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Short communication

Faurea recondita (Proteaceae): A new species from the Sneeuwberg Centre of Endemism, South Africa[☆]

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ABSTRACT

Faurea recondita (Proteaceae) from the Sneeuwberg Mountains of the southern Great Escarpment of South Africa is described. It is distinguished by its shrubby, lignotuberous habit, small leaves, 30–55 × 5–15 mm, and short, 30–60 mm long, erect terminal inflorescences. The shrubby habit and occurrence in heath-like vegetation are shared with *Faurea coriacea* of Madagascar. As a consequence of its very limited distribution range, this species is allocated the IUCN conservation status of VULNERABLE.

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1. Introduction

The botanical diversity of Southern Africa is far from completely documented. Diversity modelling studies using climatic and topographic data have identified currently poorly known regions where botanical diversity can be high (Robertson and Barker, 2006; Thuiller et al., 2006). Botanical exploration of one such region, the southern Great Escarpment of South Africa, has resulted not only in a vastly improved knowledge of the botanical diversity and phytogeographic affinities of the montane flora (Clark et al., 2009; Clark, 2010; Clark et al., 2011a,b,c, 2012a,b), but also in the discovery and description of a number of new species (Schrire et al. in prep.; Nordenstam et al., 2009; Stirton et al., 2011). Here we describe a new species of *Faurea* (Proteaceae) that was collected during the botanical exploration of the Sneeuwberg Centre of Plant Endemism.

Faurea Harv. (Proteaceae: Proteoideae) is a genus of approximately 16 species of forest or savannah woodland trees and shrub from Africa and Madagascar, ranging from Nigeria in west Africa throughout central

and east Africa to South Africa, reaching Knysna in the Western Cape. Species occur in tropical forest, Afrotropical forest or savannah woodland (Lebrun and Stork, 2003). Two species, *Faurea forficuliflora* Bak. and *Faurea coriacea* S.K. Marner, are endemic to Madagascar, the former occurring as a forest tree and the latter as a very localised shrub in high altitude montane heathland (Marner, 1989). The genus is the only member of Proteaceae in Africa that is not centred in the fynbos biome of South Africa (Barker et al., 2007; Sauquet et al., 2009a,b).

Until recently, only four species of *Faurea* were known to occur in South Africa: the widespread *Faurea rochetiana* (A. Rich.) Chiov. ex Pic.Serm. and *Faurea saligna* Harv., the rather more localised *Faurea galpinii* E. Phillips from Mpumalanga and adjacent Swaziland, and *Faurea macnaughtonii* E. Phillips, known from a few disjunct forest habitats in KwaZulu-Natal, Eastern and Western Cape. In April 2008 a fifth species was discovered by V. Ralph Clark in the poorly botanised Kamdebooberge near Aberdeen, Eastern Cape. The discovery was made during a comprehensive four-year botanical survey of the Sneeuwberg Mountains (Clark, 2010; Clark et al., 2009), and is one of two new taxa discovered on the Kamdebooberge (Clark et al., 2012b). Subsequent visits to the site between 2008 and 2011 produced only fruiting specimens. Flowering plants were seen for the first time by botanist Nick Helme in January 2011, establishing its flowering period. The type material was eventually collected in January 2012 from a few flowering specimens on the disturbed extreme outer fringes of the habitat.

[☆] This paper is dedicated to the memory of Colin Patterson-Jones (29/08/1941–4/01/2013), plant lover and nature photographer extraordinaire.

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2. Materials and methods

The description of this species is based on both field and herbarium observations. The only known population of this species was visited seven times by us between April 2008 and January 2012.

3. Species description

3.1. *F. recondita* Rourke & V.R. Clark, sp. nov.

Type: South Africa, Eastern Cape, 3223 (Rietbron): Kamdebooberge, Goewermetsberg on the Farm Waterval, (previously Oaklands), 1360 m (–BD), 4 Jan. 2012, J.P. Rourke 2294 (NBG, holo.; GRA, K, MO, OXF, PRE, iso.).

Diagnosis: Frutex vel suffrutex multicaulis. Folia sclerophyllis parvis, lanceolatis acutis 30–55 × 5–15 mm, et inflorescentiis brevibus erectis, 30–60 mm longis, distinguitur.

Erect, sparsely branched, multi-stemmed lignotuberous shrub, 1.5–3.5 m tall, basal branches up to 10–15 mm diam.; older specimens occasionally developing a single main trunk 45–50 mm diam. *Bark* smooth, grey mottled white. *Stems* glabrous, dark red. *Leaves* ascending, coriaceous, lanceolate, acute or shortly mucronate, 30–55 × 5–15 mm, pale greenish-glaucous, initially very sparsely puberulous, glabrescent but remaining puberulous basally, margins horny, reddish, midrib prominent, red; shortly petiolate, petiole 3–5 mm long, reddish. *Inflorescence* erect, terminal, usually solitary, occasionally with up to 8 pedunculate axillary inflorescences developing on a flowering shoot, cylindrical, 50–70 flowered, 30–60 mm long, subsessile to shortly pedunculate, peduncle up to 10 mm long, axis densely cinereous. *Flowers* shortly pedicellate, pedicel to 2 mm long, densely cinereous. *Subtending floral bracts* ovate acute, 1 mm long. *Perianth* 10 mm long, adaxially curved, minutely puberulous, glabrescent swollen and dull carmine basally otherwise greenish-brown at anthesis. *Hypogynous scales* lanceolate acuminate 2–3 mm long, orange. *Ovary* ovoid 2 mm long, densely sericeous with single apically attached ovule. *Style* filiform, straight, glabrous, swollen basally, 9–10 mm long, becoming slightly adaxially curved in fruiting stage. *Pollen presenter* narrowly clavate, 2 mm long, geniculate at junction with style. *Stigmatic groove* terminal. *Achene* ovoid, basally truncate, sericeous, 5–6 × 2–3 mm, style persistent.

3.1.1. Etymology

Reconditus = hidden, concealed, not easily seen, referring to the species' remote distribution, tucked away in a remote corner of an isolated mountain block.

3.1.2. Diagnostic characters

F. recondita is distinguished from other members of the genus by having the smallest leaves, 30–55 × 5–15 mm, by its shrubby, lignotuberous growth habit, and by its short, 30–60 mm long, erect terminal inflorescences (Figs. 1 and 2).

3.1.3. Growth habit and phenology

F. recondita is a multi-stemmed, lignotuberous, sclerophyllous shrub usually about 2 m in height. The tallest specimen measured was 3.5 m tall with a main trunk 50 mm in diameter but this was an exceptional case (Fig. 2C). The only other comparable growth habit in *Faurea* apparently occurs in the Madagascan endemic, *F. coriacea* S.K. Marner, a species endemic to the heathland zone of Marojejy Massif in north-eastern Madagascar between 1500 and 2000 m (Marner, 1989).

A rough visual estimation in June 2008 and January 2011 suggested that fewer than 5% of the entire population of approximately 40 000 plants had flowered in the previous years. The specimens in the main population at the type locality had apparently not been burned in a bush fire for approximately 19 years (K. Lategan, pers. comm.), a fact confirmed by a rough count of annual growth increments observable on the branches. Like many lignotuberous Proteaceae in South Africa,

F. recondita probably flowers profusely in the first two or three years after a fire, and then enters a phase when flowering diminishes progressively in each subsequent year, as a mainly vegetative state predominates. Another burn will then stimulate re-growth from the lignotuber with renewed flowering on the regenerating shoots. This apparent dependence on episodic burning is evidenced in the absence of flowering in the main population during the course of several years of observation (2008–2012).

All of the several thousand plants in the main population in an area which last burned in 1992 were in a vegetative state with no sign of inflorescence development. This stand was entering a moribund growth stage with annual growth increments progressively decreasing in length from about 100 mm per annum at the base of the stems to 40 mm per annum on uppermost shoots. Flowering was subsequently observed in summer of 2011–2012 with bud development advanced by mid-December and inflorescences opening from late December, peaking from early to mid-January. However, only a few specimens (about ten shrubs) flowered in this area that had been burned eleven years earlier in 2000. Only one of the shrubs flowering in January 2012 had flowered the previous year. Flowering is apparently erratic and episodic.

Prior to anthesis the perianth in *F. recondita* is greenish, flushed carmine basally, but the inner surface of the perianth segments is cream-coloured on opening. The styles are cream-tipped with a pale green pollen presenter. A yeasty odour is produced by the open inflorescences attracting a diverse range of pollinating insects, including Diptera and small scarab beetles (Coleoptera).

3.1.4. Geographic distribution and ecology

At present this species is only known from the south-eastern slopes of Goewermetsberg, in the Kamdebooberge north of Aberdeen in the Sneeuwberg Mountain complex (Clark et al., 2009, 2012b), Eastern Cape Province, South Africa (Fig. 3). The Kamdebooberge form the south-western arm of Clark et al.'s (2009) Sneeuwberg Centre of Floristic Endemism and hosts numerous species not found elsewhere in the Sneeuwberg (Clark et al., 2012b).

F. recondita grows in dense mountain fynbos, specifically Drakensberg-Amathole Afromontane Fynbos (Mucina and Rutherford, 2006), and on forest margin (Southern Mistbelt Forest) between 1300 and 1680 m above sea level. In the Kamdebooberge, this moist habitat is apparently unique and owing to Goewermetsberg's favourable orientation to the moist south-easterlies. The dense fynbos vegetation consists of inter alia several Restionaceae, shrubs such as *Agathosma venusta*, *Myrsine africana* and *Phyllica paniculata*, several Ericaceae, and the fern *Pteridium aquilinum* subsp. *aquilinum*. The forest is dominated by *Olinia emarginata*, with *Olea europaea* subsp. *africana*, *Celtis africana*, *Cussonia spicata*, *Kiggelaria africana*, and *Rhamnus prinoides* also common.

3.1.5. Taxonomic affinities

The fact that *F. recondita* and *F. coriacea* both possess a shrubby rather than arborescent growth form suggests to us a close relationship between these two species. Additional similarities include the shared habitat, both species being found in high altitude heathland type of vegetation. However, it is also possible that the similarity in habit is a consequence of habitat similarities (i.e. convergence in habit). This can only be resolved by a species-level phylogenetic analysis.

3.1.6. Conservation status

The fact that this species is known from one large population on a single remote mountainside means that this species is not under immediate anthropogenic threat, but may be at risk of population fluctuations as a consequence of environmental stochasticity. While the area of occupancy (AOO) and extent of occurrence (EOO) is small, there is no evidence to date of population decline. It is thus not a candidate for critically endangered or endangered categories, and we

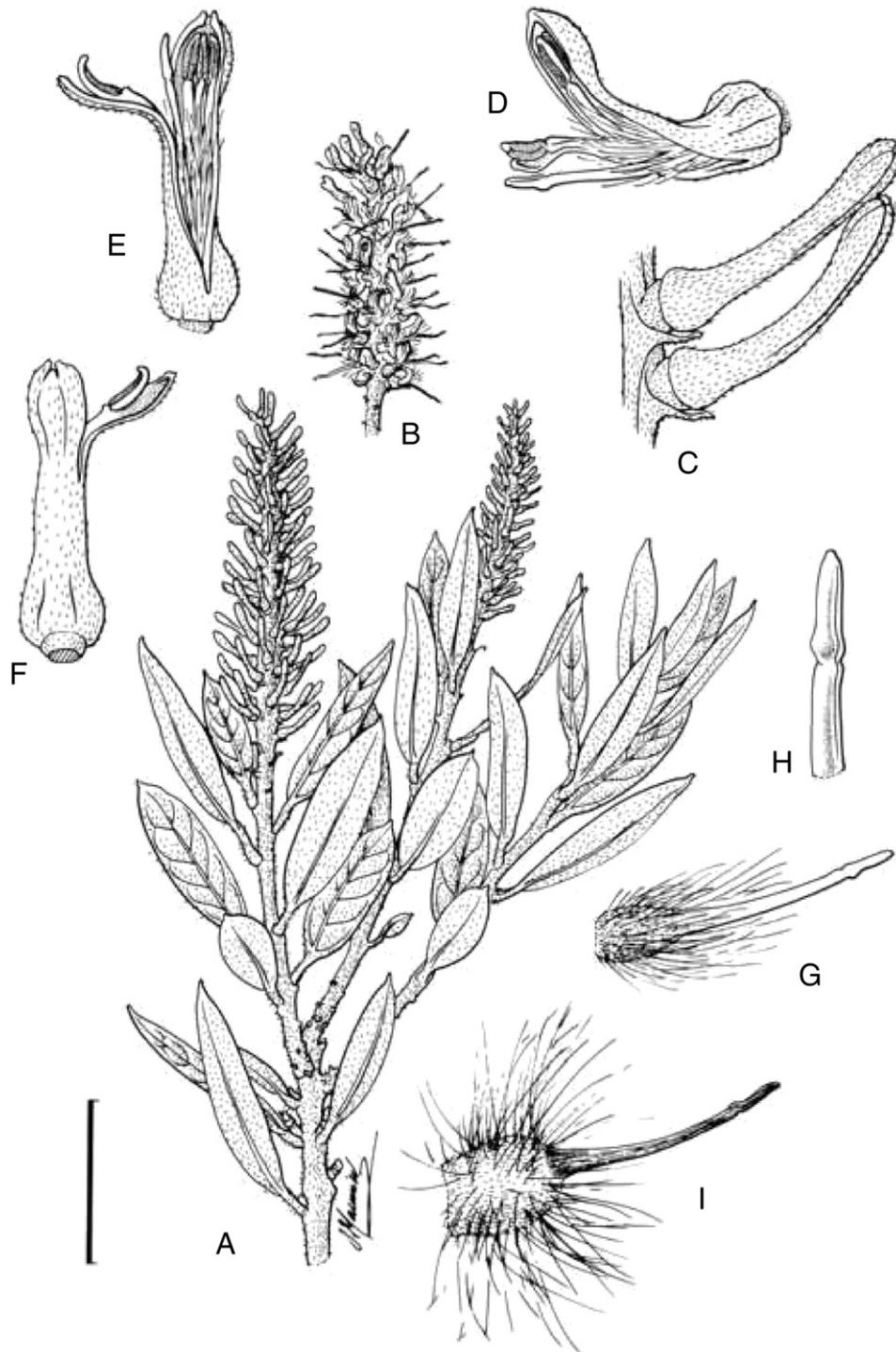


Fig. 1. *Faurea recondita*. A, Flowering stem before anthesis; B, detached inflorescence at anthesis; C, two floral buds; D, single flower; E, ventral view of flower; F, dorsal view of flower; G, gynoecium; H, detail of pollen presenter; and I, achene. Scale bar: A, B, 30 mm; C–G, I, 5 mm; H, 0.5 mm. Artist: John Manning.

recommend VULNERABLE (Vu D2), as its limited AOO and EOO and single large population makes it susceptible to stochastic events.

3.1.7. Additional specimens examined

Eastern Cape, 3223 (Rietbron): Aberdeen district, Farm Oaklands 104, Goewermentsberg, Kamdebooberge, (–BD), 9 Sept. 2008, *V.R. Clark & R. O'Connor* 1 (GRA, NBG); 17 June 2008, *V.R. Clark & C. Pienaar* 609 (GRA, NBG); 4 April 2008, *V.R. Clark & I. Crause* 106 (GRA, NBG); 8

June 2010, *J.P. Rourke* 2292 (NBG, K, MO, PRE, OXF, S); 15 Feb. 2011, *J.P. Rourke* 2293 (NBG, PRE).

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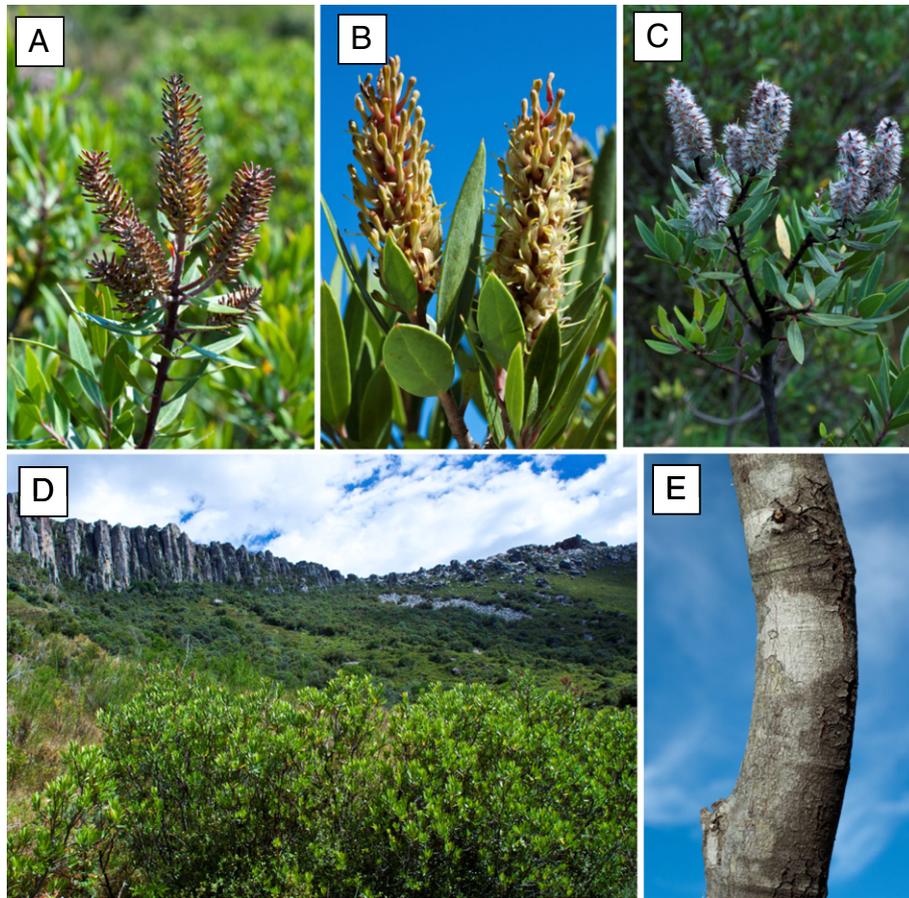


Fig. 2. *Faurea recondita*. A, Immature inflorescence; B, inflorescence with open flowers; C, infructescence with dehiscent fruit; D, habitat view of the S.E. slopes of Goewermontsberg, with large *F. recondita* plant in the foreground and dolerite cliff line forming the skyline; and E, bark of stem of one of the larger individuals (approx. 50 mm in diameter). Photographs: Colin Paterson-Jones.

assistance in the field. We are also indebted to the Lategans for their permission to access and collect specimens on their property, for logistical assistance, and for information on veld burning intervals. Fieldwork by the second author formed part of a PhD at Rhodes University that was funded by the National Research Foundation (grant GUN 2069059), a freestanding South African Biosystematics Initiative grant (2006–2009), the National Geographic Society (USA) Committee for Research and Exploration Grant (8521-08), Buk'Indalo Consultancy cc,

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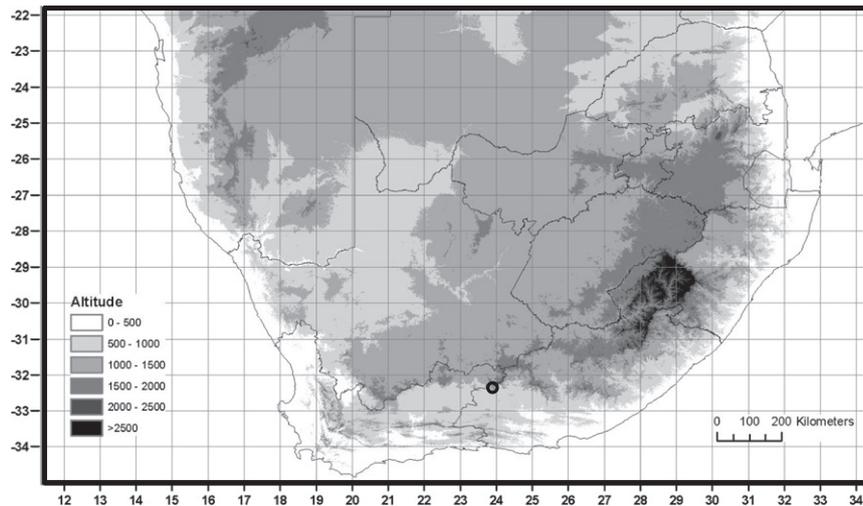


Fig. 3. Distribution of *Faurea recondita*.

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