EDINBURGH JOURNAL OF BOTANY 64 (1): 17–23 (2007)

doi:10.1017/S0960428606000680

PLEONOTOMA ORIENTALIS (*BIGNONIACEAE – BIGNONIEAE*): EXPANDED DESCRIPTION, DISTRIBUTION AND A NEW VARIETY OF A POORLY KNOWN SPECIES

C. E. B. PROENÇA[1], R. FARIAS-SINGER[2] & B. M. GOMES[1]

Pleonotoma orientalis Sandwith (*Bignoniaceae*), a poorly known species, is lectotypified, illustrated for the first time and a distribution map is provided. *Pleonotoma orientalis* Sandwith var. *ratteriana* Proença & Farias from the Jalapão area (State of Tocantins, Central Brazil) is described and illustrated. The new variety is apparently identical to the typical variety in floral characters but distinct in its ternate-tripinnate leaves with numerous, minute, slightly thickened leaflets, and fruits with rounded or obtuse tips. The collections of this new variety increase its range c.400 km S from Northern Brazil (Maranhão and Pará) into Tocantins in Central Brazil.

Keywords. *Bignoniaceae*, Brazil, cerrado, Jalapão, liana, *Pleonotoma*, Tocantins.

INTRODUCTION

Pleonotoma is a small neotropical genus belonging to tribe *Bignonieae* of the *Bignoniaceae* (Gentry, 1997). The genus has 12 species and is distributed from Guatemala to Bolivia and southeastern Brazil including Trinidad and Tobago, with the centre of diversity in the Amazon region (Gomes, 2006). The genus *Pleonotoma* was first recognized by Miers (1863), but the lectotype of the genus, *Bignonia jasminifolia* [= *Pleonotoma jasminifolia* (Kunth) Miers], was described much earlier (Humboldt *et al.*, 1818).

Recent molecular studies in tribe *Bignonieae* indicate that the genus *Pleonotoma* is monophyletic (Lohmann, 2006).

The genus is easily recognized by the combination of quadrangular branches, nodes with prominent pseudostipules and lacking glandular fields, 2–3-ternate or combined ternate and 1–3-pinnate leaves, and trifid tendrils. The inflorescence is a raceme (rarely with solitary flowers), the calyx is cupuliform, the corolla usually white or cream, sometimes with a yellow tube or the lobes tinged pink or violet, the ovaries are provided with a nectariferous disk and the fruits are flattened, long and narrow to elliptic, with an inconspicuous mid-vein.

Sandwith (1938) described *Pleonotoma orientalis* Sandwith var. *orientalis* from Maranhão and Pará based upon two collections. He compared his new species to

[1] Departamento de Botânica, Universidade de Brasília, C.P. 4457 Brasília, DF, Brazil, CEP 70919-970. E-mail: cproenca@unb.br
[2] Departamento de Botânica, Universidade Estadual de Campinas, C.P. 6109 Campinas, SP, Brazil, CEP 130803-070.

Pleonotoma clematis (Kunth) Miers, a widespread species of the genus with which it shares the same kind of pseudostipules and flowers, and to *P. jasminifolia*, with which it shares biternate leaves.

This paper describes a new variety of *Pleonotoma orientalis* Sandwith from the Jalapão area, in the State of Tocantins, Brazil. The Jalapão region, close to the border with the States of Piauí, Maranhão and Bahia, is botanically almost unknown. As far as we can tell, botanical collecting in this area was first undertaken in 1998 by a joint Royal Botanic Garden Edinburgh/Universidade de Brasília expedition in which the second author took part. The epithet of this new variety honours the leader of that expedition, James Alexander Ratter of the Royal Botanic Garden Edinburgh, who has been working and collecting in Central Brazil since 1967. The new variety was re-collected in 2001 during the *Expedição Científica Gilvandro Simas Pereira* which resulted in the *Estação Ecológica Serra Geral do Tocantins* National Reserve being created (Proença *et al.*, 2002).

LECTOTYPIFICATION OF *PLEONOTOMA ORIENTALIS*

Pleonotoma orientalis Sandwith, Brittonia 3: 92 (1938). – Type: Brazil, Maranhão, Região do Rio Maracassumé, Ilha do Trauira, *Froes* 1840 (lecto K, designated here; iso F, NY).

NEW VARIETY

Pleonotoma orientalis Sandwith var. **ratteriana** Proença & Farias, **var. nov. Fig. 1.** A varietas *orientalis* foliis plerumque ternato-tripinnatis, folioliis plus numerosis, 31–127, laminae minima, 0.2–0.75(–1.1) × 0.05–0.2(–0.4) cm, ad maturatione crassiuscula, folioliis terminalibus apicibus rotundatis vel obtusis, fructibus apicibus rotundatis vel obtusis et distributione geographica australiore differt. – Type: Brazil, Tocantins, Município de Mateiros, Dunas da Serra do Espírito Santo, 10°33′43″S, 46°39′44″W, 17 vi 2003, *A.B. Sampaio & M.B. Sampaio* 749 (holo UB; iso CEN, E, NY, UEFS).

Shrubby liana; stems strongly tetragonal, the surfaces between the angles green when fresh, striate, minutely lepidote, puberulent when young, the angles rounded, brown, woody, detaching with age; nodes lacking glandular fields, with interpetiolar ridges; pseudostipules ascending, 2.5–5 mm, spatulate to oblanceolate, abaxial surface with 1–2 rows of sunken patelliform glands and elevated mid-vein, adaxial surface with sparse hairs. *Leaves* ternate-tripinnate, 3.5–6 cm, the central pinna frequently replaced by a tendril; petiole 0.7–2.9 cm, grooved, puberulous; pinnulae imparipinnate with 3–7 leaflets; rachis puberulous; leaflets 31–127 per leaf, 0.2–0.75(–1.1) × 0.05–0.2(–0.4) cm, elliptic or the terminal one obovate, oblong or subrhombical, usually entire and obtuse or rounded, but the larger leaflets subtending the inflorescence obscurely 3-dentate and acute; abaxial surface with

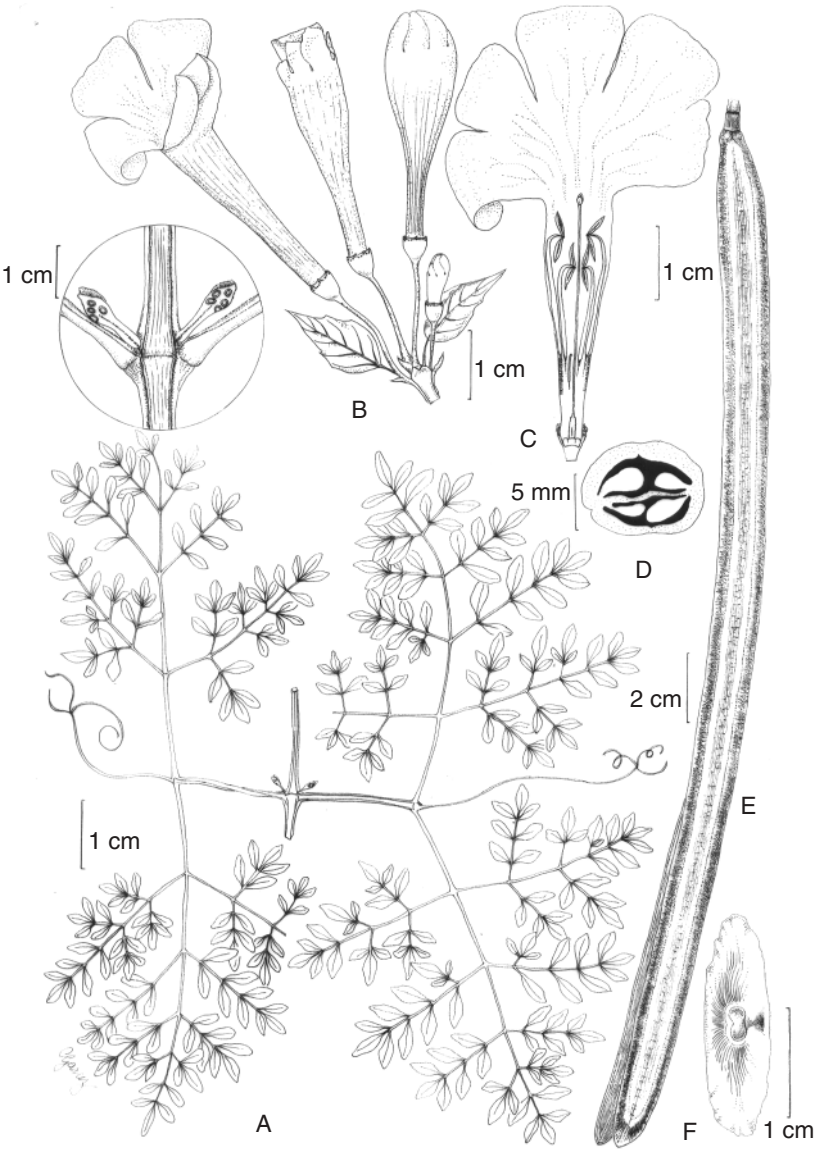

FIG. 1. *Pleonotoma orientalis* Sandwith var. *ratteriana* Proença & Farias. A, stem with leaves and detail of node and pseudostipules; B, inflorescence with closed floral buds and old flowers; C, flower in longitudinal section; D, ovary in transverse section; E, fruit (immature); F, seed (immature).

slightly raised venation, tufts of hairs in the axils of the veins and sparse sunken patelliform glands, adaxial surface with the mid-vein impressed; tendril trifid, arms uncinate when young, twining with age. *Inflorescence* a terminal, congested, bracteate raceme with 4–20 flowers; bracts deltoid, acute, puberulous; pedicels

5–13 mm. *Calyx* cupulate, 4–5 × c.3–4 mm, truncate and minutely 5-denticulate, obscurely ciliate, with a warty ridge of 2–3 rows of sunken patelliform glands; calyx teeth swollen at base, puberulous; corolla white (with purple 'details' fide *Sampaio & Sampaio* 749), narrowly infundibuliform, 3–6 × 0.8–1.2 cm, the tube externally glabrous, internally pubescent below stamen insertion; lobes imbricate in bud, rounded, externally puberulous with sparse sunken patelliform glands at base; staminode rudimentary, inserted below the stamens; ovary c.1 mm wide, compressed, lepidote; ovules many, 2-seriate per locule; style 3.6–3.7 cm, glabrous. *Capsule* long, flattened, 19–29.3 × 1–1.2 cm, apex rounded sometimes with the extreme tip obtuse, base truncate, subtended by accrescent, woody nectariferous disk; valves thin, inconspicuously 2–3 sulcate along mid-vein, shiny brown, with minute pale subepidermal glands. *Immature seeds* c.0.6 × 1.5 cm, transversely oblong, the seed body poorly demarcated from the wings; wings shiny pale golden brown, not at all or barely hyaline at tip; hilum transversely elliptic, c.1 mm wide.

Ecology. This variety grows over trees and shrubs in islands of vegetation bordering extensive inland sand dunes and along the floor of gallery forests, always on sandy soil, between 200 and 500 m above sea level. It was found flowering and fruiting in March, May, June and November.

Vernacular name. The vernacular name, 'unha-de-gato', means cat's claw. This name is used for two other lianas which also have trifid tendrils: *Macfadyena unguis-cati* (L.) A.H.Gentry and *Melloa quadrivalvis* (Jacq.) A.H.Gentry (Sandwith & Hunt, 1974), both *Bignonieae* but not closely related to *Pleonotoma* (Lohmann, 2006).

Additional specimens examined. BRAZIL. Tocantins: Entre Pedro Afonso e Santa Maria [do Tocantins], 8°34′S, 47°45′W, 320 m, 18 xi 1998, *R. Farias, S. Bridgewater, J. Fonsêca Filho & J. Ratter* 187 (E, UB); Guaraí, rodovia Belém-Brasília, iii 1976, *G. Hatschbach & R. Kummrow* 38506 (MBM); Mateiros, Dunas, 10°34′59″S, 46°29′42″W, 470 m, 4 v 2001, *R. Farias, A.B. Sampaio, L.C. Milhomens & P.L. Simpson* 416 (UB).

The two varieties of *Pleonotoma orientalis* are identical in the morphology of the pseudostipules, inflorescence and floral characteristics, and in their thin-valved, long, narrow and flattened fruits. Both taxa also have characteristic tufts of simple hairs in the axils of the secondary veins of the leaflets, a characteristic that is present in no other species of the genus (Gomes, 2006). They are, however, distinguishable in the number of leaflets per leaf and the size, shape and texture of the leaflets as well as, based upon a limited sample, in the tips of the fruits; the numerous, small leaflets with rounded or obtuse tips are particularly striking (Fig. 2). Geographically, there is a distribution gap of c.400 km between the two varieties. Ecologically, *Pleonotoma orientalis* var. *ratteriana* occurs in the gallery forests of the Central Brazilian savannas in the cerrado biome between 200 and 500 m above sea level, while *Pleonotoma orientalis* var. *orientalis* occurs within the Amazon forest biome reaching the Atlantic coast (Fig. 3) from 5 to 700 m above sea level. If the differences in leaf and fruit characters prove to be consistently stable and correlated within the Northern and

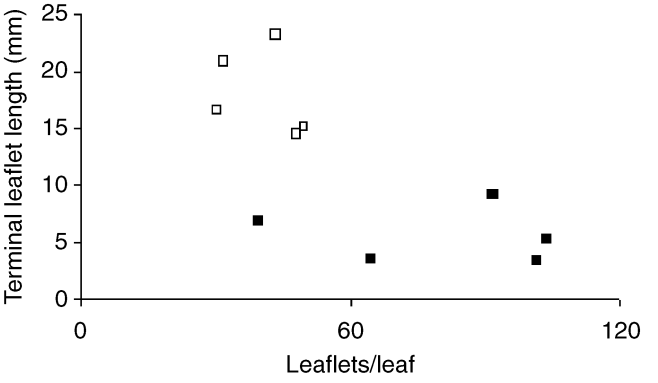

FIG. 2. Scatter diagram of number of leaflets per leaf and of terminal leaflet length in *Pleonotoma orientalis* Sandwith. □ = *P. orientalis* var. *orientalis*; ■ = *P. orientalis* var. *ratteriana*. Only leaves which appeared to retain all leaflets were used.

Central Brazilian populations, and additional collecting fails to produce intermediates, *Pleonotoma orientalis* var. *ratteriana* may eventually merit specific status. Additional collections, particularly of fruiting material, are necessary. At the present state of knowledge, in view of the great similarity, varietal status seems more appropriate.

Key to the varieties

1a. Leaves ternate-bipinnate; leaflets 24–63 per leaf, 1.2–2.5 × 0.5–1.4 cm, thinly cartaceous at maturity, the adaxial surface smooth; apex of the terminal leaflet usually acute or acuminate; fruit apex attenuate __ **P. orientalis** var. **orientalis**

1b. Leaves ternate-tripinnate; leaflets 31–127 per leaf, 0.2–0.75(–1.1) × 0.05–0.2(–0.4) cm, thickened at maturity (appearing crassulaceous under a lens), the adaxial surface rugose; apex of the terminal leaflet rounded or obtuse; fruit apex rounded or obtuse _____ **P. orientalis** var. **ratteriana**

Pleonotoma orientalis var. *ratteriana* has been collected in three municípios in the State of Tocantins: Guaraí, Mateiros and Santa Maria do Tocantins (Fig. 3). It has been twice independently collected in the Serra do Espírito Santo, and was also observed in the Serra da Muriçoca and in the Mata do Carrapato (A. B. Sampaio, pers. comm., 2004). These last three localities are within the c.700,000 ha *Serra Geral do Tocantins* Ecological Reserve, which suggests that *Pleonotoma orientalis* var. *ratteriana* is protected.

ACKNOWLEDGEMENTS

We thank Cristina Garcez for drawing Fig. 1, Alexandre Bonesso Sampaio for kindly re-collecting and observing this species at our request, and the curators of F

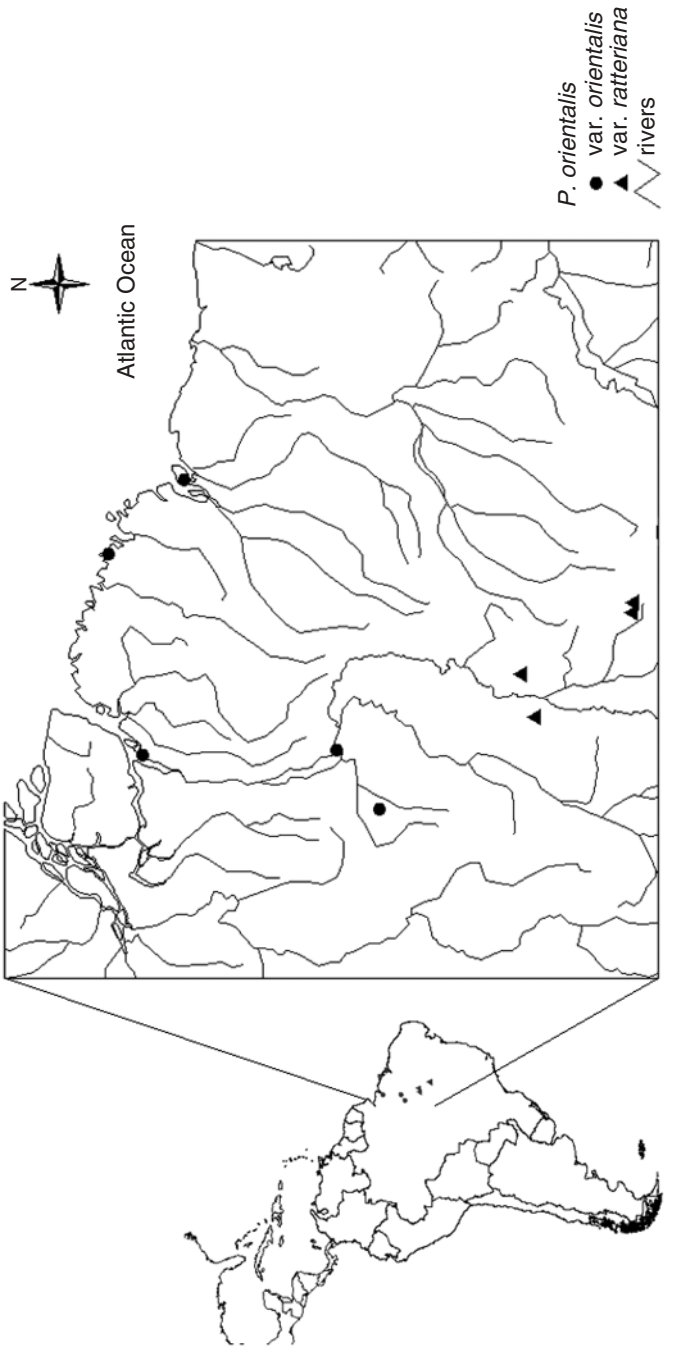

FIG. 3. Geographic distribution of *Pleonotoma orientalis* Sandwith. ● = *P. orientalis* var. *orientalis*; ▲ = *P. orientalis* var. *ratteriana*.

and NY for sending material on loan. Stephen Harris, Amy Pool, Sally Bidgood, and David Middleton made suggestions that improved the manuscript. Moacir Arruda, Miguel von Behr, *Pesquisa e Conservação em Cerrado*, EMBRAPA-Cerrados, DfID (UK) and Conservation International, who organized and provided funding for fieldwork, also deserve thanks. This work forms part of the third author's MSc dissertation.

REFERENCES

GENTRY, A. H. (1997). Bignoniaceae. *Flora of the Venezuelan Guyana,* vol. 3. St Louis: Missouri Botanical Garden Press [published posthumously].

GOMES, B. M. (2006). *Revisão de* Pleonotoma *Miers (Bignonieae, Bignoniaceae)*. MSc thesis (unpublished). Universidade de Brasília, Brasília.

HUMBOLDT, A., BONPLAND, A. & KUNTH, K. S. (1818). *Nova genera et species plantarum* 3, pp. 1–356, figs 193–300. Paris.

LOHMANN, L. (2006). Untangling the phylogeny of neotropical lianas (Bignonieae, Bignoniaceae). *Amer. J. Bot.* 93(2): 304–319.

MIERS, J. (1863). Report on the plants collected by Mr. Weir, especially the Bignoniaceae. *Proc. Roy. Hort. Soc. London* 3: 179–202.

PROENÇA, C., SAMPAIO, A. B., SOARES E SILVA, L. H., MILHOMENS, L. C., SIMON, M. F., SIMPSON JR., P. L. & FARIAS, R. (2002). Relatório da Botânica. In: ARRUDA, M. B. & VON BEHR, M. (eds) *Jalapão: Expedição Científica e Conservacionista*, pp. 21–28. Brasília, Brazil: Edições Instituto Brasileiro do Meio Ambiente (IBAMA).

SANDWITH, N. Y. (1938). Three new South American plants. *Brittonia* 3: 92–94.

SANDWITH, N. Y. & HUNT, D. R. (1974). Bignoniáceas. In: REITZ, R. (ed.) *Flora Ilustrada Catarinense*. Itajaí, Brazil: Herbário Barbosa Rodrigues.

Received 19 June 2006; accepted for publication 31 October 2006