



Rafnia angulata subsp. *montana*

Many a botanist and lover of fynbos has come upon a species of legume with bright yellow flowers and wondered, 'Now which species is that?' and those a little more keen may think, 'Now which species of *Rafnia* is that?'. *Rafnia* is a genus of beautiful legume plants, the closest relative of which is *Aspalathus*, the genus from which rooibos 'tea' is obtained. *Rafnia* is restricted to the fynbos, with the exception of *R. elliptica* which extends into the southern part of KwaZulu-Natal. The plants are particularly evident after fires, as they have a re-sprouting habit, which enables them to withstand fire. Last updated in 1862, some updating of the genus was required, and during my study* of *Rafnia*, I found five new species and seven new subspecies. Whereas previously twenty-two species had been distinguished, now there are nineteen species and a total of thirty-one groups (taxa).

WHICH NEW RAFNIA IS THAT?

A Guide to identifying the new and rare species and subspecies of a little-known fynbos legume genus.

by Gael J. Campbell-Young, photographs by Ben-Erik van Wyk



Rafnia rostrata subsp. *rostrata*

Rafnia plants are re-sprouting shrubs with simple sessile leaves (leaves without leaf stalks). The leaves are tough, usually blue-green and those at the base of the stem are often larger and a different shape to the upper leaves. Basal leaves are usually alternate, while leaves on the flowering branches are usually opposite. The plants turn black when dry (and do not make good cut or pressed flowers) and are characterized by the complete absence of hairs on the stem, leaves and flowers, except for minute hairs on the inside of the calyx and on the bracts, bracteoles and sterile extension of the rachis (that part of the stem which directly bears the flowers). Flowers are solitary and in terminal racemes (at the end of the branches).

Rafnia is divided into two groups based on the shape of the keel petal, which is either sharply curved ending in a point ('beaked' or 'rostrate') or may appear to be cut off ('truncate') or slightly indented ('emarginate').



Rafnia vlokii

NEW AND RARE TAXA WITH 'BEAKED' KEEL PETALS AND FLAT, OPEN STANDARD PETALS

Rafnia racemosa subsp. *racemosa* is a woody shrub up to 1.5 m tall with all the leaves alternate and lance-shaped or elliptical. The basal leaves are larger than the upper leaves. The flowers are in terminal racemes of up to nineteen flowers. The new subspecies, *R. racemosa* subsp. *pumila*, differs from subsp. *racemosa* in its small clump-forming growth form of up to 0.2 m tall (hence the name *pumila* which means dwarf or short). The basal leaves are smaller than the upper leaves and all the leaves are lance-shaped. It has fewer flowers in terminal racemes (up to five). This rare subspecies is known only from the Worcester area, between Goudini Sneekop and Deception Peak.

The new subspecies, *Rafnia angulata* subsp. *montana* is one of

five subspecies of *R. angulata*, a very variable and widespread species. It is a clump-forming plant with stems only 0.15 m high. The leaves are very narrow and grey and there is a wing-like extension on the calyx tube between the upper lobes. *Montana* refers to the plant's high altitude montane habitat in the Seweweekspoort Mountains near Ridge Peak and Seweweekspoort Peak.

Rafnia crispata is a small shrublet, much-branched from the base and up to 0.4 m tall. The lance-shaped leaves have clear venation and the margins are distinctly 'crisped'. The calyx has an unusual shape for a *Rafnia* in that the upper and lower lobes are fused higher up on either side of the flower. *R. lancea* has a similar calyx structure. *R. crispata* is rare and is known only from the Worcester area

southwest of Wolseley on the flats at Kluitjieskraal.

The new species, *Rafnia rostrata* subsp. *rostrata* is an erect shrublet up to 0.4 m tall. Its leaves are sub-opposite to opposite on flowering branches, grey and the shape of an upside down egg (obovate). Basal leaves are larger than upper leaves and flowers are solitary in terminal racemes. *Rostrata* refers to the keel petal that is sharply up-curved towards the apex. It occurs in the Swartberg, Bonteberg, Laingsburg and Touwsrivier areas. *Rafnia rostrata* subsp. *pluriflora* differs from subsp. *rostrata* in its clump-forming habit and lax stems. All leaves are alternate and lance-shaped, and basal leaves are smaller than upper leaves. The flowers are in terminal racemes of up to five flowers. *Pluriflora* means 'several-flowered' (as opposed to the single-flowered racemes of subsp. *rostrata*). This subspecies is rare, and occurs in the Swartberg.

Another new species, *Rafnia vlokii* is a robust, much-branched shrub that grows up to 2 m high. The leaves are lance-shaped to elliptic and the flowers are large (19-25 mm), as are the pods (up to 50 mm long) and the seeds have longitudinal ridges on their surface. It is named after Jan Vlok who discovered the species, which is known only from Moerasrivier and the Outeniqua Mountains.

Rafnia alata, a new and relatively rare species known from the Swartberg, Outeniqua Mountains, Potberg and Cape Infanta, is a clump-forming, much-branched shrub that grows up to 0.4 m high. It also has large flowers (14-25 mm) and characteristic wing-like structures on the calyx tube.

Rafnia inequalis is an erect shrublet, usually 0.4 m tall but can grow up to 0.8 m. Leaf bases are heart-shaped with distinct venation and young leaves are characteristically rolled inwards. The calyx is unusual in that the upper lobes are long and very broad, while the lower lobes are narrowly triangular. The lowermost lobe is hair-like and much shorter than the other lobes. The 'imbalanced' calyx shape is the reason for the name *inequalis* (unequal). The yellowish pods have a short stalk or stipe. This is the only species with a beaked keel and a stipe. It is rare and known only from a few populations on the Piketberg.



NEW TAXA WITH 'TRUNCATE' TO 'EMARGINATE' KEEL PETALS AND A STANDARD PETAL THAT IS FOLDED ALONG THE EDGES

Rafnia capensis is a very variable and widespread species, like *R. angulata*. It is subdivided into seven subspecies, four of which are new, and are described below. All the subspecies have pods with a stipe. The rare *R. capensis* subsp. *carinata* is a much-branched shrublet up to 0.4 m tall that

occurs in the Cederberg. Flowers are borne singly in terminal racemes. The keel is not markedly truncate or emarginate, and *carinata* refers to the keel or 'carina' which has an unusual shape for *Rafnia*.

Rafnia capensis subsp. *calycina* is an erect or slightly lax shrublet of up to 0.5 m tall with flowers borne singly in terminal

racemes. The lower calyx lobes are very long, rather slender and greatly reflexed during flowering. *Calycina* refers to the calyx, which has unusual lower lobes for *Rafnia*. This subspecies is rare, and known only from the Piketberg and Olifantsrivier Mountains.

Rafnia capensis subsp. *elsiea* is a prostrate shrublet up to 0.3 m tall. All the leaves are alternate and the

flowers are in terminal racemes of four to eight flowers. The subspecies is named after Elsie Esterhuysen who first discovered it. It is also rare and known only from Waaihoek Peak, Milner Peak and Fonteintjiesberg in the Worcester area.

Rafnia capensis subsp. *pedicellata* is an erect or rather lax shrublet up to 0.5 m tall. All the leaves are alternate and twenty to forty-five flowers are borne in terminal racemes. The pedicels (flower stalks) are unusually long for *Rafnia* (13-18 mm) and the name *pedicellata* refers to them. Only *R. crassifolia* has pedicels of similar length. This subspecies is found in the Kleinmond, Palmietrivier, Caledon and Hermanus areas.

Rafnia globosa is an erect, multi-stemmed shrub up to 0.6 m tall. The flowers are solitary, in terminal racemes, and clustered into large, globose leafy structures called pseudoracemes, to which the name *globosa* refers. The keel petal has a similar shape to that of *R. capensis* subsp. *carinata*. The species is rare and known only from a locality in the Clanwilliam area and Algeria in the Cederberg. ©

About the author

Gael is an M.Sc. graduate who was working as a Research Officer at the C.E. Moss Herbarium of the Department of Animal, Plant and Environmental Sciences at the University of the Witwatersrand at the time she submitted this article. She revised the genus *Rafnia* for her M.Sc. dissertation.

*Details and distributions will soon be published in a formal revision of the genus in the *South African Journal of Botany*.