Filling the Gap: *Fockea multiflora* K. Schum. (Apocynaceae) in Mala#i

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Source: HASELTONIA, 16(1):79-82. 2011.
Published By: Cactus and Succulent Society of America
DOI: 10.2985/1070-0048-16.1.79
URL: http://www.bioone.org/doi/full/10.2985/1070-0048-16.1.79

FILLING THE GAP: *FOCKEA MULTIFLORA* K. SCHUM. (APOCYNACEAE) IN MALAŴI

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Abstract: *Fockea multiflora* K. Schum. (Apocynaceae) was previously known from southern, southeastern and eastern Africa with a distributional gap between the Zambezi River valley and central Tanzania. Six localities in Malaŵi, that fall within this previous gap, are reported on here.

Introduction

The African genus *Fockea* Endl. (Apocynaceae) comprises of six stem-succulent species with root tubers or caudices and more or less twining stems with deciduous leaves (Court 1987; Meve 2002; Bruyns and Klak 2006; Bruyns 2009). Four species are restricted to South Africa and Namibia, whereas the widespread *F. multiflora* K. Schum. (Fig. 1) and *F. angustifolia* K. Schum. occur in southern Africa as well as South tropical, Southeast and East Africa, both with a distributional gap between the Zambezi River valley in the south and central Tanzania in the north (Bruyns and Klak 2006).

Here, the genus *Fockea* represented by *F. multiflora* is reported to occur in Malaŵi, i.e. within the previous distributional gap (Fig. 1). Although localities for *F. multiflora* in Malaŵi were published by Hargreaves (1978) and Dudley (1994; 1997; 2001), these were not mentioned in the taxonomic treatments cited above, possibly because these references were not seen by the authors of the revisions, and due to the absence of herbarium specimens from Malaŵi outside Malaŵi. In order to highlight the occurrence of *F. multiflora* in Malaŵi again, available information is summarized here.

Material and Methods

Field studies in Malaŵi were conducted by Bruce J. Hargreaves (BJH) (1965–1968 and 1976–1981) and Joachim Thiede (JT) (24 Mar to 21 Apr 1991). Two specimens were studied in the National Herbarium of Malaŵi (MAL) by Montfort L. Mwanyambo (MLM). The map for the distribution of Miombo woodlands (Fig. 1) was created electronically by combining the four single distribution maps of the four Miombo woodland ecoregions at Wikimedia Commons which were based on White (1983). The distribution map for *F. multiflora* (Bruyns and Klak 2006) was georeferenced by matching the map elements using ArcGIS 9.3 geographic information system (ESRI 2008).

Results

Fockea multiflora was observed by BJH and JT on five localities: #1, #2, #3, #5, #6 (Fig. 1). Locality #4 (not shown in Fig. 1) was reported by Scholes (1982). Localities discussed below are arranged in order from south to north.

1. Malaŵi. Southern Region: Blantyre Distr., road Blantyre-Mwanza, inselberg on E side of the road ca. 2.5 km NE of Shire River Bridge/Mpatamanga Gorge, ca. 380 m. Observed by JT on 10 Apr 1991 (Figs. 1 & 2).

   Several leafless and sterile plants of *F. multiflora* grew in cracks of a granitic inselberg. The branches were mostly twisting around trees or rarely formed a self-supporting crown (Fig. 2). The latter obser-

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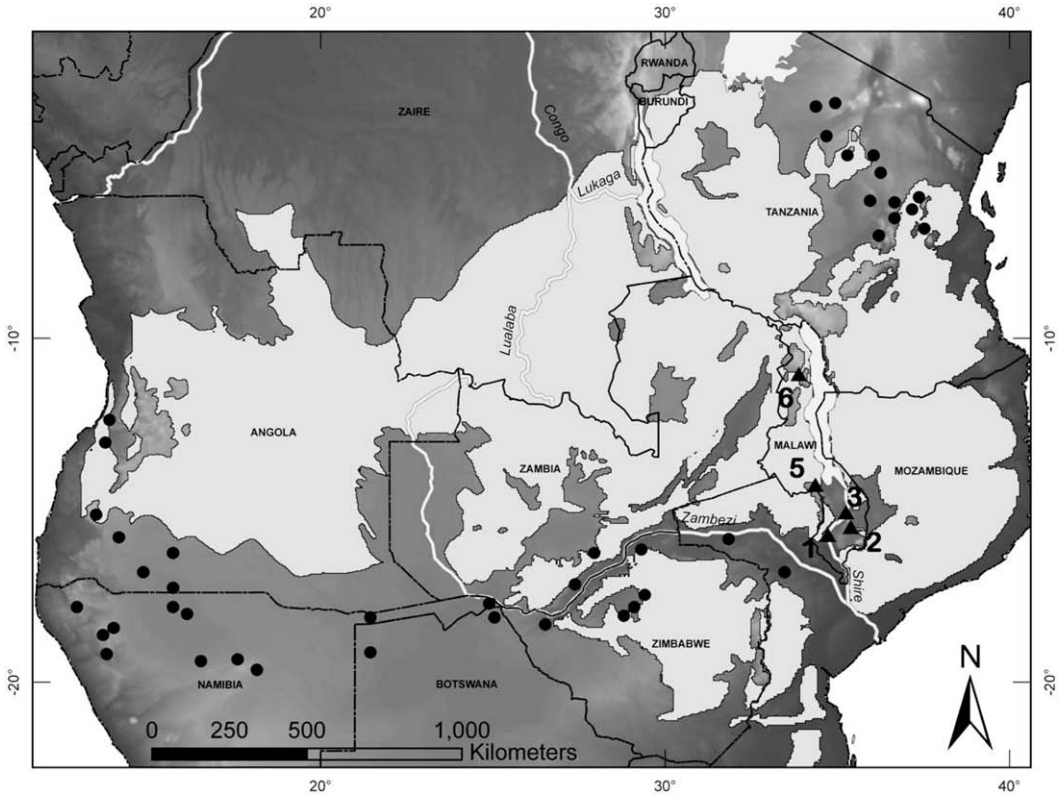

Figure 1. Distribution of *Fockea multiflora* in Southern, Southeastern and Eastern Africa. Black dots are from Bruyns and Klak (2006), except that the two localities in Central Angola are added from van Jaarsveld (2010). Triangles represent locality data added in this paper.(numerals as in text). Distribution of Miombo woodlands is indicated as light grey area (map: Jens Oldeland).

vation invalidates the statement that 'there are no reports of *F. multiflora* growing independently' (Court 1987). *Fockea multiflora* was accompanied by xerophytes (*Xerophyta* and *Coleochloa)*, forbs, shrubs and trees, including small baobabs. The stem-succulent liana *Cissus quadrangularis* was growing on *Fockea* (Fig. 2). At nearby Mpatamanga Gorge, where the Blantyre-Mwanza road bridges the Shire River, an arid vegetation with succulents such as *Aloe*, *Adenium*, *Cissus*, *Euphorbia*, *Huernia*, and *Sansevieria* (Downs 1986) is present.

2. Malaŵi. Southern Region: Phalombe Distr. (previously part of Mulanje Distr.), Phalombe Plain. Observed in flower by BJH, possibly 16 Aug 1977.
3. Malaŵi. Southern Region: Machinga Distr. (previously Kasupe District), Liwonde National Park (Hargreaves 1978). Observed by BJH at Line 1 on 20 Mar 1977, at Balaka on 13 Jun 1977 and 20 Apr 1978 (twining on *Euphorbia espinosa* Pax, a xerophytic woody shrub) and on 14 Jul 1978 (together with *Adenium obesum* Roem. & Schult. and *Talinum portulacifolium* Asch. ex Schweinf.).

Dudley (1994, 1997, 2001) studied the vegetation of Liwonde National Park in detail in conjunction with the re-introduction of Black Rhinoceros. It consists mainly of Mopane forests. *Fockea multiflora* is common in Mopane clumped (termitaria) savannah on termite hills or in spiny Mopane woodland/thicket. Dudley observed that Black Rhinos fed on these plants, consuming most of their basal stems, but none were found to die due to this damage (Dudley 1994; 1997; 2001).

Specimens examined: MALAŴI. Southern Region: Machinga Distr. (previously Kasupe District) Liwonde National Park, 500 m, base Chinguni Hill, 8 Oct 1983, flowering, *C.O. Dudley 799* (MAL) (Fig. 3); Liwonde National Park, 500 m, near Likwenu River, 25 Jun 1984, fruiting, *C.O. Dudley 1346* (MAL). Digital images are available from MLM.

4. Malaŵi. Southern Region: between about Monkey Bay and Nkopola Lodge, on a tobacco estate of the "Spearhead" company on the shore of Lake Malaŵi (Scholes 1982). The spot could not exactly be localized and is not shown in Fig. 1.

Here *Fockea multiflora* was found in dry *Acacia*–baobab bushland "growing vigorously up supporting trees".

5. Malaŵi. Central Region: Dedza Distr., near Golomoti (Hargreaves 1978).
6. Malaŵi. Northern Region: Rumphi Distr., Njakwa Gorge (Hargreaves 1978).

These plants were growing on rock outcrops, rooting in cracks and twining on surrounding shrubs. Njakwa Gorge is a humid gorge on the banks of South Rukuru River. The gorge is rich

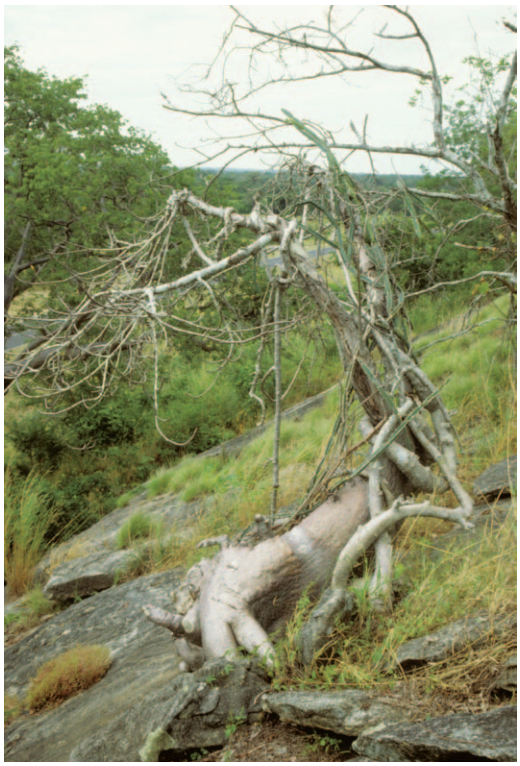

Figure 2. *Fockea multiflora* in Malawi (inselberg at Blantyre-Mwanza road ca. 2.5 km NE Mpatamanga Gorge, 10 Apr 1991). Free-standing sterile specimen forming a self-supporting crown, accompanied by *Cissus quadrangularis*. The Shire River lowlands are visible at the horizon (photo: Joachim Thiede).

Figure 3: Flowering specimen of *Fockea multiflora* from Liwonde National Park (*C.O. Dudley # 799)* in the National Herbarium of Malawi (MAL). The two inflorescences on the right hand side of the sheet are enlarged in the insert on the left hand side (photos: Montfort L. Mwanyambo)

in succulents and includes 16 species of the genera Aloe, Ceropegia, Cyanotis, Dorstenia, *Euphorbia*, *Kalanchoe*, *Kedrostis*, *Plectranthus*, *Sansevieria*, and *Sarcostemma* (Thiede et al. 2009), and is also the type locality of *Sansevieria downsii* Chahinian (Chahinian 2000).

Discussion

Fockea multiflora is a tropical species which occurs in arid *Acacia-Commiphora-Balanites* and *Colophospermum* (Mopane) woodland or scrub from Namibia/Angola to Tanzania (Fig. 1). According to Bruyns and Klak (2006), a distributional gap occurs between the Zambezi River and Central Tanzania where more mesic *Brachystegia* (Miombo) woodland prevails. Similar disjunct patterns are known for many plant taxa including several genera and species of the Stapeliinae (Gilbert 1990).

The previous known distribution of *F. multiflora* published in taxonomic treatments (Court 1987; Bruyns and Klak 2006; Bruyns 2009) was almost completely outside the Miombo region (Fig. 1). Most of the localities in Zambia, Zimbabwe and Mozambique follow the Zambezi River valley which is covered by *Acacia-Combretum* and Mopane woodland (White 1983).

The distributional gap of *F. multiflora* in the Miombo region is lessened by the six localities in Malawi reported on here. Localities #1– #3 are located along the Shire River and localities #4 and #5 are near the southern shores of Lake Malawi. Here, *F. multiflora* grows in *Acacia* or Mopane woodland similar to the situation in the Zambezi River valley. The humid Njakwa Gorge in northern Malawi at locality #6 is exceptional because here *F. multiflora* is restricted to the Miombo woodland region.

In most or possibly all localities in Malawi, *F. multiflora* occurs on azonal habitats such as inselbergs (#1), termite mounds (#3) or rocks (#6). Hargreaves (2000) reports that *F. multiflora* "in Malawi … grows on rock outcrops". The same azonal habitats are occupied outside Malawi where "most specimens of *Fockea* occur on rocky hills" (Bruyns 2009: 12).

With the additional localities in Malawi reported on here, the distributional gap of *F. multiflora* is closed, resulting in a nearly continuous distribution from the arid regions of southern Africa (Namibia, Angola, Botswana) along the Zambezi River Valley (Zambia, Zimbabwe, Mozambique) and the southern part of the Great Rift Valley (Shire River valley and Lake Malawi) to the arid regions of East Africa (Tanzania).

Acknowledgements

Two anonymous reviewers are thanked for valuable comments on the manuscript.

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