
The *Dorstenia* species (*Moraceae*) of north-western tropical America

by C.C. Berg and R.W.J. van Leeuwen

*Institute for Systematic Botany, State University of Utrecht,
Heidelberglaan 2, Utrecht, the Netherlands*

Communicated by Prof. F.A. Stafleu at the meeting of September 28, 1981

ABSTRACT

Four new species of *Dorstenia* are described: *D. panamensis* C.C. Berg, *D. boliviana* C.C. Berg, *D. peruviana* C.C. Berg, and *D. belizensis* C.C. Berg. A list of and a key to the 21 *Dorstenia* species distinguished in north-western tropical America are presented, together with synonyms and distributions.

INTRODUCTION

The Neotropical representatives of *Dorstenia* occur in two well-defined areas. One group of species is found within the limits of the area of *D. brasiliensis* (sensu lato, incl. *D. tubicina* and *D. sabanensis*), mainly in Brazil. This group of species has been studied by Carauta and collaborators. The results of their studies have been compiled by Carauta (1978). The other group of species is found almost within the limits of the area of *D. contrajerva*. In order to arrive at a revision of the genus for the Neotropics this second group is here revised (for the Greater Antilles in collaboration of the present authors). Some of the results of this study (four new species, the species recognized, with their synonyms and distribution, and a key to them) are presented as a precursor to a part of the revision for Flora Neotropica, which will be prepared in cooperation with Dr. Carauta.

It should be noted that the continental species treated are clear-cut. However, the small-leaved species of the Greater Antilles (including the continental *D. belizensis*) constitute a rather complex group of closely related species. Delimitation on morphological characters proved to be far from easy. These

species are more narrowly circumscribed than the continental ones. Some of the taxonomic decisions made for this group are somewhat questionable, partly due to lack of sufficient material.

KEY TO THE DORSTENIA SPECIES OF THE ANDES REGION, CENTRAL AMERICA, MEXICO, AND THE GREATER ANTILLES

- 1 Internodes elongate, to 1 cm long or longer.
 - 2 Lamina peltate 16. *D. belizensis*
 - 2 Lamina basally attached.
 - 3 Petiole 3–20 cm long; lamina broadly ovate to cordiform 10. *D. contrajerva*
 - 3 Petiole at most 5 cm long; lamina elliptic to lanceolate, to subobovate or subovate.
 - 4 Lamina at the base attenuate to decurrent with narrow wings along the upper part of the petiole; Central America 7. *D. choconiana*
 - 4 Lamina not attenuate to decurrent at the base.
 - 5 Lamina scabrous above with long bristle-like hairs, apex almost rounded to broadly (sub)acute 8. *D. lindeniana*
 - 5 Lamina smooth above, or, if scabrous, then with minute conical hairs, apex acuminate to acute.
 - 6 Stipules broadly triangular to ovate, often patent to deflexed.
 - 7 Petiole ca. 1 cm long; lamina oblong, less than 5 cm broad; Panamá 2. *D. panamensis*
 - 7 Petiole 1–2.5 cm long; lamina elliptic to oblong, more than 5 cm broad; Columbia 3. *D. colombiana*
 - 6 Stipules narrowly triangular to subulate, appressed.
 - 8 Petiole 0.5–1.5 cm long; base of the lamina subobtuse to subacute; receptacle, outside sparsely puberulous with retrorse hairs; Peru 6. *D. umbricola*
 - 8 Petiole 1–5 cm long; base of the lamina cordate to truncate, if narrow and tending to subobtuse, then the receptacle outside (rather) densely hirtellous to puberulous.
 - 9 Tertiary venation of the lamina prominent and conspicuous beneath; receptacle lobed; Venezuela . 1. *D. aristeguietae*
 - 9 Tertiary venation of the lamina almost plane (and rather inconspicuous) beneath; receptacle subentire.
 - 10 Receptacle sparsely puberulous with retrorse hairs; Peru 5. *D. peruviana*
 - 10 Receptacle (rather) densely hirtellous; Bolivia 4. *D. boliviana*
 - 1 Internodes, or at least some of them, short.
 - 11 Receptacle excentrally attached, at least 0.5 cm in diameter.
 - 12 Lamina oblong to elliptic (to ovate or suborbicular), at most 4 cm broad, entire; Mexico 11. *D. excentrica*
 - 12 Lamina cordiform to subsagittiform to elliptic or to broadly ovate, occasionally less than 4 cm broad, mostly lobed to parted.
 - 13 Receptacle elliptic to obovate or suborbicular; Mexico–Costa Rica 9. *D. drakena*
 - 13 Receptacle quadrangular to irregularly lobed; Mexico to Peru and Venezuela, West Indies 10. *D. contrajerva*
 - 11 Receptacle (almost) centrally attached, or if excentrally, then the receptacle deeply cup-shaped and less than 0.5 cm in diameter; Greater Antilles.
 - 14 Lamina peltate.

- 15 Receptacle discoid, bracts (almost) in a single (sub)marginal row, all or most of them radiating and/or on short appendages.
- 16 Lamina with short hairs above; Jamaica 14. *D. jamaicensis*
- 16 Lamina also with long hairs above; Cuba 13. *D. petraea*
- 15 Receptacle cup-shaped to discoid, bracts in (2-)3-4 rows, appressed.
- 17 Stem (partly creeping) with many long internodes; lamina usually distinctly longer than broad; Haiti 15. *D. flagellifera*
- 17 Stem with most internodes short; lamina mostly not distinctly longer than broad.
- 18 Receptacle deeply cup-shaped, bracts on and below the margin, not on the fringe*; Cuba 24. *D. rocana*
- 18 Receptacle shallowly cup-shaped to discoid, bracts also on the fringe*.
- 19 Larger marginal bracts setulose; stigmas of equal length, 0.4-0.5 mm long; Cuba, Hispaniola 20. *D. erythrandra*
- 19 Larger marginal bracts not setulose; stigmas of unequal length, 0.1-0.2 mm long.
- 20 Receptacle cup-shaped to turbinate; lamina above with short, rather soft hairs; Cuba, Dominican Republic . 19. *D. peltata*
- 20 Receptacle discoid; lamina above with stiff hairs.
- 21 Stem 3-5 mm thick; lamina 0.5-5 cm long, above with rather long, stiff hairs; perianth (almost) glabrous; Cuba . 18. *D. nummularia*
- 21 Stem 4-8 mm thick; lamina (3-)5-10 cm long, above with short, stiff hairs; perianth with dense, minute, (sub)globose hairs; Cuba 17. *D. roigii*
- 14 Lamina basally attached.
- 22 Receptacle discoid, bracts (almost) in a single (sub)marginal row, all or most of them radiating and/or on short appendages (or sometimes also minute appressed bracts on the fringe).
- 23 Lamina ovate to (sub)cordiform, to 7 cm long, mostly sub-acuminate to obtuse; endocarp body distinctly tuberculate; Jamaica, Haiti 12. *D. fawcettii*
- 23 Lamina cordiform to subreniform, to 2.2 cm long, apex mostly rounded; endocarp body (almost) smooth; Cuba 23. *D. tuberosa*
- 22 Receptacle cup-shaped to discoid, bracts in (2-)3-4 rows, appressed.
- 24 Receptacle deeply cup-shaped, bracts on and below the margin, not on the fringe; Cuba 24. *D. rocana*
- 24 Receptacle shallowly cup-shaped to discoid, bracts also on the fringe.
- 25 Plant on all parts only with minute hairs; Haiti 21. *D. caimitensis*

* The peripheral, non-flower bearing part of the flowering face.

25 Plant on several parts, at least on the lamina above and/or the marginal bracts with long hairs.

26 Receptacle with entire margin, marginal bracts distinct, the larger ones setulose; Cuba, Hispaniola 20. *D. erythrandra*

26 Receptacle with crenulate margin, marginal bracts obscure and not setulose; Cuba
. 22. *D. crenulata*

1. *Dorstenia aristeguieta* Cuatrecasas, Bol. Soc. Venez. Cienc. Nat. 15: 108 (1954).

Distribution: Venezuela (Aragua, Distrito Federal).

2. *Dorstenia panamensis* C.C. Berg spec. nov. (Fig. 1).

Herba ad 25 cm alta; caulis internodiis longis. Lamina oblonga, 5.5–11 cm longa, 2.5–4.5 cm alta, apice acuminata vel subacuta, basi rotundata vel cordata, facie superiore glabra, inferiore scabridula; venae laterales pro latere 10–15; petiolus circ. 1 cm longus; stipulae late triangulares vel ovatae, ad 0.7 cm longae, deinde patentes vel deflexae. Inflorescentia viridis, pedunculo 0.5–3.5 cm longo, receptaculo centraliter affixo, discoideo vel late turbinato, plus minusve irregulariter lobato vel suborbiculari, diam. 0.5–1.5 cm; bractee plus minusve biseriatae; flores staminati inter pistillatos dispersi; tepala staminae dua.

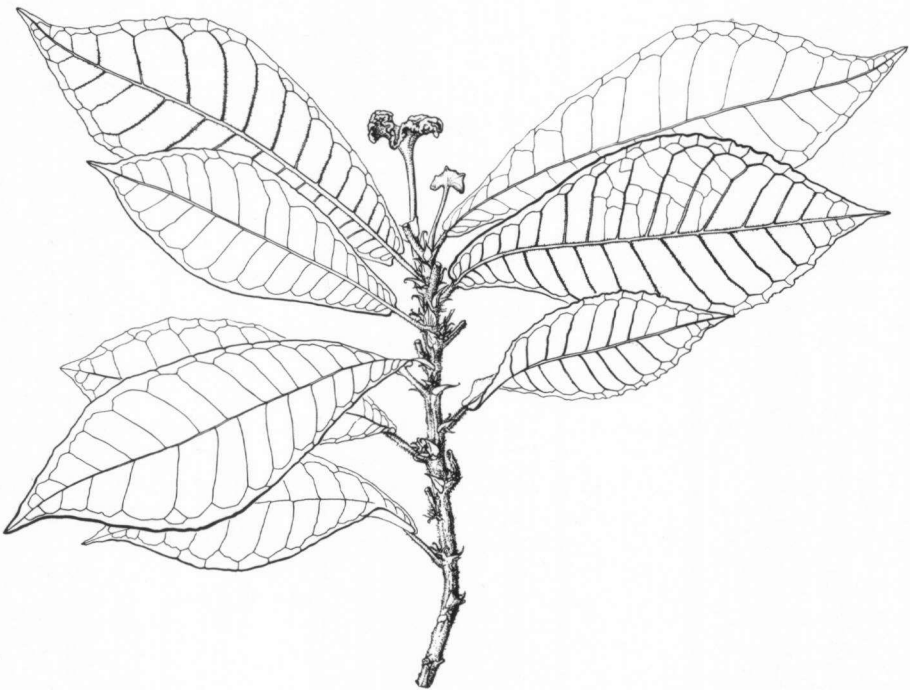


Fig. 1. *Dorstenia panamensis*. From Berg, Maas & Dressler 415.

Herb up to ca. 25 cm tall; stem 3–4 mm thick, densely hirtellous to hirsute, with uncinata and curved hairs; internodes 0.5–2 cm long. Leaves in spirals; lamina oblong, 5.5–11 cm long, 2.5–4.5 cm broad, chartaceous, apex acuminate to subacute, base (narrowly) rounded to cordate, margin repand to more or less distinctly crenate; upper surface smooth and glabrous, lower surface scabridulous, on the veins puberulous to hirtellous; lateral veins 10–15 pairs, loop-connected, midvein slightly impressed above, venation prominent beneath; petiole ca. 1 cm long, hirtellous to hirsute; stipules broadly triangular to ovate, up to 0.7 cm long, faintly plurinervate, acute to subacuminate, sparsely puberulous, on older parts of the stem mostly patent to deflexed. Inflorescences green; peduncle 0.5–3.5 cm long, puberulous with retrorse uncinata hairs; receptacle centrally attached, discoid to broadly turbinate, more or less irregularly lobed to suborbicular, 0.5–1.5 cm in diameter, outside puberulous with retrorse uncinata hairs; fringe 0.5–1.2 mm broad, with minute globose and appressed uncinata hairs; bracts in ca. 2 rows on and below the margin, or also on the fringe, broadly ovate to semi-circular, up to 2 mm long, appressed, almost glabrous; staminate flowers among the pistillate ones, tepals 2, stamens 2, filament shorter than the perianth; stigmas equal or unequal in length, 0.2–0.3 mm long, white; endocarp body tuberculate.

Typus: *Berg, Maas & Dressler* 415, Panamá, Colón, Río Boqueron (holo-U; iso- K, MO, NY. PMA, RB).

Additional collection: *Dressler* 4698, Panamá, Colón, Río Boqueron, 6–8 km upstream from Peluca (PMA).

This new species appears to be related to *C. colombiana*.

3. *Dorstenia colombiana* Cuatrecasas, Rev. Acad. Colomb. **9**: 341 (1956).
Distribution: Colombia (El Valle).

4. *Dorstenia boliviana* C.C. Berg spec. nov. (Fig. 2).

Herba, ut videtur, ad 50 cm alta; caulis internodiis longis. Lamina oblonga vel subobovata vel lanceolata, 13–18 cm longa, 4–5.5 cm lata, acuminata vel subacuta, basi (anguste) cordata vel subcordata, facie superiore scabridula vel laevi, inferiore scabridula; venae laterales pro latere 13–18; petiolus 2.5–5 cm longus; stipulae fere subulatae, ad 0.8 cm longae. Inflorescentia pedunculo 5–7 cm longo, receptaculo excentrice affixo, subdiscoideo, elliptico, circ. 3.5–4 cm longo.

Herb probably up to 50 cm tall; stem 3–4.5 mm thick, hirsute to hirtellous with uncinata and straight hairs; internodes 1–2 cm long. Leaves in spirals; lamina oblong to subobovate or to lanceolate, 13–18 cm long, 4–5.5 cm broad, chartaceous, apex acuminate to subacute, base (narrowly) cordate to subcordate, margin subentire to faintly crenate; upper surface smooth and almost glabrous, lower surface scabridulous, puberulous on the (main) veins; lateral veins 13–18 pairs, loop-connected; petiole 2.3–5 cm long, puberulous to

hirtellous with more or less retrorse, uncinata and straight hairs; stipules almost subulate, up to 0.8 cm long, uninervate, puberulous. Inflorescences on minute short-shoots with reduced stipules; peduncle 5–7 cm long, rather densely puberulous to hirtellous, mainly with uncinata hairs; receptacle excentrally attached, almost discoid, elliptic, ca. 3.5–4 cm long, outside (rather) densely puberulous to hirtellous, mainly with uncinata hairs, margin subentire(?). (The condition of the material did not allow further examination of the inflorescence).

Typus: *Buchtien 1948*, Bolivia, La Paz, Charopampa, near Mapiri (US).

This new species shows points of resemblance to *D. aristeguietae* from Venezuela.



Fig. 2. *Dorstenia boliviana*. From *Buchtien 1948*.

5. *Dorstenia peruviana* C.C. Berg spec. nov. (Fig. 3).

Herba ad 80 cm alta; caulis internodiis longis. Lamina oblonga vel subobovata, 6–20 cm longa, 2–7 cm lata, subacuta ad acuminata, basi cordata (vel obtusa), utraque facie scabridula; venae laterales pro latere 10–12; petiolus 3–5 cm longus; stipulae anguste triangulares vel subulatae, ad 0.5 cm longae. Inflorescentia viridis; pedunculus 1.5–4 cm longus; receptaculum centraliter affixum, late turbinatum vel discoideum, (sub)orbiculare, diam. 1.5–2 cm; bractee circ. 3-seriatae; flores staminati inter pistillatos dispersi; tepala staminaque dua.

Herb up to 80 cm tall; stem 3–4 mm thick, sparsely, minutely and more or less retrorsely puberulous; internodes 1–2.5 cm long. Leaves in spirals; lamina oblong to subobovate, 6–20 cm long, 2–7 cm broad, chartaceous, apex subacute to acuminate, base subcordate to cordate, sometimes almost obtuse,



Fig. 3. *Dorstenia peruviana*. From *Mexia* 8303.

often more or less inequilateral, margin subentire to repand or (coarsely) crenate; upper surface scabridulous, lower surface scabriculous, on the veins sparsely and minutely puberulous with straight and uncinat hairs; lateral veins 10–12 pairs, loop-connected; petiole 3–5 cm long, minutely and retrorsely puberulous; stipules (narrowly) triangular to subulate, up to 0.5 cm long, uninervate, minutely puberulous. Inflorescences yellowish-green, on minute short-shoots with reduced stipules; peduncle 1.5–4 cm long, sparsely and minutely puberulous; receptacle (almost) centrally attached, broadly turbinate to almost discoid (passing more or less abruptly into the peduncle), (sub)orbicular, 1.5–2 cm in diameter, outside minutely appressed-puberulous, margin lobed to subentire; fringe ca. 0.5 mm broad; bracts in ca. 3 rows, on and below the margin and on the fringe, ovate to triangular or to semi-circular, up to 0.7 mm long, appressed or sometimes more or less radiating, sparsely puberulous; staminate flowers mainly peripheral, a few among the pistillate flowers, tepals 2, stamens 2, filament longer than the perianth; stigmas almost equal in length, 0.4–0.5 mm long; endocarp body tuberculate.

Typus: *Mexia* 8303, Peru, Huánuco, along trail from Río Huallaga to Riachuela Chontalagua (holo- U; iso- BM, F, GH, K, MO, NA, NY, US).

Additional collection: *Plowman* 5904, Peru, Huánuco, prov. Leonico Prado, distr. Emilio Valdizan, Fondo Mariamilla, along old road to La Divisoria (U).

This species shows many similarities to *D. choconiana* from Costa Rica, Honduras, and Guatemala.

6. *Dorstenia umbricola* A.C. Smith, Bull. Torrey Bot. Club 58: 87 (1931).

Distribution: Peru (Loreto).

7. *Dorstenia choconiana* S. Watson, Proc. Amer. Acad. Arts 22: 477 (1887).

Synonym: *D. cordato-acuminata* Cufodontis

Distribution: Costa Rica, Honduras, Guatemala.

8. *Dorstenia lindeniana* Bureau in De Candolle, Prodr. 17: 269 (1873).

Distribution: Mexico, Belize, Guatemala.

9. *Dorstenia drakena* Linnaeus, Syst. Nat. Veg. ed. 10. 899 (1759).

Synonyms: *D. ovalis* Stokes, *D. mexicana* Bentham, *D. crispata* S. Watson

Distribution: Mexico to Costa Rica.

10. *Dorstenia contrajerva* Linnaeus, Sp. Pl. 121 (1753).

Synonyms: *D. houstonii* (Linnaeus) Linnaeus, *D. alexiteria* Linnaeus, *D. quadrangularis* Stokes, *D. palmata* Willdenow, *D. maculata* Lemaire

Distribution: From Mexico to Peru, northern Venezuela, and many of the West Indian islands.

11. *Dorstenia excentrica* Moricand, Pl. Nouv. Amer. 92 (1840).

Distribution: Mexico.

12. *Dorstenia fawcettii* Urban, Ark. Bot. 22A (10): 2 (1929).
Synonyms: *D. marginata* Urban & Ekman, *D. haitensis* Rossberg.
Distribution: Haiti, Jamaica.
13. *Dorstenia petraea* Grisebach, Cat. Pl. Cuben. 58 (1866).
Distribution: Cuba (Oriente).
14. *Dorstenia jamaicensis* Britton, Bull. Torrey Bot. Club 35: 567 (1908).
Distribution: Jamaica (Manchester).
15. *Dorstenia flagellifera* Urban & Ekman, Ark. Bot. 22A (10): 8 (1929).
Synonym: *D. hotteana* Urban & Ekman
Distribution: Haiti.

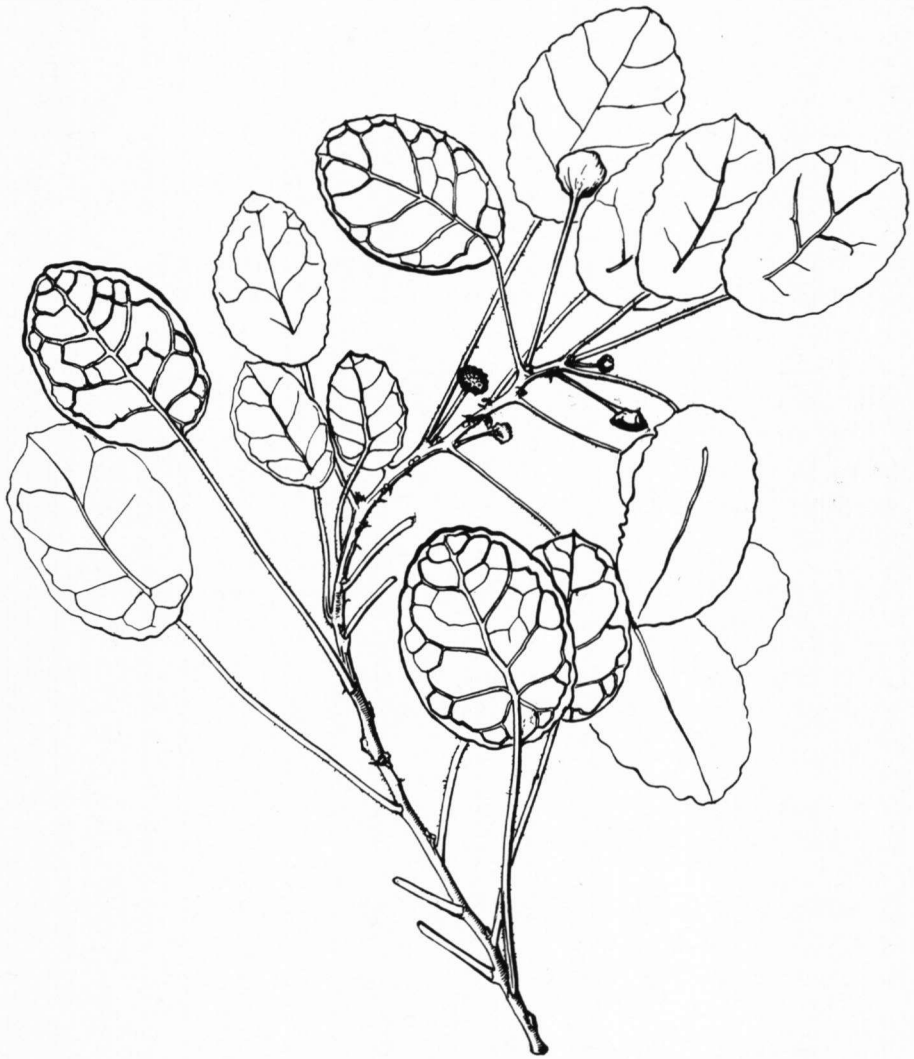


Fig. 4. *Dorstenia belizensis*. From Proctor 35982.

16. *Dorstenia belizensis* C.C. Berg spec. nov. (Fig. 4).

Herba plus minusve procumbens; caulis internodiis longis. Lamina peltata, elliptica vel oblonga vel (sub)obovata vel suborbicularis, 1.5–6 cm longa, 0.8–2.3 cm lata, apice basique rotundata, facie superiore puberula, inferiore hirtella vel subtomentosa, nervatura pinnata, venis lateralibus pro latere 4–6; petiolus 1.5–7 cm longus; stipulae triangulares vel subulatae, ad 0.2 cm longae. Inflorescentiae virides, facie florifera deorsum spectante; pedunculus 1–2.5 cm longus; receptaculum subcentraliter affixum, subdiscoideum, suborbiculare, diam. 0.5–0.8 cm; bractee biseriatae; flores staminati inter pistillatos dispersi; tepala staminaque dua; corpus endocarpii tuberculatum.

Herb, more or less procumbent; stem ca. 2 mm thick, puberulous to hirtellous with straight hairs; internodes 0.5–1 cm long. Leaves in spirals; lamina peltate, elliptic to oblong or to (sub)obovate or sometimes suborbicular, 1.5–6 cm long, 0.8–3.3 cm broad, firmly chartaceous, often variegated, apex rounded, sometimes mucronulate, base rounded (to emarginate), margin subentire to irregularly crenate to denticulate; upper surface puberulous, scabridulous, lower surface hirtellous to subtomentose; lateral veins 4–6, more or less distinctly loop-connected, venation rather prominent beneath; petiole 1.5–7 cm long, hirtellous to puberulous; stipules narrowly triangular to almost subulate, 1.5–2 mm long, uninervate, puberulous. Inflorescences greenish, with the flowering face facing downwards; peduncle 1–2.5 cm long, puberulous; receptacle almost centrally attached, discoid to broadly turbinate, suborbicular, 0.5–0.8 cm in diameter, outside (sparsely) puberulous; fringe to ca. 0.3 mm broad; bracts in ca. 3 rows, on the margin and on the fringe, ovate to triangular, up to 0.5 mm long, appressed, puberulous; staminate flowers among the pistillate ones, tepals 2, stamens, 2, filament shorter than the perianth; stigmas unequal in length, 0.1–0.2 mm long; endocarp body distinctly tuberculate.

Typus: *Proctor 35982*, Belize, Toledo, near Sapote Camp, ca. 10 km W. of Medina bank (holo- IJ; iso- U).

D. belizensis is a distinct species within a group of otherwise Antillean species with peltate leaves comprising *D. roigii*, *D. nummularia*, *D. flagellifera*, and *D. peltata*.

17. *Dorstenia roigii* Britton, Bull. Torrey Bot. Club 51: 9 (1924).

Distribution: Cuba (Pinar del Rio).

18. *Dorstenia nummularia* Urban & Ekman, Ark. Bot. 2A (10): 7 (1929).

Synonym: *D. ekmanii* Urban

Distribution: Cuba (Las Villas).

19. *Dorstenia peltata* Sprengel, Neue Entdeck. 3: 22 (1822).

Synonym: *D. crassipes* Grisebach

Distribution: Cuba (Oriente), Dominican Republic.

20 *Dorstenia erythrandra* Grisebach, Cat. Pl. Cuben. 58 (1866).

Synonyms: *D. confusa* Britton, *D. domingensis* Urban & Ekman, *D. multi-squamae* Urban, *D. nipensis* Urban & Ekman, *D. howardii* Bro. León

Distribution: Cuba (Oriente), Dominican Republic, Haiti.

21. *Dorstenia caimitensis* Urban, Ark. Bot. 22A (10): 4 (1929).

Synonym: *D. asperifolia* Rossberg

Distribution: Haiti.

22. *Dorstenia crenulata* Grisebach, Mem. Amer. Acad. n.s. 8: 173 (1861).

Distribution: Cuba (Oriente).

23. *Dorstenia tuberosa* Grisebach, Mem. Amer. Acad. n.s. 8: 173 (1861).

Distribution: Cuba (Oriente).

24. *Dorstenia rocana* Britton, Bull. Torrey Bot. Club 51: 8 (1924).

Synonym: *D. tricolor* Urban & Ekman

Distribution: Cuba (Oriente).

ACKNOWLEDGEMENTS

The authors are much indebted to Dr. K.U. Kramer (Zürich) for correcting the English text and for contributing the Latin diagnoses. The drawings were prepared by Miss E.M. Hupkens van der Elst.

REFERENCE

Carauta, J.P.P. – *Dorstenia* L. (Moraceae) do Brasil e países limítrofes. *Rodriguésia* 29 (no. 44): 53–223 (1978).