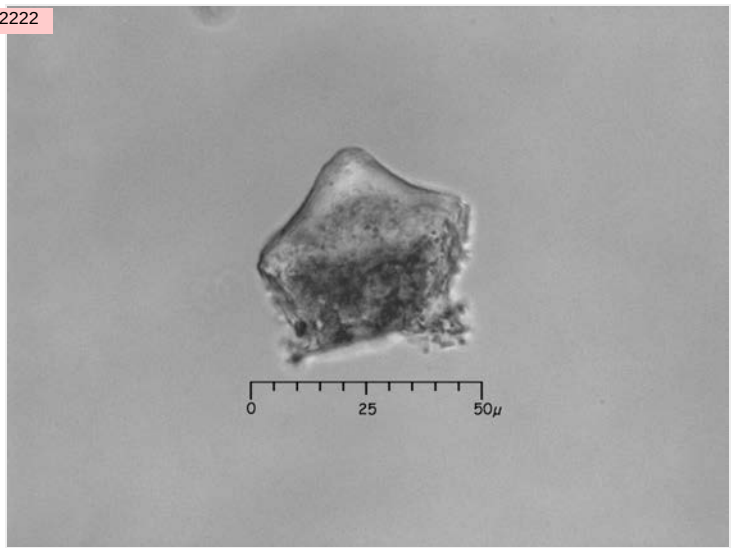
Authority

Comments

PC1385a, fruit, very abundant

seed body, still has distinct, curved stalk tip of Calathea spp., but cylinder is very short relative to width.
note “corkskrew” axis of main body shaft. This appears to be a point where the bodies “break” resulting in Tip pieces and base pieces.
Diagnostic level: genus

Image Z2222



Description

Cylindrical seed bodies, large in diameter. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft is twisted away from axis with irregular or broken end OR very shortened.
Tip/stalk is broad with acuminate or acute stalk (often with a sight curve at tip).

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 22VIIBc1

Recno 363

Family Marantaceae

Genus Calathea

Species majestica

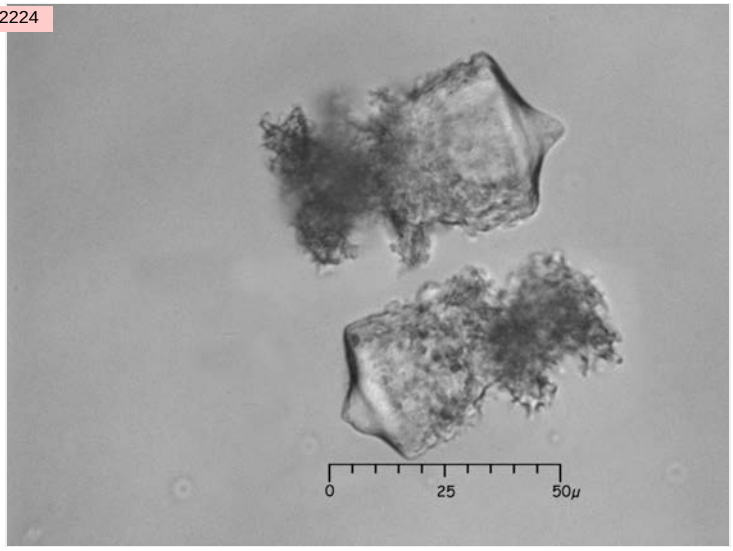
Authority

Comments

PC1385a, fruit, very abundant

seed body, still has distinct, curved stalk tip of Calathea spp., but cylinder is very short relative to width.
note “corkskrew” axis of main body shaft. This appears to be a point where the bodies “break” resulting in Tip pieces and base pieces.
Diagnostic level: genus

Image Z2224



Description

Cylindrical seed bodies, large in diameter. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft is twisted away from axis with irregular or broken end OR very shortened.
Tip/stalk is broad with acuminate or acute stalk (often with a sight curve at tip).

Entered by Deborah M. Pearsall

Updated 9/13/2012

MUno 22IBc

Recno 364

Family Marantaceae

Genus Calathea

Species majestica

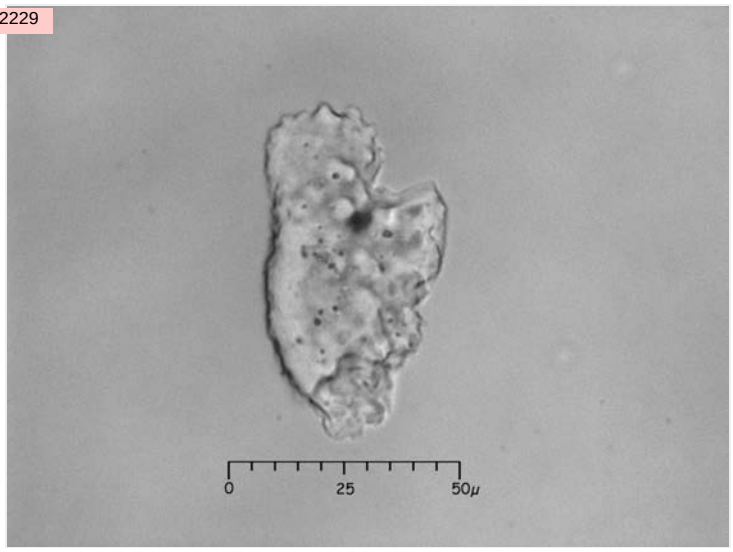
Authority

Comments

PC1385a fruit

Diagnostic level: under study

Image Z2229



Description

Irregularly shaped non-quadrilateral epidermis of seed or fruit;
small projections on surface, shape very irregular
projections are rounded

Entered by Deborah M. Pearsall

Updated 9/17/2012

MUno 20IC

Recno 380

Family Marantaceae

Genus Calathea

Species majestica

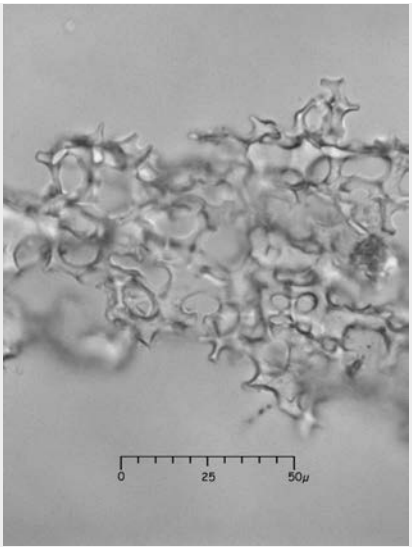
Authority

Comments

PC1385 fruit, rare. Also observed in
Donax, Maranta specimens

Diagnotic level: under study

Image Z2226



Description

epidermal non-quadrilateral, smooth surface
perforated epidermis with scalloped and curved edges
well silicified

Entered by Deborah M. Pearsall

Updated 9/20/2012

MUno 22VIIBb

Recno 90

Family Marantaceae

Genus Calathea

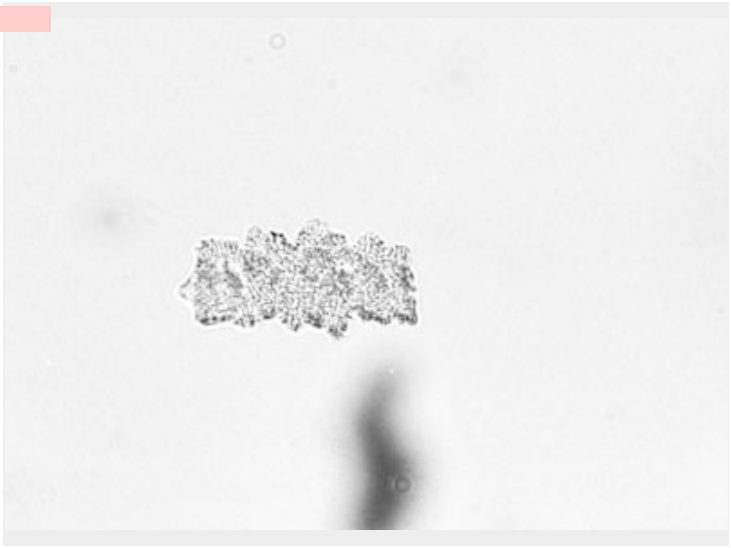
Species marantina

Authority (Willd. ex Koern.) K.Koch

Comments

Wild Marantaceae seed body.
Diagnostic level: family, wild taxa

Image



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments.
Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIBb

Recno 91

Family Marantaceae

Genus Calathea

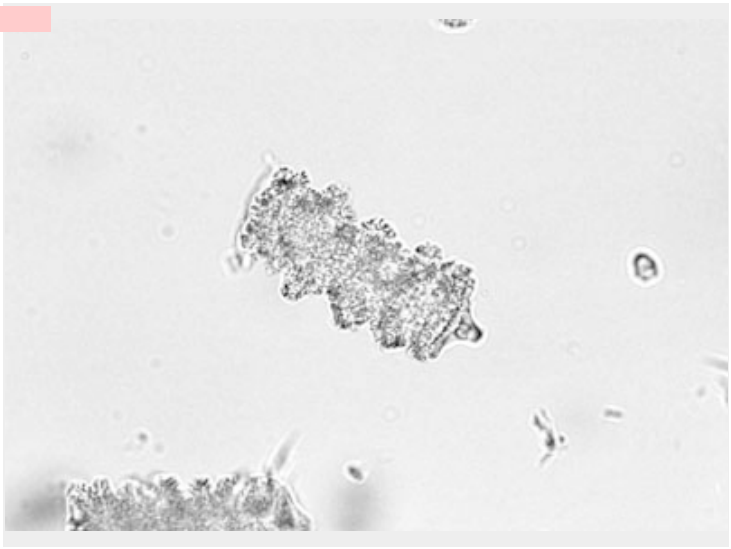
Species marantina

Authority (Willd. ex Koern.) K.Koch

Comments

seed body
Diagnostic level: family, wild taxa

Image



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments.
Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIBd

Recno 92

Family Marantaceae

Genus Calathea

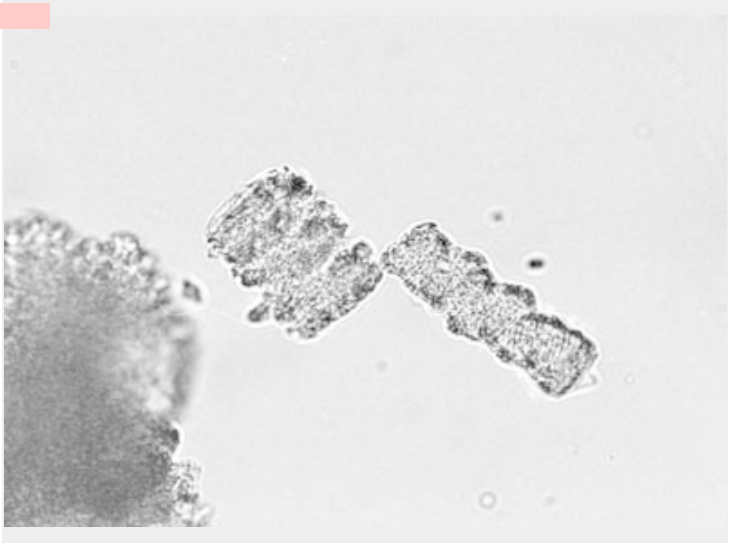
Species marantina

Authority (Willd. ex Koern.) K.Koch

Comments

seed body.
Note variation in width of cylinder,
Stalk on tip of body on left is very small, reduced.
Stalk is missing on body on the left.
Diagnostic level: family, not Maranta

Image



Description

Marantaceae NOT Maranta spp.
Pieces of Cylindrical seed bodies, large diameter
(Broken pieces of the cylinders or cylinders with missing tips)
Segments of pieces of cylinders have porous to densely ciliate surface.
Ciliate surface has appearance of abundant 3-dimensional spots or bumps.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20IA

Recno 378

Family Marantaceae

Genus Donax

Species

Authority

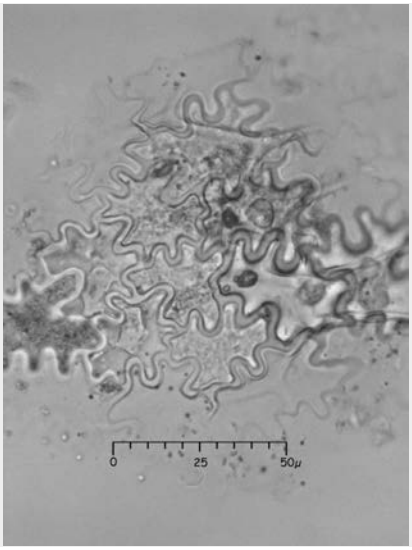
Comments

PC1387, leaf, common

Epidermis fragment showing anticlinal cells

Diagnostic level: not diagnostic

Image Z2247



Description

epidermal non-quadrilateral
smooth surface
sinuous edge (anticlinal cells)
not elongated

Entered by Deborah M. Pearsall

Updated 9/20/2012

MUno 22VIIDd

Recno 381

Family Marantaceae

Genus Donax

Species

Authority

Comments

PC1388 fruit, very abundant

Diagnostic level: Donax

Image Z2253

Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; cilia not present. Head is spheroidal, base encased in cylinder. Cylinder flares out at top.

Entered by Deborah M. Pearsall

Updated 9/20/2012

MUno 22VIIDd

Recno 382

Family Marantaceae

Genus Donax

Species

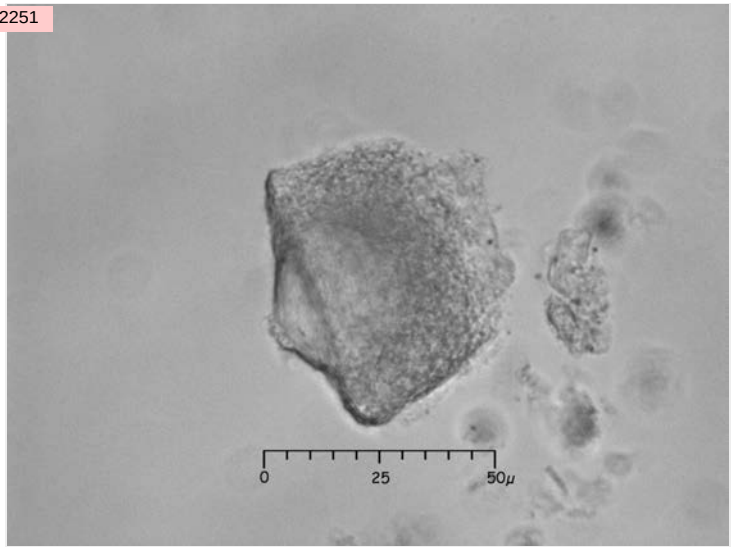
Authority

Comments

PC1388 fruit, very abundant

Diagnostic level: Donax

Image Z2251



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; cilia not present. Head is spheroidal, base encased in cylinder. Cylinder flares out at top.

Entered by Deborah M. Pearsall

Updated 9/20/2012

MUno 22VIIDd

Recno 383

Family Marantaceae

Genus Donax

Species

Authority

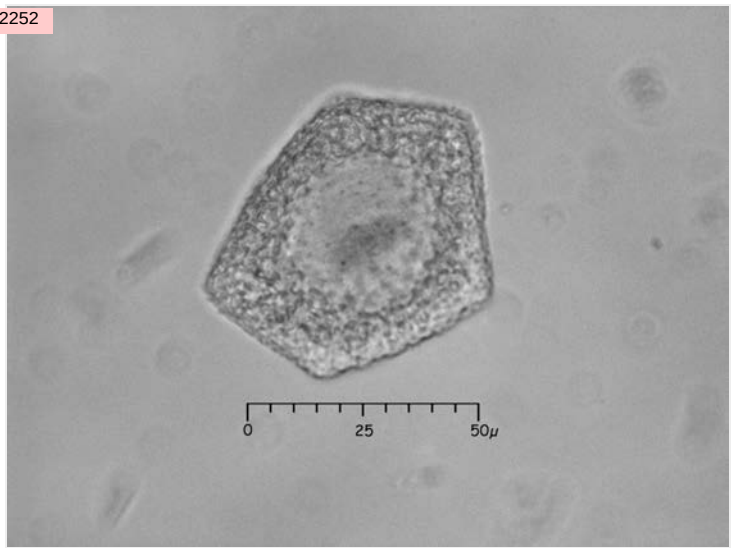
Comments

PC1388 fruit, very abundant

Diagnostic level: Donax

This image shows the base of the head, within the cylinder (from beneath)

Image Z2252



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; cilia not present. Head is spheroidal, base encased in cylinder. Cylinder flares out at top.

Entered by Deborah M. Pearsall

Updated 9/20/2012

MUno 22VIIDd

Recno 384

Family Marantaceae

Genus Donax

Species

Authority

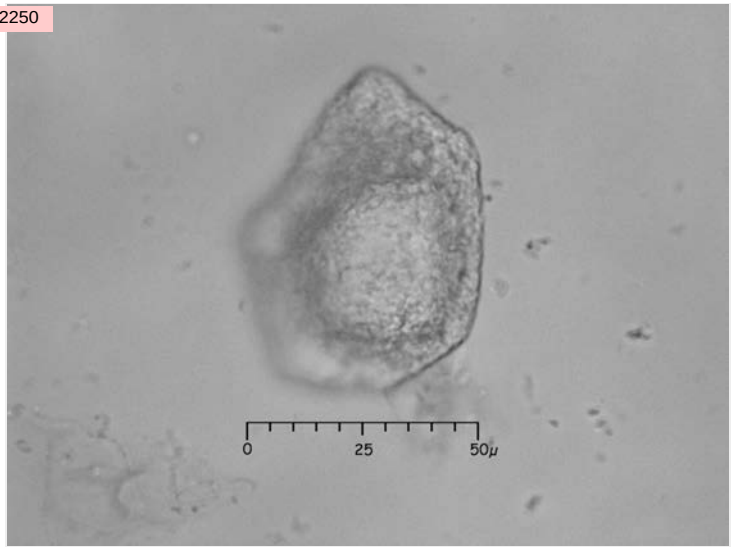
Comments

PC1388 fruit, very abundant

Diagnostic level: Donax

This image shows the top of the head, extending out from the cyclinder

Image Z2250



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; cilia not present. Head is spheroidal, base encased in cylinder. Cylinder flares out at top.

Entered by Deborah M. Pearsall

Updated 9/20/2012

MUno 80ICf

Recno 385

Family Marantaceae

Genus Donax

Species

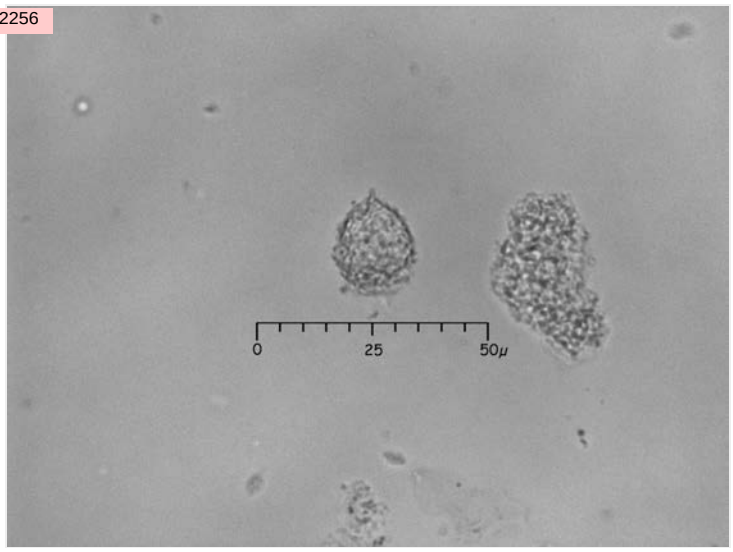
Authority

Comments

PC1388 fruit Moderate

Diagnostic level under study

Image Z2256



Description

spheroidal phytoliths with nodules and cilia or spinules on surface

Entered by Deborah M. Pearsall

Updated 9/20/2012

MUno 80ICf

Recno 386

Family Marantaceae

Genus Donax

Species

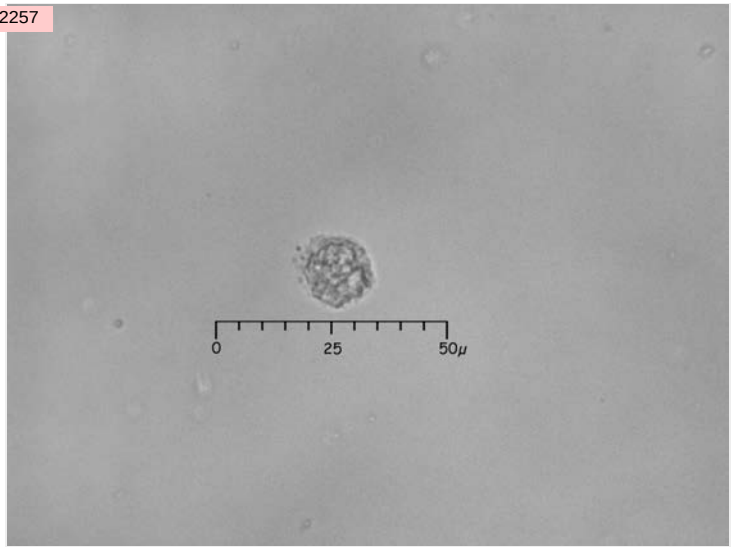
Authority

Comments

PC1388 fruit Moderate

Diagnostic level under study

Image Z2257



Description

spheroidal phytoliths with nodules and cilia or spinules on surface

Entered by Deborah M. Pearsall

Updated 9/20/2012

MUno 22VIIDb

Recno 319

Family Marantaceae

Genus Donax

Species arundastrum

Authority

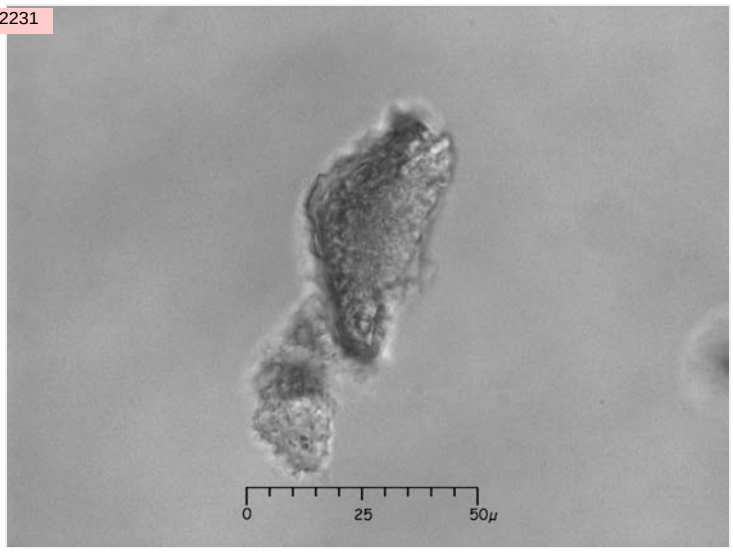
Comments

PC280, inflorescence

Can look like a very large conical body

Diagnostic to genus

Image Z2231



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; often covered with long cilia. Like 22VIIDa (cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder) but cylinder is broken off very short.

Entered by Deborah M. Pearsall

Updated 8/15/2012

MUno 80IIIC

Recno 365

Family Marantaceae

Genus Donax

Species arundastrum

Authority

Comments

PC280 inflorescence

Type first defined in Costus.

Side view of conical form. Sometimes the projections break off, leaving flat rugulose/nodular bodies

Diagnostic level: under study

Image Z2243

Description

large conical body with large dome (projection) and a narrow rim with a lightly decorated edge. Granular to rugulose surface

Entered by Deborah M. Pearsall

Updated 9/17/2012

MUno 22IBa

Recno 366

Family Marantaceae

Genus Donax

Species arundastrum

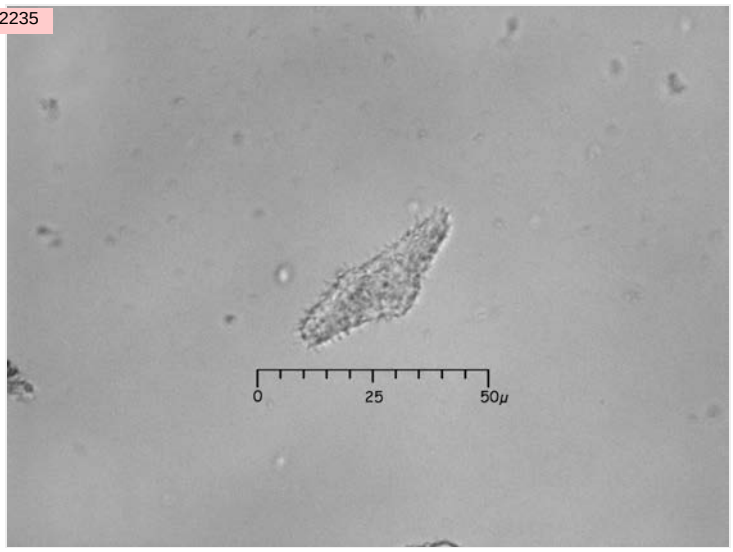
Authority

Comments

PC280 inflorescence, common

Diagnostic level: under study

Image Z2235



Description

epidermal non-quadrilateral from seed or fruit
small projections on surface, shape very irregular
many long, thin projections

Entered by Deborah M. Pearsall

Updated 9/17/2012

MUno 80ICf

Recno 367

Family Marantaceae

Genus Donax

Species arundastrum

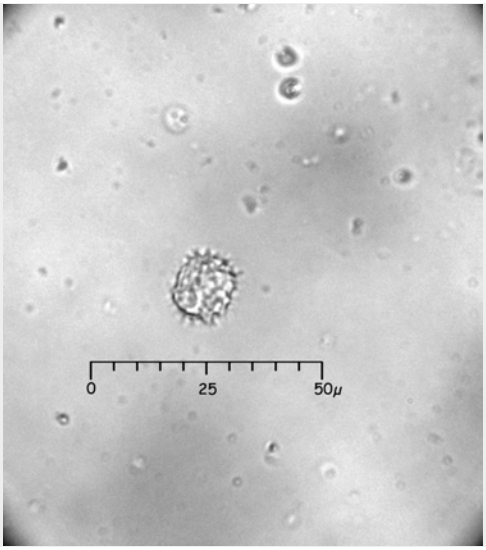
Authority

Comments

PC280 inflorescence

Diagnostic level under study

Image Z4277



Description

spheroidal phytoliths with nodules and cilia or spinules on surface

Entered by Deborah M. Pearsall

Updated 9/17/2012

MUno 80ICf

Recno 368

Family Marantaceae

Genus Donax

Species arundastrum

Authority

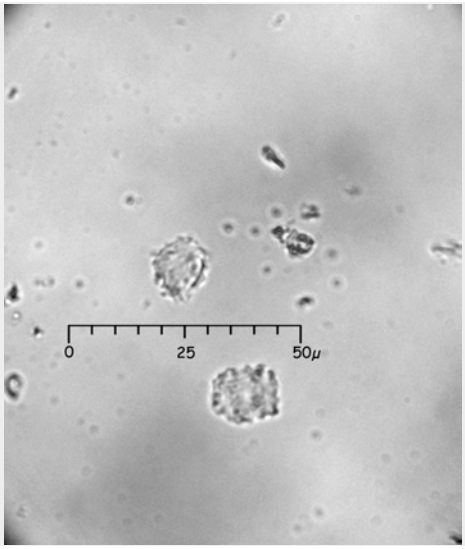
Comments

PC280 inflorescence

Diagnostic level under study

Body below scale bar is conical (80IIIB) viewed from top

Image Z4278



Description

spheroidal phytoliths with nodules and cilia or spinules on surface

Entered by Deborah M. Pearsall

Updated 9/17/2012

MUno 80ICf

Recno 369

Family Marantaceae

Genus Donax

Species arundastrum

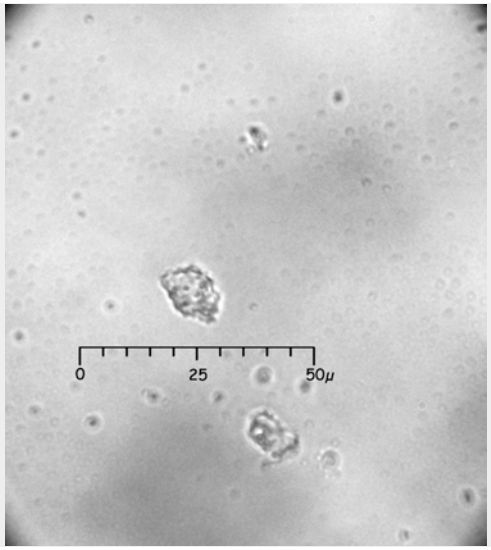
Authority

Comments

PC280 inflorescence

Diagnostic level under study

Image Z4279



Description

spheroidal phytoliths with nodules and cilia or spinules on surface

Entered by Deborah M. Pearsall

Updated 9/17/2012

MUno 22VIIDa

Recno 370

Family Marantaceae

Genus Donax

Species arundastrum

Authority

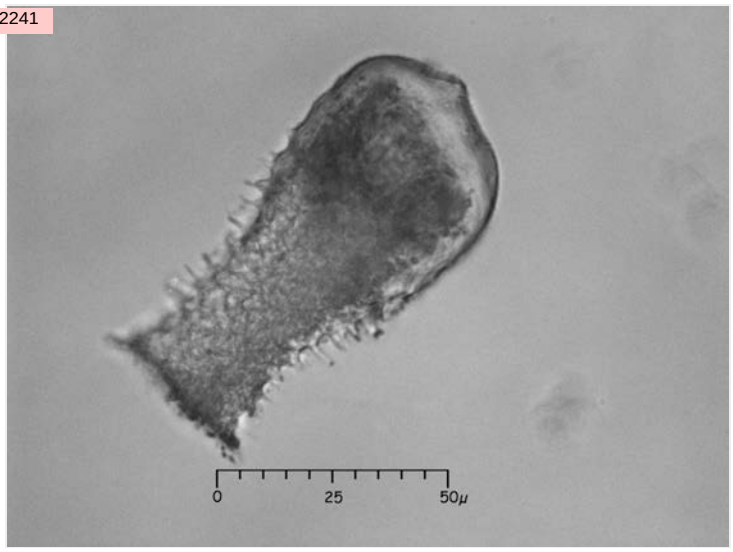
Comments

PC280, inflorescence

Note variation in size, shown in following records.

Diagnostic level: genus

Image Z2241



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; often covered with long cilia. Cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder

Entered by Deborah M. Pearsall

Updated 9/18/2012

MUno 22VIIDa

Recno 371

Family Marantaceae

Genus Donax

Species arundastrum

Authority

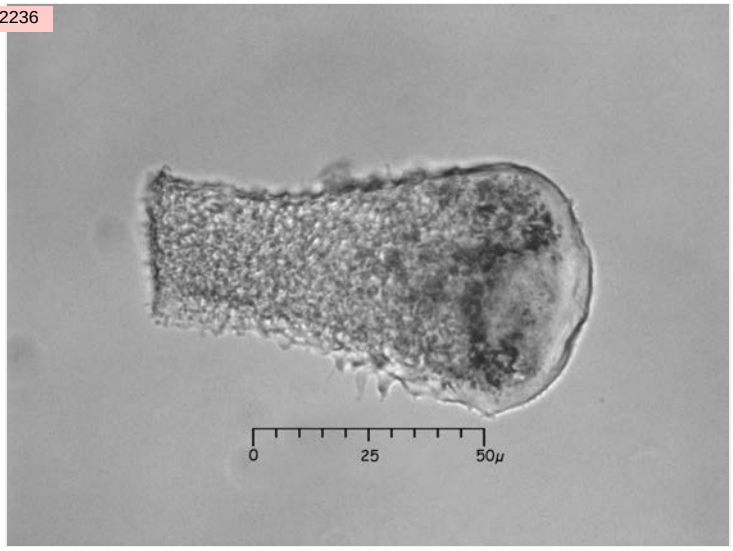
Comments

PC280, inflorescence

Note variation in size, shown in following records.

Diagnostic level: genus

Image Z2236



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; often covered with long cilia. Cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder

Entered by Deborah M. Pearsall

Updated 9/18/2012

MUno 22VIIDa

Recno 372

Family Marantaceae

Genus Donax

Species arundastrum

Authority

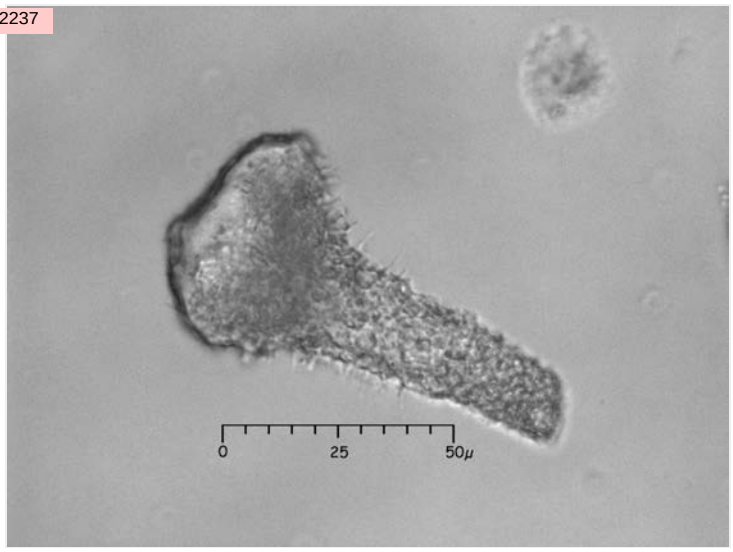
Comments

PC280, inflorescence

Note variation in size, shown in following records.

Diagnostic level: genus

Image Z2237



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; often covered with long cilia. Cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder

Entered by Deborah M. Pearsall

Updated 9/18/2012

MUno 22VIIDa

Recno 373

Family Marantaceae

Genus Donax

Species arundastrum

Authority

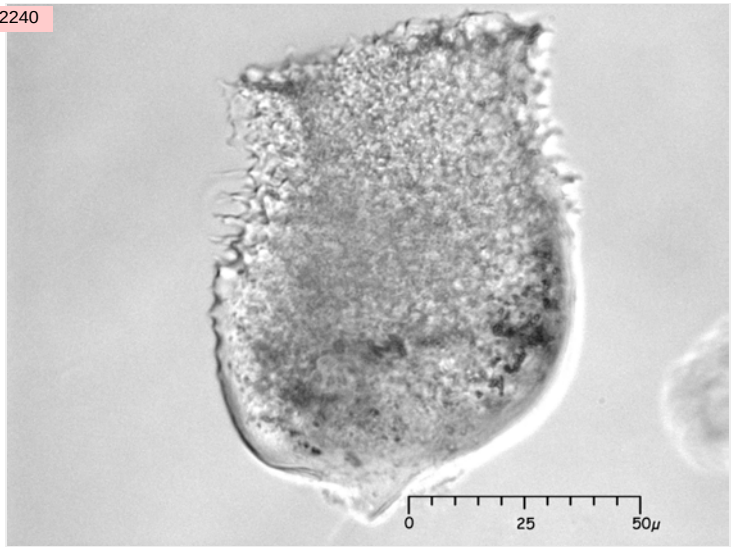
Comments

PC280, inflorescence

Note variation in size, shown in following records.

Diagnostic level: genus

Image Z2240



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; often covered with long cilia. Cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder

Entered by Deborah M. Pearsall

Updated 9/18/2012

MUno 22VIIDb

Image Z2232

Recno 374

Family Marantaceae

Genus Donax

Species arundastrum

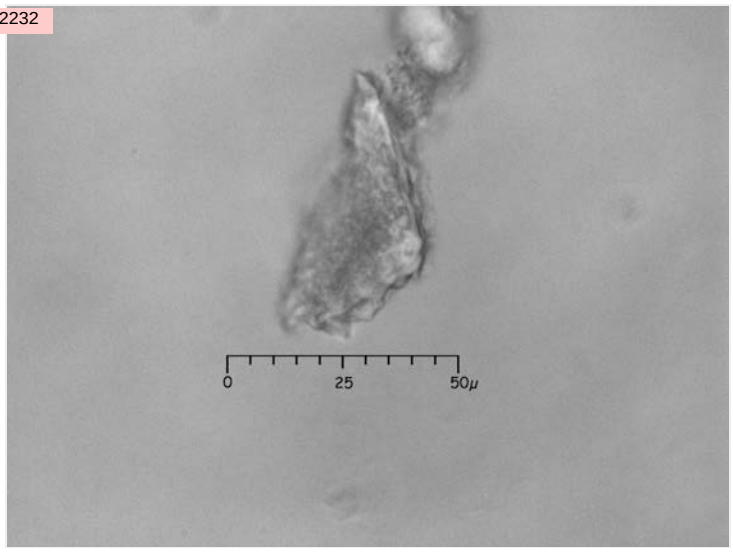
Authority

Comments

PC280, inflorescence

May look like a large conical body

Diagnostic level: genus



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; often covered with long cilia. Like 22VIIDa (cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder) but cylinder is broken off very short.

Entered by Deborah M. Pearsall

Updated 9/18/2012

MUno 22VIIDc

Image Z2233

Recno 375

Family Marantaceae

Genus Donax

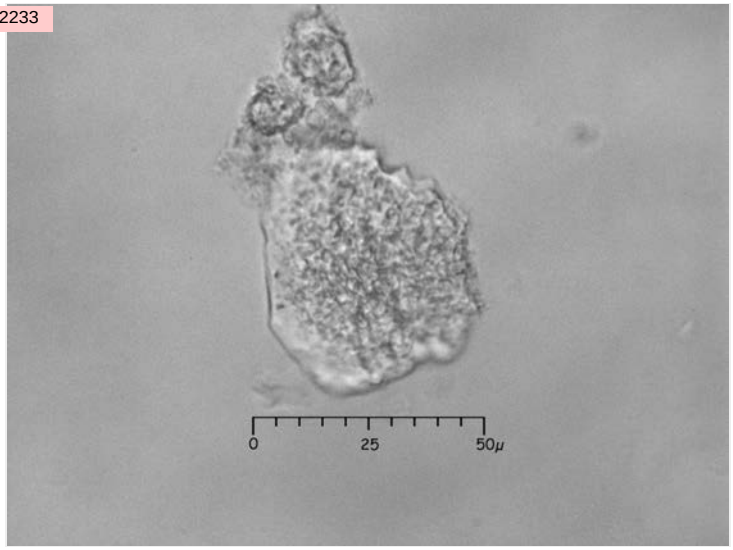
Species arundastrum

Authority

Comments

PC280, inflorescence

Diagnostic level: Marantaceae



Description

Fragment of base (cylinder) of 22VIIDa (cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder)

Entered by Deborah M. Pearsall

Updated 9/18/2012

MUno 22VIIDb

Recno 376

Family Marantaceae

Genus Donax

Species arundastrum

Authority

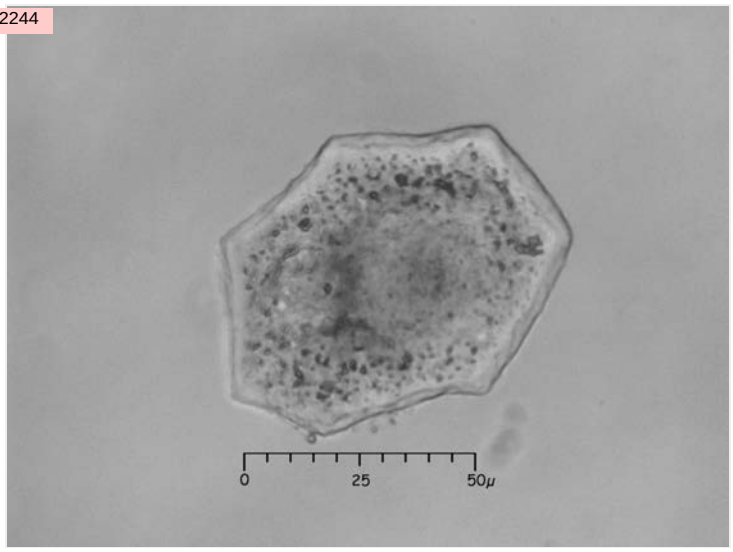
Comments

PC280, inflorescence

When very broad are difficult to roll and appear in bottom view, as seen here

Diagnostic level: genus

Image Z2244



Description

Cylindrical seed body. Cylinder shaft has porous appearance, often covered with long cilia. Like 22VIIDa (cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder) but cylinder is broken off very short.

Entered by Deborah M. Pearsall

Updated 9/18/2012

MUno 22VIIDb

Recno 377

Family Marantaceae

Genus Donax

Species arundastrum

Authority

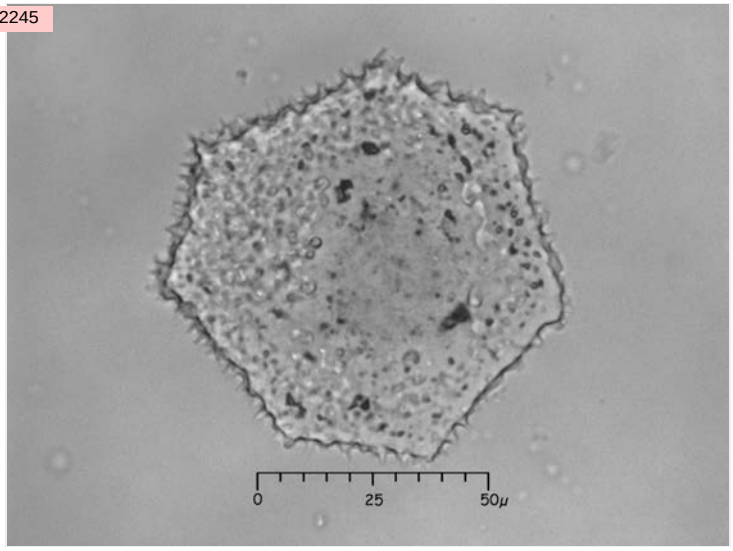
Comments

PC280, inflorescence

When very broad are difficult to roll and appear in bottom view, as seen here

Diagnostic level: genus

Image Z2245



Description

Cylindrical seed body. Cylinder shaft has porous appearance, lacks three dimensional spots and bumps; often covered with long cilia. Like 22VIIDa (cylinder long, unsegmented, head is short, smooth to bumpy, extends down side of cylinder) but cylinder is broken off very short.

Entered by Deborah M. Pearsall

Updated 9/18/2012

MUno 22VIIBa

Recno 102

Family Marantaceae

Genus Ischnosiphon

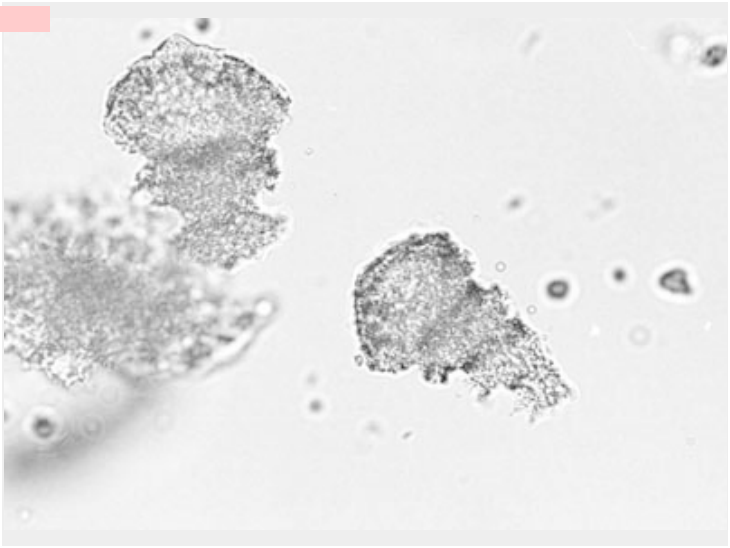
Species inflatus

Authority L. Andersson

Comments

seed bodies.
Show range of variation in wild types.
Diagnostic level: Marantaceae, wild taxa

Image



Description

Cylindrical seed bodies, large.
Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious “segments”. Axis of shaft twists like a corkscrew or “zig-zag” to varying degrees.

Entered by Karol Chandler-Ezell

Updated 3/3/2005

MUno 22VIIBa

Recno 103

Family Marantaceae

Genus Ischnosiphon

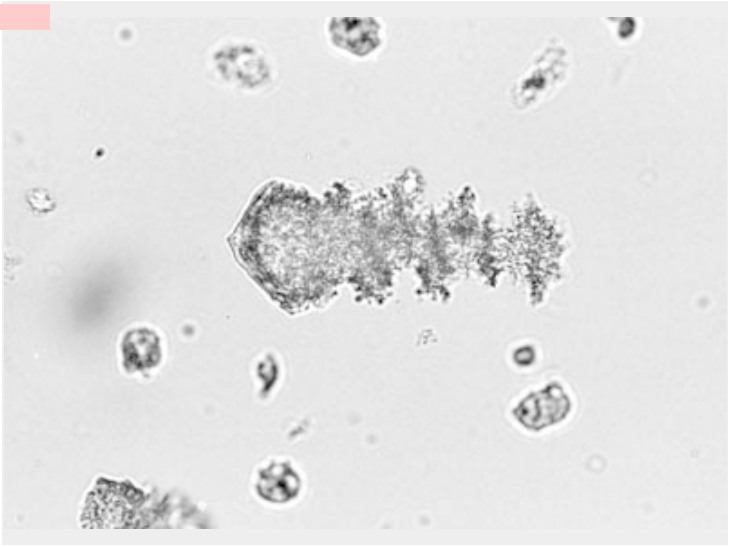
Species inflatus

Authority L. Andersson

Comments

seed bodies, Note how body continues to narrow below tip.
Diagnostic level: family, wild taxa

Image



Description

Cylindrical seed bodies, large.
Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious “segments”. Axis of shaft twists like a corkscrew or “zig-zag” to varying degrees.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIBa

Recno 104

Family Marantaceae

Genus Ischnosiphon

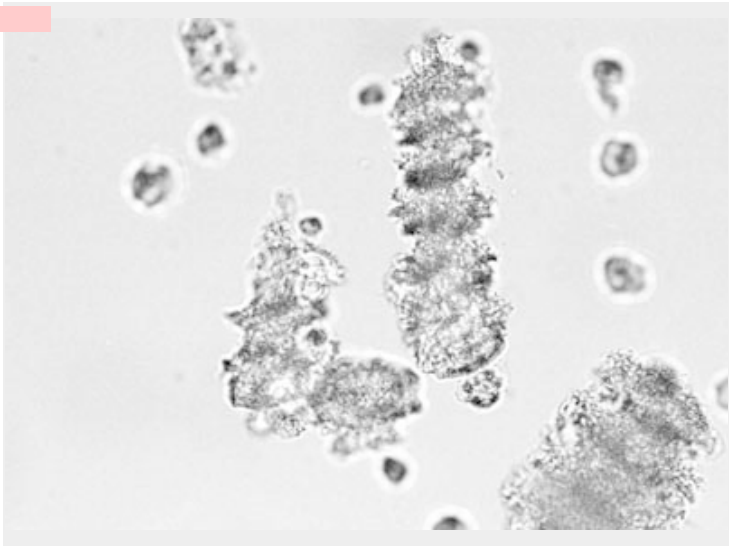
Species inflatus

Authority L. Andersson

Comments

Spiralling of “corkscrew” along shaft very apparent in body right of center.
Diagnostic level: family, wild taxa

Image



Description

Cylindrical seed bodies, large.
Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious “segments”. Axis of shaft twists like a corkscrew or “zig-zag” to varying degrees.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IIIB, 80ICa1

Recno 59

Family Marantaceae

Genus Maranta

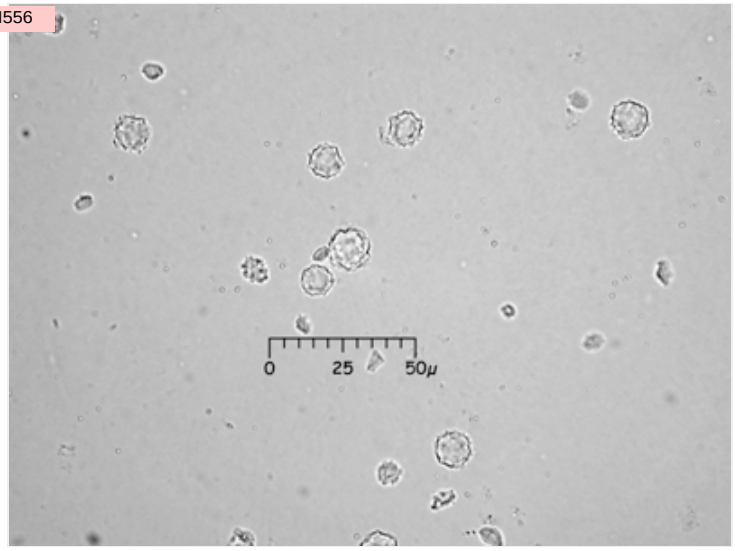
Species arundinacea

Authority L.

Comments

Note both conical (hat-shaped) bodies and nodular spheres in this field. Both appear in Marantaceae. 80IIIB looks like rugulose or nodular sphere in flat view, but side view shows conical shape.
Diagnostic level, 80IIIB: family
Diagnostic level, 80ICa1: Marantaceae/Bombacaceae

Image N556



Description

Spheres with nodular projections
Conical bodies:
Top: convex surface smooth to irregular; Bottom: concave surace with nodular projections; Shape irregular to spheroidal.

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 22VIIAb

Recno 84

Family Marantaceae

Genus Maranta

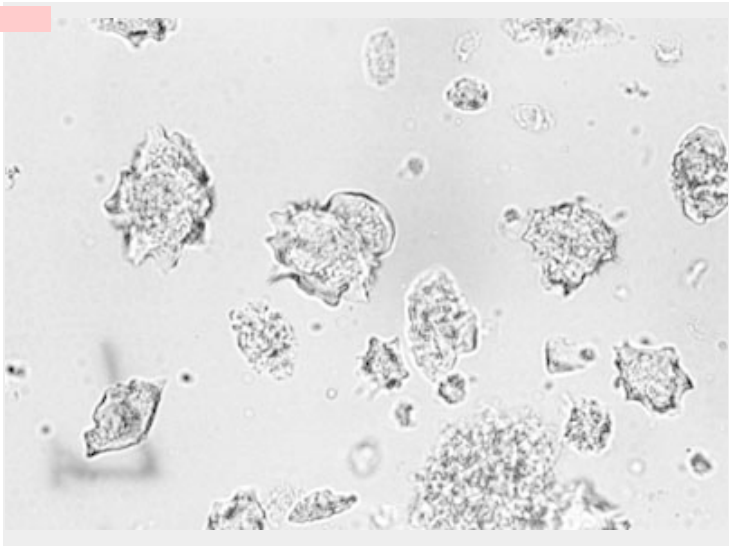
Species arundinacea

Authority L.

Comments

Note the “bottom” view of the bodies, since this is the typical side up.
Often it looks like an irregular star-shape or a granular textured disk with irregular margins.
Note in bottom left and far right “tip” only bodies. see below.
Diagnostic level: species

Image



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a “skirt” in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIAb

Recno 85

Family Marantaceae

Genus Maranta

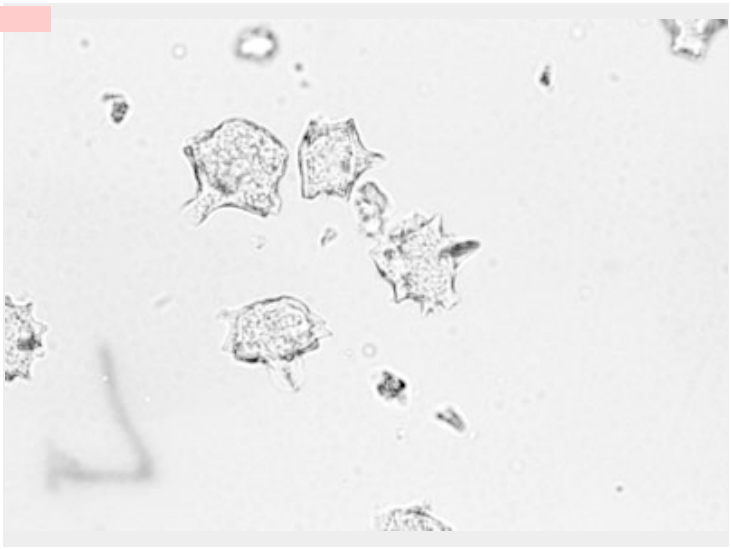
Species arundinacea

Authority L.

Comments

Note how much shorter in length cylinders are compared to Maranta spp. type -- yet “tips” are larger
Compare to other photos of this type for variation.
Diagnostic level: species

Image



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a “skirt” in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIAb

Recno 86

Family Marantaceae

Genus Maranta

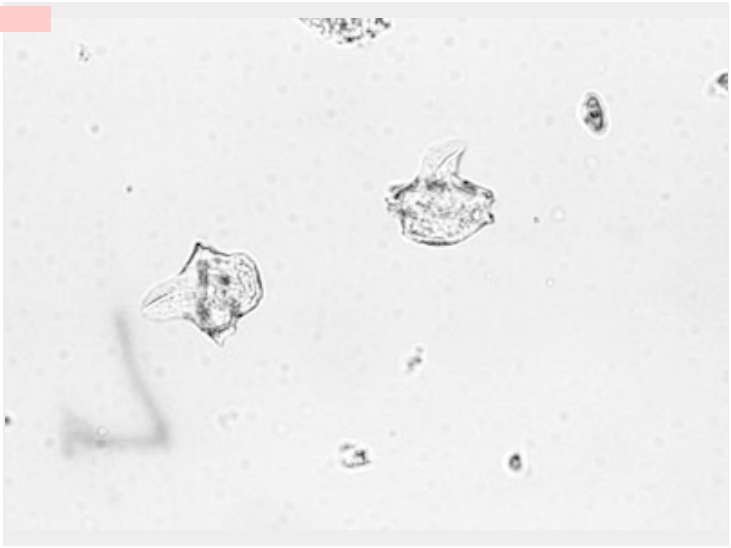
Species arundinacea

Authority L.

Comments

Note shortness of cylinder compared to "tip" and Maranta sp. type.
Diagnostic level; species

Image



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a "skirt" in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 26IB

Recno 244

Family Marantaceae

Genus Maranta

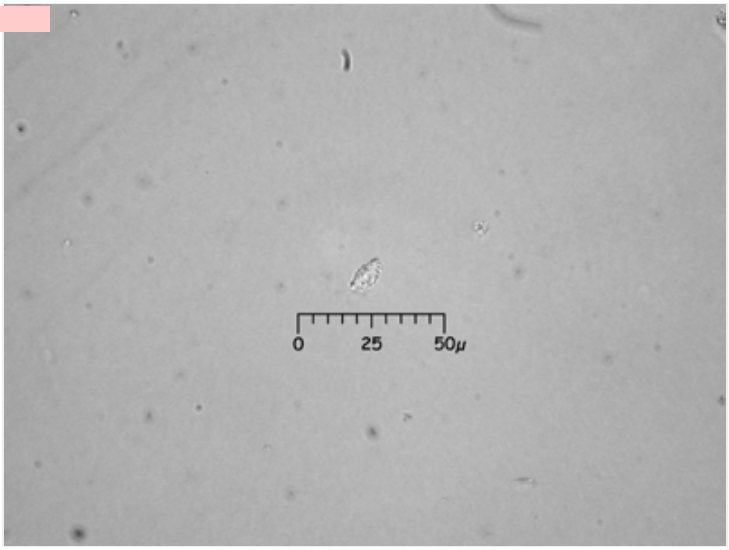
Species arundinacea

Authority

Comments

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: Maranta/Calathea rhizomes

Image



Description

Rhizome spindle: cylindrical body that tapers gradually to a pointed tip (lacks distinctive head area or distinctly separate cylinder and head areas). Nodular surface decoration. Body is round in cross section. Observed in Maranta and Calathea; does not occur in other genera.

Entered by Emily Sternberg

Updated 2/3/2005

MUno 22VIIBb

Recno 387

Family Marantaceae

Genus Maranta

Species arundinacea

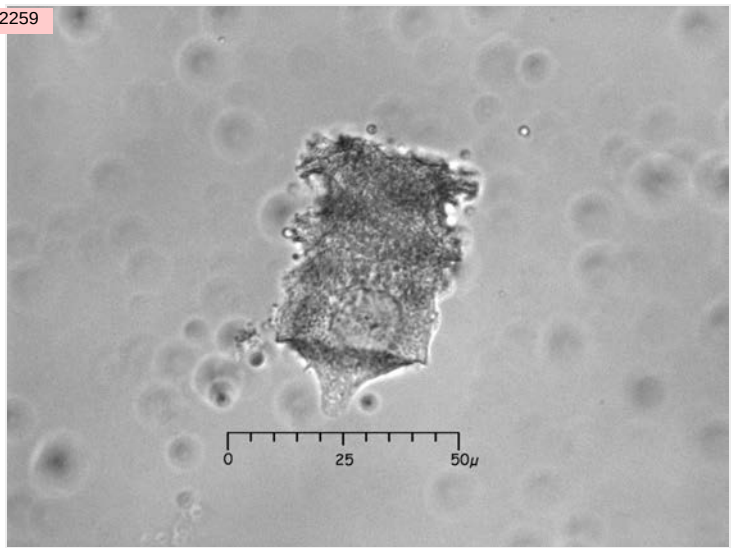
Authority

Comments

PC2670, fleshy rhizome, moderate

A seed body type,
Diagnostic level: family, wild taxa;
occurs in one specimen of arrowroot rhizome

Image Z2259



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments. Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Deborah M. Pearsall

Updated 9/27/2012

MUno 22VIIBb

Recno 388

Family Marantaceae

Genus Maranta

Species arundinacea

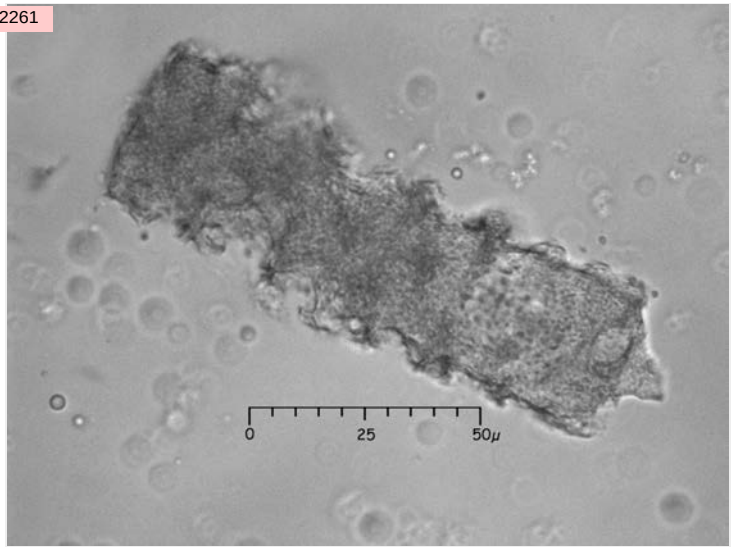
Authority

Comments

PC2670, fleshy rhizome, moderate

A seed body type,
Diagnostic level: family, wild taxa;
occurs in one specimen of arrowroot rhizome

Image Z2261



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments. Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Deborah M. Pearsall

Updated 9/27/2012

MUno 22VIIBb

Recno 389

Family Marantaceae

Genus Maranta

Species arundinacea

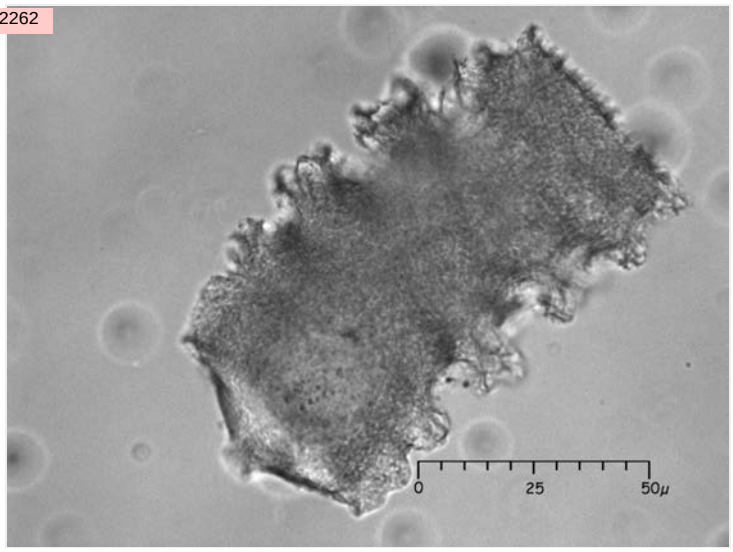
Authority

Comments

PC2670, fleshy rhizome, moderate

A seed body type,
Diagnostic level: family, wild taxa;
occurs in one specimen of arrowroot rhizome

Image Z2262



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments.
Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Deborah M. Pearsall

Updated 9/27/2012

MUno 22VIIAb

Recno 397

Family Marantaceae

Genus Maranta

Species arundinacea

Authority

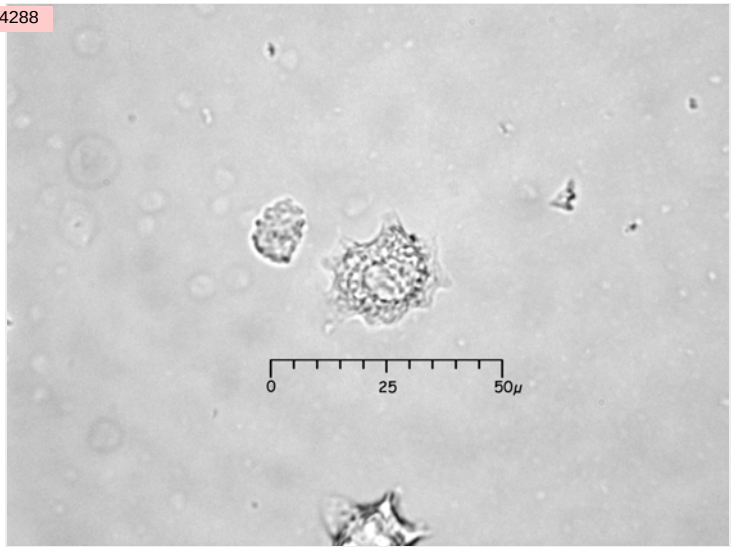
Comments

PC2038, inflorescence

Diagnostic level: species

This image is a view from the bottom (often in this rotation)

Image Z4288



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a “skirt” in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAb

Recno 398

Family Marantaceae

Genus Maranta

Species arundinacea

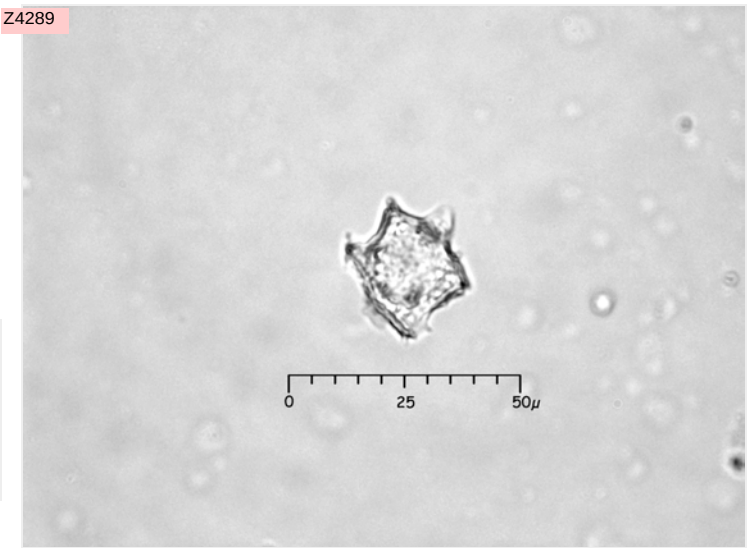
Authority

Comments

PC2038, inflorescence

Diagnostic level: species

Image Z4289



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a “skirt” in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAb

Recno 399

Family Marantaceae

Genus Maranta

Species arundinacea

Authority

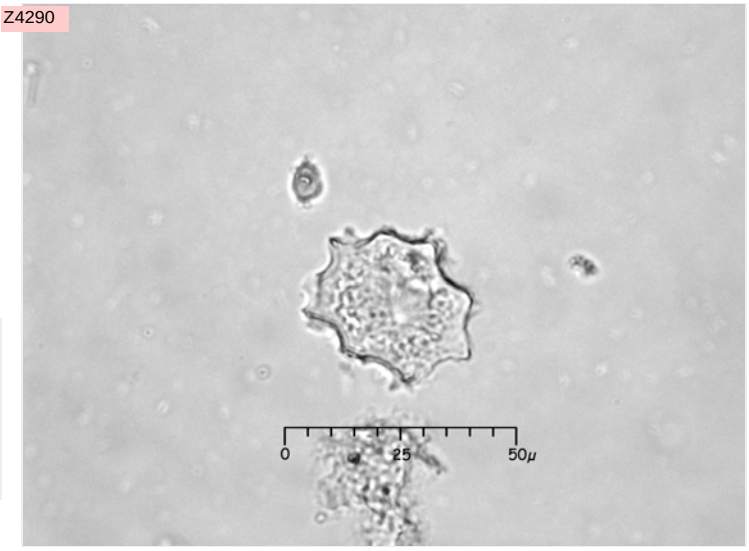
Comments

PC2038, inflorescence

Diagnostic level: species

View from the bottom

Image Z4290



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a “skirt” in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAb

Recno 400

Family Marantaceae

Genus Maranta

Species arundinacea

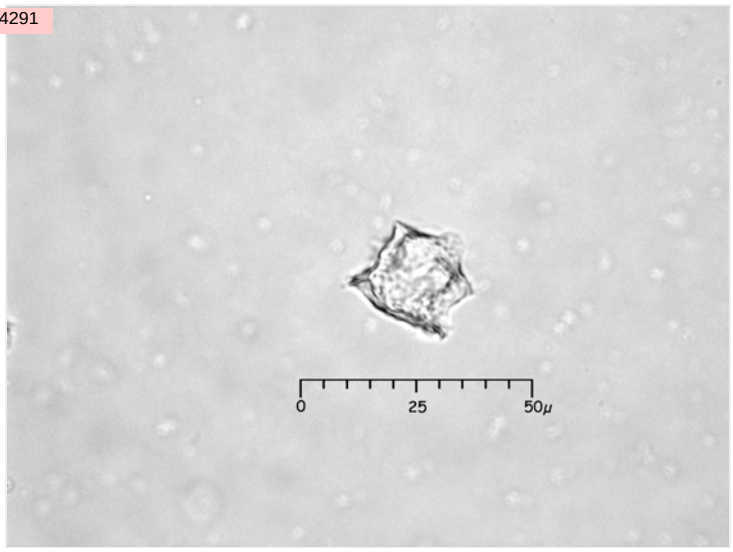
Authority

Comments

PC2038, inflorescence

Diagnostic level: species

Image Z4291



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a “skirt” in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAb

Recno 401

Family Marantaceae

Genus Maranta

Species arundinacea

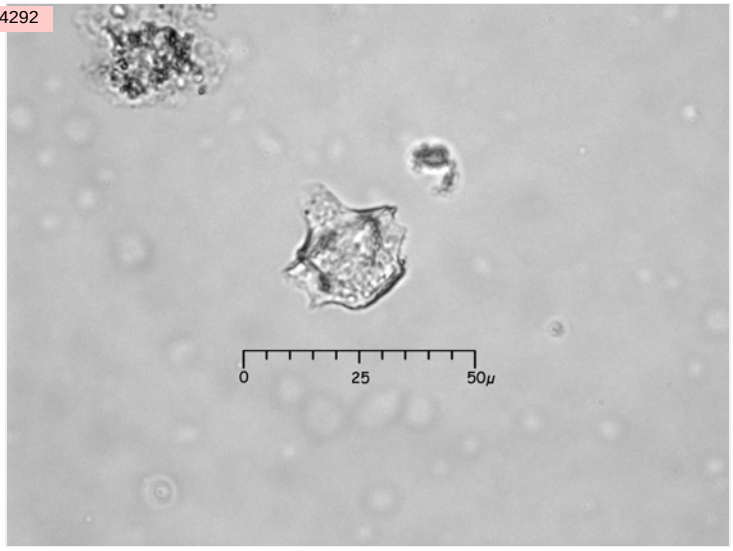
Authority

Comments

PC2038, inflorescence

Diagnostic level: species

Image Z4292



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a “skirt” in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAb

Recno 402

Family Marantaceae

Genus Maranta

Species arundinacea

Authority

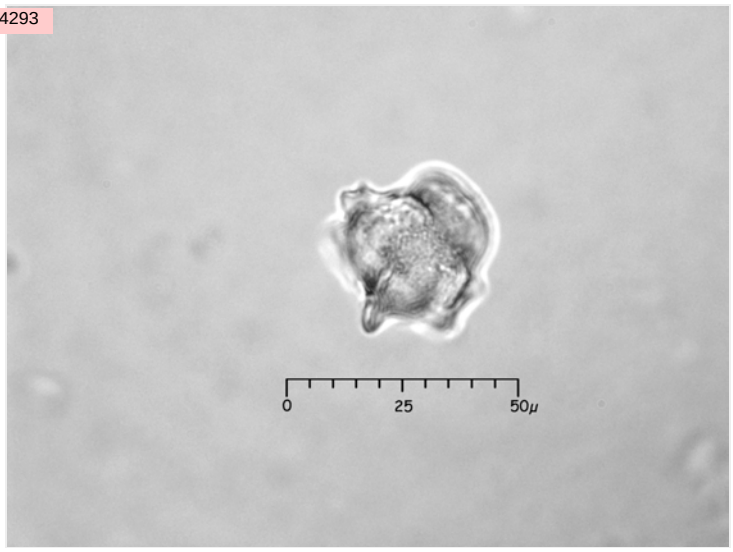
Comments

PC2038, inflorescence

Diagnostic level: species

View is of partially rotated body

Image Z4293



Description

- Short cylindrical seed body with smooth-to-solid granular surface.
- Bottom and side views show broad bulbous base
- Base varies from very irregular and flattened to polyhedral
- Base and stalk may fuse to form a “skirt” in very shortened bodies.
- Stalk shape varies from broad to angular/pointed
- Stalk length varies from truncated to very long (<1/2 diameter to >1/2

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 80IBb

Recno 60

Family Marantaceae

Genus Maranta

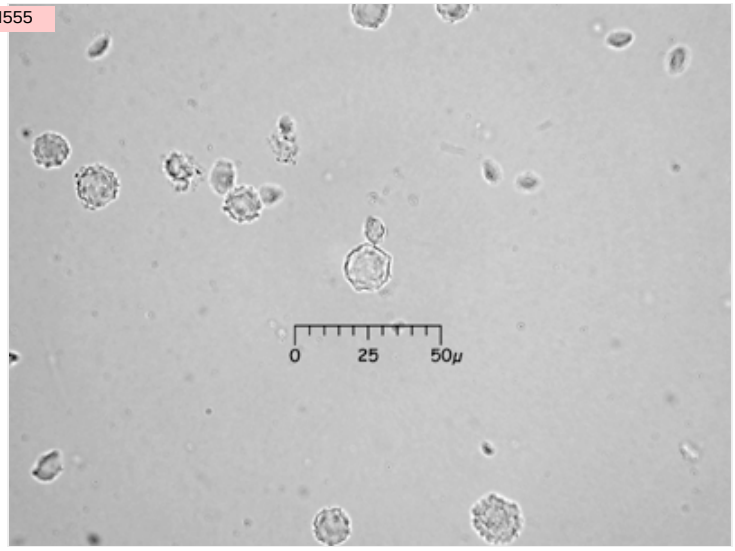
Species gibba

Authority Sm. in Rees

Comments

Large (10-30 microns) rugulose spheres. Rugulose spheres occur in many taxa, very common in Marantaceae, Bombacaceae, Cannaceae, Heliconiaceae, and Chrysobalanaceae. Small rugulose spheres (< 10 microns) that are well silicified (i.e., opaque) are, according to Iriarte and Piperno, characteristic of woody dicots. Large spheres (10-30

Image N555



Description

- Rugulose spheres
- Regular or very irregular in overall shape (may not be strictly spherical)
- Surface bumpy, rough (pock marks) with irregular projections in between

Entered by Karol Chandler-Ezell

Updated 2/7/2008

MUno 22VIIAa

Recno 79

Family Marantaceae

Genus Maranta

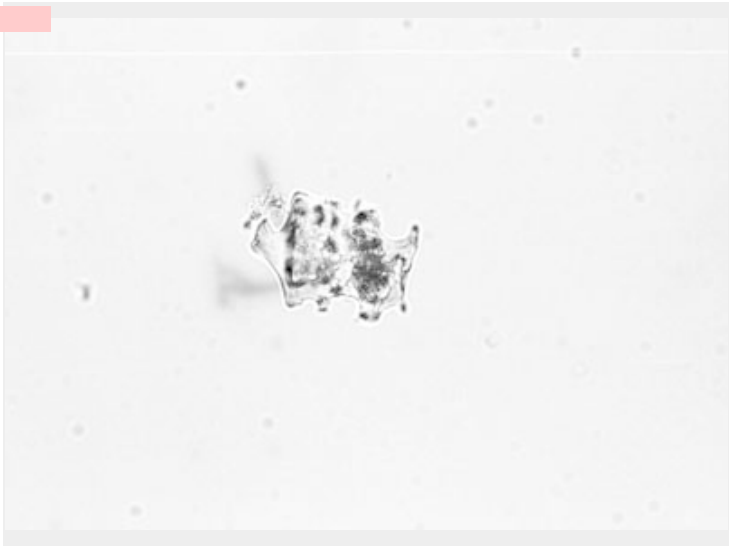
Species gibba

Authority Sm. in Rees

Comments

Maranta spp. inflorescense body,
Diameter of central cylinder is
37microns wide
Note: may occur in all Maranta spp.,
including Maranta arundinacea
Diagnostic level: genus

Image



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIAa

Recno 80

Family Marantaceae

Genus Maranta

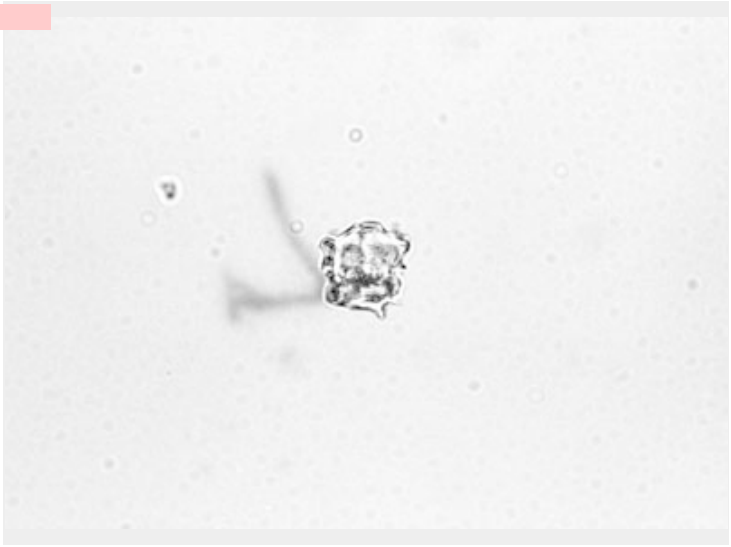
Species gibba

Authority Sm. in Rees

Comments

Small, “incomplete” seed body.
Note absence of “tip” or “stalk” typical of
the body...only a tiny or vestigial stalk
at bottom of body.
This photo is to illustrate the extreme
end of the type.
Diagnostic level: genus

Image



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIAa

Recno 81

Family Marantaceae

Genus Maranta

Species gibba

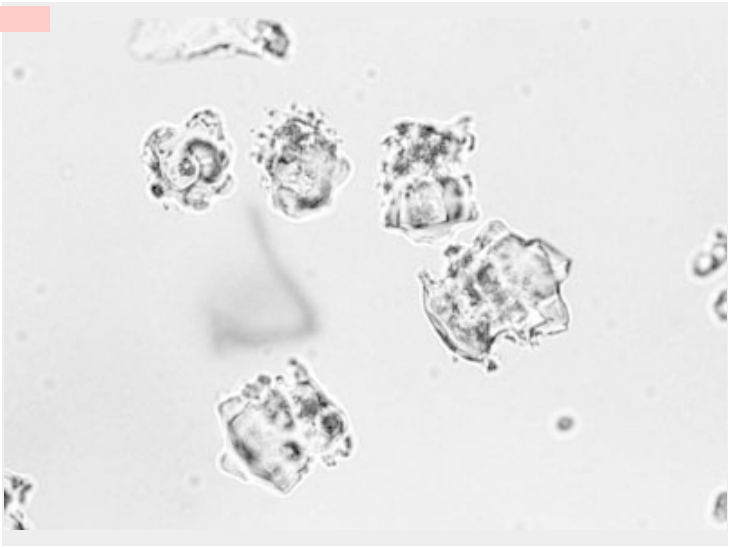
Authority Sm. in Rees

Comments

Size range in length: 25 - 55 microns

Note: may occur in all Maranta spp., including Maranta arundinacea
Diagnostic level: genus

Image



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIAa

Recno 82

Family Marantaceae

Genus Maranta

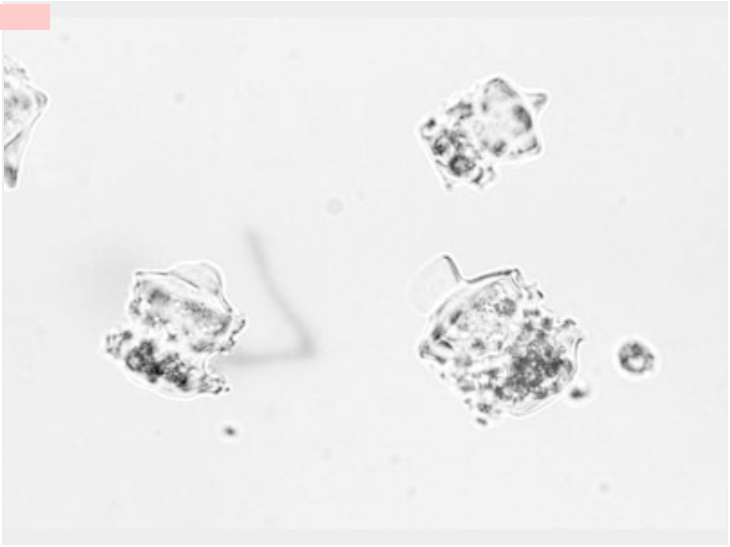
Species gibba

Authority Sm. in Rees

Comments

Note smooth stalks on wide tips of bodies. Cylinders are covered in projections and surface decoration.
Note: may occur in all Maranta spp., including Maranta arundinaceae
NOTE: In some samples, you may see JUST the tip of the body -- 22VII Ca
Diagnostic level: genus

Image



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIAa

Recno 83

Family Marantaceae

Genus Maranta

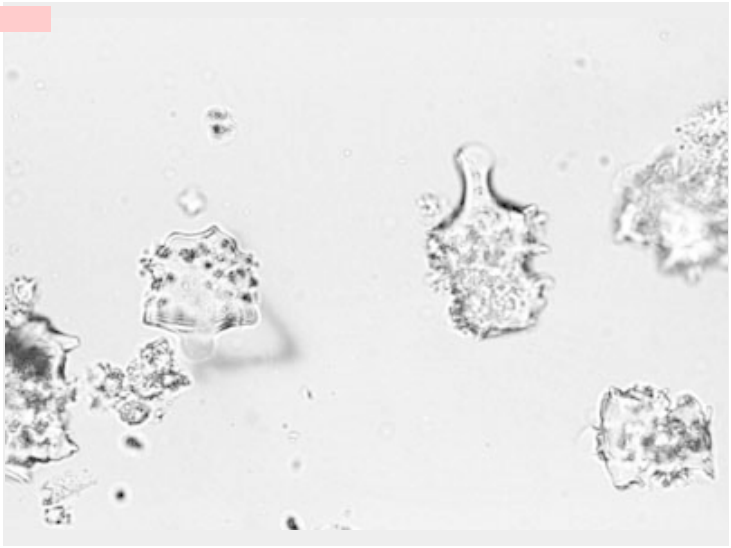
Species gibba

Authority Sm. in Rees

Comments

Note range of variaiton in size, nature of decorationon cylinders, and proportional length of bodies between bodies on the right and left.
Note: may occur in all Maranta spp., including Maranta arundinaceae
Note: you may encounter the “tip” of the body only: see below
Diagnostic level: genus

Image



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IIIB, 80ICa1

Recno 93

Family Marantaceae

Genus Maranta

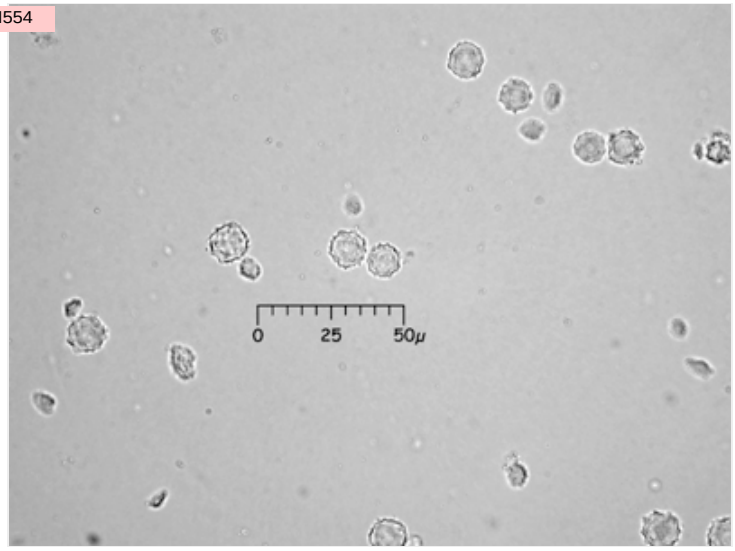
Species gibba

Authority Sm. in Rees

Comments

Typical of leaf samples, both 80IIIB and 80ICa also appeared in the inflorescense sample of this taxon.
Diagnostic level, 80IIIB: family
Diagnostic level, 80ICa: Marantaceae/Bombacaceae

Image N554



Description

Nodular spheres:
Shape of spheres varies: round to oval to irregular in shape. Average Size varies from 7 - 16 microns.
Projections are nodular: obtuse tip, not evenly pointed, often rounded.

Conical body:

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80IIIB

Recno 96

Family Marantaceae

Genus Maranta

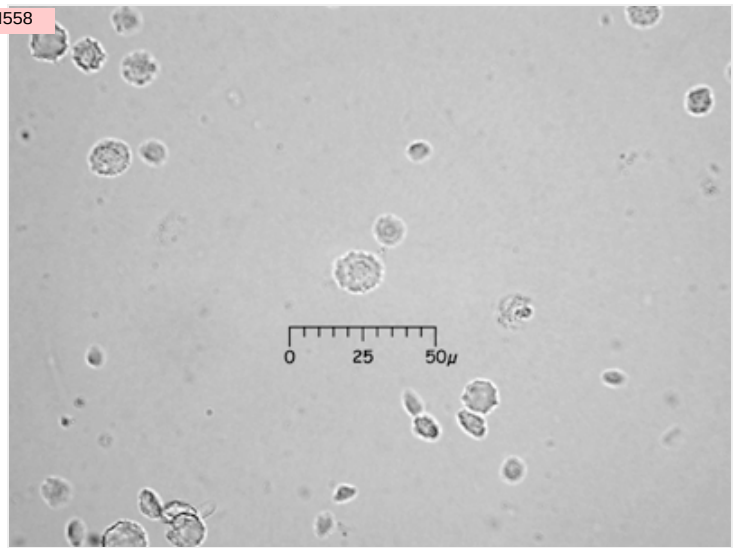
Species gibba

Authority Sm. in Rees

Comments

rugulose conical bodies, Leaf sample
Diagnostic level: family

Image N558



Description

Conical body. Distinct, dome on top is rugulose to nodular (Convex side).
Rugulose on bottom (concave side)
Size range 3-14 microns.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 80ICa1

Recno 97

Family Marantaceae

Genus Maranta

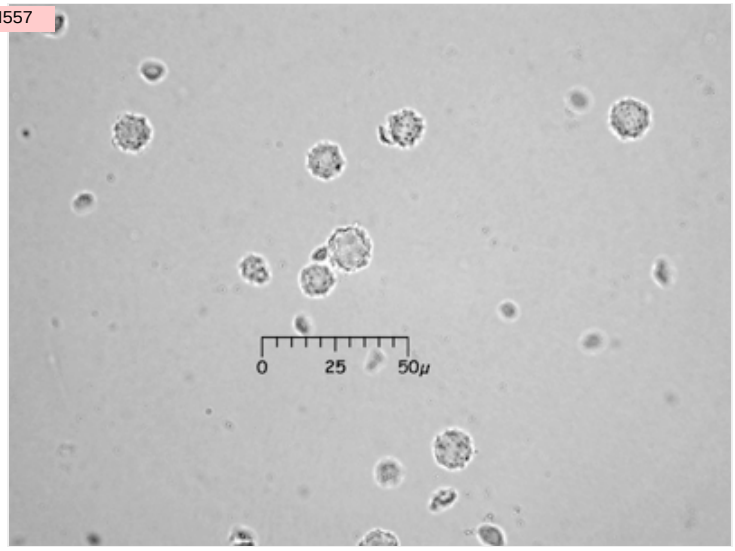
Species gibba

Authority Sm. in Rees

Comments

Very elongate end of range for this type.
Nodular spheres
Diagnostic level:
Marantaceae/Bombacaceae

Image N557



Description

80 I Ca: Nodular sphere:
Shape of spheres varies: round to oval to irregular in shape. Average
Size varies from 7 - 16 microns.
Projections are nodular: obtuse tip, not evenly pointed, often rounded.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIAa

Recno 393

Family Marantaceae

Genus Maranta

Species gibba

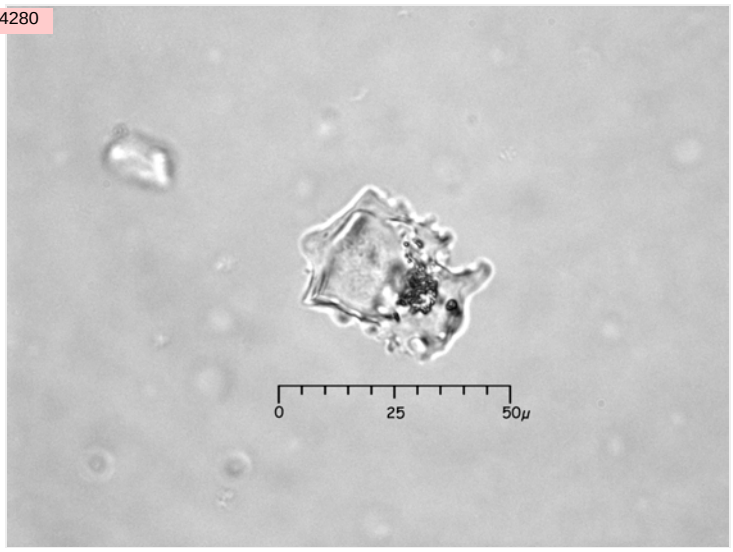
Authority

Comments

PC2036, inflorescence

Diagnostic level: genus

Image Z4280



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAa

Recno 394

Family Marantaceae

Genus Maranta

Species gibba

Authority

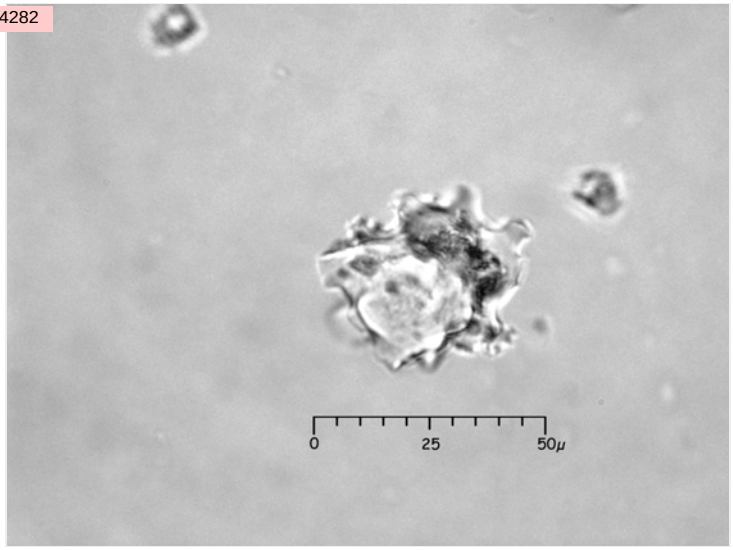
Comments

PC2036, inflorescence

Diagnostic level: genus

View shows the large irregular scallops

Image Z4282



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAa

Recno 395

Family Marantaceae

Genus Maranta

Species gibba

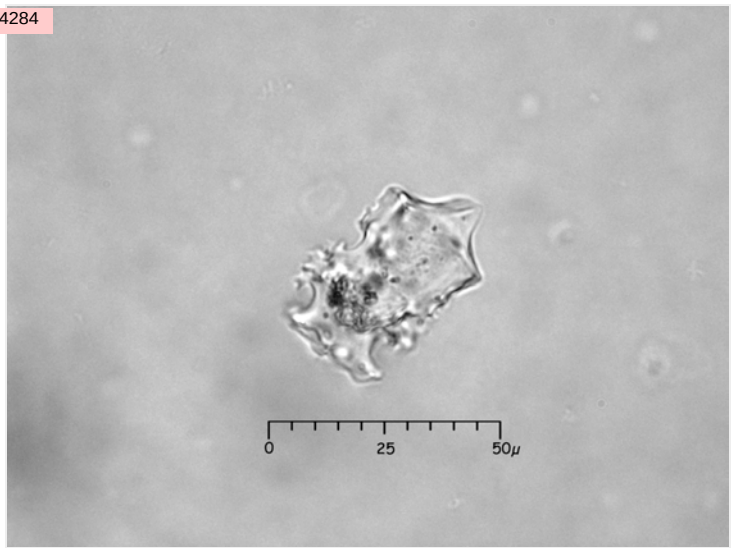
Authority

Comments

PC2036, inflorescence

Diagnostic level: genus

Image Z4284



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAa

Recno 396

Family Marantaceae

Genus Maranta

Species gibba

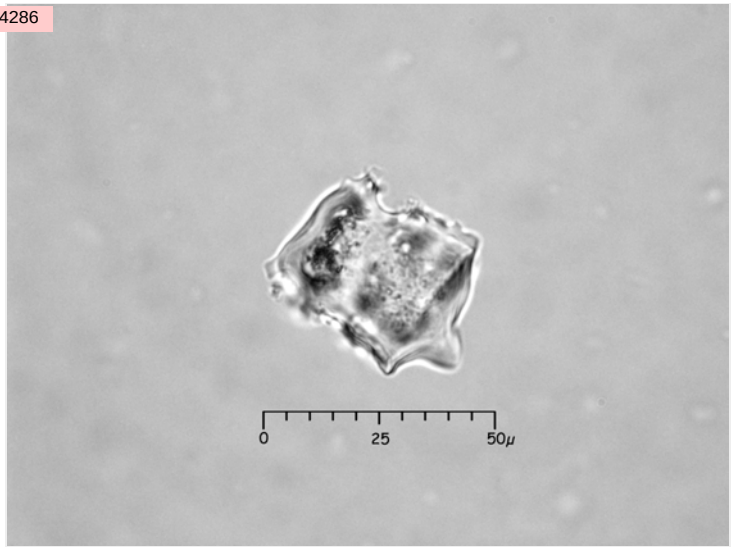
Authority

Comments

PC2036, inflorescence

Diagnostic level: genus

Image Z4286



Description

- Seed phytolith, cylindrical in form.
- Barrel of cylinder has irregular projections on a solid surface.
- Surface NOT granular, but smooth with irregular scallops.
- End of cylinder has a “stalk” with a large smooth tip.
- Size large: average length 30-50 microns.

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 80ICd

Recno 346

Family Marantaceae

Genus Maranta

Species gibba

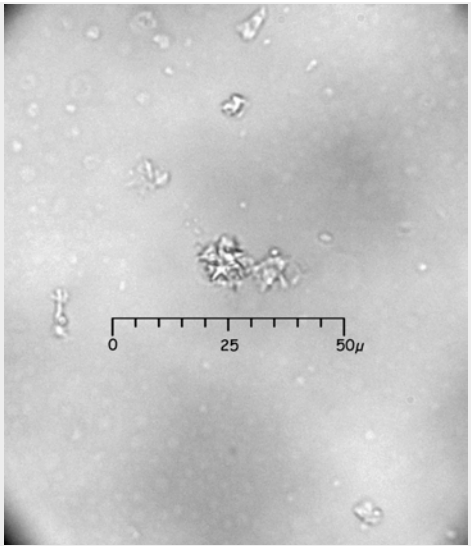
Authority

Comments

type established by Karol Chandler-Ezell
PC2732 Maranta gibba stem base

Diagnostic level: Calathea/Maranta

Image Z4274



Description

rough spheres to irregular flattened bodies with nodules, occasional spinules, and distinctive linear ridges

Entered by Deborah M. Pearsall

Updated 9/11/2012

MUno 80ICd

Recno 347

Family Marantaceae

Genus Maranta

Species gibba

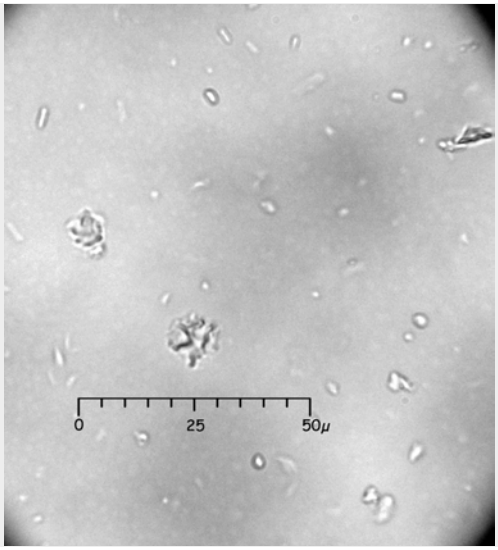
Authority

Comments

type established by Karol Chandler-Ezell
PC2732 Maranta gibba stem base

Diagnostic level: Calathea/Maranta

Image Z4275



Description

rough spheres to irregular flattened bodies with nodules, occasional spinules, and distinctive linear ridges

Entered by Deborah M. Pearsall

Updated 9/11/2012

MUno 22VIIBb

Recno 391

Family Marantaceae

Genus Pleistochya

Species morlaei

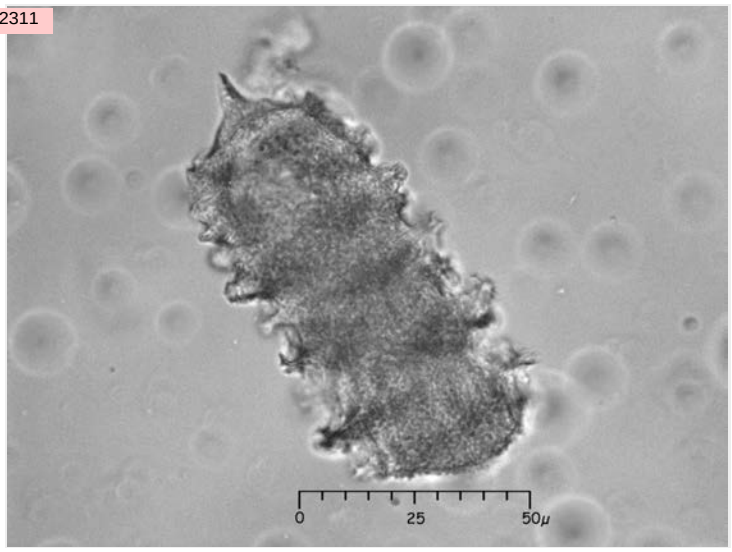
Authority

Comments

PC1826 inflorescence

Diagnostic level: family

Image Z2311



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments. Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Deborah M. Pearsall

Updated 10/1/2012

MUno 22VIIBb

Recno 392

Family Marantaceae

Genus Pleistochya

Species morlaei

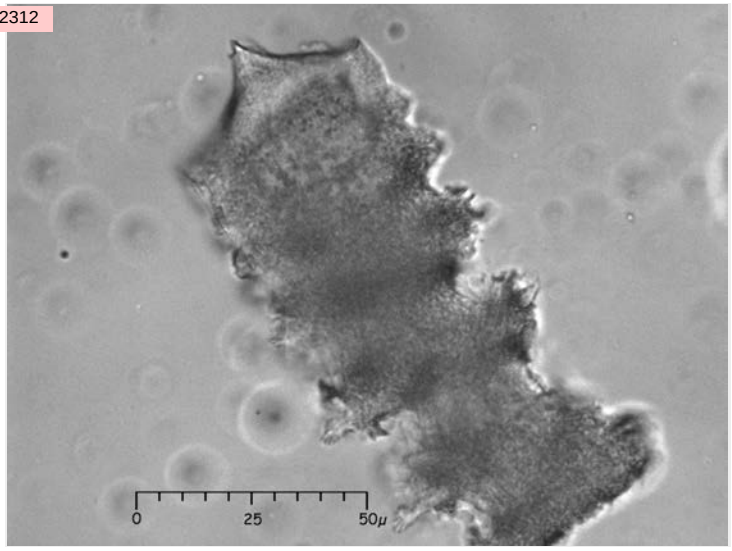
Authority

Comments

PC1826 inflorescence

Diagnostic level: family

Image Z2312



Description

Cylindrical seed bodies, large. Shaft of cylinder with porous to densely ciliate surface. Ciliate surface has appearance of abundant 3-dimensional spots or bumps. Shaft often has obvious segments. Cylinder is straight along its axis.
Tips variable: very blunt to acuminate with a side rim present and decorated or absent.

Entered by Deborah M. Pearsall

Updated 10/1/2012

MUno 22IBc

Recno 393

Family Marantaceae

Genus Pleistochya

Species morlaei

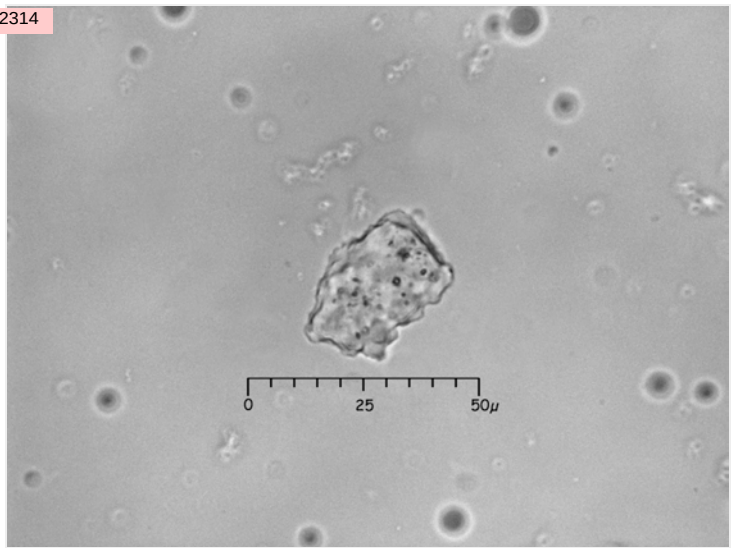
Authority

Comments

PC1826, inflorescence

Diagnostic level: under study

Image Z2314



Description

Irregularly shaped non-quadrilateral epidermis of seed or fruit; small projections on surface, shape very irregular projections are rounded

Entered by Deborah M. Pearsall

Updated 10/1/2012

MUno 60IB

Recno 390

Family Marantaceae

Genus Pleistochyma

Species morlaei

Authority

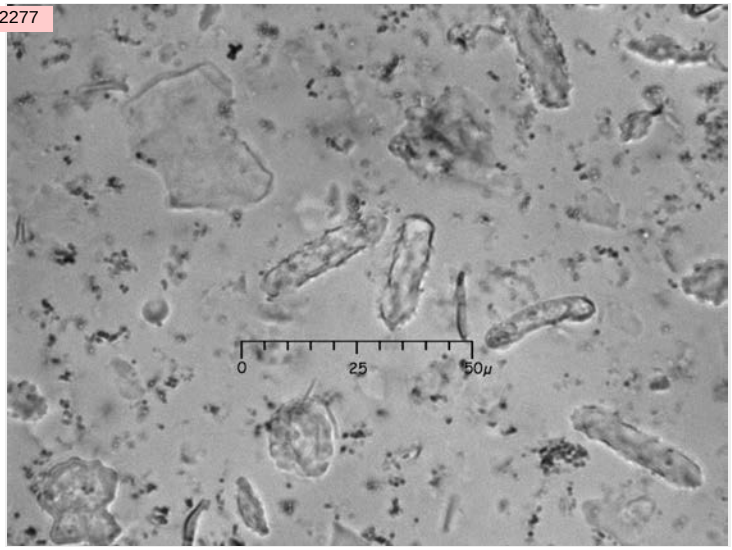
Comments

PC1825, leaf

In this specimen the bodies are smoother, and sometimes have small projections.

Diagnostic level: family

Image Z2277



Description

- Rectangular body, wider than tall.
- Surface scored by diagonal ridges or scores.

Entered by Deborah M. Pearsall

Updated 10/1/2012

MUno 22VIIAc

Recno 403

Family Marantaceae

Genus Stromanthe

Species jarquinii

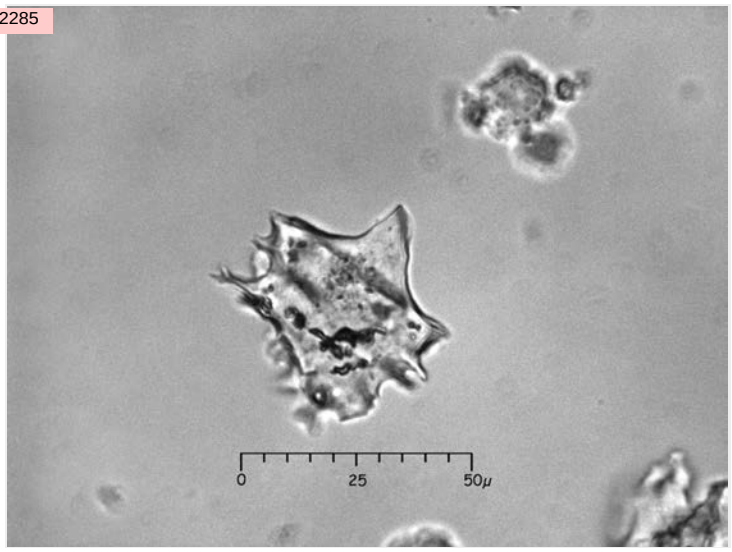
Authority

Comments

PC1822, inflorescence

Diagnostic level: genus

Image Z2285



Description

cylindrical seed body, smooth/solid cylinder shaft shortened, broad cylinder, smooth surface
robust single and bifurcated angular projections
tip smooth

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAc

Recno 404

Family Marantaceae

Genus Stromanthe

Species jarquinii

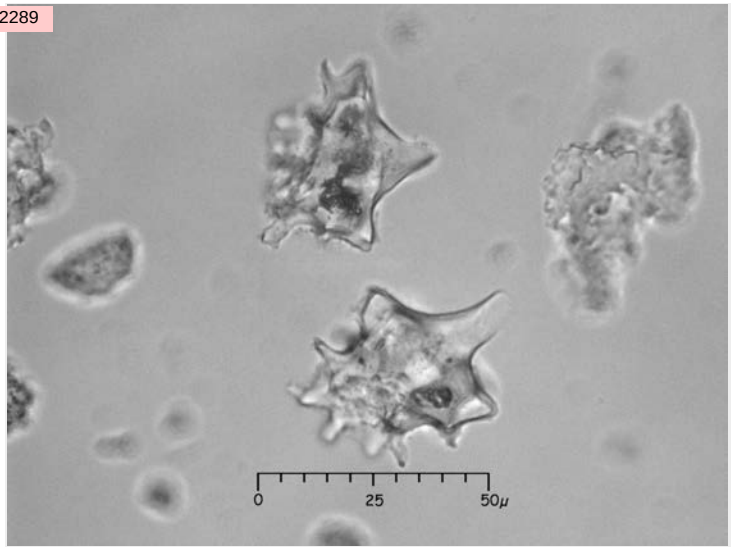
Authority

Comments

PC1822, inflorescence

Diagnostic level: genus

Image Z2289



Description

cylindrical seed body, smooth/solid cylinder shaft shortened, broad cylinder, smooth surface
robust single and bifurcated angular projections
tip smooth

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAc

Recno 405

Family Marantaceae

Genus Stromanthe

Species jarquinii

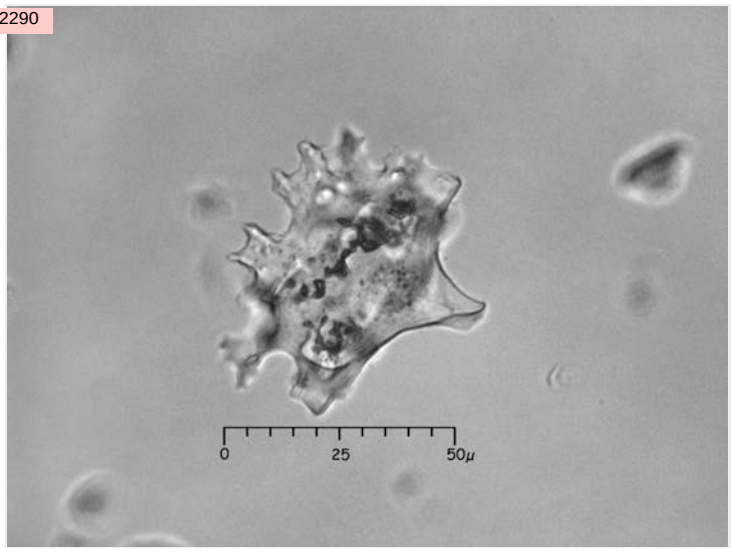
Authority

Comments

PC1822, inflorescence

Diagnostic level: genus

Image Z2290



Description

cylindrical seed body, smooth/solid cylinder shaft
shortened, broad cylinder, smooth surface
robust single and bifurcated angular projections
tip smooth

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIAc

Recno 406

Family Marantaceae

Genus Stromanthe

Species jarquinii

Authority

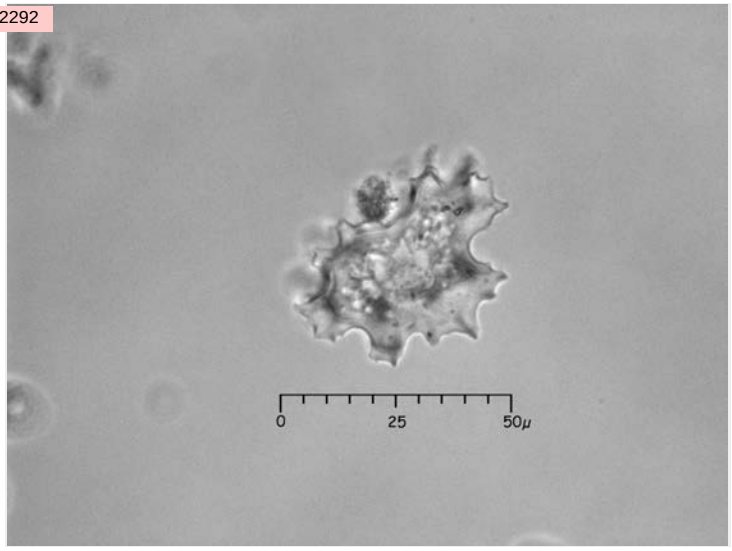
Comments

PC1822, inflorescence

Diagnostic level: genus

View is from base

Image Z2292



Description

cylindrical seed body, smooth/solid cylinder shaft
shortened, broad cylinder, smooth surface
robust single and bifurcated angular projections
tip smooth

Entered by Deborah M. Pearsall

Updated 10/2/2012

MUno 22VIIE

Recno 407

Family Marantaceae

Genus Stromanthe

Species jarquinii

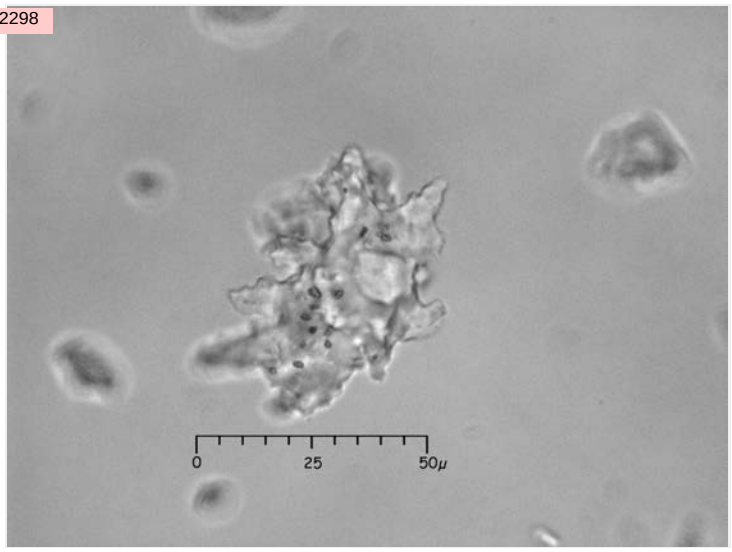
Authority

Comments

PC1822, inflorescence

Diagnostic level: genus

Image Z2298



Description

cylindrical seed body
irregularly shaped with smooth, complex, robust projections
robust tip that is a continuation of the cylinder

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 22VIIE

Recno 408

Family Marantaceae

Genus Stromanthe

Species jarquinii

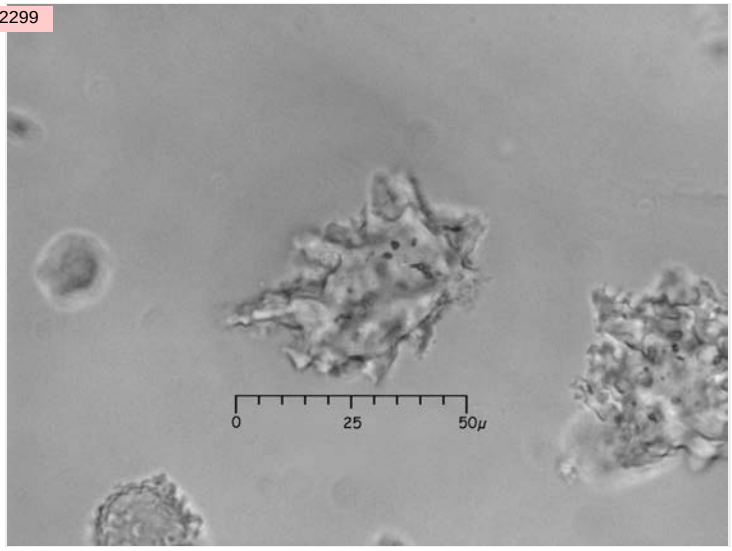
Authority

Comments

PC1822, inflorescence

Diagnostic level: genus

Image Z2299



Description

cylindrical seed body
irregularly shaped with smooth, complex, robust projections
robust tip that is a continuation of the cylinder

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 80IIBb

Recno 409

Family Marantaceae

Genus Stromanthe

Species jarquinii

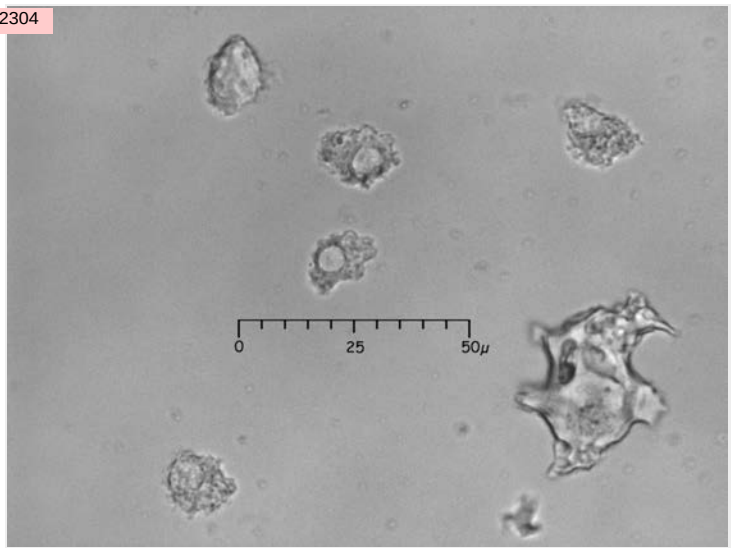
Authority

Comments

PC1822, inflorescence

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: not diagnostic

Image Z2304



Description

Verrucate trough body: decorated, textured verrucate platform with a multi-outlined pit in the center of one side. Seeds, fruit, and root cortex.

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 80IG

Recno 410

Family Marantaceae

Genus Stromanthe

Species jarquinii

Authority

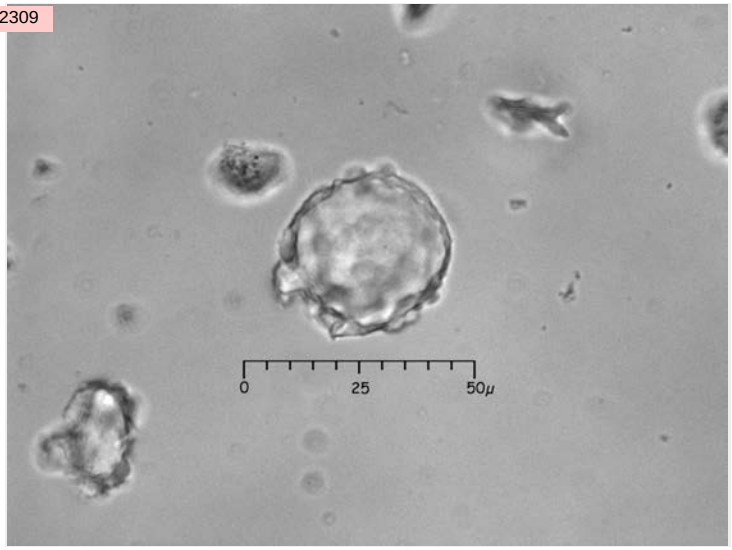
Comments

PC1822, inflorescence

Diagnostic level: under study

This view shows the round concavities

Image Z2309



Description

Surface with small round concavities (”dimpled”) and rounded projections.
Flattened to spheroidal.

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 80IG

Recno 411

Family Marantaceae

Genus Stromanthe

Species jarquinii

Authority

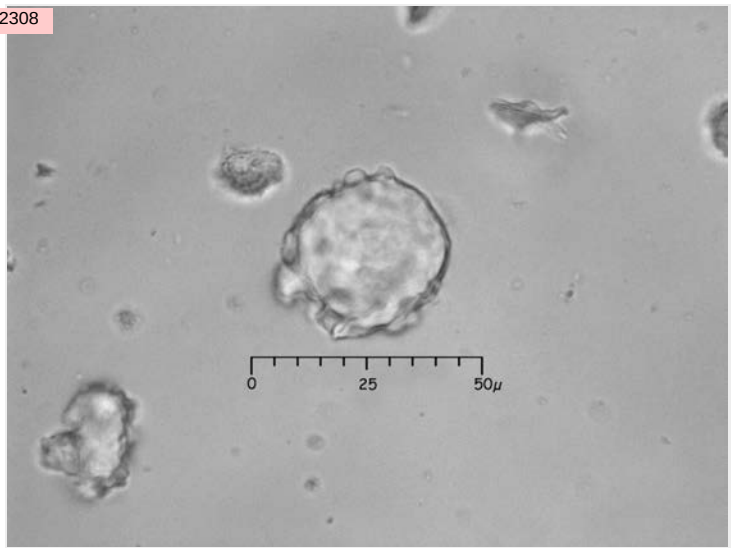
Comments

PC1822, inflorescence

Diagnostic level: under study

This view shows the rounded projections

Image Z2308



Description

Surface with small round concavities (”dimpled”) and rounded projections.
Flattened to spheroidal.

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 22VIIBe

Recno 412

Family Marantaceae

Genus Stromanthe

Species jarquinii

Authority

Comments

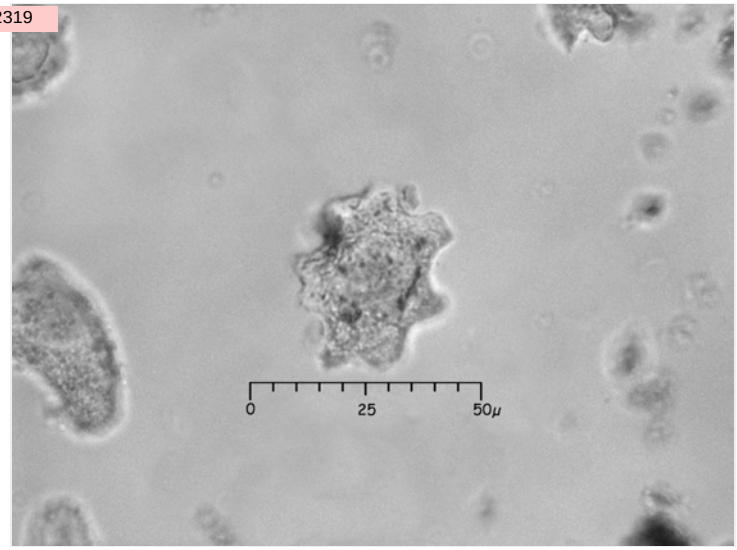
PC2622, inflorescence

Diagnostic level: Stromanthe, Thalia

This specimen had only short cylinders. Bottom view

Compare to 22VIIDd, Donax

Image 2319



Description

Porous to densely ciliate cylinder shaft, abundant three dimensional spots and bumps
shaft short or elongated, tip a sphere enclosed in top of shaft

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 22VIIBe

Recno 413

Family Marantaceae

Genus Stromanthe

Species jarquinii

Authority

Comments

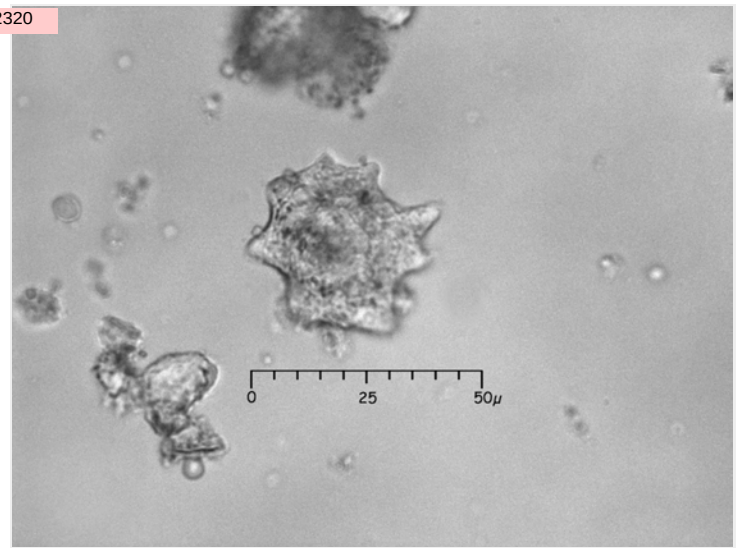
PC2622, inflorescence

Diagnostic level: Stromanthe, Thalia

This specimen had only short cylinders.
Bottom view

Compare to 22VIIDd, Donax

Image 2320



Description

Porous to densely ciliate cylinder shaft, abundant three dimensional spots and bumps
shaft short or elongated, tip a sphere enclosed in top of shaft

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 22VIIBe

Recno 414

Family Marantaceae

Genus Stromanthe

Species jarquinii

Authority

Comments

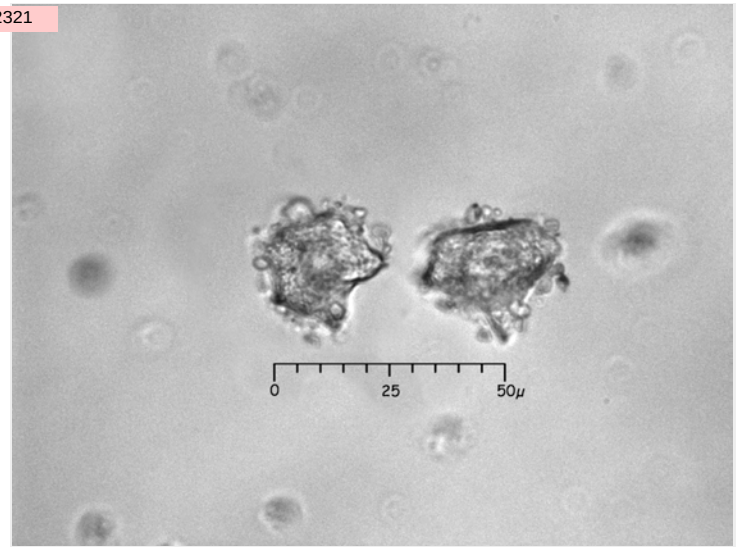
PC2622, inflorescence

Diagnostic level: Stromanthe, Thalia

This specimen had only short cylinders.
Body on right shows the side view

Compare to 22VIIDd, Donax

Image 2321



Description

Porous to densely ciliate cylinder shaft, abundant three dimensional spots and bumps
shaft short or elongated, tip a sphere enclosed in top of shaft

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 80IIBb

Recno 415

Family Marantaceae

Genus Stromanthe

Species stromanthoides

Authority

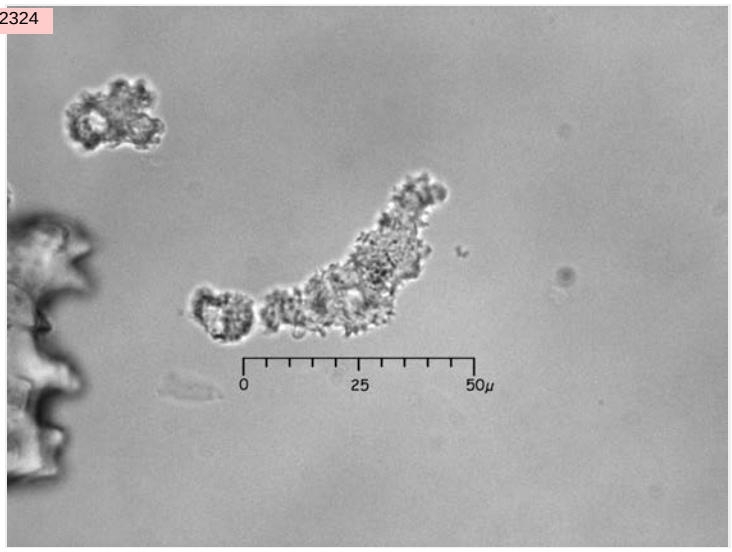
Comments

PC1824, inflorescence

Type established by Karol Chandler-Ezell, 2004
Diagnostic level: not diagnostic

Image shows variation in size and shape; note very elongated example

Image Z2324



Description

Verrucate trough body: decorated, textured verrucate platform with a multi-outlined pit in the center of one side. Seeds, fruit, and root cortex.

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 22IBc

Recno 416

Family Marantaceae

Genus Thalia

Species geniculata

Authority

Comments

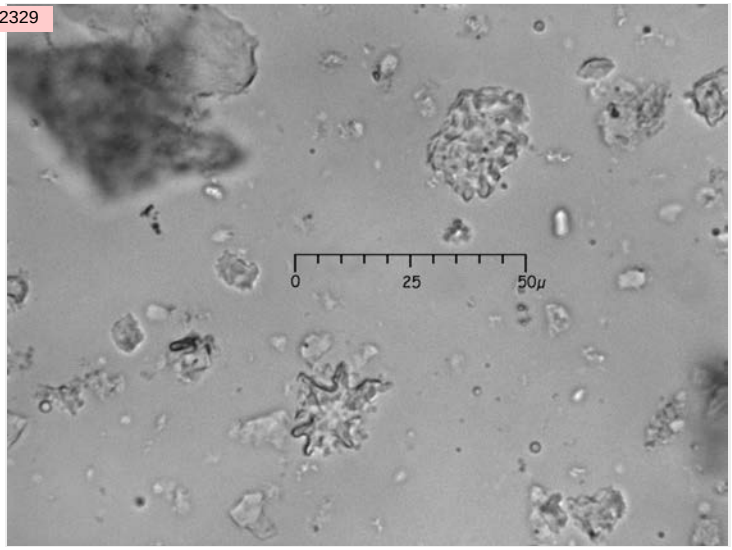
PC1156, fruit

Diagnostic level: under study

This specimen had some examples with longer projections; see body below the scale and compare to one above the scale

Rarely observed in Thalia multiflora leaf

Image Z2329



Description

Irregularly shaped non-quadrilateral epidermis of seed or fruit; small projections on surface, shape very irregular projections are rounded

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 22VIIBe

Recno 417

Family Marantaceae

Genus Thalia

Species geniculata

Authority

Comments

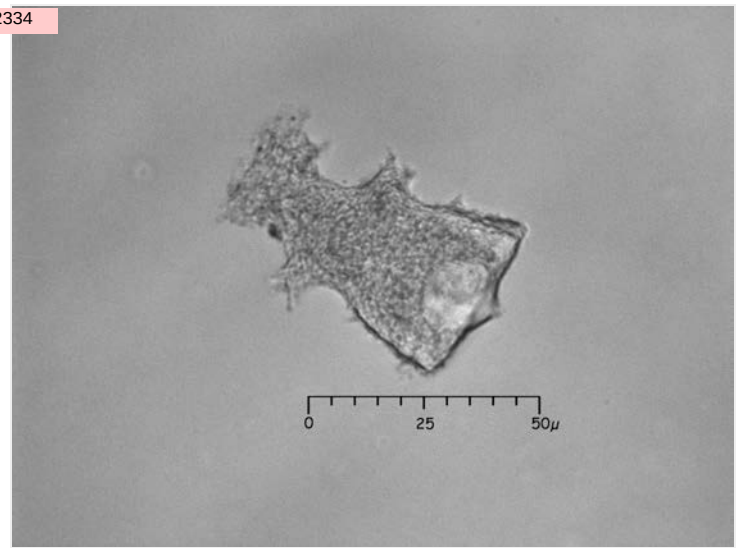
PC1818, inflorescence

Diagnostic level: Stromanthe, Thalia

This specimen has long cylinders

Compare to 22VIIDd, Donax

Image 2334



Description

Porous to densely ciliate cylinder shaft, abundant three dimensional spots and bumps
shaft short or elongated, tip a sphere enclosed in top of shaft

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 22VIIBe

Recno 418

Family Marantaceae

Genus Thalia

Species geniculata

Authority

Comments

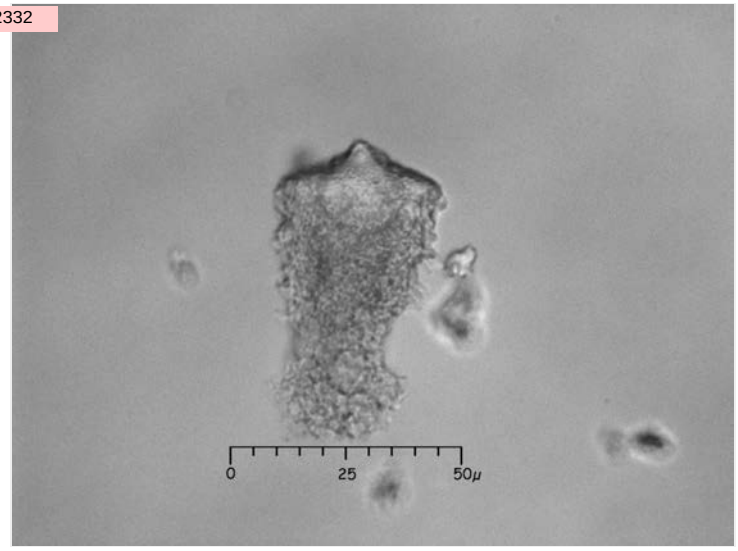
PC1818, inflorescence

Diagnostic level: Stromanthe, Thalia

This specimen has long cylinders

Compare to 22VIIDd, Donax

Image 2332



Description

Porous to densely ciliate cylinder shaft, abundant three dimensional spots and bumps
shaft short or elongated, tip a sphere enclosed in top of shaft

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 22VIIBe

Recno 419

Family Marantaceae

Genus Thalia

Species geniculata

Authority

Comments

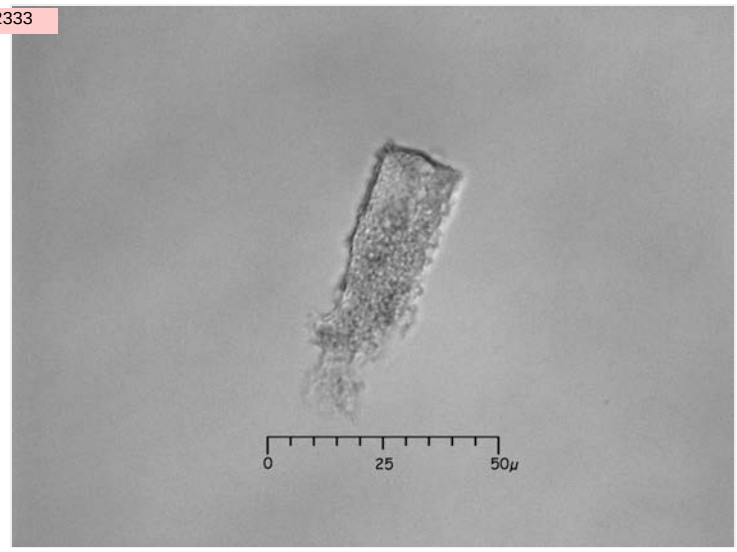
PC1818, inflorescence

Diagnostic level: Stromanthe, Thalia

This specimen has long cylinders.
Image shows an example which lacks projecting tip

Compare to 22VIIDd, Donax

Image 2333



Description

Porous to densely ciliate cylinder shaft, abundant three dimensional spots and bumps
shaft short or elongated, tip a sphere enclosed in top of shaft

Entered by Deborah M. Pearsall

Updated 10/3/2012

MUno 80IIID

Recno 420

Family Marantaceae

Genus Thalia

Species geniculata

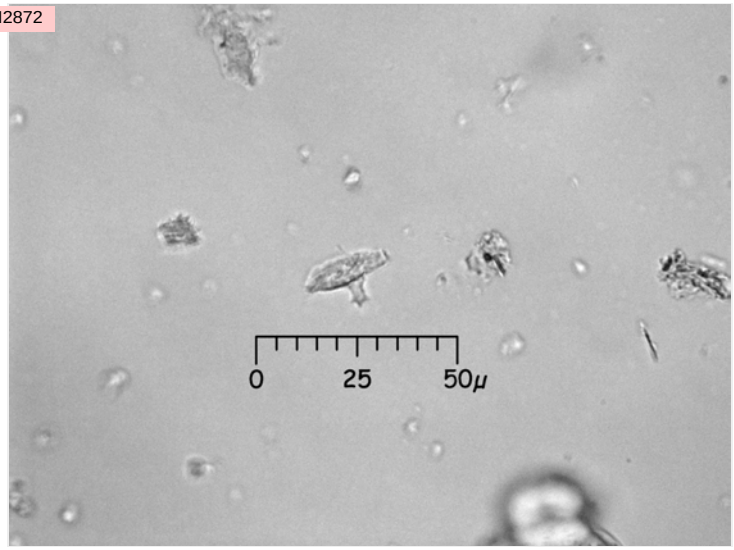
Authority

Comments

PC1740, root, common.
Type defined by Karol Chandler-Ezell, 11/2004

Diagnostic level: under study

Image N2872



Description

Conical body
flat, rugulose to smooth base
top is narrow, with ciliate projections

Entered by Deborah M. Pearsall

Updated 10/10/2012

MUno 80IIID

Recno 421

Family Marantaceae

Genus Thalia

Species geniculata

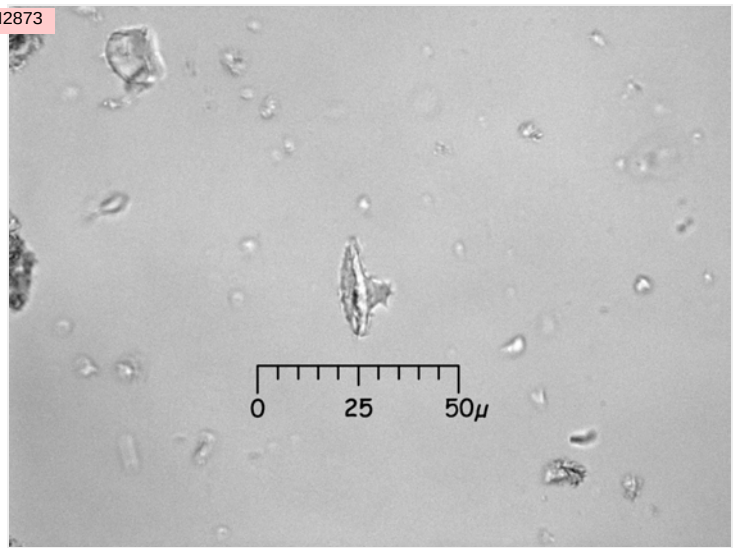
Authority

Comments

PC1740, root, common.
Type defined by Karol Chandler-Ezell, 11/2004

Diagnostic level: under study

Image N2873



Description

Conical body
flat, rugulose to smooth base
top is narrow, with ciliate projections

Entered by Deborah M. Pearsall

Updated 10/10/2012

MUno 80IIID

Recno 422

Family Marantaceae

Genus Thalia

Species geniculata

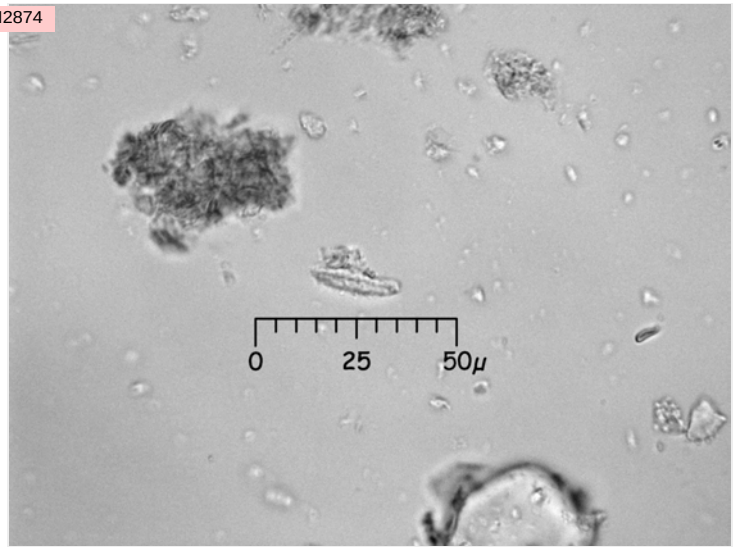
Authority

Comments

PC1740, root, common.
Type defined by Karol Chandler-Ezell, 11/2004

Diagnostic level: under study

Image N2874



Description

Conical body
flat, rugulose to smooth base
top is narrow, with ciliate projections

Entered by Deborah M. Pearsall

Updated 10/10/2012

MUno 80IIID

Recno 423

Family Marantaceae

Genus Thalia

Species geniculata

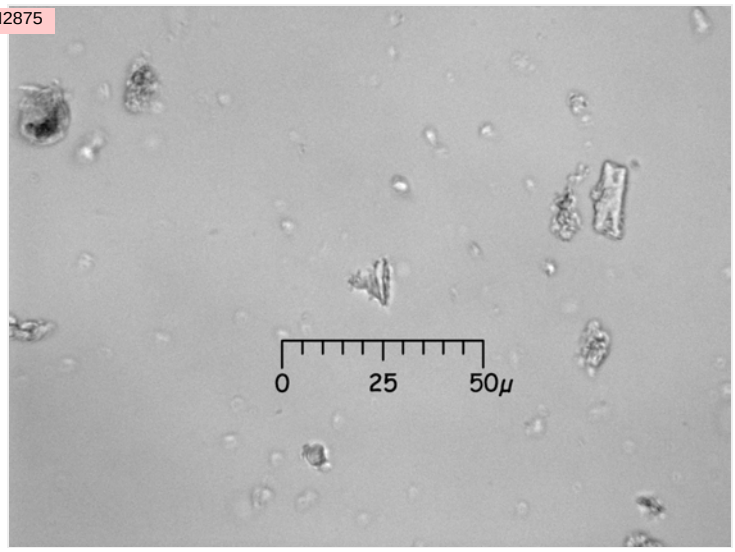
Authority

Comments

PC1740, root, common.
Type defined by Karol Chandler-Ezell, 11/2004

Diagnostic level: under study

Image N2875



Description

Conical body
flat, rugulose to smooth base
top is narrow, with ciliate projections

Entered by Deborah M. Pearsall

Updated 10/10/2012

MUno 40IIIAb101

Recno 35

Family Moraceae

Genus Artocarpus

Species altilis

Authority (Parkinson) Fosberg

Comments

Armed hair; hair is bent in a right angle from base, rather than curving as in Boraginaceae *Cordia lutea* 40IIIAb100. Often has a piece of attached epidermal tissue at base with a “torn” appearance. Distinct multiple outline appearance helps to separate it from similar types.
Diagnostic level: family

Image N500

Description

Unicellular hair; Long; Bent; Interor space; Armed.

Entered by Meghann O’Brien

Updated 02/23/2005

MUno 40IIIAb101

Recno 36

Family Moraceae

Genus Artocarpus

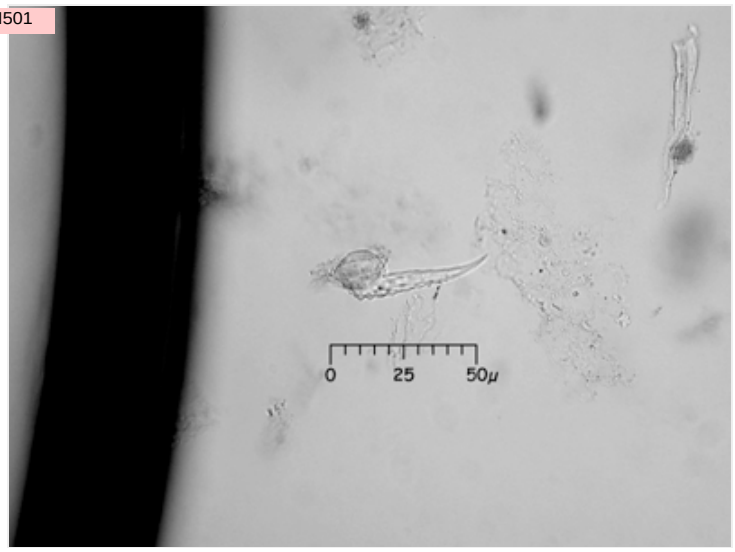
Species altilis

Authority (Parkinson) Fosberg

Comments

Armed hair; hair is bent in a right angle from base, rather than curving as in Boraginaceae *Cordia lutea* 40IIIAb100. Often has a piece of attached epidermal tissue at base with a “torn” appearance. Distinct multiple outline appearance helps to separate it from similar types. Diagnostic level: family

Image N501



Description

Unicellular hair; Long; Bent; Interor space; Armed.

Entered by Meghann O’Brien

Updated 02/23/2005

MUno 40IVFd

Recno 37

Family Moraceae

Genus Artocarpus

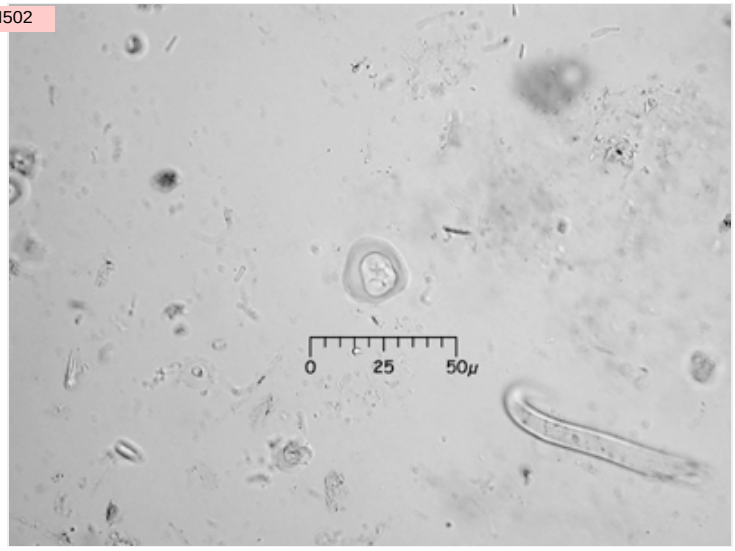
Species altilis

Authority (Parkinson) Fosberg

Comments

Diagnostic level: family

Image N502



Description

- Hair base
- very small stellate center embedded in a well silicified body; outer ring more effemeral

Entered by Shawn K. Collins

Updated 3/1/2005

MUno 80IIAa,b,c

Recno 38

Family Musaceae

Genus Heliconia

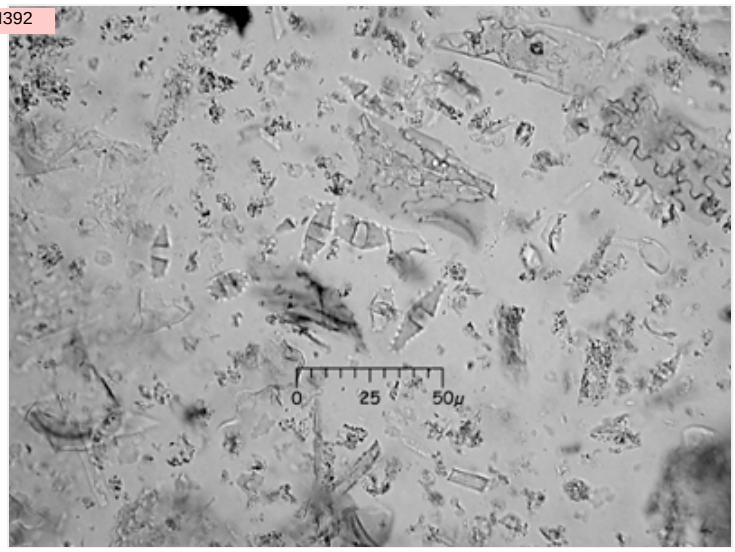
Species curtispatha

Authority Petersen

Comments

Be careful to rotate these phytoliths to see their shape (ellipse or blocky) and the depth of the trough. Check for surface decoration.
Diagnostic level: genus

Image N392



Description

- Troughed body
- Deep trough, compact
- From top, trough cuts body into two parts
80IIAa) Trough ends acute; smooth edges OR
80IIAb) Trough ends acute; projections on edges OR
80IIAc) Trough ends blunt; projections on edge

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 80IIAa

Recno 39

Family Musaceae

Genus Heliconia

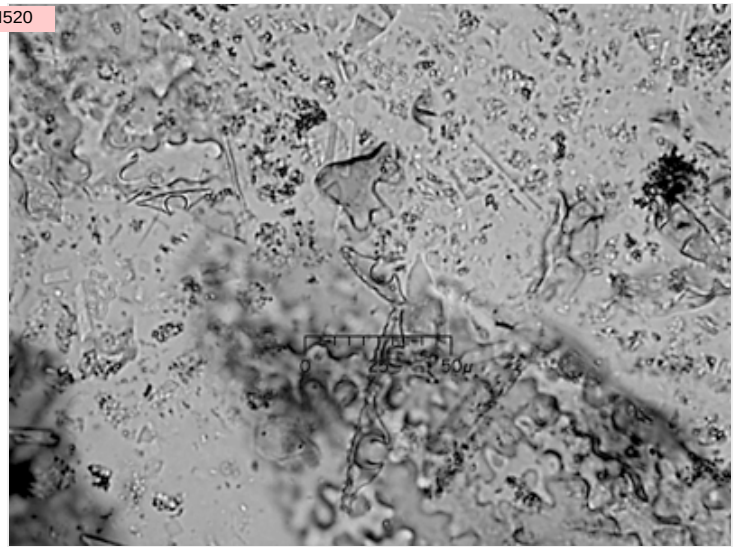
Species curtispatha

Authority Petersen

Comments

Be careful to rotate these phytoliths to see their shape (ellipse or blocky) and the depth of the trough. Check for surface decoration.
Diagnostic level: genus

Image N520



Description

- Troughed body
- Deep trough, compact
- From top, trough cuts body into two parts
80IIAa) Trough ends acute; smooth edges

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 80IIAb

Recno 207

Family Musaceae

Genus Heliconia

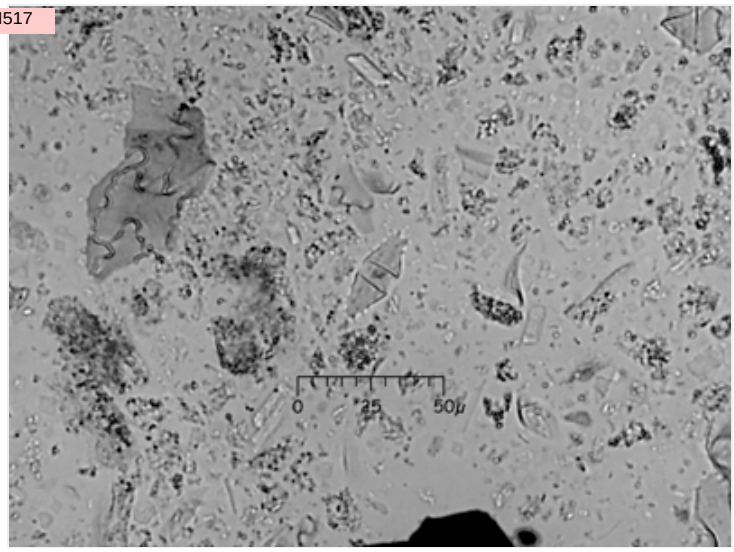
Species curtispatha

Authority Petersen

Comments

Be careful to rotate these phytoliths to see their shape (ellipse or blocky) and the depth of the trough. Check for surface decoration.
Diagnostic level: genus

Image N517



Description

- Troughed body
- Deep trough, compact
- From top, trough cuts body into two parts

80IIAb) Trough ends acute; projections on edges

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 80IIAc

Recno 208

Family Musaceae

Genus Heliconia

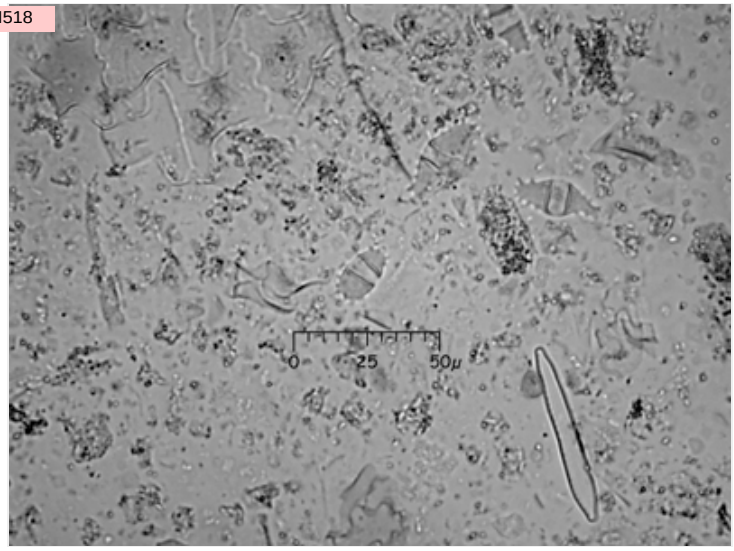
Species curtispatha

Authority Petersen

Comments

Be careful to rotate these phytoliths to see their shape (ellipse or blocky) and the depth of the trough. Check for surface decoration.
Diagnostic level: genus

Image N518



Description

- Troughed body
- Deep trough, compact
- From top, trough cuts body into two parts

80IIAc) Trough ends blunt; projections on edge

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 80IIBa

Recno 41

Family Musaceae

Genus Musa

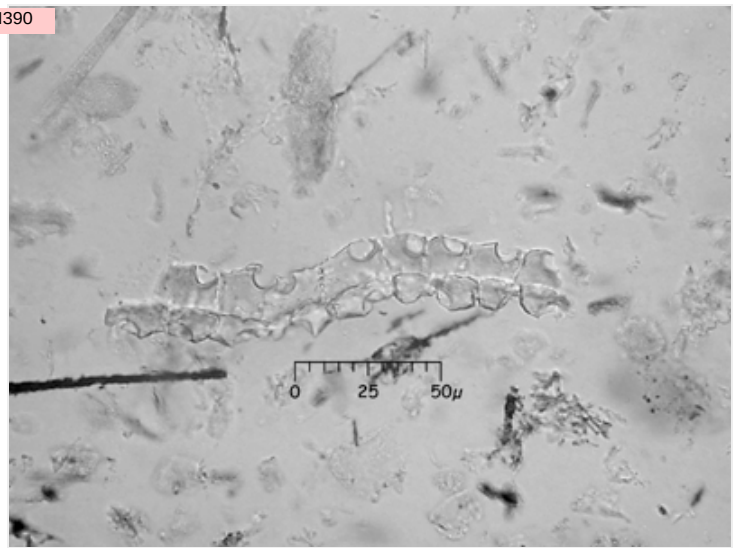
Species sp.

Authority

Comments

Musa, cultivated banana leaf.
Check depth of trough to separate from just extremely rugulose spheres. Should be thick and blocky.
Diagnostic level: genus

Image N390



Description

Troughed bodies; Shallow trough; Not elongated; From top, trough appears as circular depression; Bottom view may show up a spheroid with irregular bumps.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 80IIBa

Recno 41

Family Musaceae

Genus Musa

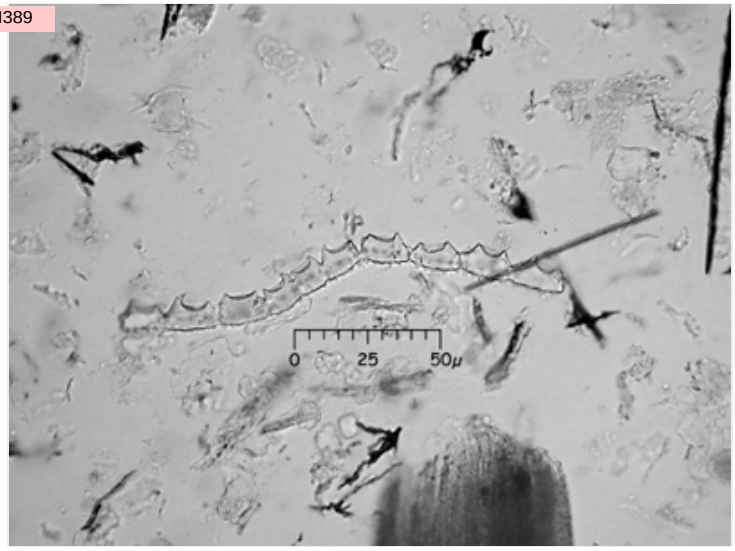
Species sp.

Authority

Comments

Musa, cultivated banana leaf.
Often occur in chains. Should be thick and blocky.
Diagnostic level: genus

Image N389



Description

Troughed bodies; Shallow trough; Not elongated; From top, trough appears as circular depression; Bottom view may show up a spheroid with irregular bumps.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 80IIBa

Recno 42

Family Musaceae

Genus Musa

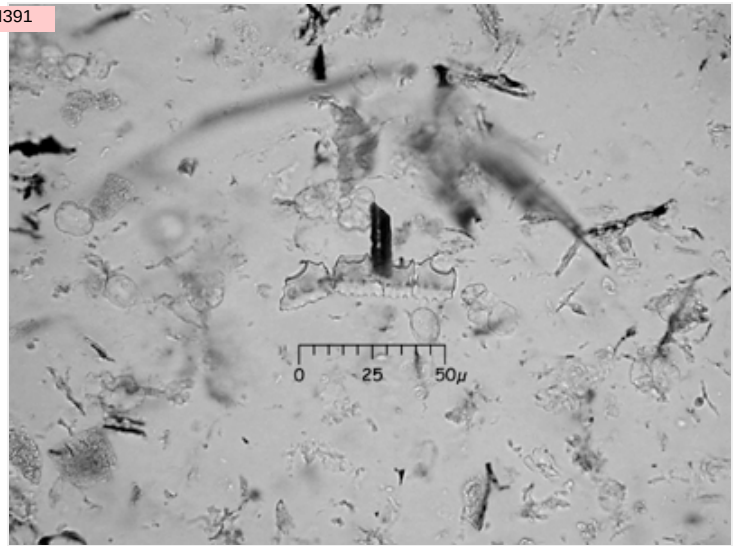
Species sp.

Authority

Comments

Musa, cultivated banana leaf. Should be thick and blocky.
Diagnostic level: genus

Image N391



Description

Troughed bodies; Shallow trough; Not elongated; From top, trough appears as circular depression; Bottom view may show up a spheroid with irregular bumps.

Entered by Meghann O'Brien

Updated 2/24/2005

MUno 100IV

Recno 43

Family Musaceae

Genus Musa

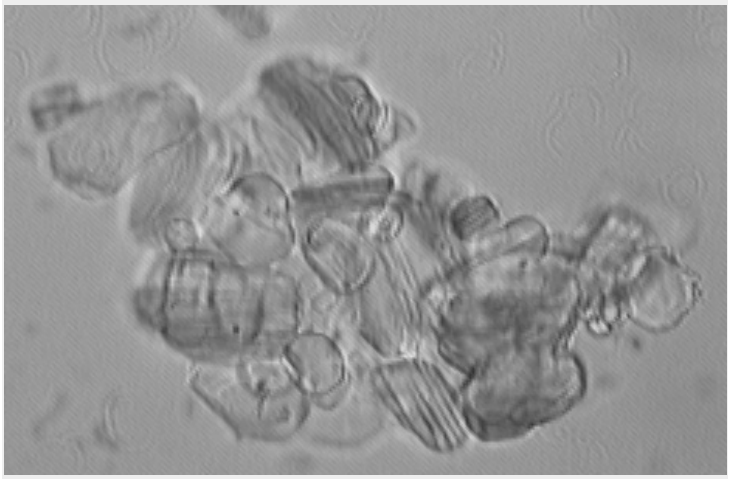
Species sp.

Authority

Comments

probably calcium carbonate ($CaCO_3$) crystals.
Also observed in Fabaceae, Flaucortiaceae, and Bombacaceae families.
Diagnostic level: not diagnostic

Image



Description

- Crystalline cubes
- Irregularly spaced striations
- Vary greatly in size
- Sometimes may have “air bubbles” or appear weathered
- Occur singly or in clusters
- Frequently fragmentary

Entered by Shawn K. Collins

Updated 10/7/2002

MUno 40IIIBa202B

Recno 273

Family Piperaceae

Genus Piper

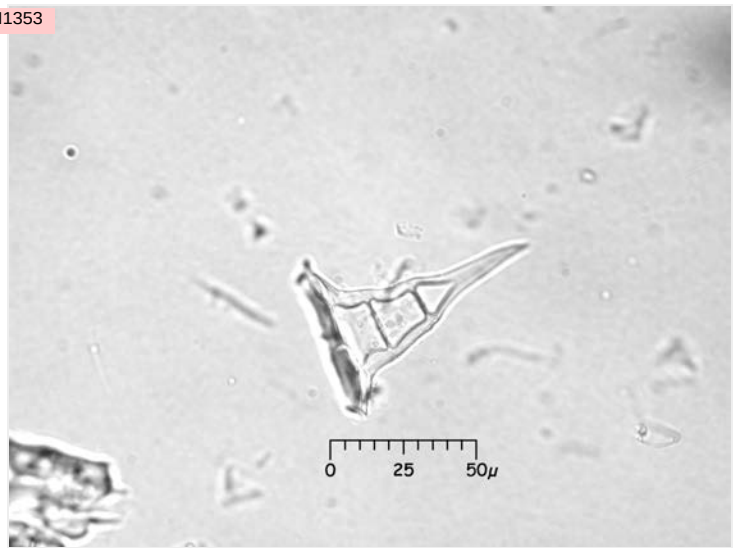
Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf

Image N1353



Description

Multi-cellular hair; smooth edges; elongated tip; In immature hairs intercellular spaces are as wide as they are long, but become elongated and restricted and more numerous as hair lengthens

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa202B

Recno 274

Family Piperaceae

Genus Piper

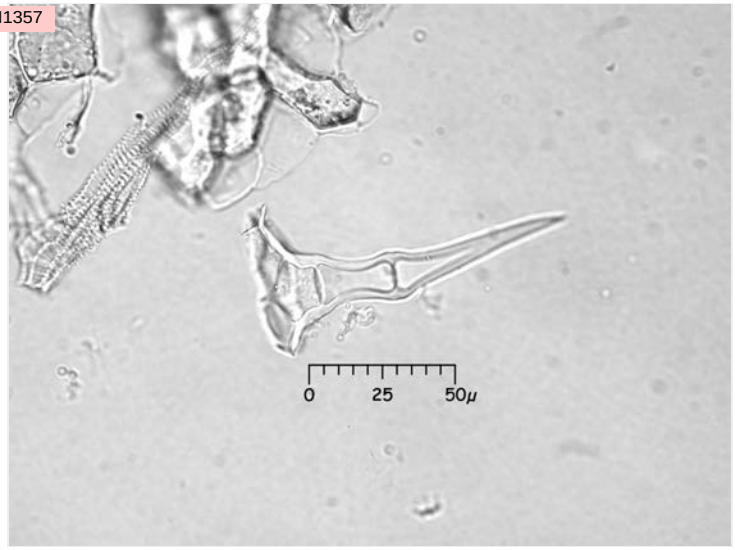
Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf

Image N1357



Description

Multi-cellular hair; smooth edges; tip elongated and acute; In immature hairs intercellular spaces are as wide as they are long, but become elongated and restricted as hair lengthens

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa202B

Image N1354

Recno 275

Family Piperaceae

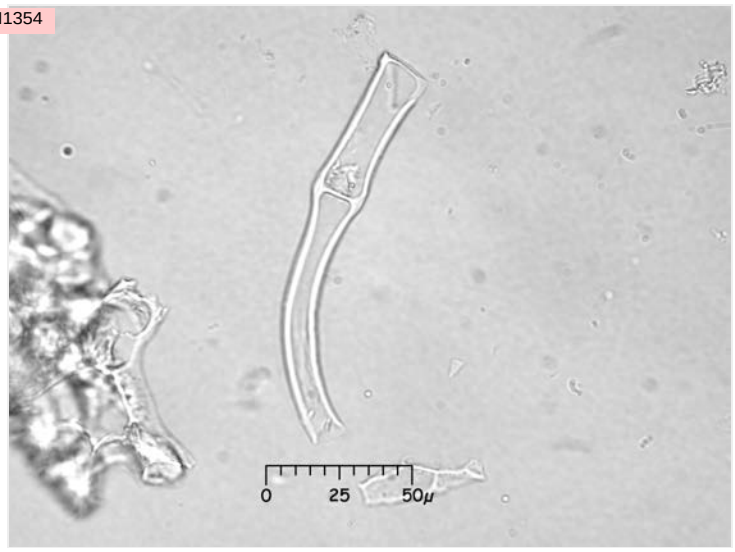
Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf
Picture shows a broken hair without the tip.



Description

Multi-cellular hair; smooth edges; elongated tip; In immature hairs intercellular spaces are as wide as they are long, but become elongated and restricted and more numerous as hair lengthens

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVBb4

Image N1374

Recno 276

Family Piperaceae

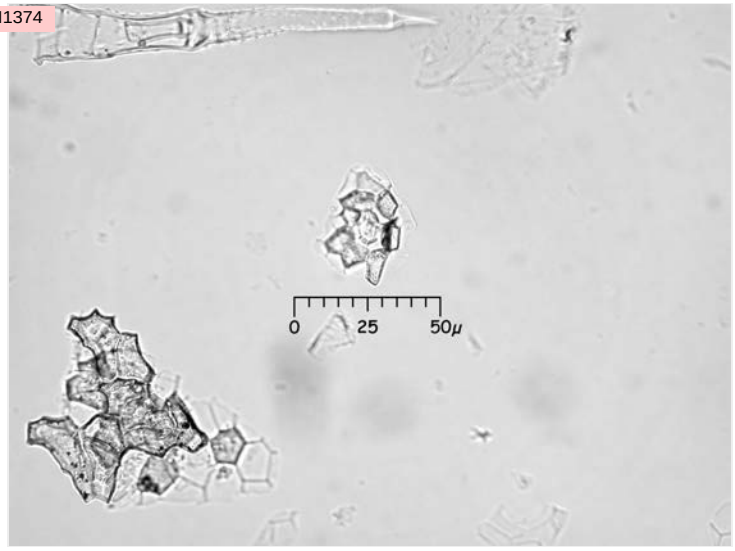
Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf



Description

Hair base; Highly silicified and distinctive central cells, usually 1-4 cells; Surrounding cells are blocky, can be rounded, and uniform in size

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVBb4

Recno 277

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf
Hair shaft still attached to base.

Image N1352

Description

Hair base; Highly silicified and distinctive central cells, usually 1-4 cells; Surrounding cells are blocky, can be rounded, and uniform in size

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVBb4

Recno 278-1

Family Piperaceae

Genus Piper

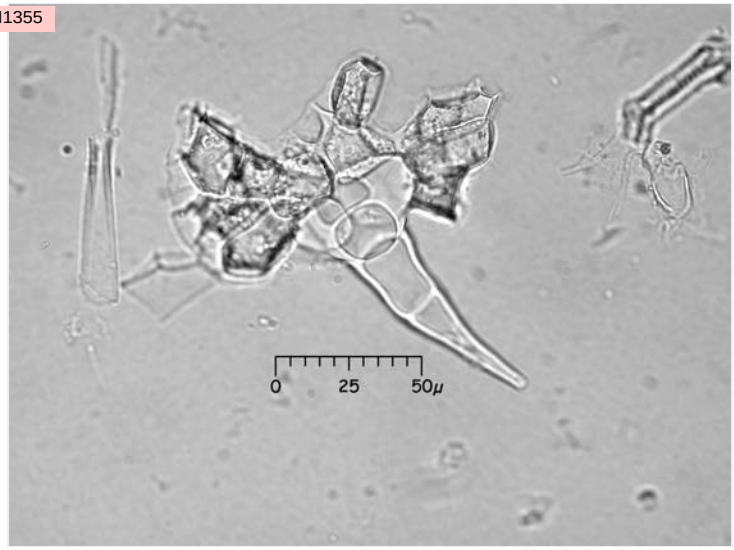
Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf

Image N1355



Description

Hair base; Highly silicified and distinctive central cells, usually 1-4 cells; Surrounding cells are blocky, can be rounded, and uniform in size

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVBb4

Recno 278-2

Family Piperaceae

Genus Piper

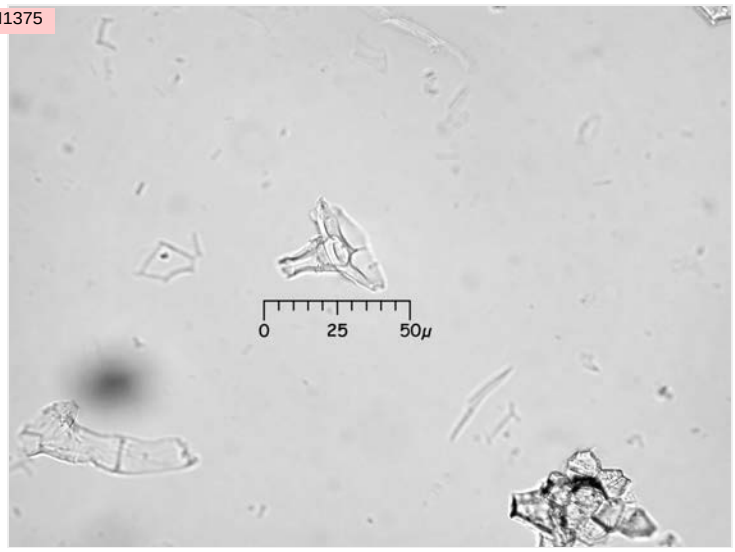
Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf

Image N1375



Description

Hair base; Highly silicified and distinctive central cells, usually 1-4 cells; Surrounding cells are blocky, can be rounded, and uniform in size

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVBb4

Recno 279

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf
Picture shows four highly silicified central cells

Image N1376

Description

Hair base; Highly silicified and distinctive central cells, usually 1-4 cells; Surrounding cells are blocky, can be rounded, and uniform in size

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIAa101

Recno 280

Family Piperaceae

Genus Piper

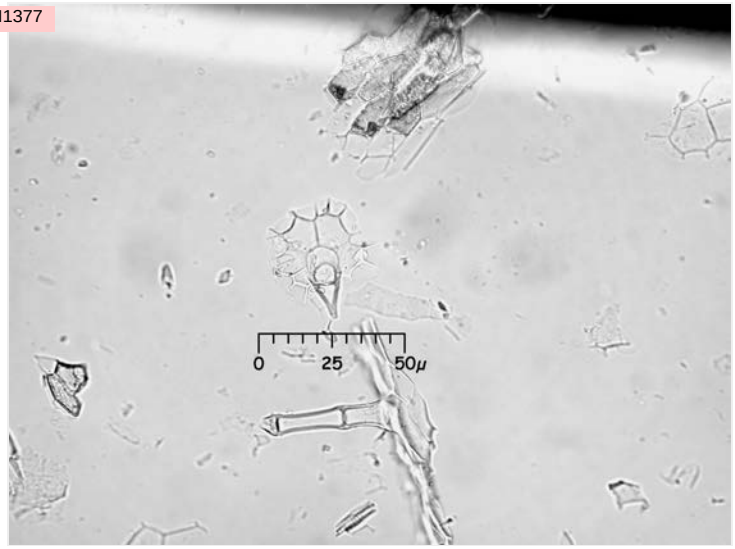
Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf

Image N1377



Description

Immature multi-cellular hair, only one intercellular space developed; Acute, elongated tip

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa101

Recno 281

Family Piperaceae

Genus Piper

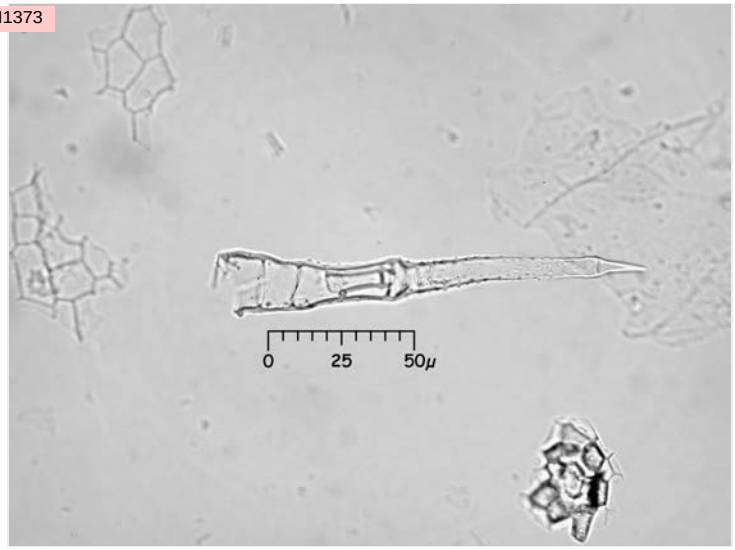
Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf

Image N1373



Description

Multi-cellular, armed hair; Large; Interior spaces; Elongated, acute tip

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa101

Recno 282

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf

Image N1380

Description

Multi-cellular, armed hair; Large; Interior spaces; Elongated, acute tip

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa101

Recno 283

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1397a; Leaf

Image N1381

Description

Multi-cellular, armed hair; Large; Interior spaces; Elongated, acute tip

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa101

Recno 284

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1398a. Inflorescence.
Picture only shows one segment of a hair.

Image N1317

Description

Multi-cellular, armed hair; Interior spaces; Acute tip; Can also occur as an armed sheath surrounding multi-cellular hair.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa101

Recno 285

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1398a. Inflorescence.

Image N1316

Description

Multi-cellular, armed hair; Interior spaces; Acute tip; Can also occur as an armed sheath surrounding multi-cellular hair.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa203B

Recno 286

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1398a. Inflorescence
Segments often occur individually or in pairs throughout slide

Image N1311

Description

Multi-cellular hair; Smooth edges, grainy surface texture; Interior spaces; Blunt, rounded tip, sometimes more elongated and pointed; Individual segments can be broad, squarish in shape

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IIIBa203B

Recno 287

Family Piperaceae

Genus Piper

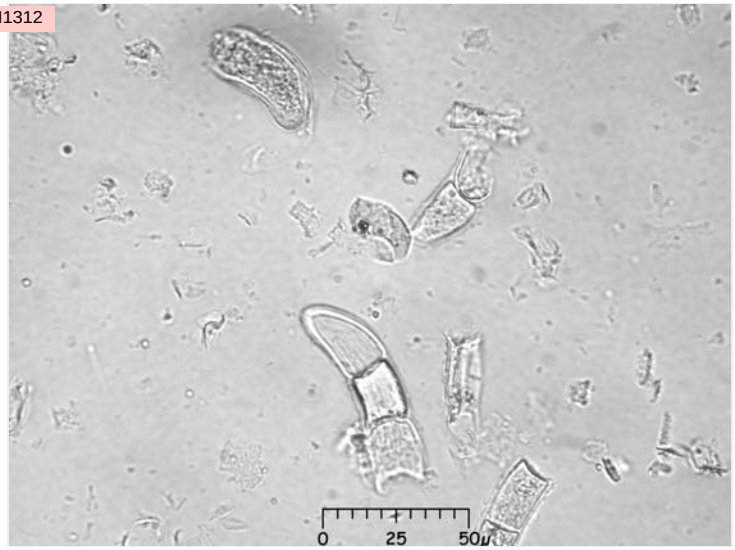
Species aduncum L. var.

Authority

Comments

Slide 1398a. Inflorescence
Segments often occur individually or in pairs throughout slide

Image N1312



Description

Multi-cellular hair; Smooth edges, grainy surface texture; Interior spaces; Blunt, rounded tip, sometimes more elongated and pointed; Individual segments can be broad, squarish in shape

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVC

Recno 288

Family Piperaceae

Genus Piper

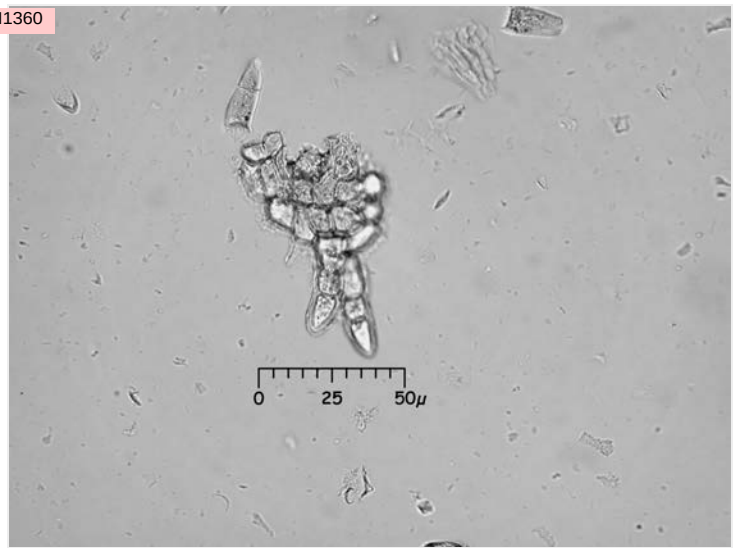
Species aduncum L. var.

Authority

Comments

Slide 1398a. Inflorescence.

Image N1360



Description

Hair base; No distinguishable center; Comprised of uniformall sized rounded cells; Cells are three-dimensional and form a mass of cells, sometimes forming a concaved body; Cells are often highly silicified.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVC

Recno 289

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1398a. Inflorescence.
Picture shows hair base with hair attached and to the far right a hair base without hairs attached.

Image N1361

Description

Hair base; No distinguishable center; Comprised of uniformall sized rounded cells; Cells are three-dimensional and form a mass of cells, sometimes forming a concaved body; Cells are often highly silicified.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 40IVC

Recno 290

Family Piperaceae

Genus Piper

Species aduncum L. var.

Authority

Comments

Slide 1398a. Inflorescence.

Image N1362

Description

Hair base; No distinguishable center; Comprised of uniformall sized rounded cells; Cells are three-dimensional and form a mass of cells, sometimes forming a concave body; Cells are often highly silicified.

Entered by Meghann O'Brien

Updated 9/19/2005

MUno 22VIIIE

Recno 129

Family Poaceae

Genus Paspalum

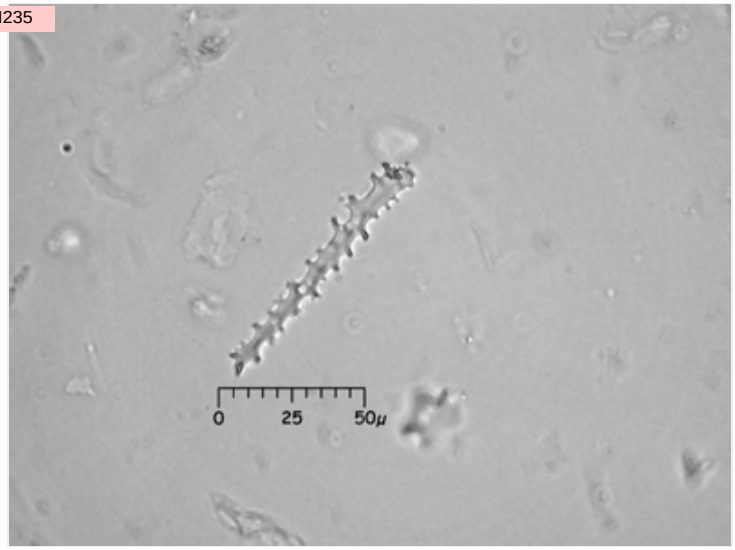
Species lividum

Authority Trin. ex Schltdl.

Comments

Tubular body
These bodies are very similar to the narrow rectangular IRP, but are tubules, not flattened pieces.
These occur mostly in non-Zea grases and rarely in Zea spp.
Diagnostic level: wild Poaceae

Image N235



Description

Tubular bodies have distinct, rounded or pointed tips at each end, since they are actually narrow cylinders, or rounded tubes, rather than flat, two-dimensional bodies. Bodies are nto twig-like or sharply curving (i.e. not bent in a zig-zag pattern). In some cases, projections are ranked at 90 degree intervals around the central spine of the body.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22IX

Recno 130

Family Poaceae

Genus Paspalum

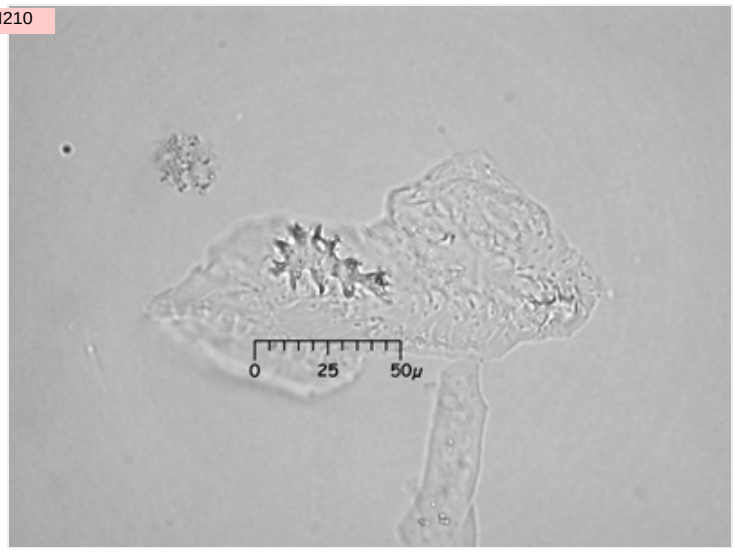
Species lividum

Authority Trin. ex Schltdl.

Comments

Burr-like spheres and elongate bodies with needle projections.
Occur mainly in Digitaria spp. and in Arundinella hispida, but not in Zea spp.
Diagnostic level: wild Poaceae

Image N210



Description

Key characteristic of this type is the shape of the projections.
In spheroid bodies, sharp, often curved projections rise barb-like from the central body. Overall appearance is of a rounded or flattened cockleburr. Bodies range from Spherical to elongate to cylindrical bodies. Projections are not cylindrical or speculate, but rather flattened and blade-like. Central spine of these bodies can be straight but often

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 30IIBg

Recno 122

Family Poaceae

Genus Zea

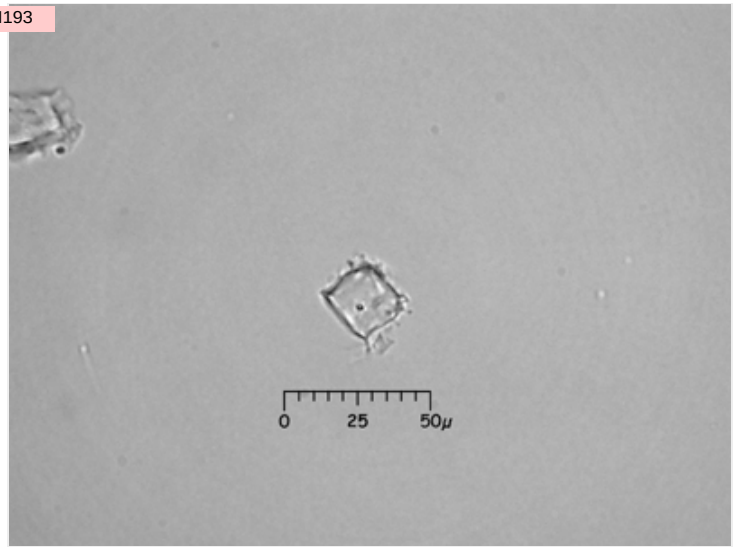
Species luxuriens

Authority (Durieu & Asch.) R.M.Bird

Comments

Diagnostic level: genus
Half-decorated rondel. Found in high numbers in teosinte fruit cases, and in very low numbers in some types of maize. A good Zea indicator, and is especially characteristic of teosinte and primitive maize. The body illustrated shows very long speculate projections. See other illustration for range of variation.

Image N193



Description

Base a rondel that is usually circular in outline, but can be square.
The upper part of the body (sides and top) is rounded to squared, or even “puffed.” The upper part of the body is decorated with beadlike (sperical-tipped) or speculate (spherical tip with a visible parallel-sided stalk) projections.
There should be more than four projections, and these are not spikes

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIIDb

Recno 126

Family Poaceae

Genus Zea

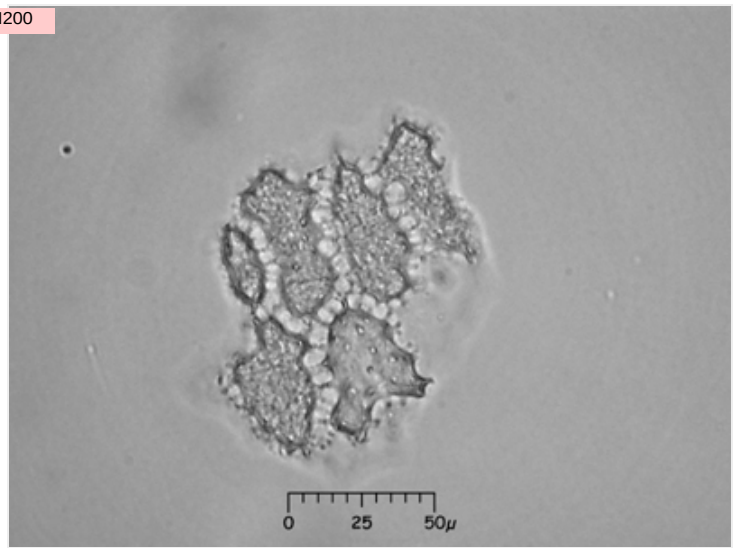
Species luxuriens

Authority (Durieu & Asch.) R.M.Bird

Comments

Sheet of robust globular bodies.
Robust globular bodies occur in maize and teosinte only, and are good Zea spp. indicators.
Diagnostic level: genus

Image N200



Description

This type is a full, three-dimensional globule with a visibule globular surface (see bottom right body insheet). Projections must be speculate to fit the type. There may be very few projections on some bodies. Key diagnostic feature of this type is that the bodies are heavily silicified -- apperaing purple under transmitted light - and hte projections are long and wide (robust, not delicate).

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIIDb

Recno 127

Family Poaceae

Genus Zea

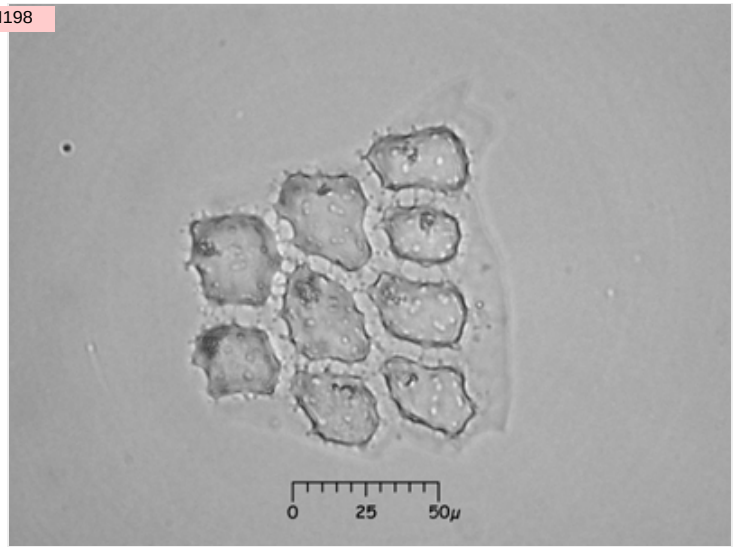
Species luxuriens

Authority (Durieu & Asch.) R.M.Bird

Comments

Diagnositic level: genus
Robust globular body.
Long sides are roughly parallel . Body may be two-dimensional and flattened, or more three-dimensional (i.e. thickness may vary considerably).
Sides may be undulating, but may not be crenate.
Projections may be distributed regularly or irregularly, as long as they are along

Image N198



Description

This type is a full, three-dimensional globule with a visibule globular surface (see bottom right body in sheet). Projections must be speculate to fit the type. There may be very few projections on some bodies. Key diagnostic feature of this type is that hte bodies are heavily silicified -- apperaing purple under transmitted light - and hte projections are long and wide (robust, not delicate).

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIIC

Recno 131

Family Poaceae

Genus Zea

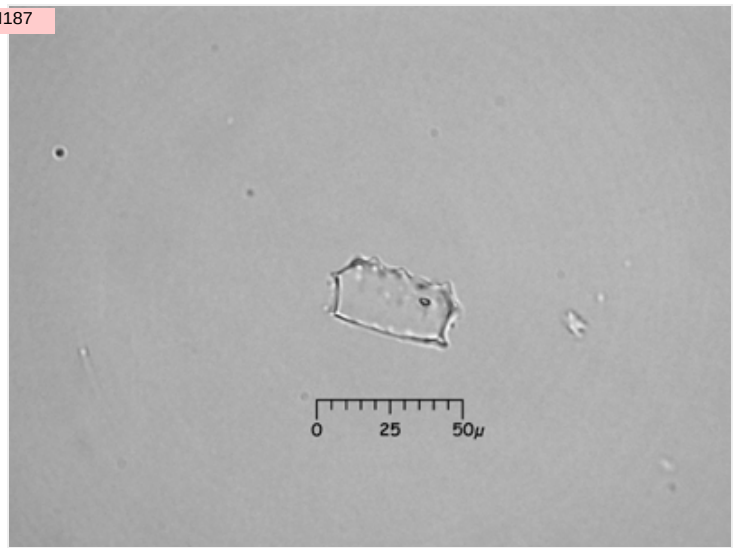
Species luxuriens

Authority (Durieu & Asch.) R.M.Bird

Comments

Half-decorated oblong body
Differs from the 1/2 decorated rondel only in that their bases are blocky, square or rectangular, not a rondel.
Often occur in dense sheets in teosinte.
Diagnostic level: genus

Image N187



Description

Base an oblong, rounded to rectangular and blocky.
The upper part of the body (sides and top) is rounded to squared, or even "puffed." The upper part of the body is decorated with beadlike (sperical-tipped) or speculate (spherical tip with a visible parallel-sided stalk) projections.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 30IIBe

Recno 105

Family Poaceae

Genus Zea

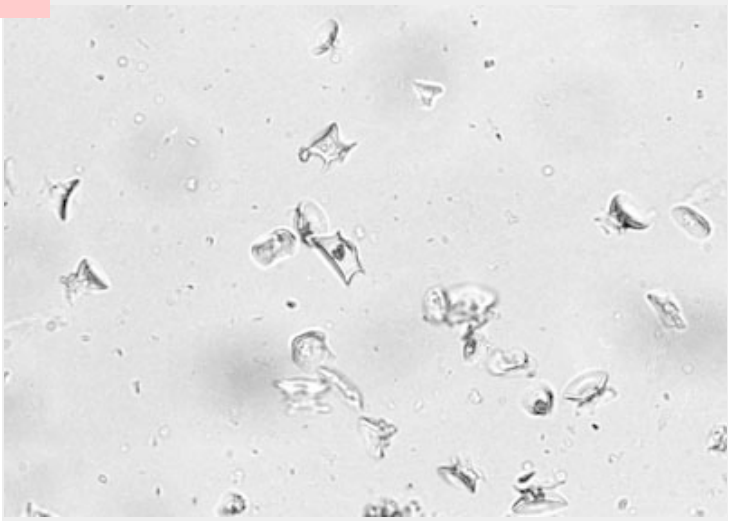
Species mays

Authority L.

Comments

wavy top rondel:
Rectangular bases, bilobate bases, and saddle bases are excluded from this type.
Occur only in maize.
Good maize indicator even within the range of teosinte.
Diagnostic level: species, domesticated

Image



Description

Base a rondel (circular to oval in shape), flat, not concave.
Base must be longer than the body is high/tall;.
Top is a single, complete wave that is equal to or less than the length of the rondel base.
Edges of the top and bottom are not ruffled.
Convergence of the sides forms the top, which is a single, undulating

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 30IIBf

Recno 120

Family Poaceae

Genus Zea

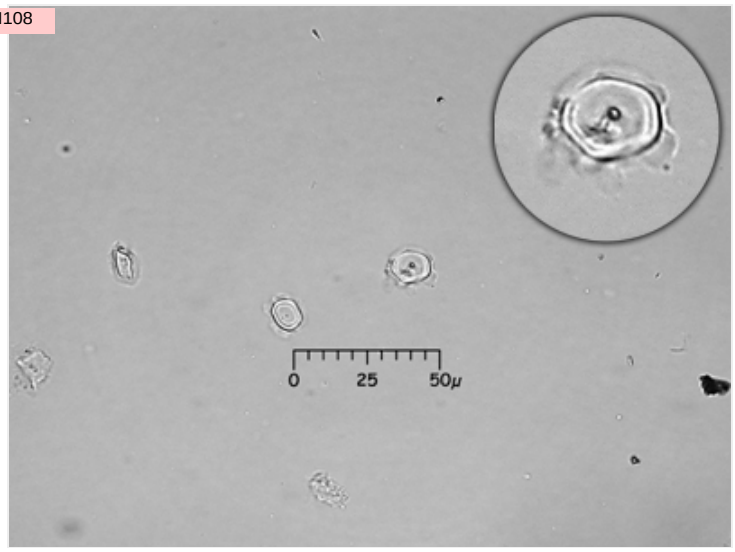
Species mays

Authority L.

Comments

Ruffle-top rondel
Descrubed by Bozarth (1993)
Occurs in genus Zea.
Diagnostic level: genus

Image N108



Description

Base is a rondel that is oval to circular in outline. Rondel must be longer than it is tall. Edges of top are ruffled or undulating, filmy in maize, more heavily silicified in teosinte.
The top does not have any acute or sharply angled edges. Tops distinctly not with spikes. Top is flat and ephemeral. View from top is outline of ruffled top crossing more heavily silicified circular outline of the

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 30IIBf

Recno 121

Family Poaceae

Genus Zea

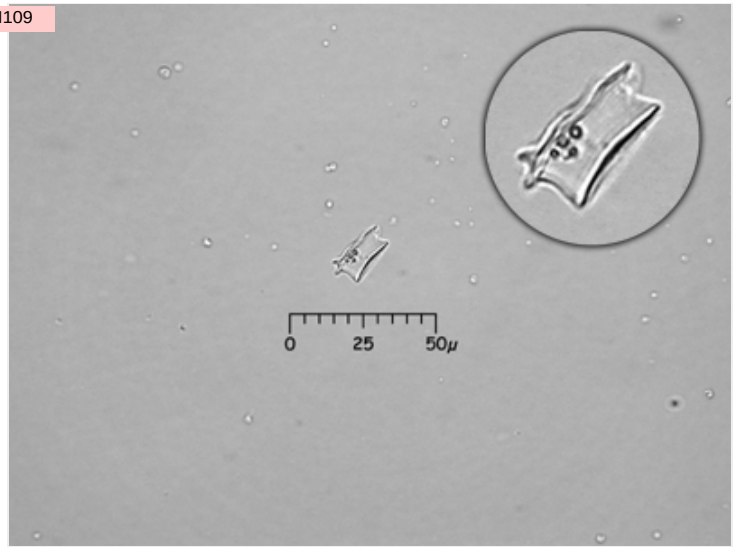
Species mays

Authority L.

Comments

Ruffle-top rondel
Descrubed by Bozarth (1993)
Occurs in genus Zea.
Diagnostic level: genus

Image N109



Description

Base is a rondel that is oval to circular in outline. Rondel must be longer than it is tall. Edges of top are ruffled or undulating, filmy in maize, more heavily silicified in teosinte.
The top does not have any acute or sharply angled edges. Tops distinctly not with spikes. Top is flat and ephemeral. View from top is outline of ruffled top crossing more heavily silicified circular outline of the

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIIB

Recno 125

Family Poaceae

Genus Zea

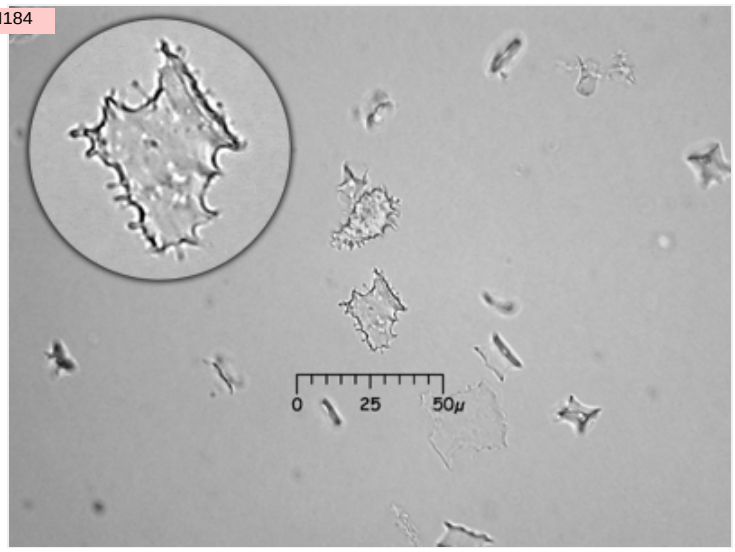
Species mays

Authority L.

Comments

Diagnostic level: Zea spp. and some other panicoid grasses.
Irregular IRP, IRP type was first described by Piperno and Pearsall (1993). IRP bodies are the product of epidermal silicification in the fruitcase, cupule, glume, and other infl. tissues. Found in Zea spp., Panicum bulbosum, and Lasiacis spp. (panicoid grasses), and Neurolepis pittieri (bamboo)

Image N184



Description

Shape is not rectangular. Bodies are often L-shaped, tringular, or other irregular shapes.
Body may be two-dimensional and flattened, or more three-dimensional (i.e. thickness may vary considerably).
Projections may be distributed regularly or irregularly, as long as they are along all surfaces (not just margins) and are speculate.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 30IIBe

Recno 118

Family Poaceae

Genus Zea

Species mays mays

Authority

Comments

wavy top rondel:Described by Bozarth (1993). Rectangular bases, bilobate bases, and saddle bases are excluded from this type. Occur only in maize. Good maize indicator even within the range of teosinte.
Diagnostic level: species, domesticated

Image N170

Description

Base a rondel (circular to oval in shape), flat, not concave.
Base must be longer than the body is high/tall;.
Top is a single, complete wave that is equal to or less than the length of the rondel base.
Edges of the top and bottom are not ruffled.
Convergence of the sides forms the top, which is a single, undulating

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 30IIBe

Recno 119

Family Poaceae

Genus Zea

Species mays mays

Authority

Comments

wavy top rondel: Described by Bozarth (1993). Rectangular bases, bilobate bases, and saddle bases are excluded from this type. Occur only in maize. Good maize indicator even within the range of teosinte.
Diagnostic level: species, domesticated

Image N179

Description

Base a rondel (circular to oval in shape), flat, not concave.
Base must be longer than the body is high/tall;.
Top is a single, complete wave that is equal to or less than the length of the rondel base.
Edges of the top and bottom are not ruffled.
Convergence of the sides forms the top, which is a single, undulating

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIIDa

Recno 128

Family Poaceae

Genus Zea

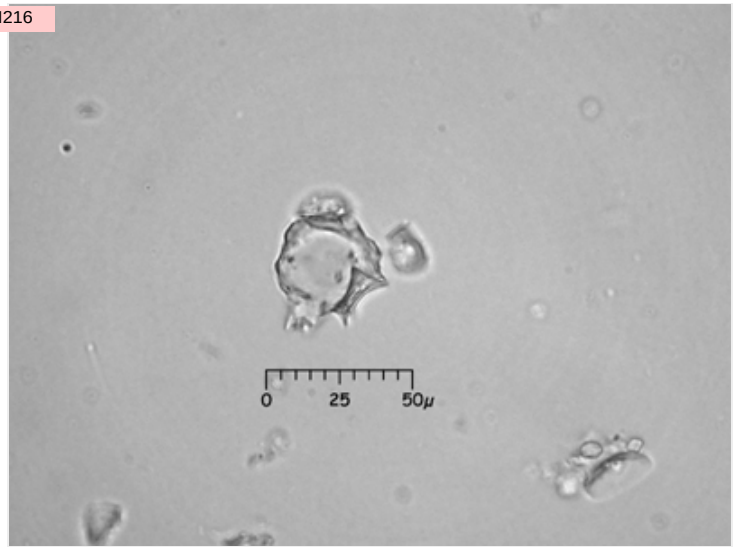
Species mays mays

Authority

Comments

Diagnostic level: species, domesticated
Gracile spherical body
This is a relatively rare type that occurs in maize, and not in teosinte or other wild panicoid grasses.
Compare to their robust cousins (Robust globular bodies) in size, nature of projections, and degree of silicification.

Image N216



Description

Gracile spherical bodies are spherical, diameter generally in the 10-15 micron range. Bodies are lighlty silicified, with short, narrow, speculate projections (which appear to break off sometimes). Projections are typically few.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22VIIIAa

Recno 124

Family Poaceae

Genus Zea

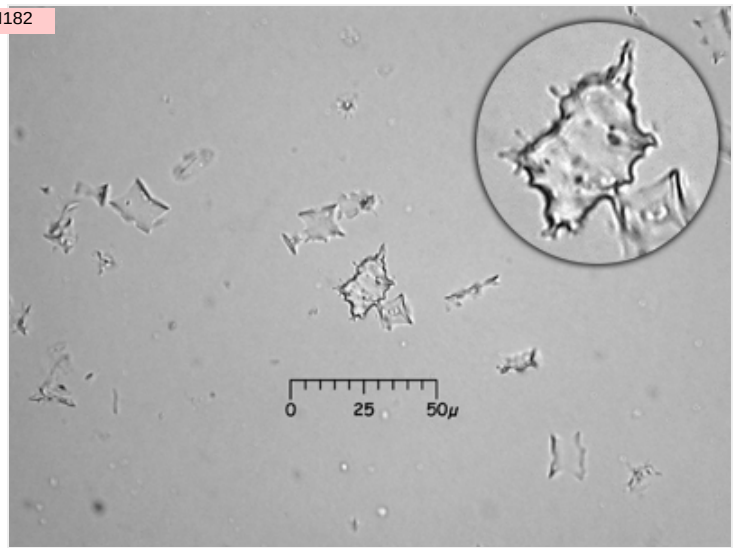
Species mays, race “pepitillo”

Authority

Comments

Rectangular IRP, Wide (>7.5 microns width). IRP type was first described by Piperno and Pearsall (1993). IRP bodies are the product of epidermal silicification in the fruitcase, cupule, glume, and other infl. tissues.
Diagnostic level: Zea spp. and some other panicoid grasses

Image N182



Description

Long sides are roughly parallel . Body may be two-dimensional and flattened, or more three-dimensional (i.e. thickness may vary considerably). Sides may be undulating, but may not be crenate. Projections may be distributed regularly or irregularly, as long as they are along all surfaces (not just margins) and are speculate. Speculate projections have a distinct stalk and head, which is rounded to

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 22XA

Recno 132

Family Poaceae

Genus Zea

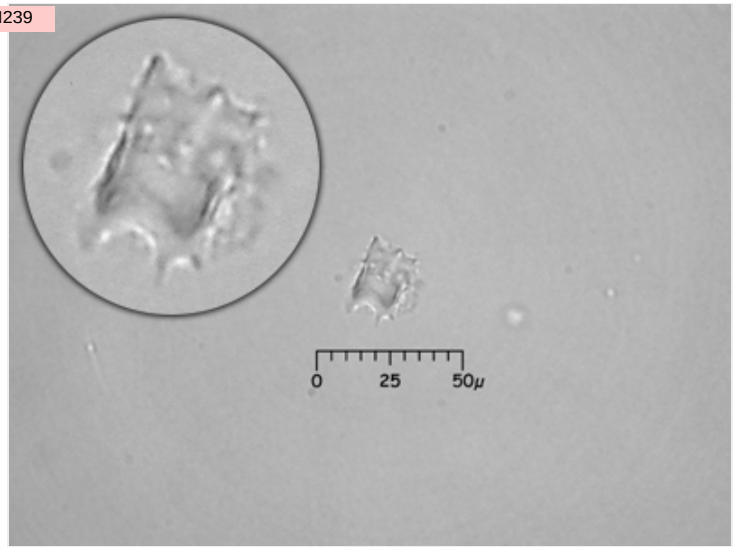
Species perennis

Authority (Hitchc.) Reeves & Mangelsd.

Comments

Body with semi-circular cuts.
Teosinte indicator.
Diagnostic level: wild Zea spp.

Image N239



Description

Rectangular in outline with irregular margins and 1-3 semi-circular cuts. Frequently cuts are taken from a “corner” of the body. Surface is undulating to roughened, and may show raised ribs that thicken the body.

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 30II

Recno 123

Family Poaceae

Genus Zea

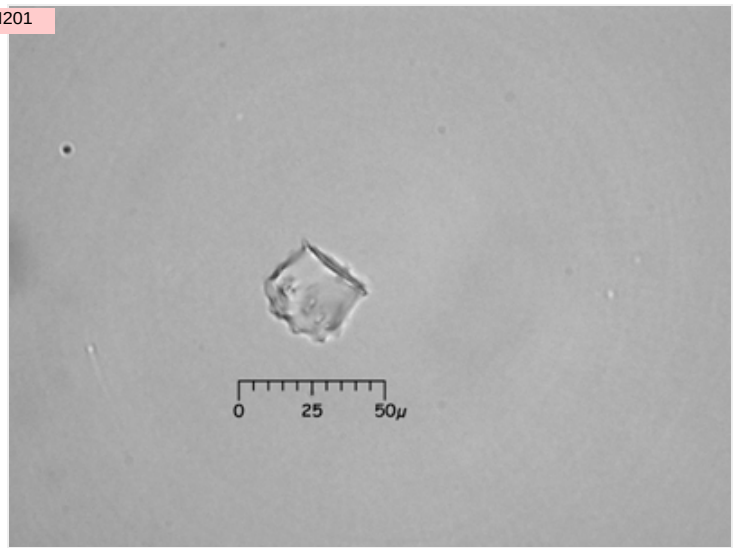
Species luxuriens

Authority (Durieu & Asch.) R.M.Bird

Comments

Diagnostic level: genus
Half-decorated rondel
Found in high numbers in teosinte fruit cases, and in very low numbers in some types of maize.
This is a good Zea indicator, and is especially characteristic of teosinte and primitive maize.
The body illustrated here shows the beadlike projections. See other

Image N201



Description

Base a rondel that is usually circular in outline, but can be square.
The upper part of the body (sides and top) is rounded to squared, or even "puffed." The upper part of the body is decorated with beadlike (sperical-tipped) or speculate (spherical tip with a visible parallel-sided stalk) projections.
There should be more than four projections, and these are not spikes

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVAa202

Recno 34

Family Sterculiaceae

Genus Guazuma

Species ulmifolia

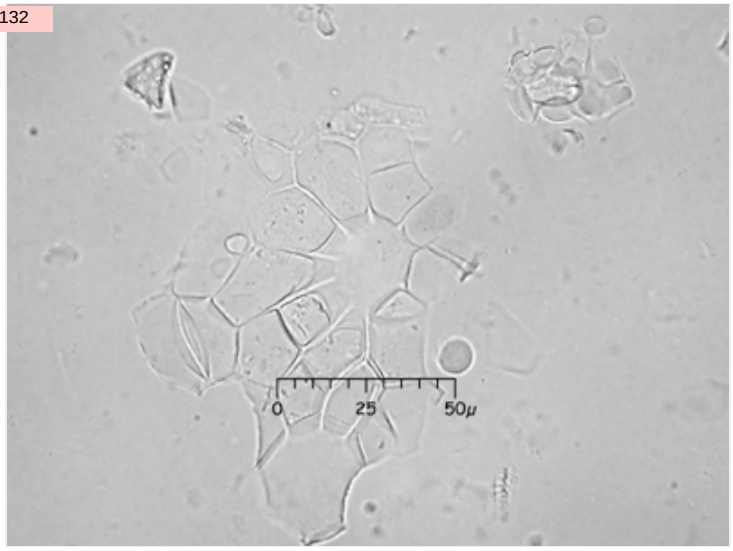
Authority Lam.

Comments

Hair base. Lightly silicified. First described by C. Veintimilla, 1991.

Diagnostic level: mixed Guazuma, Erythrina, Lithospermum

Image Z132



Description

- Hair base
- long radiating appendages; lightly silicified surrounding cells; large open circular center

Entered by Shawn K. Collins

Updated 3/1/2005

MUno 100VI

Recno 333

Family Sterculiaceae

Genus Guazuma

Species ulmifolia

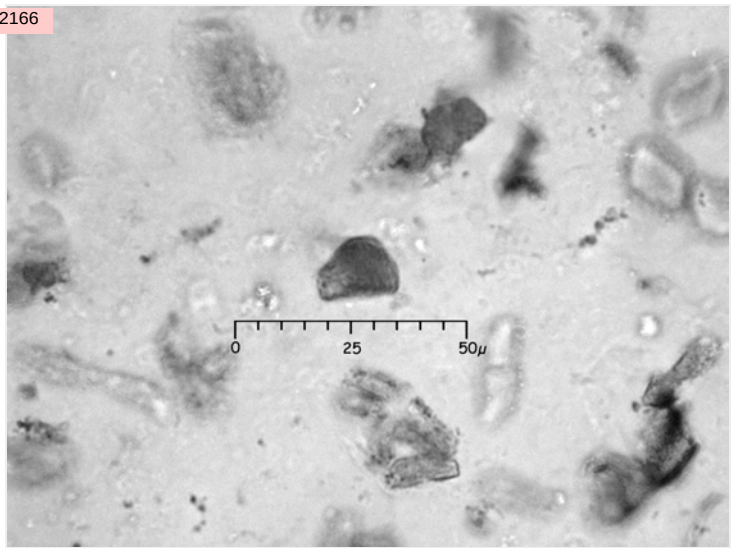
Authority

Comments

PC 2870, wood specimen

Diagnostic level: under study

Image Z2166



Description

Blocky crystals, not tabular, with granular surfaces

Entered by Deborah M. Pearsall

Updated 8/28/2012

MUno 100VI

Recno 334

Family Sterculiaceae

Genus Guazuma

Species ulmifolia

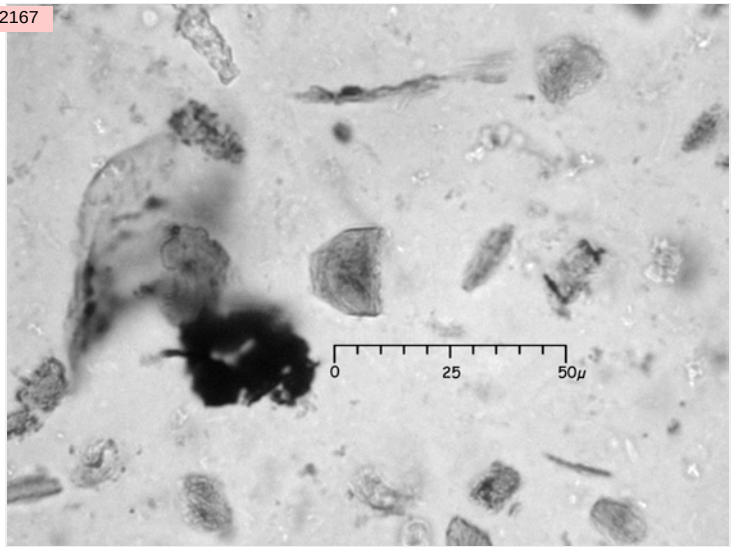
Authority

Comments

PC 2870, wood specimen

Diagnostic level: under study

Image Z2167



Description

Blocky crystals, not tabular, with granular surfaces

Entered by Deborah M. Pearsall

Updated 8/28/2012

MUno 100VB

Recno 335

Family Sterculiaceae

Genus Guazuma

Species ulmifolia

Authority

Comments

PC 2870, wood specimen

Diagnostic level: under study

Image Z2168

Description

tabular crystals with granular surfaces. Probably calcium carbonate. Tabular crystals with curved and/or right angle edges

Entered by Deborah M. Pearsall

Updated 8/28/2012

MUno 40IIIAb200Bd

Recno 330

Family Sterculiaceae

Genus Wattheria

Species americana

Authority

Comments

PC Clark 33

Diagnostic: Watteria, Sterculiaceae

Image Z2170

Description

Unicellular hair, long, non-armed, smooth surface, base occurs as part of same cell, attachment of base to hair is rounded

Entered by Deborah M. Pearsall

Updated 8/28/2012

MUno 20VCa

Recno 61

Family Ulmaceae

Genus Celtis

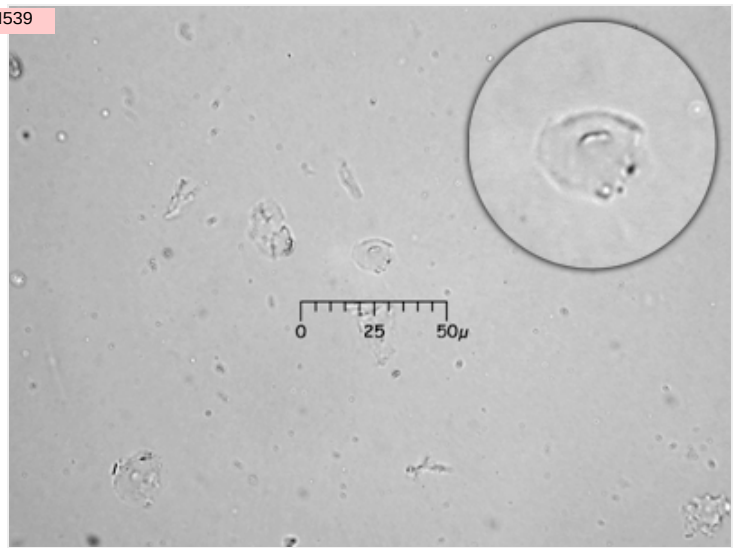
Species schippii

Authority Standl.

Comments

20 V a,b, and c separated only by arrangement of conical bodies.
20 V Ca describes when these conical bodies occur singly.
Diagnostic level: species

Image N539



Description

- Masses of hat-shaped bodies
- Rounded and conical, bottom flattened and elongated

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20VCb

Recno 62

Family Ulmaceae

Genus Celtis

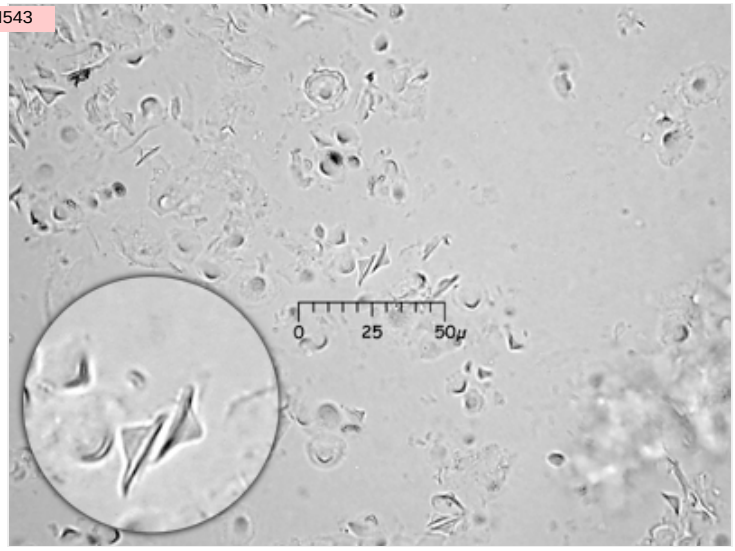
Species schippii

Authority Standl.

Comments

Occurs singly in Celtis schippii leaf and fruit.
20 V a,b, and c separated only by arrangement of conical bodies.
20 V Ca descibes a singly occuring conical body.
20 V Cb describes when 2 of these bodies are fused along their flat surfaces.
20 V Cc describes when these conical

Image N543



Description

- Small epidermal cells
- Hat-shaped , conical, or triangular in appearance
- Bottom flattened and elongated
- Rounded (but not necessarily circular) in top view, with a smaller and darker circle in the center (may not be in exact center of body)

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 20VCc

Recno 63

Family Ulmaceae

Genus Celtis

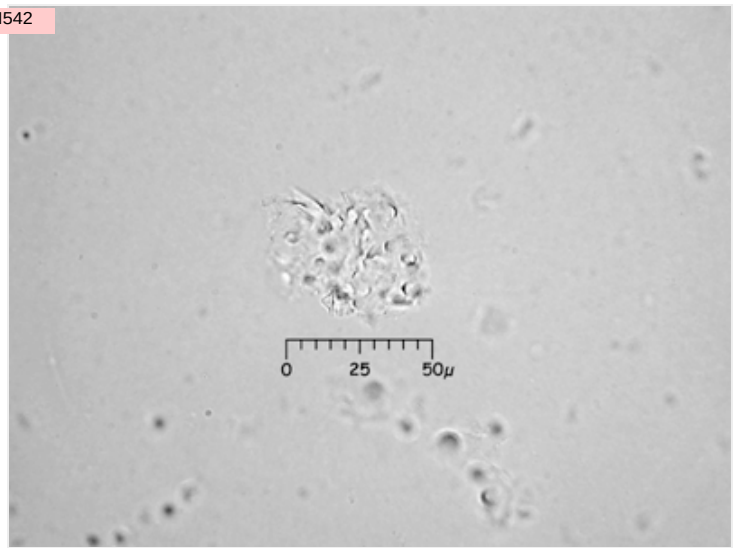
Species schippii

Authority Standl.

Comments

20 V a,b, and c separated only by arrangement of conical bodies.
20 V Cc describes when these conical bodies occur in fused masses.
Diagnostic level: species

Image N542



Description

- Masses of hat-shaped bodies
- Rounded and conical, bottom flattened and elongated

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 22IE

Recno 64

Family Ulmaceae

Genus Celtis

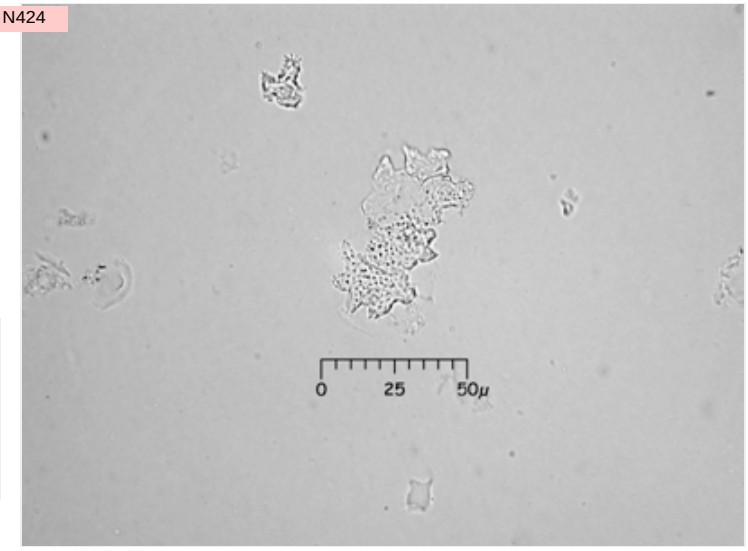
Species schippii

Authority Standl.

Comments

Seed or fruit epidermal cells.
Diagnostic level: species

Image N424



Description

- Seed epidermis
- Anticlinal cells
- Surface with projections or perforations (appear to be dark spots or dots)
- No double outline
- sinuous shape in outline

Entered by Karol Chandler-Ezell

Updated 3/1/2005

MUno 20VCa

Recno 209

Family Ulmaceae

Genus Celtis

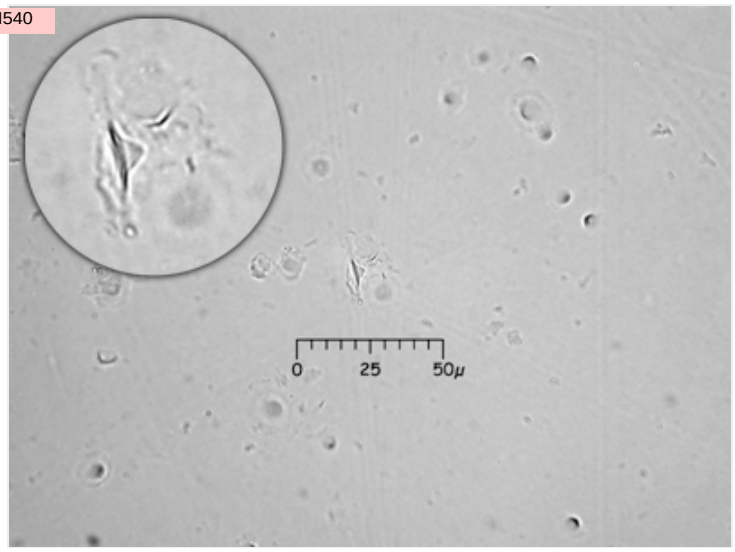
Species schippii

Authority Standl.

Comments

See Record #61 for another view.
20 V a,b, and c separated only by arrangement of conical bodies.
20 V Ca describes when these conical bodies occur singly.
Diagnostic level: species

Image N540



Description

- Masses of hat-shaped bodies
- Rounded and conical, bottom flattened and elongated

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 20VCa

Recno 210

Family Ulmaceae

Genus Celtis

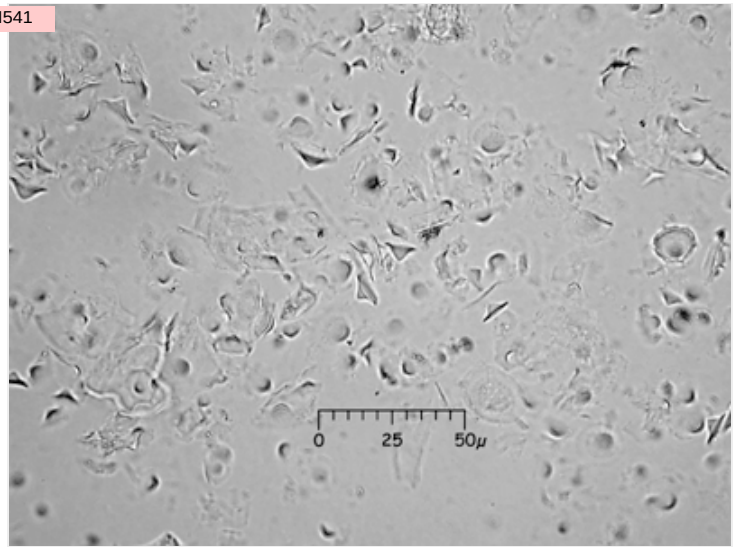
Species schippii

Authority Standl.

Comments

See Record #63 for another view.
20 V a,b, and c separated only by arrangement of conical bodies.
20 V Cc describes when these conical bodies occur in fused masses.
Diagnostic level: species

Image N541



Description

- Masses of hat-shaped bodies
- Rounded and conical, bottom flattened and elongated

Entered by Karol Chandler-Ezell

Updated 10/15/2002

MUno 22IE

Recno 217

Family Ulmaceae

Genus Celtis

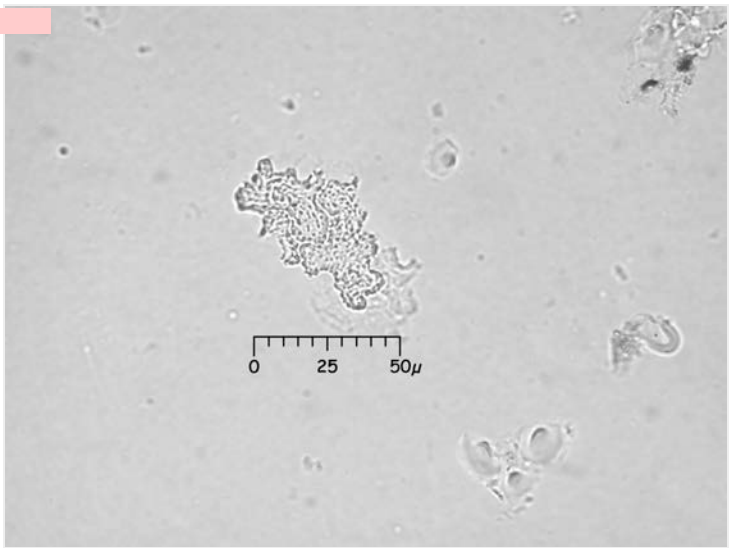
Species schippii

Authority

Comments

Occurs in fruit. Type defined by Cesar Veintimilla 05/1991.
Diagnostic level: species

Image



Description

Epidermal non-quadrilateral; Anticlinal cells; Surface with projections or perforations; Not double outline; Sinuous shape.

Entered by Meghann O'Brien

Updated 2/22/2005

MUno 40IVBa400

Recno 225

Family Ulmaceae

Genus Trema

Species integerrima

Authority

Comments

Type defined by Cesar Veintimilla 06/1991.
Diagnostic level: genus

Image

Description

Hair cell base; Rounded cells; Large central cell rounded with clear divisions that appear inside of base; Central.

Entered by Meghann O'Brien

Updated 2/23/2005

MUno 40IVBa400

Recno 240

Family Ulmaceae

Genus Trema

Species integerrima

Authority

Comments

Type defined by Cesar Veintimilla 06/1991.
Diagnostic level: genus

Image

Description

Hair cell base; Rounded cells; Large central cell rounded with clear divisions that appear inside of base; Central.

Entered by Meghann O'Brien

Updated 3/7/2005

MUno 40IIIAb200Bb

Recno 44

Family Ulmaceae

Genus Trema

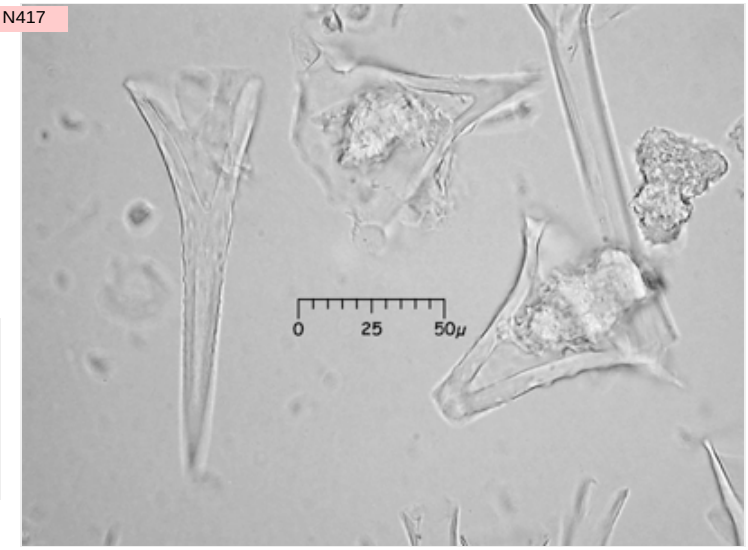
Species micrantha

Authority (L.) Blume

Comments

Hair often has cystoliths inserted in base. Some examples have slight surface texturing, but most are smooth.
Diagnostic level: genus

Image N417



Description

- Smooth tip
- Double outline
- un-armed body
- Wide, splayed base
- Often has cystolith inserted in base

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IIIAb200Bb

Recno 45

Family Ulmaceae

Genus Trema

Species micrantha

Authority (L.) Blume

Comments

Hair. Note cystoliths inserted in the base.
Diagnostic level: genus

Image N416

Description

- Smooth tip
- Double outline
- unarmed body
- Wide, splayed base
- Often has cystolith inserted in base

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IVBa3

Recno 46

Family Ulmaceae

Genus Trema

Species micrantha

Authority (L.) Blume

Comments

Hair base. Only some of the smaller cells are still with the hair base in this example.
Diagnostic level: genus

Image N415

Description

- epidermal appendage
- hair cell base

central cell isisodiametric, undivide, surrounded by smaller cells

Entered by Karol Chandler-Ezell

Updated 10/7/2002

MUno 40IIIAb200Bb

Recno 222

Family Ulmaceae

Genus Trema

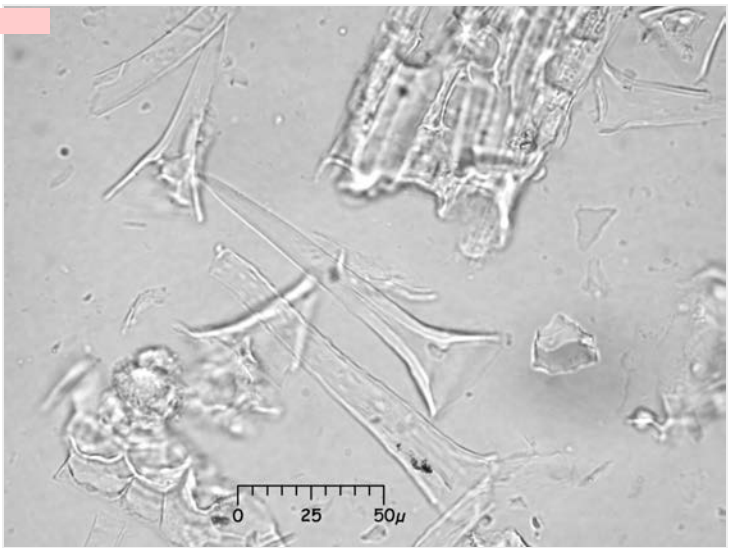
Species micrantha

Authority

Comments

Type defined by Cesar Veintimilla 05/1991.
Diagnostic level: genus

Image



Description

Unicellular hair; Long, non-armed; Some hairs may have low relief bumps; Smooth surface; Base occurs as part of same cell, but may break off; May have “V” shape or rounded base.

Entered by Meghann O’Brien

Updated 2/23/2005

MUno 100ID

Recno 232

Family Ulmaceae

Genus Trema

Species micrantha

Authority (L.) Blume

Comments

Slide 466 leaf.
Diagnostic level: generalized arboreal

Image

Description

Cystolith; Highly rugulose; Irregular shape; Different sizes; Bulbous with distinct stalk and bulb.

Entered by Meghann O’Brien

Updated 2/24/2005

MUno 80IKa

Recno 312

Family Zingiberaceae

Genus Costus

Species guanaienis

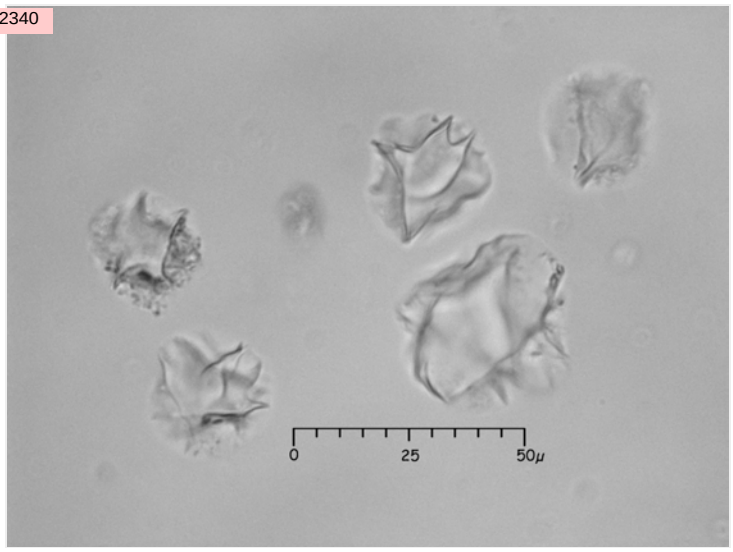
Authority

Comments

Diagnostic level: Potential species-level diagnostic, under study. Type overlaps with 80IKa, but is distinguished by larger size.

Occurs in rhizome.

Image Z2340



Description

Sphere with acute, curved, pointed projections. Size range in *Costus guanaiensis* 15 - 40 microns, but 25 - 30 micron range most common. Compare to 80IKa occuring in *Calathea allouia*.

Entered by Neil A. Duncan

Updated 4/23/2010

MUno 80IKa

Recno 315

Family Zingiberaceae

Genus Costus

Species guanaienis

Authority

Comments

Diagnostic level: Potential species-level diagnostic, under study. Type overlaps with 80IKa, but is distinguished by larger size.

Occurs in rhizome.

Image 2341

Description

Sphere with acute, curved, pointed projections. Size range in *Costus guanaiensis* 15 - 40 microns, but 25 - 30 micron range most common. Compare to 80IKa occuring in *Calathea allouia*.

Entered by Neil A. Duncan

Updated 4/23/2010

MUno 80ICa2

Recno 310

Family Zingiberaceae

Genus Costus

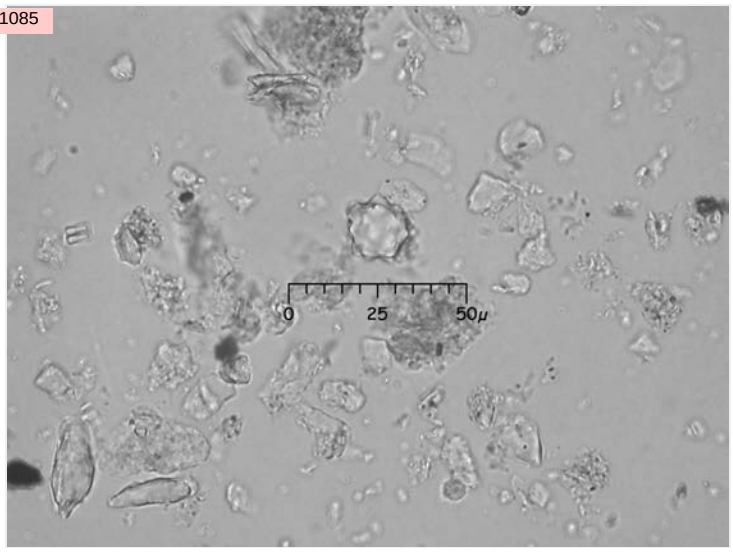
Species guaniensis

Authority

Comments

Large nodular sphere, 18 microns and larger in size, with short projections with large basal diameter. Sphere can be slightly irregulariy shaped.
Diagnostic level: Family

Image Z1085



Description

- Spheroidal, slightly variable shape
- Surface nodular with large basal diameter
- Projections irrregularly shaped and spaced
- Size large (> 18 microns)

Entered by Neil A. Duncan

Updated 5/30/2006

MUno 80ICf

Recno 311

Family Zingiberaceae

Genus Costus

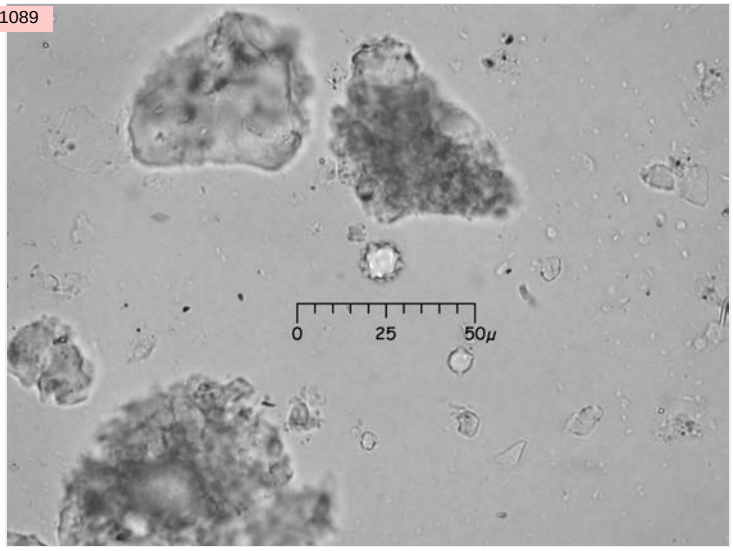
Species guaniensis

Authority

Comments

These spheres have nodular and spinulose projections or silia. Nodular projections outnumber spinulose or cilia. Projections are tightly spaced.
Diagnostic level: Under investigation.

Image Z1089



Description

- Spheroidal, slightly variable shape
- Surface nodular with spinulose projections or cilia
- Projections tightly spaced

Entered by Neil A. Duncan

Updated 5/30/2006

MUno 80ICc

Recno 309

Family Zingiberaceae

Genus Costus

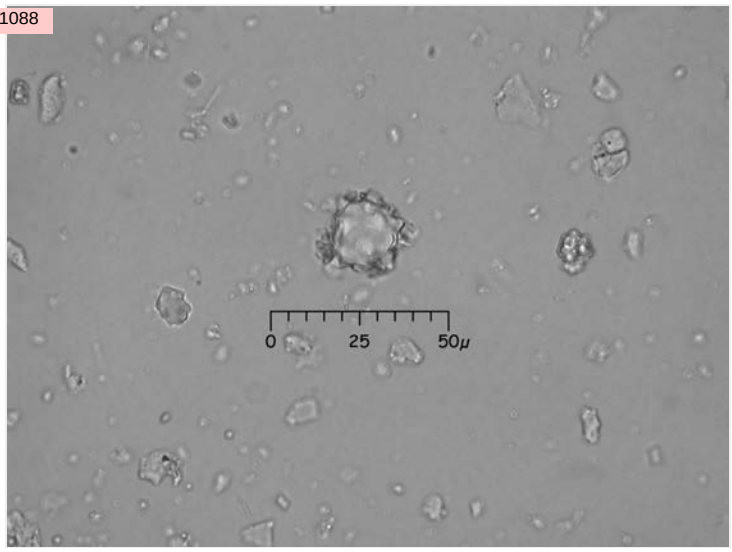
Species scaber

Authority

Comments

Also occurs in the Bombacaceae. Diagnostic level: mixed, Zingiberaceae, Bombacaceae. There are subtle differences in the smoothness and abundance of nodules between the two families.

Image Z1088



Description

- spheres with nodular projections
- nodule surfaces are both smooth and ruminate (roughened, chewed--old term was serrate)
- Nodular-tip is obtuse, sides uneven
- Nodules regularly arranged, almost spirally ranked

Entered by Neil A. Duncan

Updated 2/7/2008

MUno 80IIIC

Recno 424

Family Zingiberaceae

Genus Costus

Species scaber

Authority

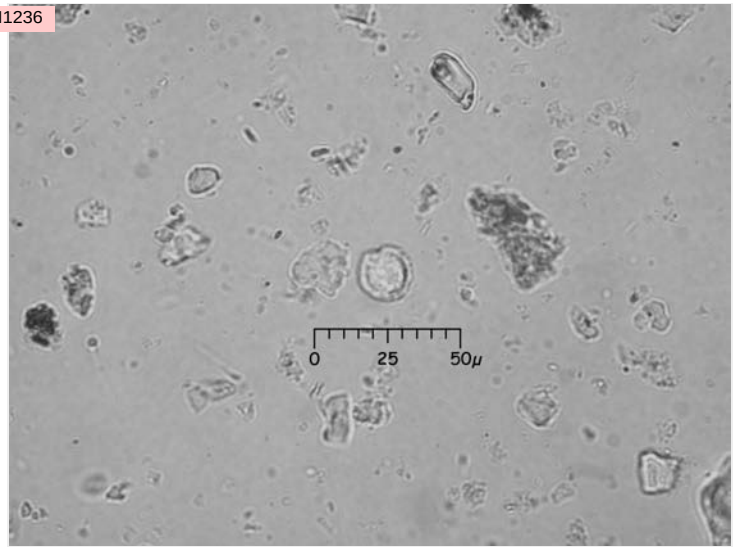
Comments

PC2744, root
Type originally defined by Karol Chandler-Ezell.

Image shows top view; note the narrow rim.

Diagnostic level: under study

Image N1236



Description

large conical body with large dome (projection) and a narrow rim with a lightly decorated edge. Granular to rugulose surface

Entered by Deborah M. Pearsall

Updated 10/17/2012

MUno 80ICf

Recno 312

Family Zingiberaceae

Genus Renealmia

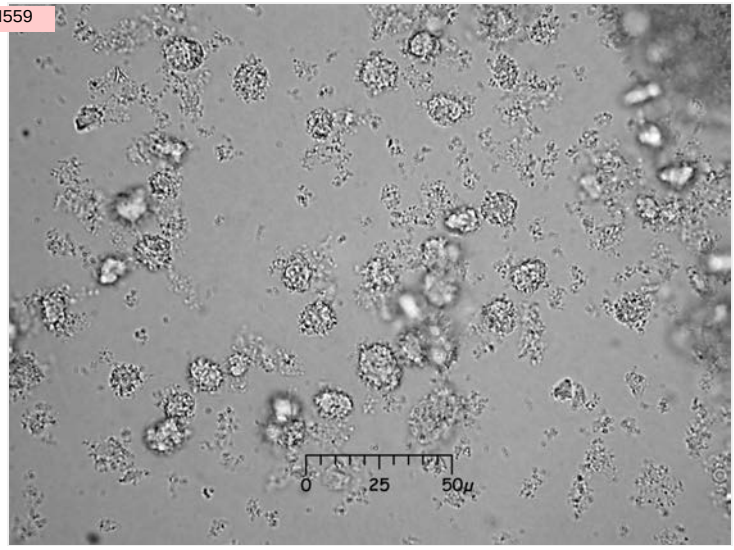
Species oligosperma

Authority

Comments

Diagnositc level: under study. Also observed in Donax, Thalia (Marantaceae)

Image N559



Description

spheroidal phytoliths with nodules and cilia or spinules on surface

Entered by Neil A. Duncan

Updated 5/31/2006