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**Autor:** Schneider, Julio Valentin / Zizka, Georg  
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# Taxonomic novelties in the neotropical genus *Quiina* Aubl. (Quiinaceae)

JULIO VALENTIN SCHNEIDER

&

GEORG ZIZKA

## ABSTRACT

SCHNEIDER, J. V. & G. ZIZKA (2003). Taxonomic novelties in the neotropical genus *Quiina* Aubl. (Quiinaceae). *Candollea* 58: 461-471. In English, English and French abstracts.

During a forthcoming familial revision, five new species (*Q. attenuata* J. V. Schneid. & Zizka, *Q. berryi* J. V. Schneid. & Zizka, *Q. cidiana* J. V. Schneid. & Zizka, *Q. gentryi* J. V. Schneid. & Zizka, *Q. piresii* J. V. Schneid. & Zizka) of the neotropical genus *Quiina* Aubl. (Quiinaceae) are described and illustrated.

## RÉSUMÉ

SCHNEIDER, J. V. & G. ZIZKA (2003). Nouveautés taxonomiques dans le genre néotropical *Quiina* Aubl. (Quiinaceae). *Candollea* 58: 461-471. En anglais, résumés anglais et français.

Dans le cadre d'une révision de la famille des *Quiinaceae*, cinq espèces nouvelles (*Q. attenuata* J. V. Schneid. & Zizka, *Q. berryi* J. V. Schneid. & Zizka, *Q. cidiana* J. V. Schneid. & Zizka, *Q. gentryi* J. V. Schneid. & Zizka, *Q. piresii* J. V. Schneid. & Zizka) du genre néotropical *Quiina* Aubl. sont décrites et illustrées.

**KEY-WORDS:** Malpighiales – Taxonomy.

## Introduction

*Quiinaceae* is a small neotropical family of trees and shrubs, encompassing four genera (*Froesia*, *Lacunaria*, *Quiina*, *Touroulia*) and about 51 species. *Quiina* Aubl. is the largest genus of the family, comprising 31 species distributed from Belize to southern Brazil and Bolivia, including the Caribbean islands Jamaica and Trinidad, with the bulk of the species occurring in the Guayana and Amazon region. They are generally confined to lowland rain forests, often being locally abundant in the forest understorey, and rarely exceed altitudes of 1000 m.

*Quiina* is circumscribed and distinguished from the other genera by a combination of characters: simple, opposite leaves (except *Q. pteridophylla* (Radlk.) Pires with whorled leaves) with well developed intersecondary and plumose-reticulate tertiary veins (FOSTER, 1950), paired interpetiolar stipules, axillary inflorescences, androdioecious sex distribution, a syncarpous gynoecium, and a usually 2-locular ovary (SCHNEIDER, 1998; SCHNEIDER & al., 2002).

### Material and methods

For the study of the plant material, specimens from the herbaria A, AAU, B, BM, BR, CEN, COL, F, G, GH, IAN, K, L, LPB, M, MO, NY, P, PORT, QCA, R, RB, S, SP, U, UB, VEN, W, WAG were investigated. The applied terminology is based on STEARN (1992) for general morphology and on HICKEY (1973) for leaf venation types.

### Descriptions

*Quiina attenuata* J. V. Schneid. & Zizka, **spec. nova** (Fig. 1)

**Type:** PERU: Loreto, Prov. Requena, ad flumen Ucayali, 4°55'S 73°45'W, 120 m, VIII-IX.1976, *L. Bernardi s. n.* (*G* 200594) (arbre no. 5-133) (Holo-: G).

*Affinis* *Q. parvifolia* Lanj. & Heerdt, *Q. berryi* J. V. Schneid. & Zizka et *Q. leptoclada* Tul. sed ab *Q. parvifolia* stipulis angustioribus differt, ab *Q. berryi* sepalis majoribus, petiolo canaliculato differt, ab *Q. leptoclada* inflorescentiis longioribus, floribus pluribus, fructu elliptico vel globoso differt.

Trees, to 10-14 m tall; terminal internodes 0.3-1.3 × 0.1-0.2 cm, ± laterally compressed, longitudinally striate, densely pilose (trichomes < 0.1-0.5 mm long), glabrescent. Leaves opposite,

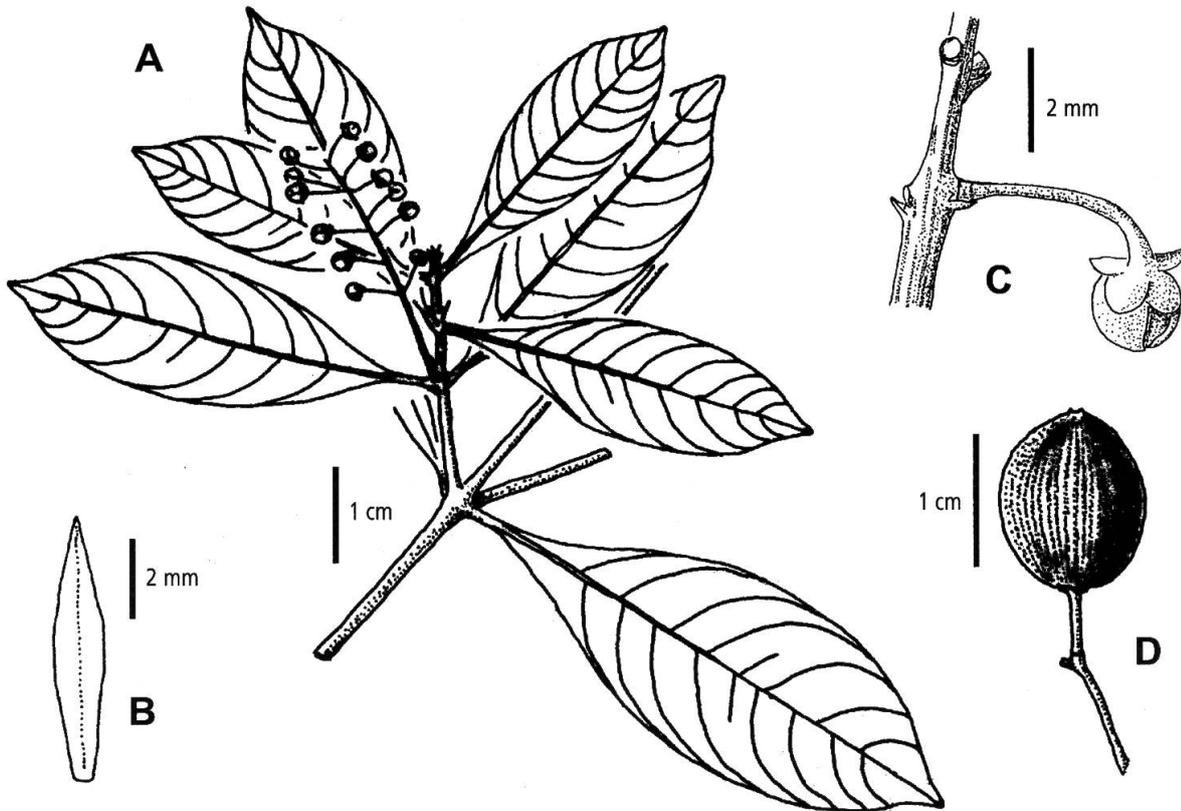


Fig. 1. – *Quiina attenuata* J. V. Schneid. & Zizka

A, terminal branchlet with fruiting inflorescences. B, single stipule with inconspicuous midvein. C, part of inflorescence with pedicel and flower bud. D, mature fruit with pedicel and part of peduncle. Figure drawn from *Bernardi s. n.* (*G* 200596) by Julio V. Schneider.

petiolate; stipules free, 3.5-9.5 × 0.3-0.8 mm, subulate (to elliptical-lanceolate), acute, ± glabrous or inconspicuously pilose, ± persistent, scars at subterminal node 0.3-0.4 × 0.4-0.55 mm, suborbicular-elliptical, joint or separated < 0.1-0.3 mm; petiole 1.0-3.0 × 0.7-1.5 mm, subcylindrical, dark, sparsely hairy, glabrescent; lamina 3.5-9.3(-14.0, juv.) × 1.3-2.4 cm, chartaceous to subcoriaceous, elliptical to elliptical-obovate, apically shortly (sub-) acuminate, basally attenuate, adaxially glabrous, abaxially glabrous or along midvein sparsely pilose; margin minutely serrulate, inconspicuously revolute; secondary veins 6-10(-17, juv.) per side, on both sides ± flat or prominulous (slightly more on adaxial surface), 0.2-1.2 cm distant at about middle of lamina, separated by 0-2(-5) intersecondary veins. Hermaphroditic inflorescence, botryoid, 5-19-flowered, male 35-70-flowered, with partial inflorescences 3-6-flowered; peduncle 1.0-3.3 cm × 0.6-0.9 mm, (in flower) laterally compressed, inconspicuously longitudinally furrowed, shortly pilose (trichomes to 0.1 mm long), subcylindrical; pedicels articulated at base (up to 0.3 mm from base), the upper part 4.5-6.5 × c. 0.3 mm (in fruit thickened, 1-1.2 mm diameter), laterally compressed or cylindrical, glabrous; bracts to 0.5 × 0.3 mm, ovate, acute-acuminate, ± glabrous. Flower c. 3 mm in diameter, globose in bud; sepals imbricate, 5, 0.9-1.0 × 0.8-1.2 mm, ovate to elliptical, rounded, ciliolate; petals imbricate, 5, 1.8-2.0 × c. 2.0 mm, suborbicular, glabrous, imbricate; stamens in hermaphroditic flowers 10, filaments c. 1.1 mm long, free, anthers c. 0.25 × 0.3 mm, subglobose; ovary 2-locular, ovules 2 per locule, basal-axile, styles 2, 1.0-1.2 mm long, ± free, stigma oblique-subpeltate. Fruiting pedicel thickened. Fruits 1.4-1.5 × 1.1-1.2 cm, ellipsoid to subglobose, apically rounded, conspicuously longitudinally furrowed, glabrous; seeds 1 per fruit, c. 0.8 × 0.7 cm, subglobose, densely villous (trichomes 0.2-0.3 mm long).

*Etymology.* – The specific epithet refers to the attenuate leaf base of the species.

*Distribution.* – The species is only known from two localities, one in a lowland rain forest of Peru and one in lowland rain forests of the blackwater region of the Río Negro in southern Venezuela.

*Ecology.* – Associated with blackwater rivers.

*Phenology.* – No information available.

*Additional material examined.* – **PERU:** Loreto, Prov. Requena, ad flumen Ucayali, 4°55'S 73°45'W, 120 m, VIII-IX.1976, *L. Bernardi s. n.* (G 200592) (arbre no. 6-R-96); Prov. Requena, ad flumen Ucayali, 4°55'S 73°45'W, 120 m, VIII-IX.1976, *L. Bernardi s. n.* (G 200593) (arbre no. 2-10-6); Prov. Requena, ad flumen Ucayali, 4°55'S 73°45'W, 120 m, VIII-IX.1976, *L. Bernardi s. n.* (G 200593; the same herbarium-no. as above, but from a different tree!) (arbre no. 7-15-4); Prov. Requena, ad flumen Ucayali, 4°55'S 73°45'W, 120 m, VIII-IX.1976, *L. Bernardi s. n.* (G 200596) (arbre no. 5-133); Prov. Requena, ad flumen Ucayali, 4°55'S 73°45'W, 120 m, VIII-IX.1976, *L. Bernardi s. n.* (G 200604) (arbre no. 3-R-202).

**VENEZUELA:** T. F. Amazonas, Dept. Casiquiare, Caño San Miguel, 2°35'N 67°07'W, 160 m, 18.IV.1991, *G. Aymard 8898* (MO); Dept. Rio Negro, San Carlos de Rio Negro, c. 20 Km S of confluence of Rio Negro and Brazo Casiquiare, along Caño Cuweje, 32 Km S of San Carlos, 1°56'N 67°03'W, 119 m, 25.IX.1980, *H. L. Clark 7678* (MO, NY).

All Peruvian collections are from the same locality. The enumeration of the specimens is somehow misleading, because there is no collection number, and tree numbers and herbarium numbers are not unique to one collection. There are two collections of *Bernardi s. n.* with tree number 5-133. The holotype (G 200594) is a fruiting specimen, while the specimen G 200596 has flower buds. From the herbarium number G 200593 two collections of different tree numbers are known. The flowering specimen *Clark 7678* (male flower buds) only differs slightly in larger bracts.

Similar species are *Q. parvifolia* Lanj. & Heerdt, *Q. leptoclada* Tul., and *Q. berryi* J. V. Schneid. & Zizka (see below). In *Q. parvifolia* stipules are elliptical and much broader (> 1.5 mm wide), and leaf blades are generally subcordate to acute, rarely attenuate. *Quiina berryi* is characterised by constantly 4 (larger) sepals, and an obconically widened pedicel in fruiting plants. *Quiina leptoclada* is distinguished by its short, mostly 3-flowered inflorescences, small obovoid fruits and conspicuously chartaceous leaf blades (even in adult plants).

***Quiina berryi* J. V. Schneid. & Zizka, spec. nova** (Fig. 2)

**Type:** BRAZIL: Amazonas, Km 159, BR 174, Manaus-Caracarai Road, 20.IX.1974, G. T. Prance & al. 22717 (Holo-: R; iso-: F, K, NY, photo FR).

*Affinis* *Q. amazonica* A. C. Sm. et *Q. negrensis* A. C. Sm., sed ab *Q. amazonica* inflorescentia brevioris foliis crassioribus differt, ab *Q. negrensis* folia nervis secundariis supra planis vel impressis, flore masculino trifasciculato.

Tree, to 15(-20) m tall; terminal internodes 0.3-8.7 × 0.08-0.15(-0.2) cm, laterally compressed or subcylindrical, longitudinally furrowed, ± pilose-pubescent (trichomes to 0.8 mm long). Leaves opposite, petiolate; stipules free, (0.18-)-0.25-1.0(-1.7) × 0.03-0.1 cm, subulate (to subulate-elliptical), acute, adaxially ± glabrous, rarely puberulent, abaxially glabrous or sparsely to densely pilose-pubescent, with trichomes to 0.6(-1.0) mm long, scars at subterminal node 0.3-0.5 × 0.4-0.8 mm, elliptical, joint or separated to 0.3 mm; petiole 0.1-0.6 × 0.07-0.15(-0.2) cm, canaliculate or not; lamina 3.3-12.5 × 1.3-5.3 cm, chartaceous to coriaceous, elliptical (to elliptical-obovate), apically (caudate-) acuminate, basally acute, cuneate or attenuate, adaxially glabrous, abaxially glabrous or pubescent along midvein, rarely covering the whole surface; margin minutely serrulate, rarely entire, flat or inconspicuously revolute; secondary veins 7-15 per side, adaxially level with surface or impressed, rarely prominulous, abaxially prominulous, 0.2-1.7 cm distant at about middle of lamina, separated by 0-2(-4) intersecondary veins. Hermaphroditic inflorescence botryoid, 1-13-flowered, male inflorescence 10-24-flowered, with partial inflorescences 3-flowered; peduncle 0.1-1.4 × 0.03-0.06 cm, laterally compressed or cylindrical, longitudinally inconspicuously furrowed-costate, glabrous or sparsely pubescent; bracts 0.7-1.4 (-2) × 0.5-1.0 mm, ± ovate, acute; pedicel below articulation to 0.2-1.4 mm long, above articulation 2.2-9 × 0.2-0.6 mm, (sub-)cylindrical, distally inconspicuously to obconically widened, glabrous. Flowers 3 mm in diameter; flower bud subglobose; sepals imbricate, 4, 0.9-2.2 × 1.0-2.3 mm, ovate, elliptical, suborbicular or obovate, apically obtuse to rounded, marginally ciliate, adaxially and abaxially glabrous, coriaceous; petals imbricate, free, in hermaphroditic flowers rarely connate at base, 4, 1.9-3.5 × 1.2-1.9 mm, obovate to elliptical-obovate, apically rounded, glabrous, membranous; stamens in hermaphroditic flowers 8-10, in male flowers 12-29, filaments (0.4-)1-1.8 mm long, in hermaphroditic flowers sometimes adnate to petals, anthers 0.3-0.4 × 0.3-0.4 mm, ellipsoid, subglobose; ovary 2-locular, ovules 2 per locule, placentation basal-axile, styles 2, free, 0.9-2.0 mm long. Fruiting peduncle thickened, to 1.5 mm in diameter; fruiting pedicel thickened, apically obconically widened, to 1.2 mm in diameter. Fruit 1.1-2.1 × 0.8-1.5 cm, broadly ellipsoid to subglobose, longitudinally furrowed by underlying lacunes, glabrous, pericarp fibrous; seeds 1-2 per fruit, 0.9-1.25 × 0.5-0.7 cm, ellipsoid, densely villous, trichomes 0.2-1.5 mm long.

*Etymology.* – This species is named in honour of the U.S. botanist Paul E. Berry.

*Distribution.* – Widespread throughout the Brazilian Amazon region.

*Ecology.* – Found in the understorey of terra firme or caatinga lowland forests on sandy-clayey, yellow lateritic soils.

*Phenology.* – The principal flowering period lasts from July to December, while fruiting is throughout the year.

*Additional material examined.* – BRAZIL: Amazonas, Município de Novo Aripuaña, BR 230, Rod. Transamazônica a 400 km de Humaitá, Rio Juma, vicinal Corujá a 30 km da Transamazônica, 7°15'S 60°00'W, 3.V.1985, *Cid Ferreira 5999* (FR, NY, UB); Município Pres. Figueredo, Canteiro de obras da Hidrelétrica de Balbina, rio Uatuma, 1-2°S 59-60°W, 12.III.1986, *Cid Ferreira & al. 6759* (NY); Município Presidente Figueredo, Canteira de obras de UHE de Balbina, 1°30'-2°00'S 59°30'-60°00'W, 11.IX.1986, *Cid Ferreira & al. 8075* (FR, NY); Distrito Agropecuário, Reserva 1501-Km 41 da Smithsonian/INPA, 2°24'26"-2°25'31"S 59°43'40"-59°45'50"W, 50-125 m, 16.VII.1990, *Freitas & al. 9* (NY); Rio Urubu, São José das Pedras, 22.II.1950, *R. L. Fróes 26066* (IAN); Região do Rio Madeira, Rio Canuma, 5.XI.1957, *R. L. Fróes 33770* (UB); Município de Borba, BR 230 Estrada Transamazônica, 5 km E of Sucunduri, 6°50'S 59°00'W, 7.V.1985, *Henderson & al. 338* (F, K, NY); Município de Manaus, c. 90 km NNE de Manaus, Distrito Agropecuário da Suframa, 2°24'26"-2°25'31"S 59°43'40"-59°45'50"W, 50-125 m, 10.XI.1989, *Kukle 22* (K, NY); Estrada Manaus-Itacoatiara, Km 108, 20.XI.1968, *Lima s. n.* (UEC); Estrada Manaus-Caracarai, km 132, 13.II.1974,

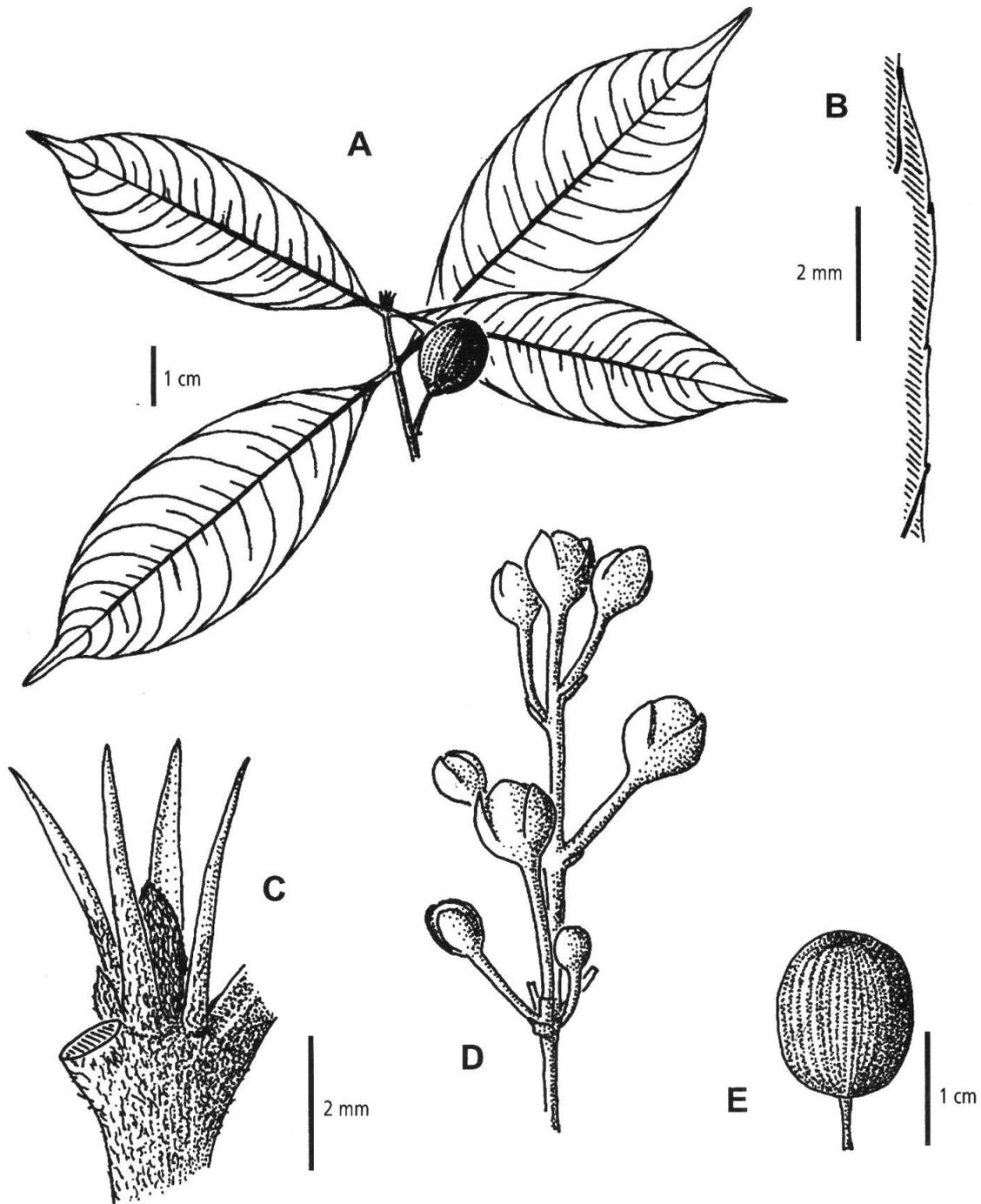


Fig. 2. – *Quiina berryi* J. V. Schneid. & Zizka

**A**, terminal branchlet with fruiting inflorescence. **B**, detail of leaf margin with minute serrulation. **C**, stipules at terminal node. **D**, inflorescence with flower buds. **E**, mature fruit. Figures **A**, **B**, **C**, **E** drawn from Santos & Silva 4651, **D** from Fróes 33770 by Julio V. Schneider.

*Loureiro & al. s. n.* (INPA-No. 47898) (F); Distrito Agropecuário, Reserva 1501 (km 41) of the Smithsonian/INPA Biological Dynamics of Forest Fragments Project, 2°24'26"-2°25'31"S 59°43'40"-59°45'50"W, 50-125 m, 26.VII.1990, *Mori & Costa Lima Assunção 21488* (FR, NY); Distrito Agropecuário, Reserva 1501 (Km 41) of the WWF/INPA MCS Project, 2°24'26"-2°25'31"S 59°43'40"-59°45'50"W, 50-125 m, 27.VII.1989, *Mori & al. 20645* (FR, NY); Distrito Agropecuário, 90 Km NNE de Manaus, Reserva 1501(Km 41) da Smithsonian/INPA, Projeto Dinâmica Biológica dos Fragmentos Florestais, 2°24'26"-2°25'31"S 59°43'40"-59°45'50"W, 50-125 m, 3.XII.1991, *Oliveira & al. 253* (NY); Distrito Agropecuário, 90 km NNE de Manaus, Reserva 1501 (km 41), Projeto Dinâmica Biológica de Fragmentos Florestais, 2°24'26"-2°25'31"S 59°43'40"-59°43'50"W, 50-125 m, 11.I.1992, *Oliveira & al. 303* (NY); Distrito Agropecuário, 90 km NNE de Manaus, Reserva 1501 (km 41), 2°24'26"-2°25'31"S 59°43'40"-59°43'50"W, 50-120 m, 10.II.1993, *Oliveira & al. A979* (NY); Distrito Agropecuário, Fazenda Porto Alegre, Reserva 3402 (Cabo Frio) of the WWF/INPA MCS project, 2°25'25"S 59°54'38"W, 50-125 m, 28.I.1989, *Pacheco & al. 157* (K, NY); Manaus-Itacoatiara Highway, Reserva Florestal Ducke, km 26, 9.IX.1967, *G. T. Prance & al. 2235* (FR, IAN, NY, R); Manaus-Itacoatiara Highway, Reserva Florestal Ducke, km 28, 20.III.1967, *G. T. Prance & al. 4694* (FR, IAN, NY, R); Vicinity of Manaus, Reserva Florestal Ducke, Manaus Itacoatiara road, km 27, 13.III.1969, *G. T. Prance & al. 10414* (F, IAN, K, NY, R); Reserva Florestal Ducke, 24.VII.1963, *Rodrigues 5461* (F); Reserva Florestal Ducke, 28.IV.1964, *Rodrigues & Loureiro 5802* (F); Reserva Florestal Ducke, 13.XII.1963, *Rodrigues & Coelho 5602* (F); Reserva Florestal Ducke, Igarapé do Barro Branco, 13.V.1963, *Rodrigues & Coelho 5206* (NY); **Pará**, Tapajós, Boa Vista, 11.IV.1933, *Capucho 569* (F, IAN); Santarém, km 67 da estrada para a Cachoeira do Palhão no rio Curuá Una, 1.XII.1966, *Cavalcante & Silva 1494* (IAN); Município Obidos, rio Jaramacaru, próximo aos Campos do Ariramba, 1°10'S 55°35'W, 5.XII.1987, *Cid Ferreira 9781* (F, GH, NY); Obidos, 15.VII.1918, *A. Ducke s. n.* (RB-No. 18131) (K, P); Rio Curuáuna, região do planalto de Santarém, 14.XI.1954, *R. L. Fróes 31390* (IAN); Beira do Rio Curuátinga, Planalto de Santarém, 14.II.1955, *R. L. Fróes 31592* (IAN); Igarapé Cuçari, região do Planalto de Santarém, IV.1955, *R. L. Fróes 31757* (IAN); Região do Planalto de Santarém, V.1955, *R. L. Fróes 31837* (IAN, NY, P); Cabeceiras do Rio Uruará, Município de Prainha, V.1955, *R. L. Fróes 31857* (IAN); BR 230, Transamazon Highway, 53 km NE of Itaituba, 28.XI.1977, *G. T. Prance & al. 25835* (NY, RB); Rio Trombetas, planalto Saracá, 27.V.1978, *Silva & Santos 4651* (F, NY, RB); Rondonia, Eixo JP-14 e arredores, 10.X.1986, *Romaniuc Neto & al. 562* (SP).

This species is most similar to *Q. amazonica* A. C. Sm. and *Q. negrensis* A. C. Sm. The first is distinguished by larger inflorescences usually with > 10 flowers in hermaphroditic and > 30 flowers in male inflorescences, and the peduncle being generally > 1.5 cm long. Additionally, its fruits tend to be obovoid rather than ellipsoid, the leaf apex is more conspicuously caudate, and the leaf texture is consistently chartaceous. *Q. negrensis* differs in adaxially more prominent secondary veins and in staminate flowers being disposed in fascicles of 5-11. For the discrimination of *Q. attenuata* see above.

***Quiina cidiana*** J. V. Schneid. & Zizka, *spec. nova* (Fig. 3)

**Type:** BRAZIL: Amazonas, Alto rio Solimões, Município de São Paulo de Olivença, platô ao sul da cidade, estrada para a localidade Bom Fim, 24.XI.1986, *Cid Ferreira & al. 8513* (Holo-: NY, photo FR; iso-: F).

*Propter folia petiolis brevibus Q. tinifolia* Planch. & Triana affinis, sed foliis rigidis, inflorescentia fructibus majoribus differt.

Tree, 12-18 m tall; terminal internodes 0.5-1.2(-2.5) × 0.2-0.4 cm, laterally compressed or subcylindrical, even or longitudinally furrowed, glabrous or with scattered trichomes (0.2-0.5 mm long); leaves opposite, petiolate; stipules free, 0.5-1.5 × 0.1-0.55 cm, narrowly elliptical to ovate, acute, basally acute, thickened, glabrous or abaxially with scattered trichomes; petiole 0.15-0.9 × 0.13-0.3 cm, subcylindrical, thickened towards base; lamina 3.2-15.8 × 1.7-6.6 cm, coriaceous, stiff, obovate, apically shortly subacuminate, obtuse, rounded or emarginate, basally (narrowly) rounded to acute, adaxially glabrous, abaxially glabrous or with scattered trichomes (0.2-1.0 mm long) along midvein; margin entire or minutely serrulate, revolute; secondary veins 9-16 per side, adaxially prominent to prominulous, abaxially prominent, 0.2-1.8 cm distant at about middle of lamina, separated by 0-1(-3) intersecondary veins. Hermaphroditic inflorescence botryoid, 22-25-flowered, male inflorescence not seen; peduncle 5.0-10.7 × 0.15-0.21 cm, laterally compressed or subcylindrical, longitudinally furrowed, densely pilose; bracts to 0.6 × 0.6 mm, ovate, subacuminate to acute; pedicel articulated, below articulation to 0.8-1.9 mm long, above articulation 6-12 × 1.2-1.3 mm, cylindrical, distally narrowly widened, glabrous or densely pilose. Flowers not seen; sepals 4-5, 0.8-1.2 × 1.1-1.9 mm, ovate to elliptical, obtuse to rounded, marginally ciliolate, abaxially glabrous or sparsely pilose, coriaceous; petals not seen; stamens

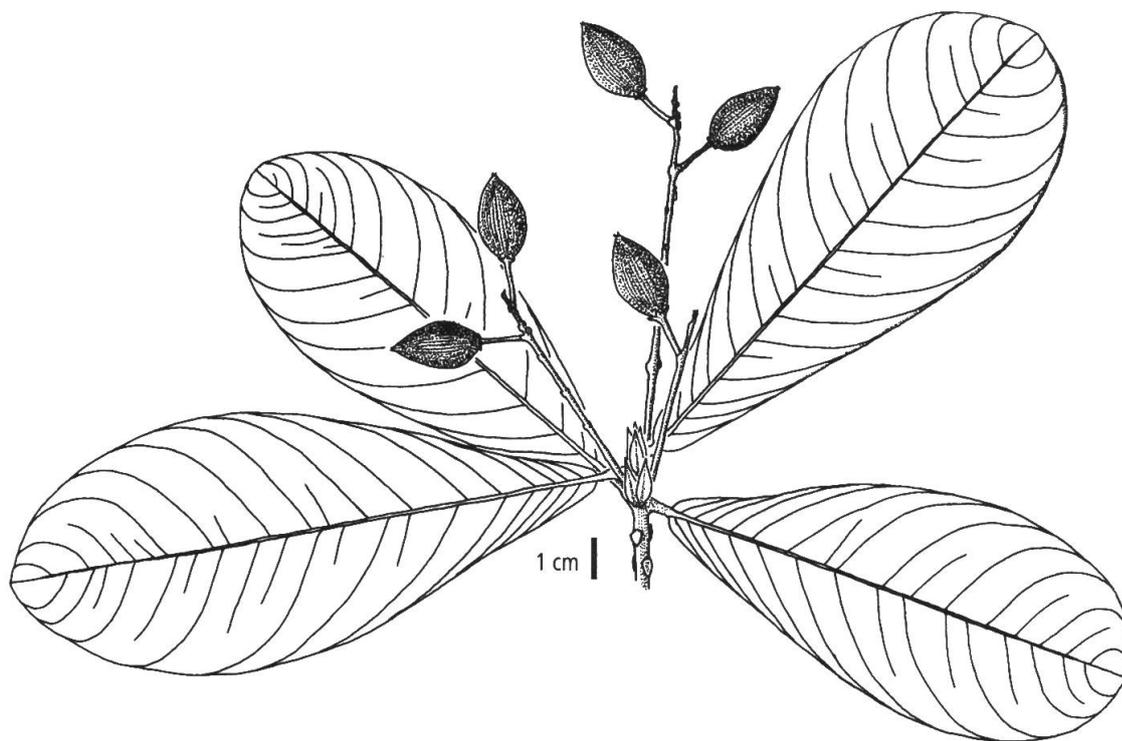


Fig. 3. – *Quiina cidiana* J. V. Schneid. & Zizka

Terminal branchlet with fruiting inflorescence. Figure drawn from *Cid & al.* 8513 by Julio V. Schneider.

not seen; ovary 2-locular; styles 2. Fruit berrylike, 2.3-2.7 × 1.3-1.6 cm, ellipsoid-ovoid, apically acute, longitudinally furrowed by underlying lacunes, glabrous, pericarp fibrous; seeds not seen.

*Etymology.* – This species is dedicated to the Brazilian botanist C. A. Cid Ferreira, explorer of the Amazon flora.

*Distribution.* – Only known from the Brazilian Amazon region.

*Ecology.* – Known from Caatinga forests on white sand.

*Phenology.* – No information available.

*Additional material examined.* – **BRAZIL: Amazonas**, Upper Rio Solimões, Município Jutai, Jutai, 10 km S of town center, 2°45'S 66°45'W, 29.X.1986, *Daly & al.* 4181 (NY).

This species resembles *Q. tinifolia* Planch. & Triana in its shortly petiolated leaves. But the unique combination of stiffly coriaceous leaf texture, ovate(-elliptical) stipules and densely hairy, long inflorescences with large fruits distinguish it clearly from other species.

***Quiina gentryi* J. V. Schneid. & Zizka, *spec. nova* (Fig. 4)**

**Type:** PERU: Madre de Dios, Prov. Manu, Parque Nacional del Manu, Río Manu, Cocha Cashu Station, 350 m, 26.III.1981, *Foster & Janson* 8327 (Holo-: F, no. 1945128, 1945129, two sheets).

*Affinis* *Q. grandifolia* Tessmann, *sed ab Q. grandifolia inflorescentia axe singulari differt.*

Trees or shrubs, 1.5-15 m tall; terminal internodes 5.8-6.8 × 0.33-0.5 cm, laterally compressed or subcylindrical, longitudinally furrowed, glabrous or densely pilose (trichomes 0.1 mm long); leaves opposite, petiolate; stipules free, ± caducous, 1.8-3.2 × 0.65-1.4 cm, ovate, acute to

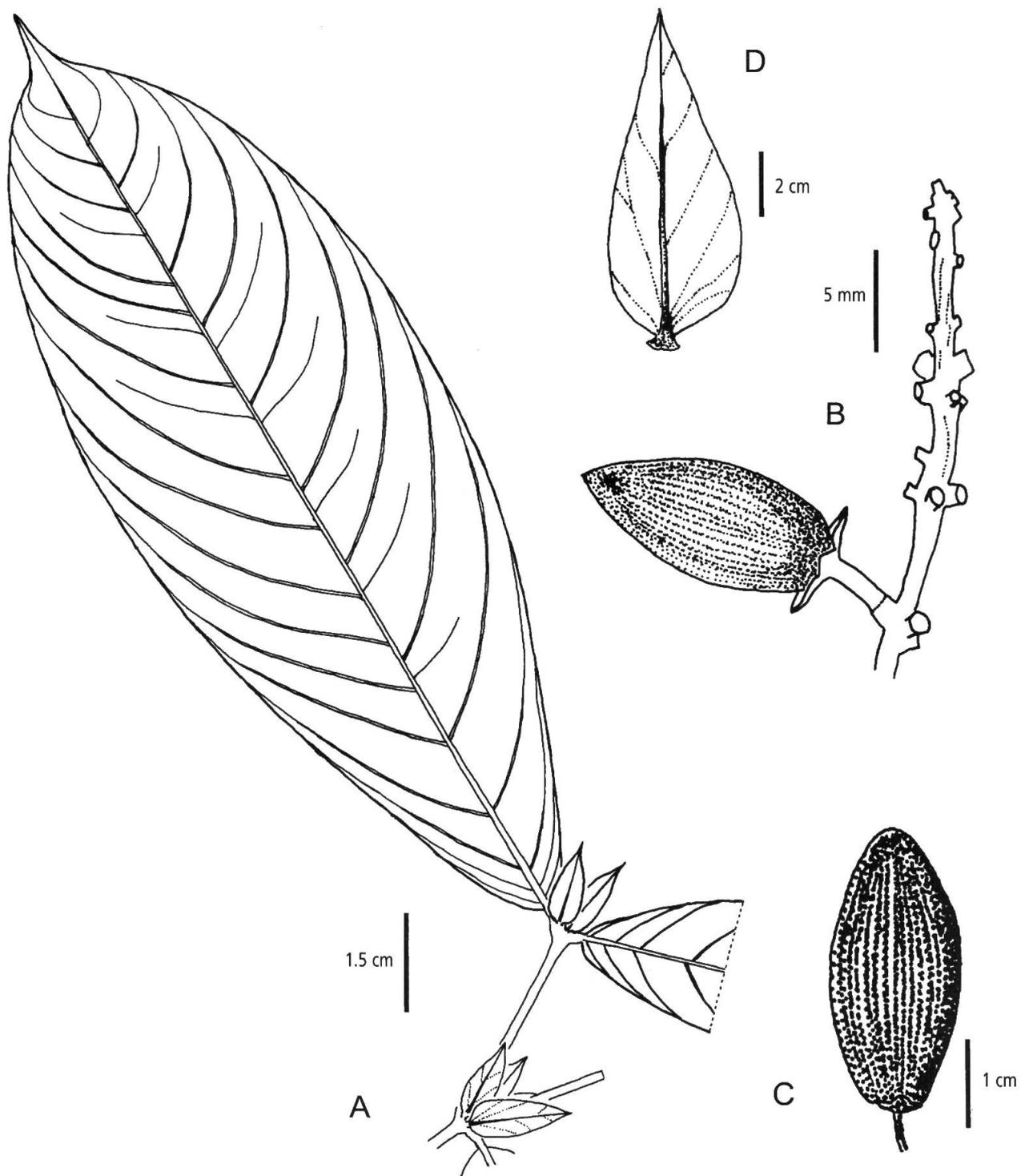


Fig. 4. – *Quiina gentryi* J. V. Schneid. & Zizka

**A**, branchlet with leaf and interpetiolar stipules. **B**, apical part of inflorescence with young fruit. **C**, mature fruit. **D**, stipule with venation. Figures **A**, **D** drawn from *Foster & Janson 8327*, **B** from *Gentry & al. 27081*, **C**, from *Dodson & Gentry 6591* by Julio V. Schneider.

acuminate, basally rounded, asymmetrical, with conspicuous lateral veins, on both surfaces glabrous or basally pilose; petiole 0.4-1.2 × 0.3-0.5 cm, subcylindrical, canaliculate or not, ± thickened; lamina 26.5-34 × 10-12.8 cm, (chartaceous-) subcoriaceous, elliptical, apically acuminate, basally acute or narrowly rounded, adaxially glabrous or sparsely pilose along midvein, abaxially sparsely pilose-pubescent along midvein; margin entire or minutely serrulate, flat; secondary veins 14-29 per side, adaxially prominent to prominulous, abaxially prominent, 0.8-3.7 cm distant at about middle of lamina, separated by 0-1(-2) intersecondary veins. Hermaphroditic inflorescence botryoid, 29-36-flowered, with flowers multiseriately arranged, male inflorescence not seen; peduncle 3.4-6.7 × 0.14-0.5 cm, cylindrical, longitudinally furrowed, densely pilose; bracts 1.1-1.2 × 0.7-0.8 mm, ovate, acute; pedicel articulated, below articulation to 2-4.5 mm long, above articulation 2-4 × 0.9-2.3 mm, cylindrical, glabrous. Flowers not seen; sepals 4-5, 1.0-2.4 × 1.0-2.8 mm, ovate to elliptical, obtuse to rounded, marginally ciliolate, coriaceous; petals not seen; stamens not seen; ovary 2-locular, ovules 2 per locule, placentation basal-axile; styles 2; fruiting peduncle conspicuously thickened, to 5 mm in diameter; fruiting pedicel thickened, to 2.3 mm in diameter. Fruit berrylike, (2.3-)-3.3 × (0.9-)-1.6 cm, ellipsoid-ovoid to ellipsoid, apically obtuse, longitudinally furrowed, glabrous, pericarp fibrous; seeds 1-2 per fruit, 1.6 × 1.15 cm, ellipsoid, densely villous, trichomes 0.2-0.6 mm long.

*Etymology.* – This species is dedicated to Alwyn H. Gentry (1945-1993).

*Distribution.* – Distributed in lowland to premontane rain forests in Peru and Ecuador.

*Ecology.* – No information available.

*Phenology.* – No information available.

*Additional material examined.* – **PERU:** Madre de Dios, Prov. Manu, Cocha Cashu Camp, Manu National Parc, 380 m, 21.X.1979, Gentry & al. 27081 (F).

**ECUADOR:** Los Ríos, Km 12 road from Patricia Pilar to 24 de Mayo, Montañas de Ila, 540 m, 7.X.1976, Dodson & Gentry 6591 (NY).

This species is closely related to *Q. grandifolia* Tessmann, but differs in adjacent stipules being separated (not fused into one as in *Q. grandifolia*). Both species most likely differ also in inflorescence characters, but so far only hermaphroditic inflorescences have been seen in *Q. gentryi*, only male ones in *Q. grandifolia*. In the first, flowers are borne along a long peduncle, while in the second, flowers appear on much shorter axes with the inflorescence looking circular in outline. Since heteromorphy between different sexual morphs is known in *Quiina*, distinction of the species based on inflorescences may be premature, albeit such a strong contrast in inflorescence structure has not been observed between different sexes in a species of the genus up to now.

The Ecuadorian collection (Dodson & Gentry 6591) differs slightly in having unthickened fruiting pedicels and more secondary veins. But for the overall habit it is similar and included in the diagnosis.

### *Quiina piresii* J. V. Schneid. & Zizka, *spec. nova* (Fig. 5)

**Type:** BRAZIL: Amazonas, Municipio de Manaus, Distrito Agropecuário da SUFRAMA, Rodovia BR-174, km 72 depois 6 km oeste da BR, Fazenda Dimona, Terra firme, 2°19'S 60°05'W, 13.V.1985, Pereira & al. s. n. (INPA/WWF 2303.1664) (Holo-: NY, photo FR).

*Affinis* *Q. yatuensis* J. V. Schneid. & Zizka, *Q. integrifolia* Pulle et *Q. obovata* Tul., sed ab *Q. yatuensis* folia nervis secundariis infra prominentibus, margine minutissime serrulata, fructu anguste obovoideo differt, ab *Q. integrifolia* inflorescentia pilosa, foliis margine minutissime serrulata differt, ab *Q. obovata* stipulis brevibus, triangulo-ovatis differt.

Tree to 11-15 m tall; terminal internodes 0.6-5.9 × 0.15-0.25 cm, subcylindrical, ± even or inconspicuously furrowed, sparsely pilose (trichomes 0.1-0.5 mm long), glabrescent. Leaves opposite; stipules 5.0-8.0 × 1.2-1.5 mm, triangular-ovate, acute, thickened at base, ciliolate, caducous, scars at subterminal node 1.3-1.7 × 1.2-1.4 mm, elliptical to suborbicular, joint;

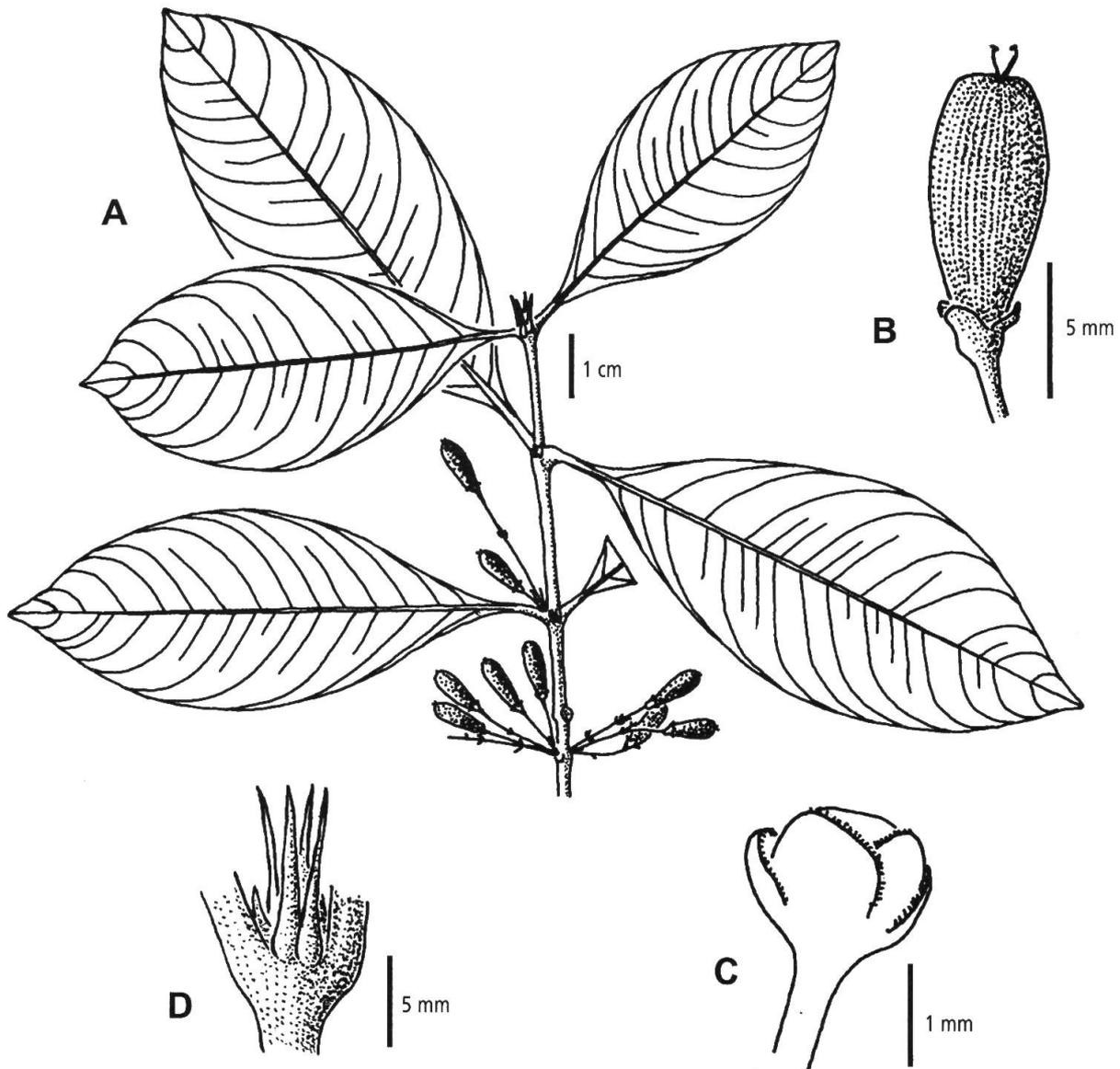


Fig. 5. – *Quiina piresii* J. V. Schneid. & Zizka

A, terminal branchlet with fruiting inflorescences. B, young fruit with style remnants. C, flower bud with ciliate sepals. D, stipules at terminal node. Figure drawn from Freitas & al. 67 by Julio V. Schneider. Scale bars in A = 1 cm, B = 5 mm, C = 1 mm, D = 5 mm.

petiole 0.15-0.8 × 0.13-0.3 cm, subcylindrical, basally thickened, dark, when old often transversally furrowed; lamina (2.8-)5.0-16.2 × (1.4-)1.8-4.4 cm, coriaceous, (elliptical-) obovate, apically (sub-)acuminate, basally tapering, adaxially glabrous, abaxially pilose along midvein, glabrescent; margin minutely serrulate, revolute; secondary veins 6-18 per side, adaxially prominent, abaxially flat or prominulous, 0.3-1.6 cm distant at about middle of lamina, separated by 0-1(-3) conspicuous intersecondary veins. Hermaphroditic inflorescence botryoid, 5-9-flowered, often basally branched, male inflorescence not seen; peduncle 5-20 × 0.55-0.8 mm, laterally compressed (to subcylindrical), inconspicuously furrowed, densely pilose; pedicels articulated, below articulation to 1.3 mm long, above articulation 5-8 × 0.25-0.35 mm, subcylindrical, glabrous; bracts to 1.9(-4.0) × 0.5-0.6 mm, (elliptical-)ovate, acute, pilose. Flowers globose in

bud; sepals imbricate, (4-)5, 0.9-1.9 × 0.6-1.9 mm, ovate to suborbicular, rounded to obtuse, ciliolate, abaxially pilose or glabrous, coriaceous; petals (only seen in bud) 4-5 (?), ± obovate, apically rounded, membranous; stamens in male flowers c. 22, in hermaphroditic flowers 12-14, filaments free, anthers subglobose, c. 0.4-0.5 × 0.4-0.5 mm; ovary 2-locular, ovules 2 per locule, placentation basal-axile, styles 2, c. 1.4 mm long, ± free, stigma oblique-subpeltate, reniform. Fruit (immature) to 1.0 × 0.4 cm, narrowly oblong-obovoid, longitudinally striate, glabrous; seed 1 per fruit, obovoid, densely villous.

*Etymology.* – This species is named in memory of the Brazilian botanist João Murça Pires (1917-1994) for his significant contributions to our knowledge on *Quiinaceae*.

*Distribution.* – Scattered in the Amazon region.

*Ecology.* – This species grows in lowland terra firme forests on yellow lateritic soils.

*Phenology.* – No information available.

*Additional material examined.* – **BRAZIL: Amazonas**, Distrito Agropecuário, Reserva 1501, km 41 da Smithsonian/INPA, 2°24'26"-2°25'31"S 59°43'40"-59°45'50"W, 50-125 m, 15.IX.1990, Freitas & al. 67 (NY); Município de Manaus, Distrito Agropecuário da SUFRAMA, Rodovia BR-174, km 64 depois 21 km leste na ZF3, Fazenda Porto Alegre, 2°00'S 59°00'W, 18.III.1987, Sothers & al. s. n. (INPA/WWF 3402.598.2) (NY).

*Quiina yatuensis* J. V. Schneid. & Zizka is similar, but differs in secondary veins which are more prominent on the abaxial surface, the entire leaf margin, a more regular, opposite arrangement of the flower bracts, and more finely striate internodes. Additionally, fruits are broadly obovoid rather than narrowly oblong-obovoid as in *Q. piresii*. *Quiina integrifolia* Pulle can be of similar leaf shape, but is characterised by densely tomentose inflorescences, entire leaf margin, and ± globose fruits. Small-leaved *Q. obovata* Tul. is distinguished by long, narrowly elliptical to subulate, persistent stipules.

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Address of the authors: Dept. of Botany/Palaeobotany, Forschungsinstitut Senckenberg and J. W. Goethe-Universität, Senckenberganlage 25, D-60325 Frankfurt/Main, Germany.

E-mail: Julio.Schneider@senckenberg.de – Georg.Zizka@senckenberg.de

