

A new restricted-range species of *Buxus* L. (Buxaceae) from central Madagascar

Porter P. LOWRY II

Missouri Botanical Garden, P.O. Box 299, St. Louis, MO, 63166-0299 (USA)
pete.lowry@mobot.org
and Département Systématique et Évolution (UMS 602),
Muséum national d'Histoire naturelle,
case postale 39, 57 rue Cuvier, F-75231 Paris cedex 05 (France)
lowry@mnhn.fr

George E. SCHATZ

Missouri Botanical Garden, P.O. Box 299, St. Louis, MO, 63166-0299 (USA)
george.schatz@mobot.org

Lowry II P. P. & Schatz G. E. 2006. — A new restricted-range species of *Buxus* L. (Buxaceae) from central Madagascar. *Adansonia*, sér. 3, 28 (1): 67-70.

ABSTRACT

Buxus cipolinica Lowry & G.E.Schatz, a distinctive new species from central Madagascar, is described and illustrated. It most closely resembles *B. humberitii* G.E.Schatz & Lowry, but differs in several characters, including the shape of its leaves and of the sepals in its female flowers. This Critically Endangered species is known only from a single highly threatened stand of remnant native vegetation on marble substrate situated south of the town of Ambatofinandrahana.

KEY WORDS

Buxaceae,
Buxus,
conservation,
Madagascar,
new species.

RÉSUMÉ

Une nouvelle espèce de Buxus L. (Buxaceae) à aire restreinte du centre de Madagascar.

Buxus cipolinica Lowry & G.E.Schatz, une nouvelle espèce caractéristique, est décrite et illustrée pour le centre de Madagascar. Elle se rapproche le plus de *B. humberitii* G.E.Schatz & Lowry, mais s'en distingue par plusieurs caractères tels que la forme de ses feuilles et des sépales de ses fleurs femelles. Cette espèce, en danger critique d'extinction, est connue d'une unique parcelle de végétation naturelle résiduelle, très menacée, sur cipolin située au sud de la ville d'Ambatofinandrahana.

MOTS CLÉS

Buxaceae,
Buxus,
conservation,
Madagascar,
espèce nouvelle.

INTRODUCTION

In the course of examining material for our revision of *Buxus* L. in Madagascar and the Comoro Islands (Schatz & Lowry 2002, 2003), a sterile unicate specimen in the TEF herbarium collected in 1964 by René Capuron from S of Ambatofinandrahana could not be accommodated in any of the nine species we recognized. At the time a team of Missouri Botanical Garden botanists was conducting field work in the Ambatofinandrahana area, so we drew their attention to this anomalous specimen and requested that they attempt to re-locate the population in order to collect fertile material. In November 2004, several collaborators visited the site where Capuron had made his gathering almost 40 years earlier. They found an estimated 2000 individuals growing in an area of *c.* 150 ha, and collected a fine set of specimens with flowers and young fruits. Careful examination of the new material shows that it represents a distinctive new species, which we describe here.

SYSTEMATICS

Buxus cipolinica Lowry & G.E.Schatz, sp. nov.
(Fig. 1)

Haec species a Buxo humbertii foliis late obovatis 1.5-1.9-plo longioribus quam latioribus atque floris feminei sepalis late ovatis apice rotundatis differt.

TYPUS. — Madagascar. Prov. Fianarantsoa, 8 km S of Ambatofinandrahana, Mahavanyo, Analalhibe, disturbed thicket on marble, 20°37'44.7"S, 46°50'36.7"E, 1362 m, 27.XI.2004, ♂ and ♀ fl., fr., C. Birkinshaw, A. Leavana & Jean-Ba 1399 (holo-, MO!; iso-, G!, K!, P!, PRE!, TEF!, WAG!).

PARATYPE. — Madagascar. Prov. Fianarantsoa, rocailles à mi-chemin environ entre Ambatofinandrahana et Fenoarivo, 20°33'S, 46°48'E, 3.XII.1964, ster., Service Forestier 23903bis (TEF!).

DESCRIPTION

Shrubs to 1.5 m, young stems 1 mm diam., with minute, erect trichomes, internodes 6-7 mm. Leaves sessile, very stiff and thick coriaceous, pale green in dry material, shiny, 1.1-1.7 × 0.6-1.1 cm, broadly

obovate, broader above the middle, adaxially concave, apex rounded, minutely emarginate, margin slightly thickened, lighter in color, base attenuate, with minute, erect trichomes, midrib lighter than blade, slightly raised above and below, secondary venation visible above, more obscure below. Flowers sessile, axillary; male flowers solitary or (2-)3 per axil, borne at nodes well below branch ends, subtended by 2-4, slightly keeled, minute bracts; sepals 4, 0.6-1 × 1-1.2 mm, broadly ovate, apex rounded; anthers 4, sessile, 1.8-2 × 0.8 mm; female flowers solitary, borne at nodes closer to branch ends, subtended by 12-16 slightly keeled bracts, margin hyaline, the upper ones *c.* 1 mm long, the lower ones progressively smaller; sepals 4, 2 × 2-2.2 mm, broadly ovate, slightly keeled, apex rounded to obtuse, with a hyaline margin, styles 3, 2 mm long at anthesis, apex slightly recurved, stigma borne along inside of upper 2/3. Immature fruits 5.5 × 5 mm, broadly ellipsoid, styler remnants 2 mm; developing seeds *c.* 5.5-4 × 1.5 mm.

REMARKS

Buxus cipolinica most closely resembles *B. humbertii* G.E.Schatz & Lowry, and material would be identified as that species using the key provided by Schatz & Lowry (2002). Our new species differs, however, in having broadly obovate leaves (vs. oblanceolate to obovate in *B. humbertii*) that are only 1.5-1.9 times as long as wide (vs. 2-3 times as long), and female flowers with broadly ovate (vs. triangular) sepals with a rounded (vs. acute to obtuse) apex. *Buxus cipolinica* is restricted to a small area with localized marble substrate S of Ambatofinandrahana in central Madagascar, whereas *B. humbertii* is probably associated with siliceous soils on gneiss, and reaches its northern limit in the Menarahaka River valley E of Ihosy (Schatz & Lowry 2002), some 200 km to the south.

The specialized marble ("cipolin") substrates in the Ambatofinandrahana region to the east of the Itremo massif are highly restricted (see map 2 in Du Puy & Moat 1998). They are home to a number of locally endemic species, including *Ormocarpopsis itremoensis* Du Puy & Labat (Fabaceae), which is known only from precisely the same site as *Buxus cipolinica* (Du Puy *et al.* 2001). Only a few fragments

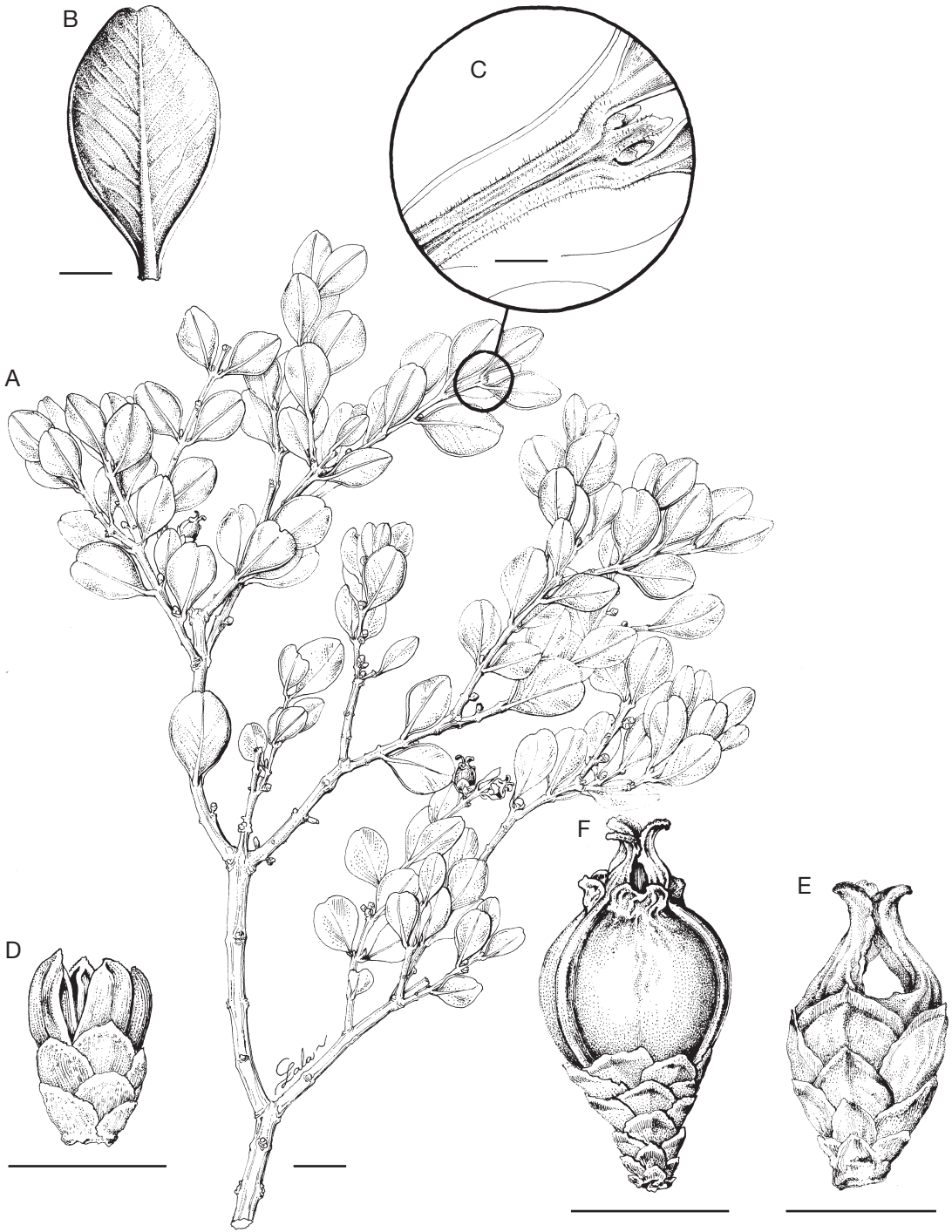


FIG. 1. — *Buxus cipolinica* Lowry & G.E.Schatz: **A**, flowering branch; **B**, leaf; **C**, close-up of indument on branch tip; **D**, male flower; **E**, female flower; **F**, immature fruit. *Birkinshaw et al.* 1399. Scale bars: A, 1 cm; B, C, 1 mm; D, F, 3 mm; E, 5 mm.

remain of the area's original vegetation on marble (Du Puy & Moat 1996, 1998), and they are highly threatened by human-set fires as well as localized mining activities. It therefore seems unlikely, although not impossible, that additional populations of *B. cipolinica* occur elsewhere in the area.

Another distinctive member of the genus, *Buxus calcarea* G.E.Schatz & Lowry, is also found on calcareous substrates, but is restricted to semi-arid deciduous thicket on tertiary limestone in Southern Madagascar (Schatz & Lowry 2002). *Buxus itremoensis* G.E.Schatz & Lowry is endemic to the Itremo massif just 25 km to the west of the site where *B. cipolinica* was collected, but it differs strikingly in being a rheophyte and is found only on substrates derived from quartzite.

CONSERVATION STATUS

Application of the IUCN (2001) threat criteria suggests that *Buxus cipolinica* should be assigned a status of Critically Endangered (CR B1ab(iii)2ab(iii)) based on an Extent of Occurrence < 100 km², an Area of Occupancy < 10 km², and a single known subpopulation at an unprotected site that faces continuing habitat decline from fires and mining.

Acknowledgements

We are grateful to C. Birkinshaw for his efforts to collect material of the new species described here, R. Lala for the fine illustration, and R. Gereau for

translating the Latin diagnosis. This research was conducted as part of the Catalogue of the Vascular Plants of Madagascar project, with support from the Andrew W. Mellon Foundation.

REFERENCES

- DU PUY D. J., LABAT J.-N., RABEVOHITRA R., VILLIERS J.-F., BOSSER J. & MOAT J. 2001. — *The Leguminosae of Madagascar*. Royal Botanic Gardens, Kew, 720 p.
- DU PUY D. J. & MOAT J. 1996. — A refined classification of the vegetation types of Madagascar, and their current distribution, in LOURENÇO W. R. (ed.), *Biogéographie de Madagascar*. ORSTOM, Paris: 205-218.
- DU PUY D. J. & MOAT J. 1998. — Vegetation and mapping in Madagascar (using GIS): implications and recommendations for the conservation of biodiversity, in HUXLEY C. R., LOCK J. M. & CUTLER D. F. (eds), *Chorology, Taxonomy and Ecology of the Floras of Africa and Madagascar*. Royal Botanic Gardens, Kew: 97-117.
- IUCN 2001. — *IUCN Red List Categories and Criteria: Version 3.1*. IUCN Species Survival Commission. IUCN, Gland, Switzerland; Cambridge, UK, ii + 30 p.
- SCHATZ G. E. & LOWRY II P. P. 2002. — A synoptic revision of the genus *Buxus* L. (Buxaceae) in Madagascar and the Comoro Islands. *Adansonia*, sér. 3, 24 (2): 179-196.
- SCHATZ G. E. & LOWRY II P. P. 2003. — *Buxus rabe-nantoandroi* G.E.Schatz & Lowry, a new name for a Malagasy Buxaceae. *Adansonia*, sér. 3, 25 (1): 129-130.

Submitted on 16 January 2006;
accepted on 20 March 2006.