Commiphora buruxa (Burseraceae), a new species from southern Namibia

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Abstract

Commiphora buruxa Swanepoel, described here as a new species, is known only from the Gariep Centre of Endemism, southwestern Namibia. It appears to be most closely related to C. cervifolia Van der Walt. Diagnostic morphological characters of C. buruxa include a viscous, cream-coloured exudate, variably simple to trifoliolate leaves, and a putamen covered by a small cupular pseudo-aril. Illustrations of the plant and a distribution map are provided. The species is known from less than 20 plants.

Keywords: Burseraceae; Commiphora; Gariep Centre; New species; Southern Africa; Taxonomy

1. Introduction

At present thirty-eight described species of Commiphora Jacq. are known from the Flora of southern Africa region, no less than thirty of which occur in Namibia (Craven, 1999; Germishuizen and Meyer, 2003; Swanepoel, 2005, 2006, 2007, 2008). Five of these species are endemic or near-endemic to the Gariep Centre of Endemism, a biogeographical region along the lower Orange River Valley in southern Namibia and adjacent Northern Cape, South Africa (Curtis and Mannheimer, 2005; Van Wyk and Smith, 2001). In this contribution, a rare, new species of Commiphora from the Gariep Centre is described.

During a botanical expedition to the remote Haib River Gorge in southwestern Namibia in March 2004, the author encountered an unfamiliar Commiphora with smooth bark, resembling C. cervifolia Van der Walt (Van der Walt, 1971) but with exudate (resin) that does not squirt if a twig is damaged. Only one plant, with male flowers, was found near the confluence of the Haib and Orange rivers. On subsequent visits to the Haib River, additional male and female plants were found near the mouth and also further upstream. Morphological and molecular evidence subsequently confirmed that they represent an undescribed species of Commiphora. In November 2006, during a botanical expedition to the Huns Mountains about 100 km further to the north–northwest, another population of the same species was found on the lower slopes of these mountains, growing in a valley leading to the Konkiep River. Apparently no other collections of the new species exist, as no herbarium specimens could be found in either PRE or WIND.

The new species was at first thought to be of hybrid origin, with C. cervifolia and C. namaensis Schinz as putative parents (Van der Walt, 1971). These two species are the only other species of Commiphora growing in the immediate vicinity of the known localities of the new species. The new species shares similarities in habit, bark, and in the aroma of the latex with C. cervifolia whereas the cream-coloured, glutinous and non-squirting latex is similar in appearance to that of C. namaensis. However, a molecular study of the three species with the nuclear ribosomal external transcribed spacer (ETS) as marker revealed that the new species has only one type of ETS, thus suggesting that the new species is most probably not of hybrid origin. A paper in which the potential hybrid status of the new species is discussed in more detail is currently in preparation (Weeks, pers. comm.). Live material of the new species was studied in the field, and morphological characters in the following description are based...
on mature leaves, fresh flowering material and ripe fruit. Diagnostic features for *C. cervifolia* were determined through examination of live plants in the field in southwestern Namibia. Additional information for *C. cervifolia* was sourced from the literature (Steyn, 2003; Van der Walt, 1971, 1973, 1986; Van der Walt and Van der Schijff, 1973).

2. Description

*Commiphora buruxa* Swanepoel sp. nov., *Commiphorae cervifoliae* Van der Walt proxima, dioicia, succosa, fruticosa arbores, resina similliter aromatica, aliquis trifolioliatis, foliolis lateralis cultratis. Sed resina pro ratione exigua, viscida et cremae, foliis simplicibus, trifoliolatis vel intermediis; foliis apicalibus obdeltatis, foliis lateralis obovatis cultivatis; putamine arillidio differt.

Type: — Namibia, Karas Region, Haib River Gorge, 28 km ENE of Noordoewer, 370 m asl (2817DB), 3 February 2004, *Swanepoel 282* (WIND, holo.; PRE, iso.).

Dioecious, shrub-like tree up to 2.5 m tall, 1–3(–6) m diam. **Trunk**: simple and short, up to 0.3 m long, 0.2 m diam., or branching repeatedly above ground level, appearing succulent. **Bark**: pale, cream-coloured to creamy brown or creamy grey with dark patches, smooth, sometimes peeling in flat pieces near ground level. **Branches and branchlets**: glabrous with few small lenticels; young growth glabrous; dwarf lateral branchlets scarred. **Exudate**: relatively scanty, aromatic, cream-coloured, viscous, drying to form a hard, pale yellow, translucent resin. **Leaves**: variously simple to trifoliate on same tree, clustered on branches and on dwarf lateral branchlets but spirally on actively elongating shoots, petiolate, glabrous, green; lamina of simple leaves suborbicular, oblate, ovate or tri-lobed, obtuse or truncate, base cuneate, 4–6×4–8 mm, irregularly coarsely dentate or dentate—serrate in distal half with 3–7 serrations each side, rarely entire; terminal leaflets of trifoliate leaves sessile, cuneate or narrowly ovate, obtuse or truncate or subacute, base cuneate, 3–7×2–5 mm long, margin dentate or dentate—serrate in distal half with 1–5, often coarse serrations on each side, rarely entire, lateral leaflets narrowly ovate or culate (unequally strap-shaped with one margin slightly convex), acute, base cuneate, 2–6×1–3 mm long, margin sparsely crenate or dentate—serrate with 1–3 teeth on each side, rarely entire; midrib on both sides not or slightly visible, not or slightly raised towards lamina base; petiole glabrous, occasionally with few short glandular hair adaxially at base, grooved in basal half, 1–6 mm long, reniform or triangular in transverse section with 1 or 3 vascular bundles, sectional dimensions 0.5–0.8×0.4–0.6 mm. **Inflorescences**: flowers axillary and solitary or in reduced, simple or dichasial cymes, peduncle up to 1 mm long, glabrous. **Flowers**: precocious or appearing with the leaves, unisexual, perigynous, sessile or shortly pedicellate; pedicel up to 0.5 mm long, glabrous. **Bracts and bracteoles**: narrowly triangular or narrowly ovate, acute, glandular, 0.6–0.8×0.2–0.3 mm. **Calyx**: yellowish green, often with few short glandular hairs on margin of lobes, otherwise glabrous, lobes triangular to ovate, acute to obtuse. **Petal**: narrowly elliptic, oblanceolate or oblong—oblanceolate, yellow, glabrous or with few short glandular hairs abaxially. **Disc**: cylindrical with 4 distinct lobes, adnate to hypanthium, not very fleshy. **Male flowers**: 3.8–5.9 mm long, calyx 2.0–3.1 mm long, calyx lobes 1.1–1.4 mm long, petals 2.9–4.0×1.0–1.3 mm, spreading recurved but minute tip inflexed; disc with two vertical folds towards apex of lobes, disc lobes bifid or obscurely bifid at apex; stamens 8, filaments semiterete, flattened and broadened at base, 4 long stamens with filaments 1.7–2.7 mm long, inserted on apex of disc lobes, 4 short stamens with filaments 0.8–2.0 mm long, inserted on disc margin between lobes, anthers 0.7–1.0 mm long, all equal; gynoecium rudimentary. **Female flowers**: 3.9–4.6 mm long, calyx 2.0–2.5 mm long, calyx lobes 1.3–1.8 mm long, petals 2.8–3.1×1.1–1.2 mm, semi-spreading towards top but minute tip inflexed; disc thin, lobes bifid at apex; staminodes 8, alternately long and short; ovary half inferior, style relatively short, sutures deeply grooved, stigma obscurely 4-lobed; pistil with stigma below top of flower, 2.0–2.5×0.8–1.0 mm. **Fruit**: a drupe, subglobose, ellipsoid or ovoid, slightly apiculate, flattened, asymmetrical, suture rectilinear, often curved over apical part towards sterile locule, 7.8–17.6×7.2–11.0×5.7–9.6 mm; pericarp 2-valved; exocarp glabrous, not glutinous, reddish brown when ripe; mesocarp not very fleshy; putamen slightly flattened, asymmetrical, slightly rugose, ovoid, ellipsoid or oblong–ellipsoid, with one fertile and one sterile locule; 7.7–11.2×6.4–7.6×4.0–6.1 mm; fertile locule convex, hemispherical to convex in apical view; sterile locule convex, obtusely triangular to convex in apical view; suture rectilinear; angle between locules at apex 40–95°; pseudo-aril orange, thin, cupular, covering less than 15% of putamen, with small triangular or convex facial lobe on sterile locule, commissural arms absent; apical pits small (Figs. 1 and 2).

2.1. Flowering time

*Commiphora buruxa* flowers from September to December and the fruit ripens from November to February.

2.2. Diagnostic characters

*Commiphora buruxa* is probably most closely related to *C. cervifolia*, with which it shares a similar habit, non-peeling...
bark, occasionally trifoliolate leaves, and the aroma of the latex. Molecular evidence from the nuclear ribosomal external transcribed spacer (ETS) and the chloroplast psbA–trnH intergenic spacer suggest that this species is placed in a well-supported clade of Namibian endemic Commiphora species, including C. cervifolia, but is inconclusive as to its closest relative (Weeks, pers. comm.). C. buruxa differs from C. cervifolia in several features of the bark, exudate, leaves, flowers, fruit and indumentum (Table 1). In C. buruxa, the bark is cream-coloured to creamy brown or creamy grey, and the exudate is relatively scanty, viscous and cream-coloured whereas in C. cervifolia the bark is greyish green to yellowish brown with dark patches and the exudate is copious, watery and colourless, and squirts upon damaging the branchlets.

Leaves in C. buruxa are glabrous and variously simple to trifoliolate on the same tree, with the terminal leaflets in trifoliolate leaves cuneate or narrowly obovate and the lateral leaflets narrowly obovate or culate. The margin is sparsely dentate, crenate or dentate–serrate, rarely entire. The leaves of C. cervifolia are invariably trifoliolate, with all leaflets culate, mostly irregularly lobed and entire, and the lamina is sparsely glandular.

In C. buruxa the fruit is often larger (up to 17.6 mm long) than in C. cervifolia (up to 11 mm long) and subglobose, ovoid or ellipsoid whereas in C. cervifolia it is ellipsoid only. There are also differences in the putamens of the two species, with the putamen in C. buruxa being ovoid, ellipsoid or oblong–ellipsoid, slightly rugose with a small cupular pseudo-aril versus
consistent ellipsoid in *C. cervifolia*, the pseudo-aril is lacking, and the putamen is smooth.

2.3. Distribution and habitat

*Commiphora buruxa* is presently known from only two localities, both situated in the Gariep Centre of Plant Endemism (Van Wyk and Smith, 2001) in the southwestern-most part of Namibia. The type locality is in the mountainous area to the east of Noordoewer along the Haib River and the only other known locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3). Both these localities are about 200 m above sea level. The type locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3). Both these localities are about 200 m above sea level. The type locality is in the mountainous area to the east of Noordoewer along the Haib River and the only other known locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3). Both these localities are about 200 m above sea level. The type locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3). Both these localities are about 200 m above sea level. The type locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3). Both these localities are about 200 m above sea level. The type locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3). Both these localities are about 200 m above sea level. The type locality is in the mountainous area to the east of Noordoewer along the Haib River and the only other known locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3). Both these localities are about 200 m above sea level. The type locality is in the mountainous area to the east of Noordoewer along the Haib River and the only other known locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3). Both these localities are about 200 m above sea level. The type locality is in the mountainous area to the east of Noordoewer along the Haib River and the only other known locality is in the eastern parts of the Huns Mountains, ±110 km from the type locality (Fig. 3).

2.4. Conservation status

Although very few plants of *C. buruxa* are known, it is not under any immediate threat as the plants are located in remote, sparsely populated areas. Future mining activities, however, may pose a serious threat as extensive exploration for uranium is currently undertaken from Noordoewer up to Warmbad. Moreover, a large deposit of copper ore is known from the Haib River Gorge, which, should it be mined, would definitely threaten the future existence of *C. buruxa* as the bulk of the known plants occurs in the vicinity of this deposit.

2.5. Etymology

The specific epithet is derived from the local Khoekhoegowab (Khoekhoe orNama) word “*buruxa*, meaning “surprising”, “amazing” or “astounding”, alluding to the fact that this species has escaped discovery until now. In Khoekhoegowab, the letter “x” is pronounced as in the English loch, or the “g” in Afrikaans (Haacke and Eiseb, 2002). I would like to propose the names “wonder corkwood” and *wonderkanniedood* as English and Afrikaans vernacular names, respectively.

2.6. Other specimens examined

Namibia, Karas Region:

- 2717 (Chamaites): lower eastern slopes of Huns Mountains, 21 km ENE of Ai-Ais Hot Springs (CD), *Swanepoel 285* (WIND).
- 2817 (Vioolsdrif): Haib River Gorge, 26 km ENE of Noordoewer (DB), *Swanepoel 283* (WIND); Haib River Gorge, 28 km ENE of Noordoewer (DB), *Swanepoel 284* (WIND); upper reaches of Haib River Gorge, 24 km NE of Noordoewer (DB), *Swanepoel 286* (WIND); Haibmond, 28 km E of Noordoewer (DD), *Swanepoel 280* (WIND); Haib River Gorge, mountains on western side of river (DD), *Swanepoel 281* (WIND).

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