



# DE DISTURBANCE ECOLOGY

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[www.disturbance.uni-bayreuth.de](http://www.disturbance.uni-bayreuth.de)



## Field Photo Herbarium

2nd Edition, Jan. 2018

North-Peru / Piura Region  
Sechura Desert and Dry Forest

Prof. Dr. Michael Richter (University Erlangen), Prof. Dr. Anke Jentsch and  
Dr. Andreas von Heßberg (University Bayreuth); few photos from Internet. With many thanks  
to Prof. Dr. Rodolfo Rodriguez Arismendiz and Luis Urbina Zapata (Universidad Piura).



# Plant Species List

(all species, found on and near the plots)

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*Acacia aroma*



*Acacia aroma*



*Acacia macracantha*



*Acacia macracantha*



ASU  
195853



ASU Herbarium Plant Material  
Barcode  
ASU0005736

PLANTS OF THE DOMINICAN REPUBLIC  
Arizona State University  
*Acacia macracantha* Humb. & Bonp. ex Willd.  
Prov. Peravia  
La Horma (de Ocoa) 24 km north of San Jose de Ocoa.  
Flowers yellow. Almost no natural vegetation, abandoned fields.  
1050 m.  
C. L. Jones 81 11 Aug 1989  
With T. Zanoni



*Acalypha setosa*



*Acanthospermum hispidum*





*Alternanthera halimifolia*



*Alternanthera halimifolia*



Leaves are not necessarily silver hairy or with glands



*Alternanthera halimifolia*



*Alternanthera peruviana*



*Alternanthera pubiflora*



© Oliver Whaley/Darwin Project 15016/RBG Kew

*Alternanthera pubiflora*



*Amaranthus hybridus*



*Anthehora hermaphrodita*





*Anthephora hermaphrodita*



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*Aristida adscensionis*



## *Aristida adscensionis*



**Plant:** Annual grass 10-30 cm; inflorescence narrow and spikelike, often with a purplish color; spikelets with one floret, unequal glumes; lemma elongated into a twisted awn column, apex bearing three awns 5-15 mm long. **Notes:** This is a very widespread species in the drier areas of the world. Because of the numerous morphological forms many infraspecific names have been proposed. However, many of the distinctive forms are connected by intergrading forms, and for this reason no infraspecific taxa are recognized in this Catalogue pending a world-wide revision of this taxon.

**Plants** short- to long-lived annuals. **Culms** (3)10-50(80) cm, often highly branched above the base. **Leaves** cauline, glabrous; **sheaths** shorter than the internodes, not disintegrating into threadlike fibers; **ligules** 0.4-1 mm; **blades** 2-14 cm long, 1-2.5 mm wide, flat to involute. **Inflorescences** panicles, 5-15(20) cm long, 0.5-3 cm wide, often interrupted below; **nodes** glabrous or with straight, less than 0.5 mm hairs; **primary branches** 1-4 cm, erect to ascending, without axillary pulvini, with 3-8 spikelets. **Spikelets** crowded. **Glumes** unequal, 1-veined, acuminate; **lower glumes** 4-8 mm; **upper glumes** 6-11 mm; **calluses** 0.5-0.8 mm; **lemmas** 6-9 mm, slightly keeled, midveins scabrous, junction with the awns not evident; **awns** not disarticulating at maturity, flattened and straight to somewhat curved at the base, central rib flanked by equally wide pale wings; **central awns** 7-15(20) mm; **lateral awns** somewhat shorter, occasionally only 1-2 mm; **anthers** 3, 0.3-0.7 mm.  $2n = 22$ . *Aristida adscensionis* grows in waste ground, along roadsides, and on degraded rangelands and dry hillsides, often in sandy soils. It is associated with woodland, prairie, and desert shrub communities. Its range extends from the United States south through Mexico and Central America to South America. Because *A. adscensionis* is highly variable in height, panicle size, and awn development, several varieties have been described. None are recognized here because most of the variation appears to be environmentally induced.

*Aristida chilayensis*



Nº 2141984

FIELD MUSEUM  
OF  
NATURAL HISTORY

Field Museum of Natural History  
*Aristida chilayensis* Tovar  
det. J.W. Horn, Feb. 1995

PLANTAS DEL PERU  
Universidad Nacional de Cajamarca  
(CPUN) POACEAE  
*Aristida chilayensis* Tovar

Depto. La Libertad: Prov. Pacasmayo. Lugar: a  
3 Km. en la carretera hacia Cajamarca, a  
partir de la Panamericana. Suelo arenoso y  
árido, cerca a Paypay, en el cerro de El  
Mango.  
Alt. 350 m.

Gramínea cespitosa anual y suave cuando las  
plantas están jóvenes.

J. G. Sánchez Vega 262

22 MAR 1987



*Aristida chiclayensis*



*Armatocereus cartwrightiana*



*Batis maritima*



*Boerhavia erecta*



© Pedro Tenorio Lezama  
Malezas de México - Weeds of Mexico  
www.malezasdemexico.net



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www.malezasdemexico.net



*Boerhavia intermedia*



*Bouteloua aristidoides*



*Bursera graveolens*



## *Caesalpinia pulcherrima*



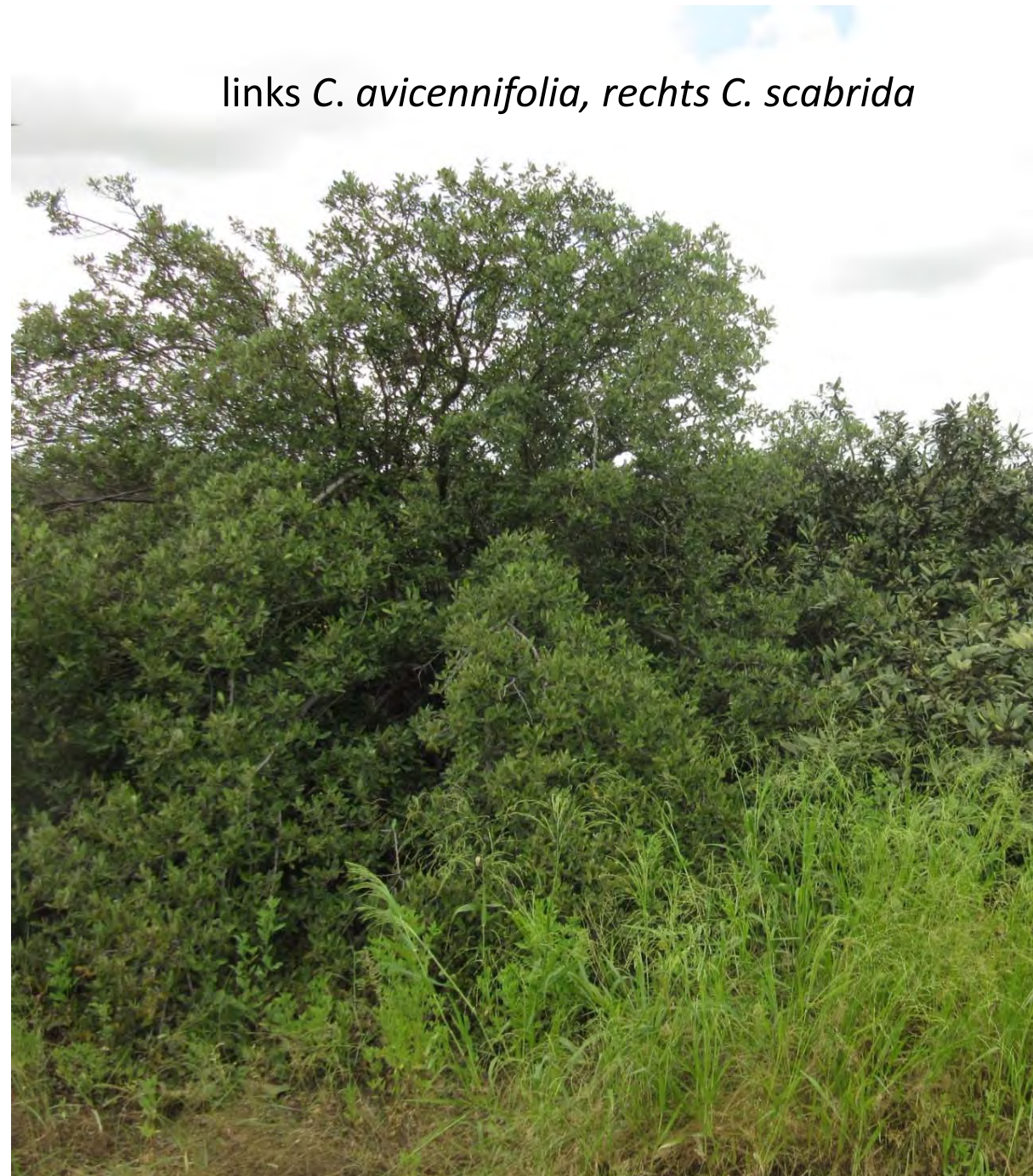
*Caesalpinia pulcherrima* is planted as a ornamental shrub / tree in all tropical areas and occurs sometimes spontaneous along roads etc. The colour of the flowers and the growing habitus can vary much. Until now not on our plots.

*Calandrinia ciliata*



*Capparis avicennifolia*

links *C. avicennifolia*, rechts *C. scabrida*



*Capparis avicennifolia*



*Capparis avicennifolia*

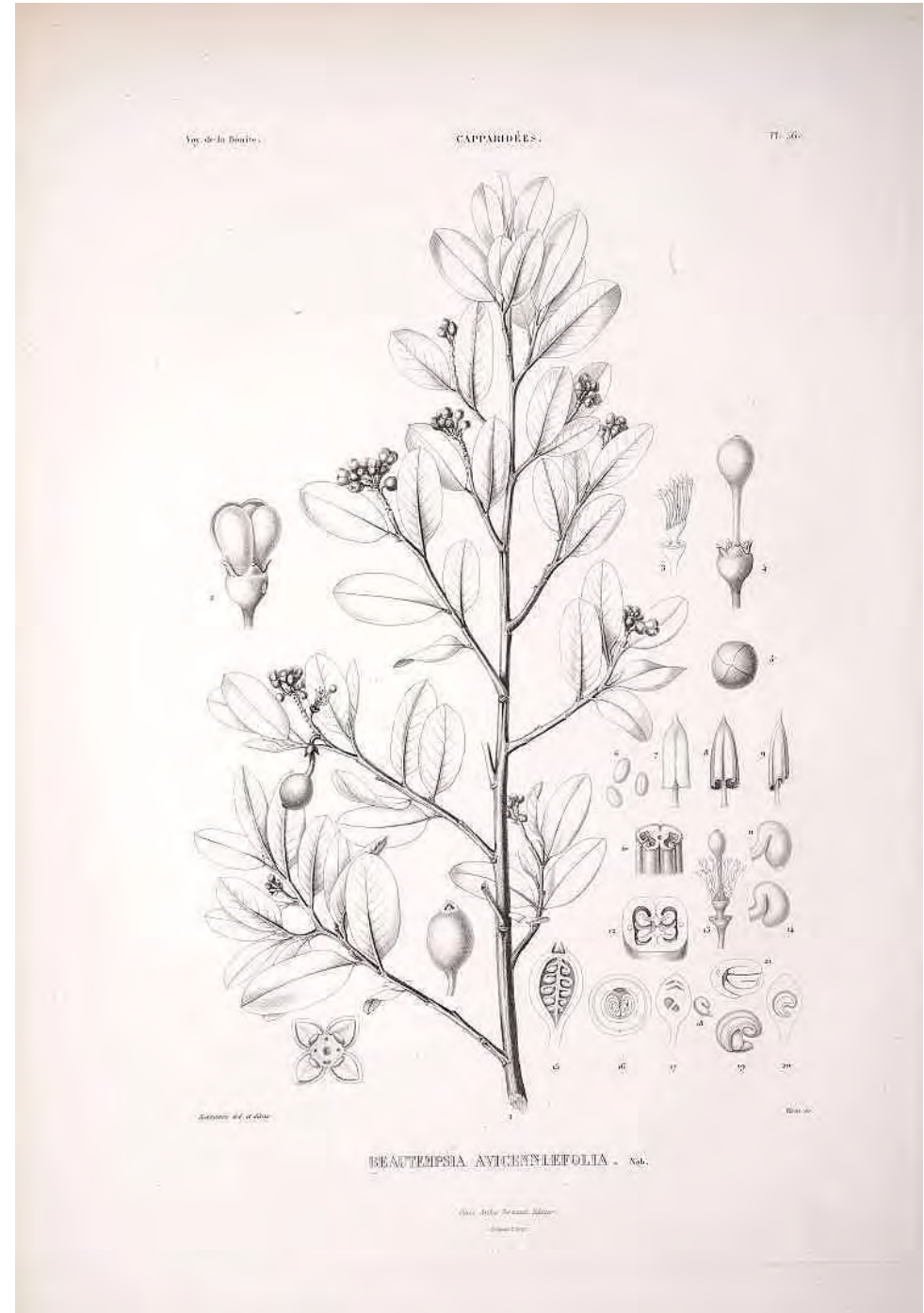


© Oliver Whaley/Darwin Project 15016/RBG Kew



2 13:11

© Oliver Whaley/Darwin Project 15016/RBG Kew





*Capparis crotonoides*



*Capparis scabrida*



*Capparis scabrida*



## *Capparis scabrida*



**Ecology:** Tropical America (South-east Ecuador, North of Peru). Endemic forests.

**Description:** Tree/Shrub (height: 4 to 8 m). Long shape leafs (long: 70 to 160 mm). Leaf basis stub, fruit 70 to 120 mm long.

*Cenchrus echinatus*



*Cenchrus pilosus*



*Cenchrus pilosus*



*Chenopodium ambrosioides*





*Chloris virgata*



*Convolvulus arvensis*



*Cordia lutea*



## *Crotalaria incana*

### **Description:**

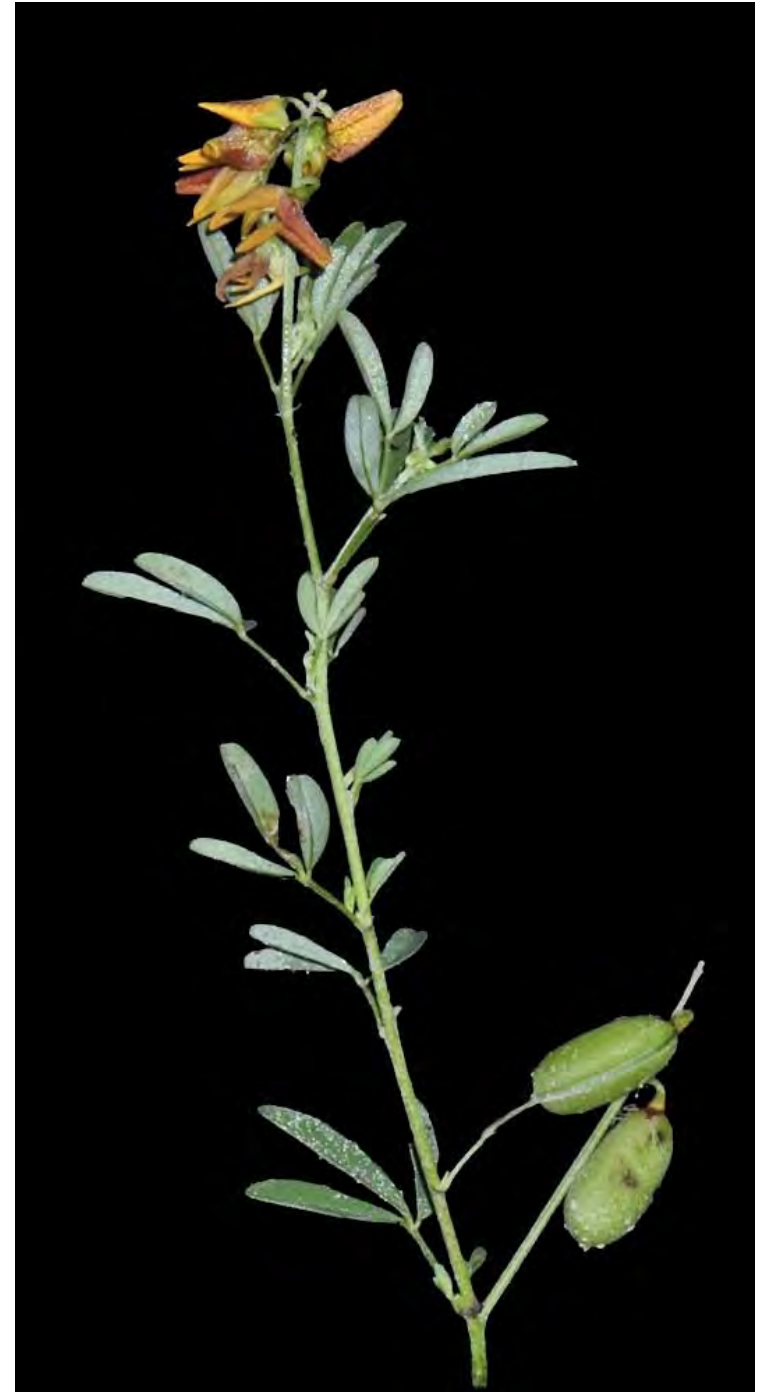
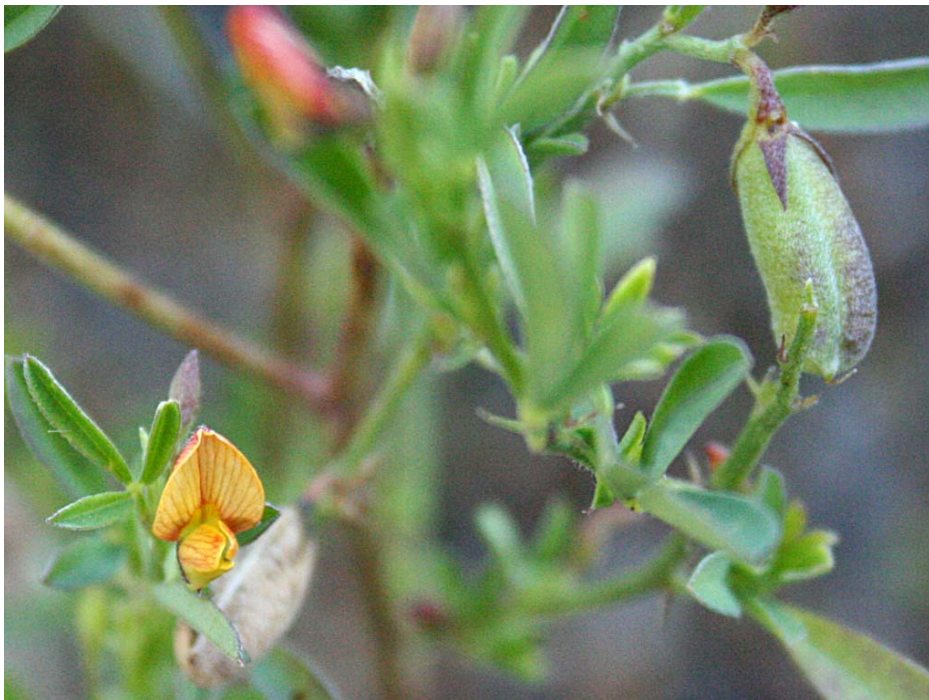
2 or 3 feet high. Stems erect and often branching, mostly covered with prominent soft gray hairs on most parts above the ground. Leaflets 3, ovate to oval with rounded ends, both surfaces of the blades silky with hairs. Flowers yellow, 12 to 20 in terminal and sometimes lateral racemes. Pods silky, slightly curved, inflated, 1 to 1-1/2 inches long, dark brown or blackish at maturity. Seeds 20 to 30, green at maturity.

### **Habitat:**

Found in moderately moist regions at lower to middle elevations. A common weed in waste places, pastures, and cultivated areas. After rain covering huge areas.



*Crotalaria pumila*



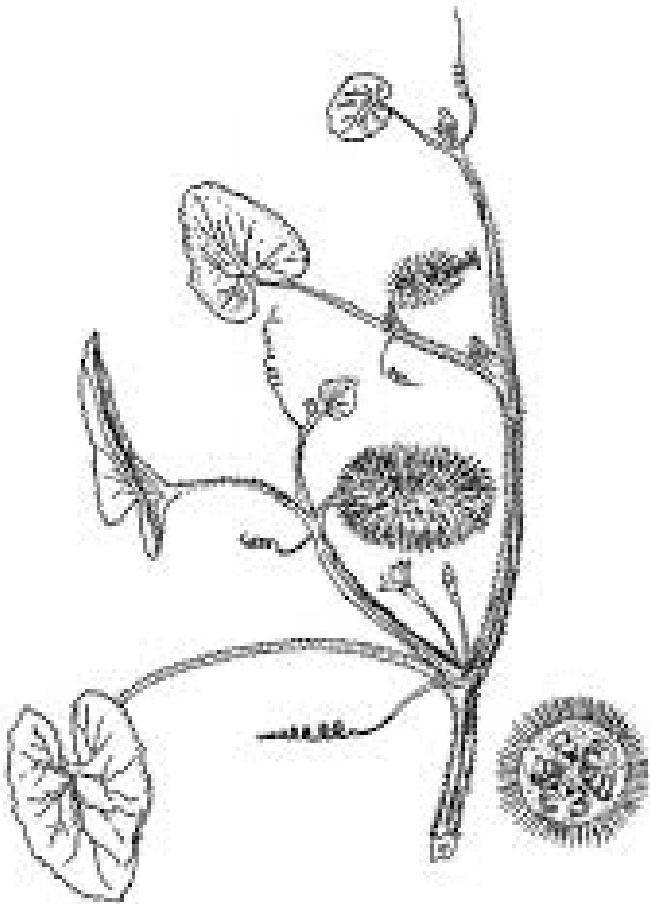
*Croton lobatus*



*Cryptocarpus pyriformis*



## *Cucumis dipsaceus*



To determine the plenty species / subspecies of *Cucumis*, it is the best to differ them in those with and without twines, with hairless or fluffy or warty fruits, with deeply divided or lobed or entire leaf margins. It is not possible to differentiate all these species for 100%. On the next page the different species of *Cucumis* are just numbered. Notice also *Ecballium elaterium*, *Luffa aegyptiaca* and *Momordica charantia*.



*Cucumis spec.*



Cucumis 1



Cucumis 3



Cucumis 5



Cucumis 2



Cucumis 4



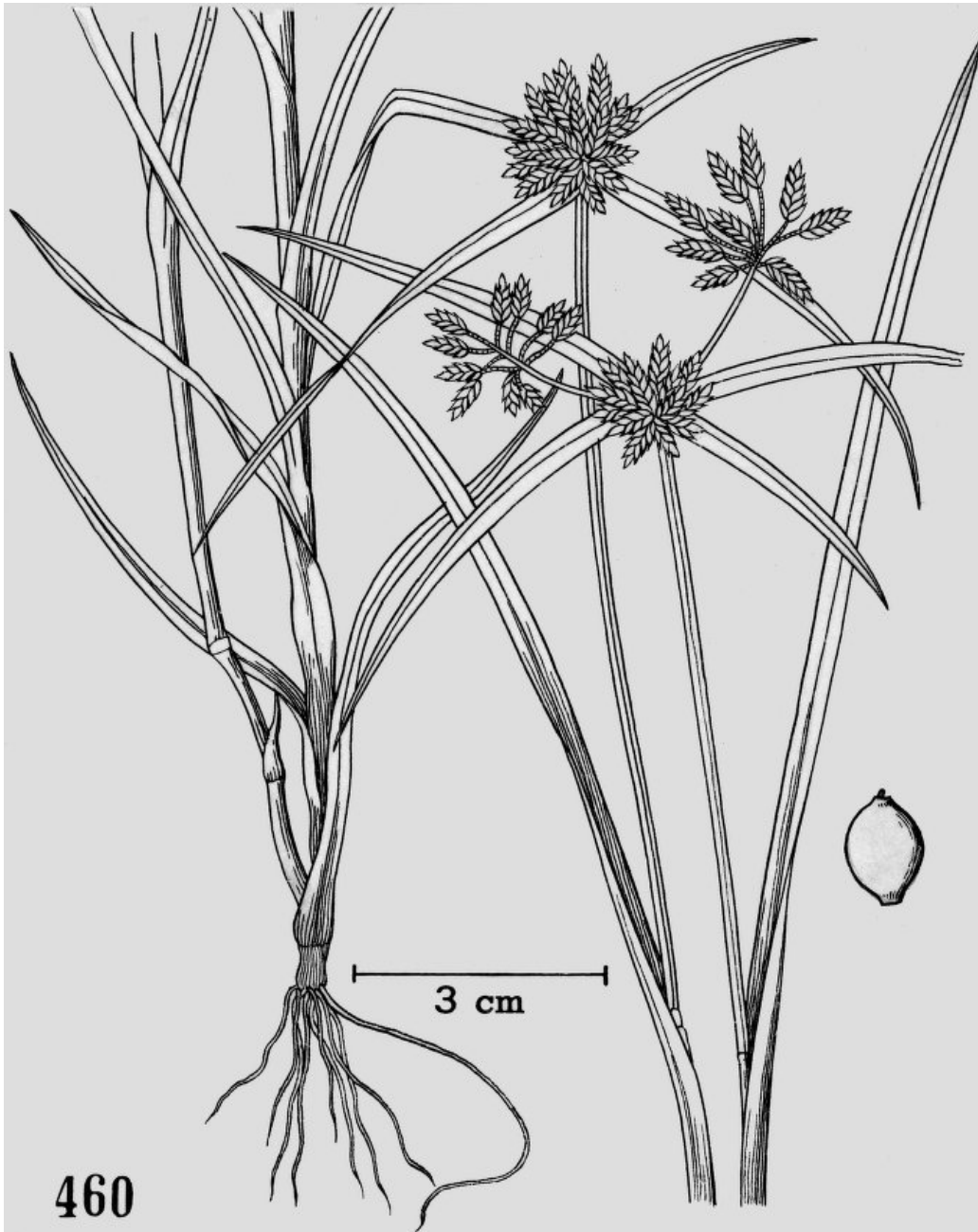
*Cuscuta cf. pacifica*



*Cyperus compressus*



## *Cyperus compressus*



460

Herbs, annual, cespitose with fibrous roots. Culms trigonous, (2-)6-15(-35) cm × (0.3-)1-1.8 mm, glabrous. Leaves 1-5, flat to V-shaped, (1-)5-15(-22) cm × (0.5-)1.5-3 mm.

**Inflorescences:** spikes ± digitate, ± globose, 7-40 × 10-20 mm; rays (0-)1-6, 2-12 cm; if absent, inflorescence a sessile cluster of (1-)3-10 **spikelets**; rachis 2-5 mm; bracts (1-)4-5(-6), ascending, V-shaped, 1-15(-20) cm × 0.5-3.5 mm; rachilla persistent, wingless. Spikelets (1-)3-12(-16), greenish white, linear to linear-lanceoloid, compressed-quadrangular, 6-34(-40) × 2-3(-3.6) mm; floral scales deciduous, (8-)16-36(-42), spreading, laterally whitish, greenish, or pale brownish, medially green, weakly 7-9-ribbed, laterally weakly 1-2-ribbed, most ribs medial, ovate, (2.4-)2.6-3 × (1.9-)2-2.4(-2.5)

mm, apex acute to ± acute, cuspidate tip (0.3-)0.5-0.7(-0.8) mm. Flowers: anthers 0.6-0.7 mm; styles 0.9-1.3 mm; stigmas 0.5-0.8 mm. Achenes brown, stipitate to sessile, obovoid, (1-)1.2-1.4(-1.5) × 0.9-1(-1.1) mm, apex obtuse to emarginate, surfaces very finely punctulate. Fruiting summer-early fall. Various disturbed soils; 0-900 m

*Dactyloctenium aegyptiacum*



# *Desmodium glabrum*

*Desmodium glabrum* (Mill.) DC.  
Fabaceae (Papilionaceae)

René Severens



*Desmodium scorpiurus*



*Desmodium tortuosum*





*Distichlis spicata*



*Ecballium elaterium*

Spritzgurke



*Encelia canescens*



ASU  
184348



ASU0017201

PLANTS OF CHILE  
Arizona State University  
*Encelia canescens* Lam.  
Región IV: Coquimbo.  
About 45 km N of La Serena along coast and ca. 3 km NW of  
the Panamerican (hwy 5) on road to Totoralillo. Grazed area with shrubby  
Compositae dominating.  
Subshrub ca. 1 m high. Rays yellow. Disk dark brown.  
ca. 100 m  
L. R. Landrum 7512 21 Sept 1991  
with S. S. Landrum

*Eragrostis amabilis*



*Eragrostis cilianensis*



## *Eragrostis ciliaris*

**Plants** annual; tufted, without innovations, without glands. **Culms** (3)9-75 cm, erect or geniculate in the lower portion, not rooting at the lower nodes, glabrous. **Sheaths** hairy on the margins and at the apices, hairs to 4 mm; **ligules** 0.2-0.5 mm; **blades** 1.8-12(15) cm long, 2-5 mm wide, usually flat, occasionally involute, glabrous or ciliate basally. **Panicles** 1.7-15 cm long, 0.2-5 cm wide, cylindrical, contracted or open, branches usually forming glomerate lobes, sometimes more open, often interrupted in the lower portion; **primary branches** 0.4-4 cm, appressed or diverging to 50° from the rachises; **pulvini** usually glabrous, occasionally sparsely pilose; **pedicels** 0.1-1 mm, erect, shorter than the spikelets, glabrous. **Spikelets** 1.8-3.2 mm long, 1-2 mm wide, elliptical-ovate to ovate-lanceolate, yellowish-brown, sometimes with a purple tinge, with 6-11 florets; **disarticulation** basipetal, glumes persistent. **Glumes** ovate to lanceolate, keels scabridulous, veins commonly green, apices acute; **lower glumes** 0.7-1.2 mm; **upper glumes** 1-1.6 mm; **lemmas** 0.8-1.3 mm, elliptical-ovate to lanceolate, membranous, keels scabridulous, lateral veins evident, apices obtuse to acute; **paleas** 0.8-1.3 mm, membranous, keels prominently ciliate, cilia 0.2-0.8 mm, apices obtuse to acute; **anthers** 2, 0.1-0.3 mm, purplish. **Caryopses** 0.4-0.5 mm, ovoid, reddish-brown.  $2n = 20, 40$ . *Eragrostis ciliaris* is native to the paleotropics. It is naturalized in parts of the United States, growing along roadsides, on waste sites, in xerothermic vegetation, and sometimes in saline habitats, at 0-200 m. It may be more widespread than indicated.



*Eriochloa procera*



*Euphorbia hirta*



Photo: P. Leatham

1766328  
 FIELD MUSEUM  
 OF  
 NATURAL HISTORY  
 CA SOUTHERN  
 CENTRAL AMERICA

PLANTAS DE PANAMA  
 Prov. Panamá  
 EUPHORBIACEAE  
 Chamaesyce hirta (L.) Millso.  
 det. por Rafael Rincón, 1974  
 Hierba de 0.40 mts. de alto. Tallo con látex blanco  
 lechoso.  
 San Carlos  
 16 de octubre de 1973  
 José Bósquez No.29  
 DISTRIBUIDAS POR EL HERBARIO DE LA UNIVERSIDAD DE PANAMA



## *Euphorbia hirta*



**Ecology:** *Euphorbia hirta* grows in cultivated fields, gardens, roadsides and waste places, from sea-level up to 2000 m altitude

**Description:** Annual, branched herb, prostrate to ascending, with branches up to 50 cm long, with latex; all parts short-hairy and with sparse yellow hairs ca. 1.5 mm long. Leaves opposite, distichous, simple; stipules linear, up to 2.5 mm long; petiole up to 3.5 mm long; blade ovate, 1–4 cm × 0.5–2 cm, base very unequal, one side cuneate, the other side rounded, apex almost acute, margin finely toothed, often with a purple blotch near the midvein. Inflorescence a terminal or axillary cluster of flowers, called a 'cyathium', with several cyathia densely clustered into a cyme ca. 15 mm in diameter; peduncle up to 15(–20) mm long; cyathia with a cup-shaped involucre ca. 1 mm in diameter, tinged purple, lobes triangular, fringed, glands 4, tiny, elliptical, green or purplish, with minute white to pink appendages, each involucre containing 1 female flower surrounded by many male flowers. Flowers unisexual; male flowers sessile, bracteoles linear, fringed, perianth absent, stamen 1, ca. 1 mm long; female flowers with short pedicel, perianth a rim, ovary superior, short-hairy, 3-celled, styles 3, minute, apex 2-fid. Fruit a just exserted, acutely 3-lobed capsule ca. 1 mm in diameter, base truncate, short-hairy, 3-seeded. Seeds oblong-conical, c. 1 mm long, slightly wrinkled, pinkish brown, without caruncle.

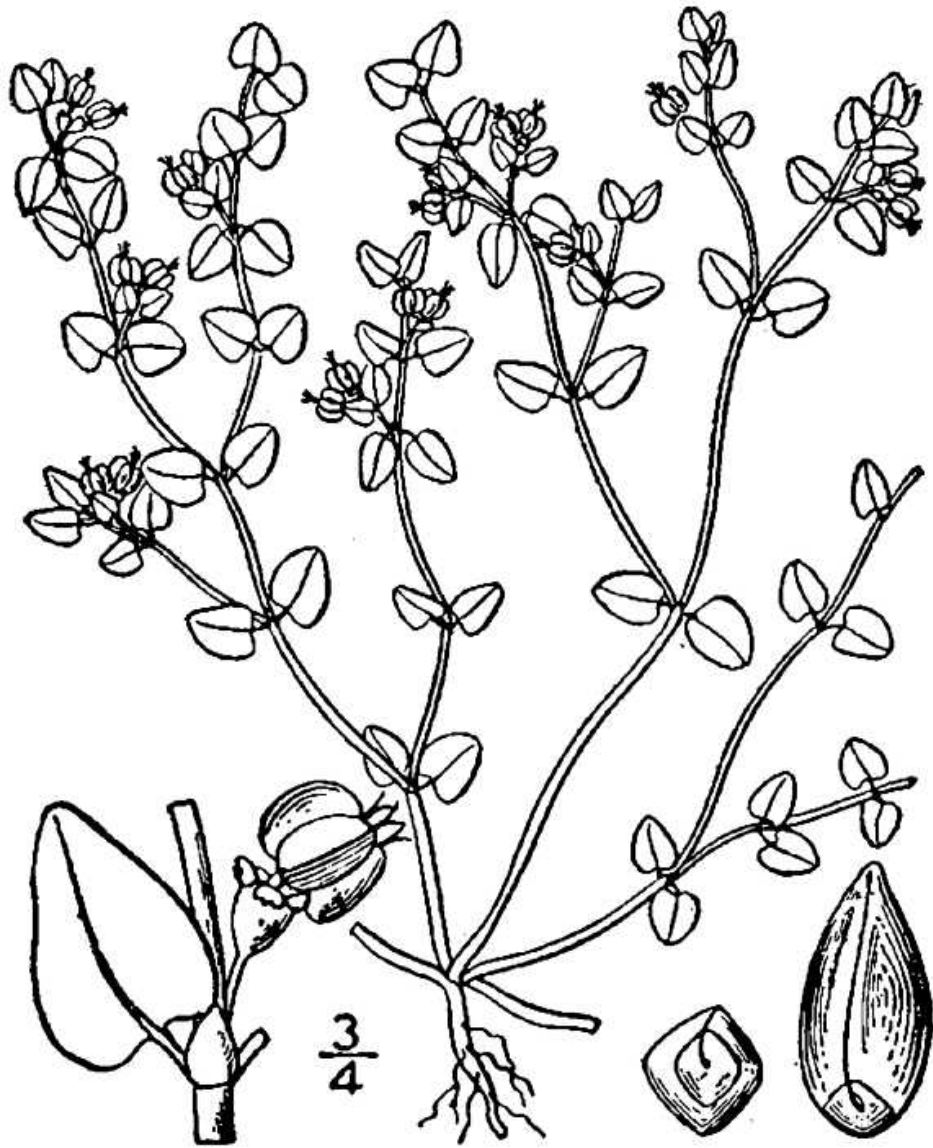
*Euphorbia hypericifolia*



*Euphorbia serpens*



## *Euphorbia serpens*



**Plant:** Annual; stem prostrate, rooting at nodes; glabrous; sap milky  
**Leaves:** cauline, opposite, short-petioled, 2-7 mm; stipules fused, triangular; blade ovate to oblong, glabrous, tip obtuse, margin entire  
**INFLORESCENCE:** flower-like, generally 1 per node; involucre < 1.5 mm, obconic, glabrous; gland < 0.5 mm, oblong; appendages wider than gland, scalloped, white  
**Flowers:** Staminate flowers 5-10, generally in 5 clusters around pistillate flower, each flower a stamen; Pistillate flower: 1, central, stalked; ovary chambers 3, ovule 1 per chamber, styles 3, divided 1/2 length  
**Fruit:** capsule < 1.5 mm, spheric, lobed, glabrous; Seed < 1.5 mm, ovoid, smooth, white to brown  
**Misc:** Waste areas; < 200 m.

*Exodeconus prostratus*



*Exodeconus prostratus*



*Froelichia interrupta*



*Galvezia limensis*





*Galvezia limensis*



*Heliotropium curassavicum*



*Hoffmanneseggia prostrata*





*Ipomoea crassifolia*



*Ipomoea incarnata*



*Ipomoea nil*



*Ipomoea tilicea*





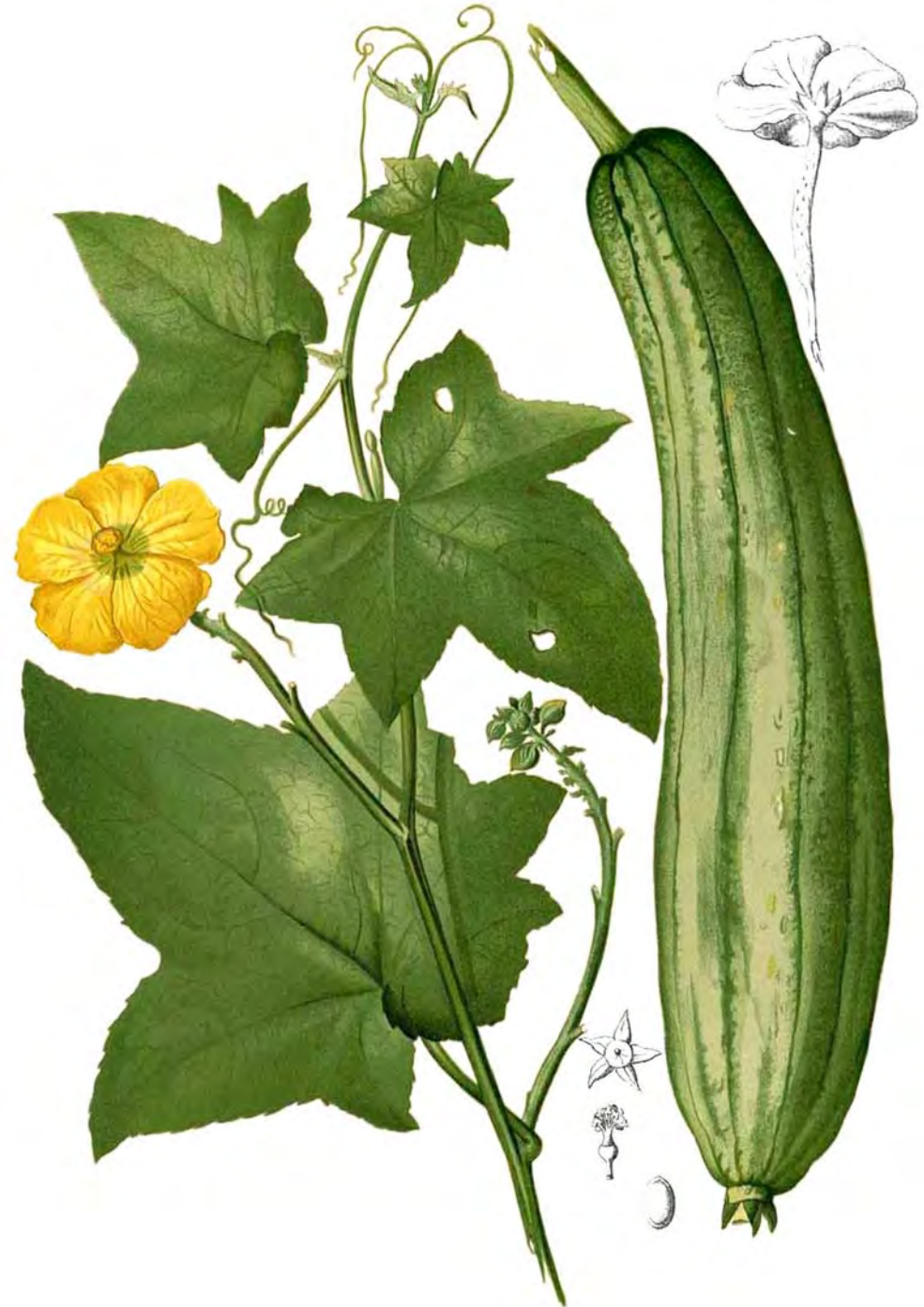
*Ipomoea tilicea*



*Lantana scabiosa*



*Luffa aegyptiaca*



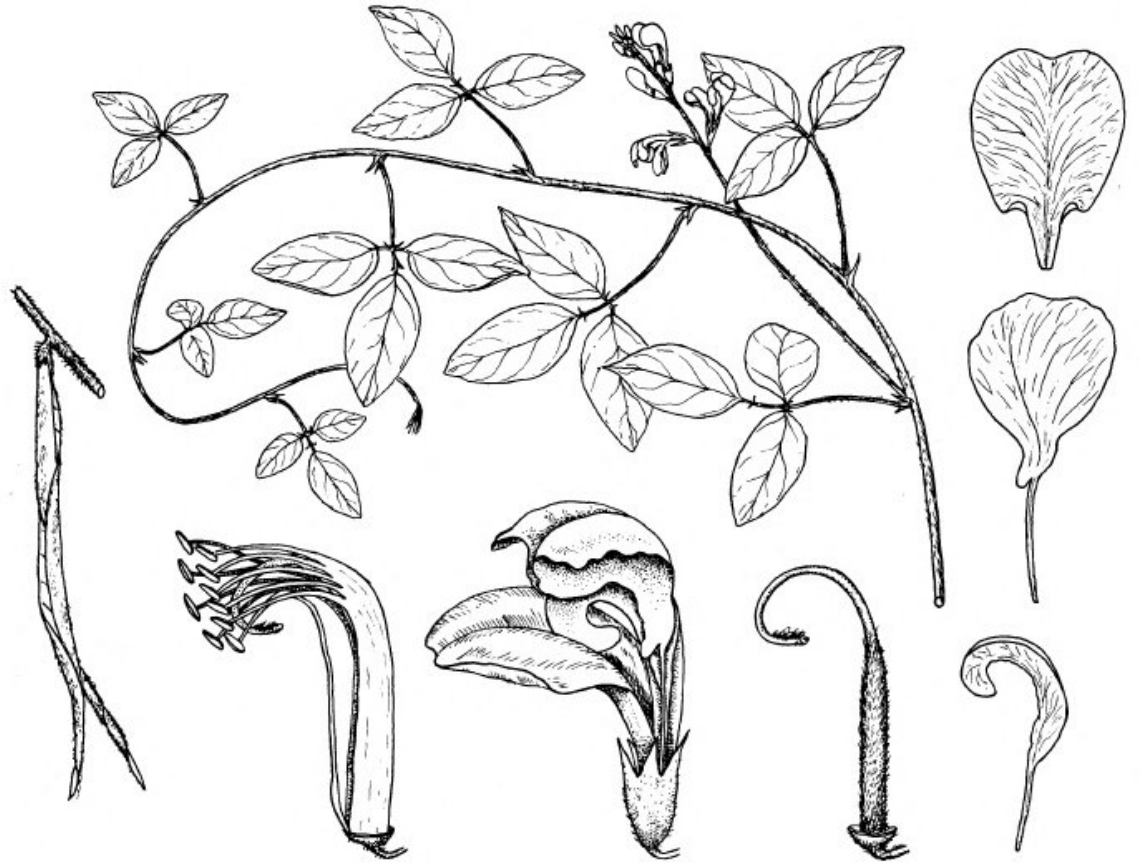
*Lycopersicon peruvianum*



*Macroptilium atropurpureum*



*Macroptilium lathyroides*



*Maytenus octogoma*



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© Oliver Whaley/Darwin Project 15016/RBG Kew



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*Melanthera aspera*





*Melanthera biflora*



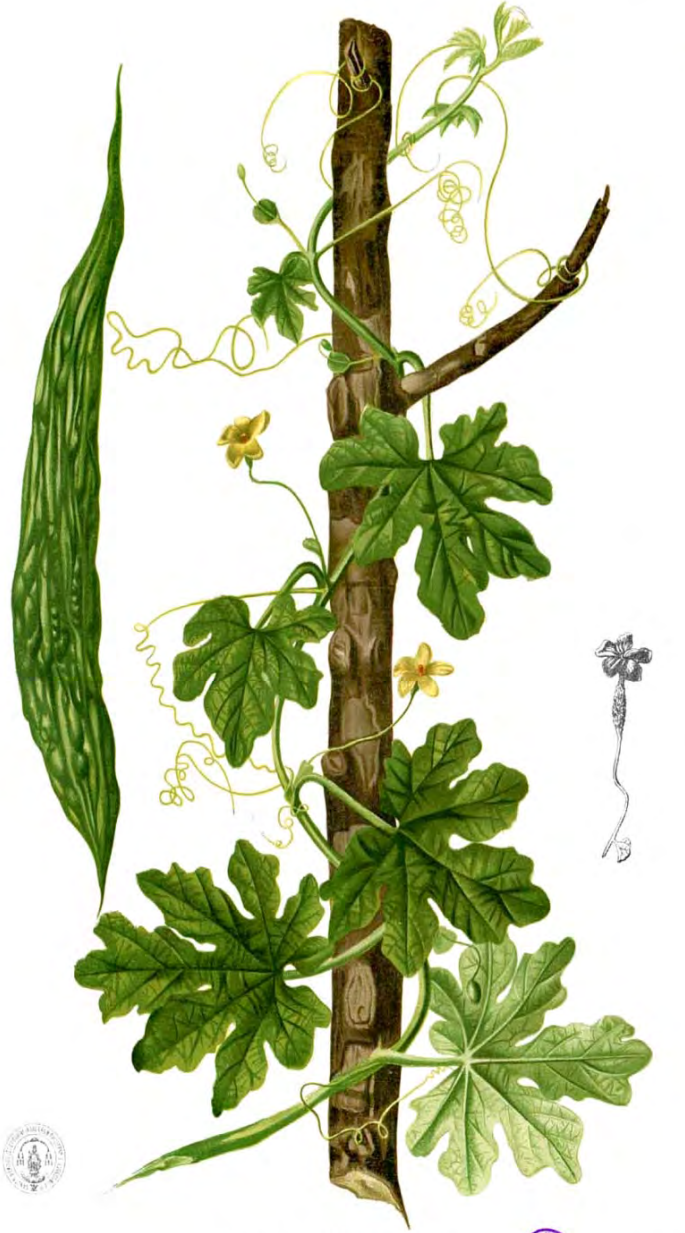
*Merremia aegyptiaca*



*Molluga cerviana*



*Momordica charantia*



MOMORDICA CYLINDRICA.—BLANCO.  
MOMORDICA CHARANTIA.—LASS.—DC.



*Oxalis lotoides*



*Parkinsonia aculeata*



*Pectis sessiliflora*



*Pennisetum clandestinum*





*Phragmites australis*



*Physalis peruviana*



*Portulaca oleraceae*



*Proboscidea altheifolia*



## *Proboscidea altheifolia*



**PLANT:** Decumbent and spreading perennial to 2 dm high. **ROOTS** large and fusiform. **LEAVES:** simple; petioles 3-18 cm long; blades nearly reniform or suborbicular to broadly ovate, 2-7 cm long, 2-8 cm wide, the margins entire to deeply lobed. **INFLORESCENCE:** short racemes with an initial axis length of 5-12 cm but lengthening in fruit to 1-2 dm. **FLOWERS:** 3-16 and fragrant; pedicels 2-8 cm long, slender, ascending in anthesis and with a linear basal bract; calyx bracts orbicular or broadly ovate to oblongfalcate, 5-10 mm long, 2-5 mm wide; calyx 1-1.5 cm long, the lobes cut one third to one half its length, viscid-pubescent without, glabrous within, the margins glandularciliate; corolla yellowish-brown externally, yellow to bronze-orange internally, the tube with pale blotches and maroon, reddish-brown or rust-colored spots in two rows internally and leading out to the throat and lobes, 2-3 cm long, slightly to strongly ventricose, infundibular to campanulate, the lobes spreading; filaments viscidpubescent at their base; pistil as long as or longer than the stamens. **FRUIT:** body very slender, 5-6 cm long and ca. 12 mm thick, crested dorsally and sometimes ventrally, the horns about twice as long as the body, the distal tooth on the dorsal suture often forming a slender horn. **NOTES:** In sandy soil and on dunes and gravelly hills: Cochise, Gila, Graham, Maricopa, Mohave, Pima, Pinal, Santa Cruz, Yavapai, Yuma cos.; below 1200 m (4000 feet); May-Sept; CA, NM, TX; n Mex., Peru.

*Prosopis pallida*



*Prosopis pallida*



l.: *Prosopis pallida*, r.: *Acacia aroma*



*Psittacanthus nodosus*





*Rhynchosia minima*



## *Ricinus communis*



Originally from Northeast-Africa but meanwhile in all tropical areas. Habitus like a shrub, sometimes like a small tree. Seed dispersal by insects and birds. Can occur as a heavily invader into other biomes. Like sunny places and can resist (after establishing) long dry seasons.



*Scutia spicata*



*Sesbania emerus*



*Sesuvium portulacastrum*



*Sida glabra*



*Sida spinosa*



**Plant:** perennial or annual herb or subshrub; to 1 m tall, minutely stellate-puberulent **Leaves:** broadly ovate to (in ours) narrowly oblong-lanceolate, dentate, 2-4 cm long, discolorous **Flowers:** solitary (or grouped) in the leaf axils, sometimes crowded apically; calyx 5-7 mm long; petals yellow (rarely white); styles 5 **Fruit:** FRUITS broadly conical, 4-5 mm diameter; mericarps 5, with apical spines ca. 1 mm long, these antrorsely pubescent; **SEEDS** solitary, glabrous **Misc:** Open arid slopes and sandy plains, sometimes in fields; 1050-1200 m (3500-4000 ft); flowering throughout the year

*Sida weberbaueri*





## *Sporobolus virginicus*



Small bristly grass; differentiate from *Distichlis spicata*! Flower is typical: narrow with small spikes (*Distichlis* has big spikes).



*Stylosanthes guianensis*



Pay attention to the flower. The leaves are very untypical for Fabaceae. A bit similar to leaves of *Lathyrus*.

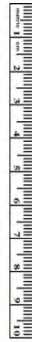
*Tamarix aphylla*



*Tephrosia cinerea*



*Tiquila dichotoma*



(syn.)  
*Tiquila dichotoma* Pers.  
Alfred Richardson, 1974  
University of Texas Herbarium

The University of Texas Herbarium

PLANTS OF PERU

*Coldenia dichotoma*

Dept. Piura, 179 Km. N. of Piura (N. of Los Organos). Sand dunes near surf. Dominant. Flowers pale violet. Plants semi erect. Many young plants; old plants to 2 meters diameter.

Alfred Richardson 2047 4 Mar 1973

1842462

FIELD MUSEUM  
OF  
NATURAL HISTORY



# *Tiquila paronychoides*



1639625  
FIELD MUSEUM OF  
NATURAL HISTORY

UNIVERSITY OF CALIFORNIA  
Botanical Garden Experiment Station, 1983-1984  
DIVERSITY PUBL. MATERIALS  
P. R. U.  
***Soldanella paronychoides* Phil.**  
det. S. Ferrerya 1904

*Soldanella paronychoides* (Phil.)  
S. Ferrerya  
MEXICO  
MEXICO, 1904  
UNIVERSITY OF CALIFORNIA

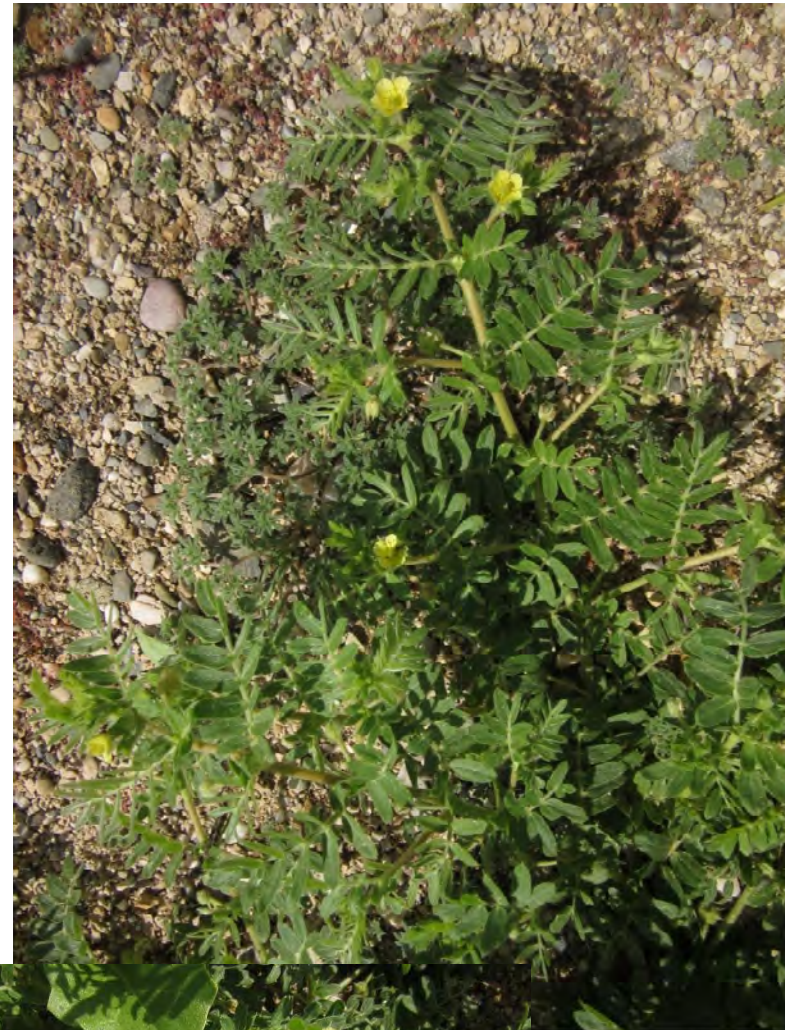
Solera don't between Pico and Pico at Yucali on road  
to Socha. Altitude ca. 100 m.  
Province of Pinar, Department of Pinar  
Pinar C. HORTONIAN 1889  
J. KENNETH WARD 1989 1 January 1989  
Determined by the Herbarium of the University of California

Collection number: 3559 - Size of set: 3 - Set 1, UC,  
dormant's set, USM - Distribution: USA, MEX, 800-440-78

*Tiquila paronychoides*



*Tribulus terrestris*



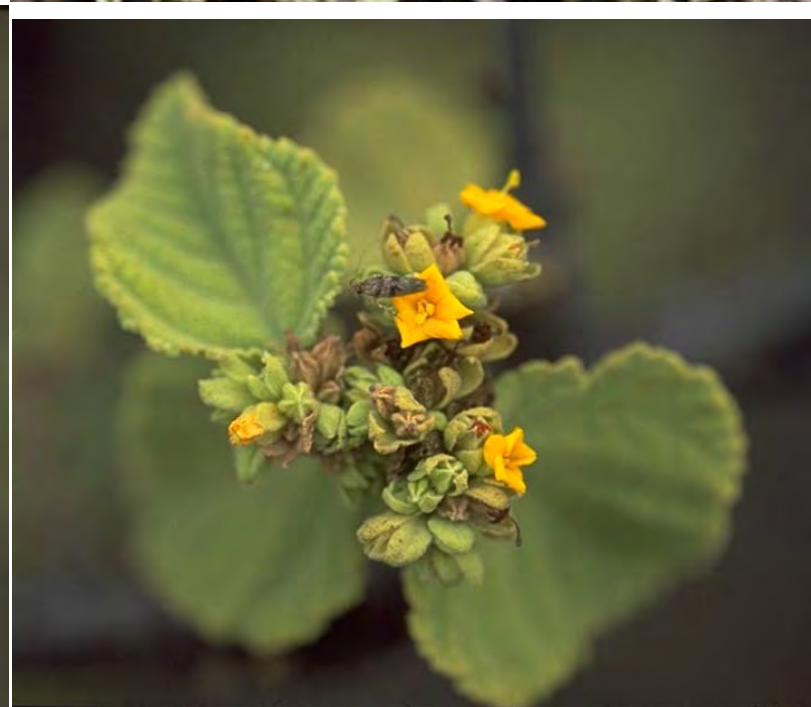


*Turnera ulmifolia*



Pay attention on the style inside the flower.  
Can confuse a bit – looks like a Rosaceae – but  
is a Passifloraceae!

*Waltheria ovata*



*unknown species (found in 2017)*



Solanaceae



Crassulaceae

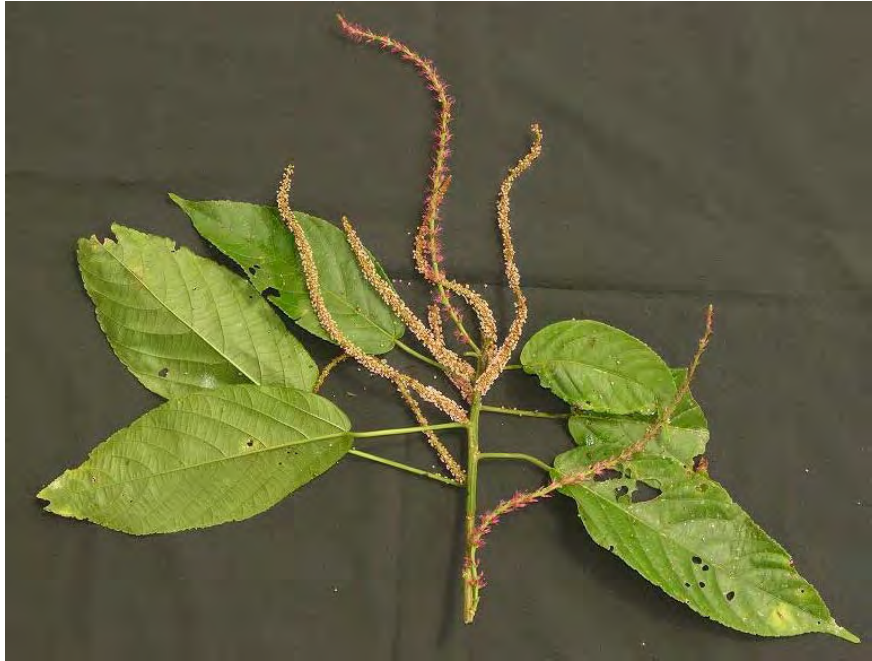
not found in 2017

*Gamochaeta* spec. ; *subfalcata* (l.) & *falcata* (r.)



*not found in 2017*

*Acalypha spec.*



Typical situation in a dry year (2013):  
vegetation coverage of about 2% but many different species.  
Plot called **Sserir** near Cangrejos with view to the Pacific.



Typical situation in a wet year (2017):  
vegetation coverage of about 98% but few dominant annual species.  
Plot called **Sserir** near Cangrejos with view to the mountains.



Some panorama impressions of a green and wet Sechura desert



