

# Flowering Plants of Africa

Volume 63

June 2013



# Flowering Plants of Africa

Since its inception in 1921, this serial, modelled on the former *Curtis's Botanical Magazine*, has published well over 2 000 colour plates of African plants prepared by some 80 artists.

The object of the serial is to convey to the reader the beauty and variety of form of the African flora, to stimulate an interest in the study, conservation and cultivation of African plants and to advance the science of botany as well as botanical art.

The illustrations are mostly prepared by artists on the staff of the South African National Biodiversity Institute, but we welcome other contributions of suitable artistic and scientific merit. Please see *Guide for authors and artists* on page 145.

A list of available back issues is given in the current *Publications Catalogue* of the Institute and on the website [www.sanbi.org](http://www.sanbi.org). Copies of this serial and of the *Catalogue* are obtainable from the SANBI Bookshop, South African National Biodiversity Institute, Private Bag X101, Pretoria, 0001 South Africa.

## History of this series

(note Afrikaans translation and changes in title)

### **Volume 1 (1921) to Volume 24 (1944):**

*The Flowering Plants of South Africa*

### **Volume 25 (1945–1946) to Volume 26 (1947):**

*The Flowering Plants of Africa*

### **Volume 27 (1948–1949) to Volume 52 (1992–1993):**

*The Flowering Plants of Africa*

*Die Blomplante van Afrika*

### **Volume 53 (1994) to Volume 63 (2013):**

*Flowering Plants of Africa*

**Cover illustration:** *Erica verticillata* (Plate 2296)

Copyright © 2013 by South African National Biodiversity Institute (SANBI)

All rights reserved. No part of this book may be reproduced in any form without written permission of the copyright owners.

The views and opinions expressed do not necessarily reflect those of SANBI. The author and publisher have made their best efforts to prepare this book, and make no representation or warranties of any kind with regard to the completeness or accuracy of the contents herein. All images in this book have been reproduced with the knowledge and prior consent of the artists concerned and no responsibility is accepted by the publisher or printer for any infringement of copyright or otherwise arising from the contents of this publication. Every effort has been made to ensure that the credits accurately comply with the information supplied by the author.

# Flowering Plants of Africa

A magazine containing colour plates with descriptions of  
flowering plants of Africa and neighbouring islands

Edited by

A. Grobler

with assistance of

G.S. Condy

Volume 63



Pretoria  
2013

## Editorial Board

A. Nicholas      University of KwaZulu-Natal, Durban, RSA  
D.A. Snijman    South African National Biodiversity Institute,  
Cape Town, RSA

## Referees and other co-workers on this volume

C. Archer, South African National Biodiversity Institute, Pretoria, RSA  
R.H. Archer, South African National Biodiversity Institute, Pretoria, RSA  
S.P. Bester, South African National Biodiversity Institute, Pretoria, RSA  
J.S. Boatwright, University of the Western Cape, Cape Town, RSA  
R. Boon, eThekweni Municipality, Durban, RSA  
P.M. Burgoyne, South African National Biodiversity Institute, Pretoria, RSA  
J. Burrows, Buffelskloof Nature Reserve & Herbarium, Lydenburg, RSA  
B. Bytebier, Bews Herbarium, University of KwaZulu-Natal, RSA  
C. Cupido, South African National Biodiversity Institute, Cape Town, RSA  
G.D. Duncan, South African National Biodiversity Institute, Cape Town, RSA  
G. Germishuizen, *ex* South African National Biodiversity Institute, Pretoria, RSA  
H.F. Glen, South African National Biodiversity Institute, Durban, RSA  
P. Goldblatt, Missouri Botanical Garden, St Louis, Missouri, USA  
D. Goyder, Royal Botanic Gardens, Kew, UK  
S. Hammer, Sphaeroid Institute, Vista, California, USA  
P.O. Karis, University of Stockholm, Stockholm, Sweden  
E.S. Klaassen, National Herbarium of Namibia, Windhoek, Namibia  
R.R. Klopper, South African National Biodiversity Institute, Pretoria, RSA  
J. Lavranos, Loulé, Portugal  
J.J. Meyer, South African National Biodiversity Institute, Pretoria, RSA  
T.H.C. Mostert, University of Zululand, KwaDlangezwa, RSA  
A.N. Motete, University of Johannesburg, Johannesburg, RSA  
H. Schaefer, Technische Universitaet Muenchen, Freising, Germany  
S.J. Siebert, North-West University, Potchefstroom, RSA  
Y. Singh, South African National Biodiversity Institute, Durban, RSA  
G.F. Smith, South African National Biodiversity Institute, Pretoria, RSA  
D.A. Snijman, South African National Biodiversity Institute, Cape Town, RSA  
Y. Steenkamp, South African National Biodiversity Institute, Pretoria, RSA  
H.M. Steyn, South African National Biodiversity Institute, Pretoria, RSA  
M. Struwig, North-West University, Potchefstroom, RSA  
W. Swanepoel, H.G.W.J. Schweickerdt Herbarium, University of Pretoria, Pretoria, RSA  
D. Tribble, 15A Highgate West Hill, London, UK  
E.J. van Jaarsveld, South African National Biodiversity Institute, Cape Town, RSA  
H.J.T. Venter, University of the Free State, Bloemfontein, RSA  
J.E. Victor, South African National Biodiversity Institute, Pretoria, RSA  
W.G. Welman, *ex* South African National Biodiversity Institute, Pretoria, RSA

## Date of publication of Volume 62

Plates 2261–2280 ..... 1 June 2011

## Next volume

Volume 64 is likely to appear in 2015.—The Editor  
ISSN 0015-4504  
ISBN 978-1-919976-82-2

# Contents

## Volume 63

2281.	<i>Eulophia ensata</i> . G.D. Duncan and Gillian Condry . . . . .	2
2282.	<i>Aloe mitrifloris</i> subsp. <i>comptonii</i> . E.J. van Jaarsveld and Gillian Condry . . . . .	10
2283.	<i>Aloe pavelkae</i> . E.J. van Jaarsveld and Gillian Condry . . . . .	16
2284.	<i>Gasteria croucheri</i> subsp. <i>pondoensis</i> . N.R. Crouch, G.F. Smith, D.G.A. Styles and Gillian Condry . . . . .	22
2285.	<i>Lachenalia pearsonii</i> . G.D. Duncan and Gillian Condry . . . . .	32
2286.	<i>Crassula smithii</i> . G.F. Smith, N.R. Crouch and Gillian Condry . . . . .	38
2287.	<i>Crotalaria agatiflora</i> subsp. <i>agatiflora</i> . T. Jaca, T. Nkonki and Gillian Condry . . . . .	44
2288.	<i>Abrus precatorius</i> subsp. <i>africanus</i> . T. Nkonki, T. Jaca and Gillian Condry . . . . .	50
2289.	<i>Cucumis metuliferus</i> . S.P. Bester and Gillian Condry . . . . .	56
2290.	<i>Begonia sonderiana</i> . N.R. Crouch and Tracey McLellan . . . . .	66
2291.	<i>Turnera oculata</i> var. <i>oculata</i> . E.J. van Jaarsveld and Gillian Condry . . . . .	72
2292.	<i>Plumbago pearsonii</i> . E.J. van Jaarsveld, A.E. van Wyk and Marieta Visagie . . . . .	78
2293.	<i>Plumbago wissii</i> . E.J. van Jaarsveld, A.E. van Wyk and Marieta Visagie . . . . .	84
2294.	<i>Delosperma scabripes</i> . N.R. Crouch, P.M. Burgoyne and Wilna Eloff. . . . .	90
2295.	<i>Commicarpus pentandrus</i> . M. Struwig and Gillian Condry . . . . .	98
2296.	<i>Erica verticillata</i> . A.N. Hitchcock, E.G.H. Oliver and Vicki Thomas . . . . .	104
2297.	<i>Pavetta edentula</i> . P.P.J. Herman and Gillian Condry . . . . .	120
2298.	<i>Cephalanthus natalensis</i> . M. Jordaan and Gillian Condry . . . . .	126
2299.	<i>Chlorocyathus lobulata</i> . G. Coombs, A.P. Dold, C.I. Peter and Susan Abraham. . . . .	132
2300.	<i>Miraglossum davyi</i> . S.P. Bester and Gillian Condry . . . . .	138
	Guide for authors and artists . . . . .	145
	Index to Volume 63 . . . . .	148

*Crotalaria agatiflora* subsp. *agatiflora*

Leguminosae

*East and northeast Africa*

*Crotalaria agatiflora* Schweinf. subsp. *agatiflora*, Schweinfurth: 13 (1892); Taubert: 206 (1895); Baker: 315 (1914); Brenan: 414 (1949); Polhill: 205 (1968). Polhill: 72-74 (1982).

*Crotalaria* L. is a large genus in the Leguminosae family with approximately 690 species (Lewis *et al.* 2005; Le Roux & Van Wyk 2012). The genus is distributed in the tropical and subtropical areas of the world with the majority of species found in Africa and Madagascar (Polhill 1968; Polhill 1982; Lewis *et al.* 2005). Polhill (1968) studied the genus extensively after Milne-Redhead (1961) and recognised 432 species for the African continent. About 54 indigenous species are found in southern Africa (Nkonki & Swelankomo 2003) of which four are exotic species and declared invasive alien species or weeds (Germishuizen *et al.* 2006). Other species in the genus are also known to occur in India, America and China (Lewis *et al.* 2005; Le Roux *et al.* 2011). The genus shows a remarkable diversity in its morphology, which greatly facilitates the differentiation of individual species, but variation between the species is of a markedly reticulate nature precluding any simple division of the genus into sections (Polhill 1968). *Crotalaria agatiflora* has five subspecies and subsp. *agatiflora* differs from the other four by its bracteoles which are less than 2.0(–3.5) mm long and its ovate-elliptic leaflets that are less than twice as long as broad, usually glabrous beneath. There are various common names for *C. agatiflora* subsp. *agatiflora* including bird flower, canary bird bush, rattlebox, Queensland bird flower and *voëltjebos*. The common name, rattlebox, is derived from the fact that the seeds become loose in the pod as they mature and rattle when the pod is shaken.

The plant illustrated here is indigenous to tropical East Africa and northeast Africa (Tanzania and Kenya). In southern Africa it occurs in Namibia, South Africa (Gauteng, North West, Limpopo, Mpumalanga, KwaZulu-Natal and the Western and Eastern Cape) and has become naturalised in Australia (Queensland), New Zealand and South America. Distribution of *Crotalaria agatiflora* subsp. *agatiflora* in Africa, based on the PRE Computerised Information System (PRECIS), Southern African Plant Invaders Atlas (SAPIA 2011) and Global Biodiversity Information Facility (GBIF 2013) databases, is presented in Figure 1. Canary bird bush was first introduced into South Africa as an ornamental plant. The earliest known record in the Pretoria National Herbarium is from the Johannesburg Railway Horticulture Garden dated 1921 in the Johannesburg area. According to SAPIA, the earliest record of its establishment in the wild is from the Rustenburg and Brits area in North West. It has escaped from cultivation into natural areas and has been recorded in conservation areas and reserves in Pretoria such as the Colbyn conservancy area, and Faerie Glen, Groenkloof and Wonderboom Nature Reserves (Henderson & Musil 1987; SAPIA 2011).

---

PLATE 2287.—1, flowering stem × 1. Voucher specimen: *Condy 251* in National Herbarium, Pretoria.  
2, fruiting branch × 1. Voucher specimen: *Condy 253* in National Herbarium, Pretoria. Artist: Gillian Condy.





PLATE 2287 *Crotalaria agatiflora* subsp. *agatiflora*

*Crotalaria* species are widely used in Chinese traditional medicine to treat several types of internal cancers. In the United States of America some species, such as *C. pumila*, are used to treat yellow fever and skin rashes. In the Siaya area, Kenya, the roots are used as a remedy for gastrointestinal discomfort (Kokwaro & Johns 1998). *Crotalaria agatiflora* subsp. *agatiflora* is used as a medicinal plant in several African countries for the treatment of bacterial infections and cancer (Le Roux *et al.* 2011). In Ecuador *C. agatiflora* subsp. *agatiflora* is also traditionally used as a decoction to treat cancer. The above ground parts of *C. agatiflora* subsp. *agatiflora* are used in its native range to treat otitis media, a bacterial infection of ears, as well as for treatment of sexually transmitted diseases (Le Roux *et al.* 2011). In India other species of *Crotalaria* has similar uses, where it is used to treat eczema and the leaves are placed on cuts or wounds to aid the healing process. Sharma *et al.* (1967) found that *C. agatiflora* subsp. *agatiflora* relieves spasms in dogs, found to be a good relaxant, and lowered blood pressure during treatment.

A few *Crotalaria* species are consumed by humans in some parts of the world, however, many species are known to be toxic to humans and livestock. Examples include (but are not limited to) *C. oridicola*, *C. barkae*, *C. berteroana* and *C. retusa*. Toxicity has been proven in the genus *Crotalaria* to be due to the presence of pyrrolizidine alkaloids in plants and seeds (Pilbeam & Bell 1979). All plant parts of *C. agatiflora* subsp. *agatiflora* have been reported not to be toxic or poisonous.

In South Africa *Crotalaria agatiflora* subsp. *agatiflora*, is a declared category 1a species according to the National Environmental Management: Biodiversity Act (2004) and listed as a proposed invader in the Conservation of Agricultural Resources Act (1983). This species was previously misidentified as *C. agatiflora* subsp. *imperialis* (Macdonald *et al.* 2003). It grows in watercourses in Grassland and Savanna biomes; potentially invasive in forest margins and also occupies cleared grassy areas in South Africa. In some parts of the world where it has been introduced, it is regarded as an agricultural, environmental and garden weed. For example in Australia it is regarded as a minor environmental weed that has escaped cultivation and invading grasslands and areas with sandy soils (Cooperative Research Center for Australian Weed Management 2013). This is also the case in South Africa where the species has escaped cultivation and has established itself in the wild. According to herbarium material in the National Herbarium, Pretoria, *C. agatiflora* subsp. *agatiflora* is frequently collected along roads and railways, near rivers, gardens and natural habitats. Ecological data was compiled from herbarium specimens (collected from

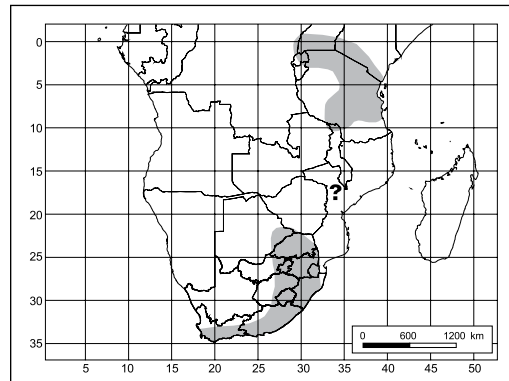


FIGURE 1.—Distribution range of *Crotalaria agatiflora* subsp. *agatiflora* based on herbarium records in the National Herbarium, Pretoria, and SAPIA and GBIF databases. The question mark (?) indicates regions of possible occurrence where records were not found.



1921–2011) and SAPIA records. Sixty-five percent were recorded near road sides, five percent along rivers, 10 percent in natural areas (including nature reserves) and 18 percent in urban areas including gardens.

*Crotalaria agatiflora* subsp. *agatiflora* reproduces and spreads exclusively by seeds. The average number of pods produced per plant is 50 and number of seeds per pod is 28. Seeds germinate in early summer.

Although no studies have focused on its effects on natural ecosystems, canary bird bush may affect the ecology of invaded areas in several ways for example through the enhancement of nitrogen levels in the soil. The species threatens watercourses in Grassland and Savanna biomes where it has been introduced. Furthermore, it has the potential to invade forest margins and often occupies cleared grassy areas and disturbed sites.

**Description**—Perennial woody herb, 0.3–2 m high, usually much branched, glabrous. *Leaves* 3-foliolate; leaflets ovate-elliptic, 25–90 × 10–35 mm, glabrous to densely hairy; petioles 30–120 mm long, mostly longer than leaflets. *Stipules* linear and caducous or absent, 4–12 mm long. *Racemes* stoutly pedunculate, many-flowered; flowers 40–50 mm long; bracts linear to attenuate-lanceolate, up to 16–20(–24) × 1–6(–9) mm; bracteoles filiform, 0.5–3.5 mm long. *Calyx* 18–30 mm long, with upper and lateral lobes joined almost to tips on either side, ± twice as long as tube; pedicels about 15 mm long, glabrous-glaucous or villose. *Standard* ovate, lemon-yellow to greenish yellow, sometimes medially pubescent outside; wings half to two-thirds as long as keel; keel broadly rounded, with a relatively short, projecting, often greenish or purplish beak, 11–55 mm long. *Pod* oblong-clavate, narrowed to a 15–25 mm long stipe, ± 75–100 mm long, glabrous. *Seeds* tumid, 6–7(–9) mm long, ± smooth. *Flowering time*: January–December in South Africa. Plate 2287.

#### REFERENCES

- BAKER, E.G. 1914. The African species of *Crotalaria*. *Journal of the Linnean Society (Botany)* 42: 241–425.
- BRENAN, M.A. 1949. *Checklist of the Forest Trees and Shrubs of the British Empire* No. 5. Tanganyika Territory Part II. Forest Institute, Oxford.
- CONSERVATION OF AGRICULTURAL RESOURCES ACT. 1983. Department Of Agriculture, Forestry and Fisheries. South Africa
- COOPERATIVE RESEARCH CENTER FOR AUSTRALIAN WEED MANAGEMENT. 2013. Canary bird bush: *Crotalaria agatiflora*. University of Queensland. Available at: [http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Crotalaria\\_agatiflora.htm](http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Crotalaria_agatiflora.htm). Accessed: 15 January 2013.
- GERMISHUIZEN, G., MEYER, N.L., STEENKAMP, Y. & KEITH, M. (eds). 2006. *A checklist of South African plants*. Southern African Botanical Diversity Network Report No. 41. SABONET, Pretoria.
- GLOBAL BIODIVERSITY INFORMATION FACILITY. 2013. Available at: <http://data.gbif.org/species/7067713/>. Accessed: 14 January 2013.
- HENDERSON, L. & MUSIL, K.J. 1987. *Plant Invaders of the Transvaal*. Department of Agriculture and Water Supply, Pretoria.
- KOKWARO, J.O. & JOHNS, T. 1998. *Luo Biological Dictionary*. East African Publishers, Nairobi.
- LEWIS, G.B., SCHRIRE, B., MACKINDER, B. & LOCK, M. (eds). 2005. *Legumes of the World*. Royal Botanical Gardens, Kew.

- LE ROUX, K., HUSSEIN, A.A. & LALL, N. 2011. In vitro chemo-preventative activity of *Crotalaria agatiflora* subspecies *agatiflora* Schweinf. *Journal of Ethnopharmacology* 138,3: 748–55.
- LE ROUX, M.M. & VAN WYK, B-E. 2012. The systematic value of flower structure in *Crotalaria* and related genera of the tribe Crotalarieae (Fabaceae). *Flora* 207: 414–426.
- MACDONALD, I.A.W., REASER, J.K., BRIGHT, C., NEVILLE, L.E., HOWARD, G.W., MURPHY S.J. & PRESTON, G. (eds). 2003. *Invasive alien species in southern Africa: national reports & directory of resources*. Global Invasive Species Programme, Cape Town.
- MILNE-REDHEAD, E. 1961. Miscellaneous notes on African species of *Crotalaria* L. *Kew Bulletin* 15: 157–167.
- NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT. 2004. Department of Environmental Affairs and Tourism, South Africa.
- NKONKI, T. & SWELANKOMO, N. 2003. *Crotalaria*. In G. Germishuizen & N.L. Meyer (eds), *Plants of southern Africa: an annotated checklist*. *Strelitzia* 14: 500. National Botanical Institute, Pretoria.
- PILBEAM, D.J. & BELL, E.A. 1979. Free amino acids in *Crotalaria* seeds. *Phytochemistry* 18: 973–985.
- POLHILL, R.M. 1968. Miscellaneous notes on African species of *Crotalaria* L. *Kew Bulletin* 22: 169–348.
- POLHILL, R.M. 1982. *Crotalaria in Africa and Madagascar*. A.A. Balkema, Rotterdam.
- SCHWEINFURTH, G. 1892. In Höhnel, Zum Rudolph-See und Stephanie-See, Anhang: 13.
- SHARMA, M.L., SINGH, G.B., GHATAK, B.J. 1967. Pharmacological investigations on *Crotalaria agatiflora* Scwienf. *Indian Journal of Experimental Biology* 5: 149–150.
- SOUTH AFRICAN PLANTS INVADERS ATLAS (SAPIA) DATABASE. 2011. ARC—Plant Protection Research Institute, Pretoria.
- TAUBERT, P.H.W. 1895. In A. Engler, *Pflanzenwelt Ost-Afrikas und der Nachbargebiete*: 206.

T. JACA\*§, T. NKONKI\* and GILLIAN CONDY\*

\* South African National Biodiversity Institute, Private Bag X101, Pretoria, 0001 South Africa.

§ Author for correspondence: t.jaca@sanbi.org.za

*Abrus precatorius* subsp. *africanus*

Leguminosae

*Africa, Australia, Americas, Asia*

*Abrus precatorius* L. subsp. *africanus* Verdc. in Kew Bull. 24: 235 (1970); Gillett et al.: 11 (1971). *A. minor* Desv.: 418 (1826). *A. squamulosus* E.Mey.: 126 (1836). *A. tunguensis* Lima: 127 (1921). *A. cyaneus* Viguiier: 172 (1952), *pro parte*.

The genus *Abrus* Adans. is a small group of about 18 species in the Leguminosae (subfamily Papilionoideae) that is native to Africa, Madagascar, India and Indo-China and is the only member of the tribe Abreae (Leistner 2000; Lewis *et al.* 2005; Kolberg & Swanepoel 2011). Two of the species are widespread across the world where they have seemingly been introduced (Lewis *et al.* 2005). *Abrus* was first described by Linnaeus in 1767 as *Glycine abrus* L. after which Adanson described the genus *Abrus* in 1763. The generic name is derived from the Greek word *habro*, which means delicate, elegant, pretty or soft in reference to the leaflets (Lewis *et al.* 2005). The specific epithet, *precatorius*, is a Latin word meaning petitioning or praying because of its use in rosaries (Masupa 2009).

The English common names for *Abrus precatorius* subsp. *africanus* are numerous and include jequirity, rosary bean, bead vine, coral bead plant, coral bean, crab's eye, licorice vine, love bean, minnie-minnies, prayer beads, prayer bean, precatory pea, red bead vine, weather plant, weather vine and lucky bean (Smith 1966; [http://en.wikipedia.org/wiki/Abrus\\_precatorius](http://en.wikipedia.org/wiki/Abrus_precatorius) 2012). In Afrikaans it is known as *paternostertjie*; other vernacular names include *amabope* (Ndebele), *nsimani* (Tsonga), *umuthi wenhlanhla* (Zulu) and *umkhokha* (Zulu) (Smith 1966; <http://redlist.sanbi.org/species> 2012). According to the Pretoria National Herbarium's database, *A. precatorius* subsp. *africanus* occurs in Namibia, Botswana, Swaziland, South Africa (Limpopo, Mpumalanga, KwaZulu-Natal and Eastern Cape provinces) (Figure 1), it is also found in Kenya, Mozambique, Madagascar, Mauritius and Seychelles. *Abrus precatorius* subsp. *africanus* occurs in orchard savanna, shrub savanna, gallery forest and also in plantations.

*Abrus precatorius* subsp. *africanus* has been widely cultivated as a garden ornamental, mainly because of its eye-catching and decorative bright red and black coloured seeds. It has a tendency to become weedy and invasive where it has been introduced, for example on Fraser Island, Australia, where the species grows readily in coastal environments and shows an enormous capacity to alter habitats (Hosking *et al.* 2007). It is naturalised in Hawaii, invading dry disturbed sites, while in Florida it has invaded undisturbed pine forests (Environmental Weeds of Australia 2008) and other open woodlands (Hosking *et al.* 2003). The species has also been reported to be opportunistic, growing very fast after disturbances such as fire and often out-competes native species in the critical period after burn ([www.bmrg.org.au/infor](http://www.bmrg.org.au/infor)



PLATE 2288 *Abrus precatorius* subsp. *africanus*

mation.php/2/106/379 2012). It was introduced into Australia and the New World (Foden & Potter 2005).

In southern Africa, it is found at altitudes of 15–1 500 m. The seeds are spherical, smooth, of a bright, shining red or white colour, with a black mark at the eye, or more rarely, black with a white eye. In India three forms of *Abrus precatorius* are recognised: with rose-coloured flowers, red seed with black eye; with lavender flowers, black seed with white eye; and with white flowers, white seed with black eye (<http://wildlifeofhawaii.com> 2012). The seeds are used as ornaments, decorations for costumes and lucky charms. Indian people used the seeds to weigh gold using a measure called a Ratti (Major *et al.* 1932). In China *A. precatorius* is used as a symbol of love and its Chinese name is *xiang si dou* or ‘mutual love bean’. In Trinidad in the West Indies, the brightly coloured seeds are used to ward off evil spirits and the evil eye ([http://en.wikipedia.org/wiki/Abrus\\_precatorius](http://en.wikipedia.org/wiki/Abrus_precatorius) 2012).

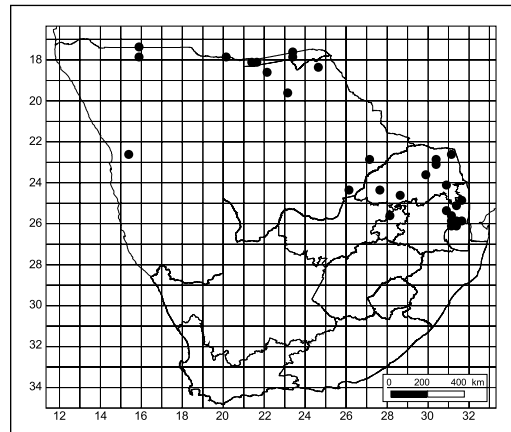


FIGURE 1.—Known distribution of *Abrus precatorius* subsp. *africanus* in southern Africa.

The seeds of *A. precatorius* subsp. *africanus* are highly poisonous and are often encountered in cases of criminal poisoning (Subramanian *et al.* 1973). According to Ghosal & Dutta (1971) the major alkaloid constituents of lucky bean seeds are N-methyltryptophan (abrine), precatorine and hypaphorine. These toxins are so dangerous that even half a seed, chewed and swallowed, can be fatal to an adult person. The seed coat is quite hard, so there is presumably no danger if the seed is swallowed whole. The digestive fluids cannot break down the seed coat, therefore the toxins are not released and the seed passes through the whole alimentary canal without being scathed. When consumed in large doses, they are an acrid poison, giving rise to symptoms similar to those of cholera. Nadkarni (1910) stated that the lethal dose of powdered seeds for human beings is 1 to 3 grams. From experiments done in horses, it was clear that *A. precatorius* seeds given orally in small and gradually increasing doses to horses, cause the animal to develop somewhat of a tolerance to relatively large doses, whereas a large dose administered either by feeding or as a bolus will kill the horse within 18 hours (Major *et al.* 1932).

Indigenous African tribes have traditionally used the seeds, roots, leaves and flowers for various ailments such as the treatment of eye infections, stomach disorders, snakebite and also as a contraceptive (Watt & Breyer-Brandwijk 1962). Crushed leaves are placed in boiling water, to prepare a steam bath for inflamed eyes. If administered uncooked, the seed acts as a strong purgative and emetic (Hutchings 1996). In Zulu culture root or leaf decoctions are used for pleuritic chest complaints and also as love charms (Hutchings 1996). Tamil Siddha people have used *Abrus pre-*



*catorius* for many years and as a result, they are familiar with its toxicity. Based on this knowledge they suggested a purification method where seeds are boiled in milk and subsequently dried. In this way, the Tamil Siddhars made tea from the leaves for the treatment of fevers, coughs and colds ([http://en.wikipedia.org/wiki/Abrus\\_precatorius](http://en.wikipedia.org/wiki/Abrus_precatorius) 2012). When sorcerers plot to kill a person, they make an effigy of their intended victim and put the beans in the place of ears (Nadkarni 1910).

**Description.**—Perennial twining climber, 2.4–4.5 m high, with glabrescent mostly yellowish green young branches. *Leaves* 50–100 mm long; petiole 5–18 mm long, 11–15-jugate, leaflets ovate, obovate, or oblong, 6–25 mm long, 3–9 mm wide; base rounded or subcordate; apex obtuse or acuminate; upper surface glabrous or glabrescent, lower surface sparsely appressed-pubescent. *Inflorescence* mostly stout, rigid and strongly falcate; bracts are up to 1 mm long, bracteoles very small. *Flowers* densely arranged on the inflorescence, up to 10 mm long, subsessile. *Calyx* ±3 mm long, pubescent. *Corolla* 3–5 times as long as the calyx, pale purple to yellowish. *Pods* almost rectangular, swelling or covered with low tubercles, 20–35 mm long, 10–15 mm wide, densely warty, tomentose, 3–7-seeded; beak reflexed, hook-shaped; mostly truncate at both ends. *Seeds* ovoid, 5–7 mm long, 4–5 mm broad, scarlet with a black spot around the hilum or rarely, black with a white eye, glossy. *Flowering time*: November–March. Plate 2288.

#### REFERENCES

- ADANSON, M. 1763. Fabaceae, *Abrus* Adans. *Familles des Plantes* 2: 327.
- DESLAUX, N.A. 1826. Abreae, *Abrus*. *Annales des Sciences Naturelles* 9: 418.
- ENVIRONMENTAL WEEDS OF AUSTRALIA. 2008. Crab's eye creeper (*Abrus precatorius* subsp. *africanus*). Fact Sheet Index. The University of Queensland.
- FODEN, W. & POTTER, L. 2005. *Abrus precatorius* L. subsp. *africanus* Verdc. National assessment: Red list of South African Plants version 2011.1. Accessed on 2012/02/15.
- GHOSAL, S. & DUTTA, S.K. 1971. Alkaloids of *Abrus precatorius*. *Phytochemistry* 10: 195.
- GILLETT, J.B., POLHILL, R.M. & VERDCOURT, B. 1971. Leguminosae. *Flora of Tropical East Africa* 3,1: 113–117.
- HOSKING, J.R., CONN, B.J. & LEPSCHI, B.J. 2003. Plant species first recognized as naturalized for New South Wales over the period 2000–2001. *Cunninghamia* 8: 175–187.
- HOSKING, J.R., CONN, B.J., LEPSCHI, B.J. & BARKER, C.H. 2007. Plant species first recognised as naturalised for New South Wales in 2002 & 2003, with additional comments on species recognised as naturalised in 2000–2001. *Cunninghamia* 10: 139–166.
- [http://en.wikipedia.org/wiki/Abrus\\_precatorius](http://en.wikipedia.org/wiki/Abrus_precatorius). Accessed 2012.
- <http://redlist.sanbi.org/species>. Accessed 2012.
- <http://wildlifeofhawaii.com>. Accessed 2012.
- HUTCHINGS, A. 1996. Zulu medicinal plants, an inventory. University of Natal Press, Pietermaritzburg.
- KOLBERG, H. & SWANEPOEL, W. 2011. *Abrus kaokoensis* (Leguminosae-Papilionoideae-Abreae), a new species from Namibia. *South African Journal of Botany* 77(3): 613–617.
- LEISTNER, O.A. (ed.) 2000. Seed plants of southern Africa: families and genera. *Strelitzia* 10. National Botanical Institute, Pretoria.
- LEWIS, G., SCHRIRE, B., MACKINDER, B. & LOCK, M. 2005. Tribe Abreae. *Legumes of the world*: 389–392. Royal Botanic Gardens, Kew.
- LINNAEUS, C. 1767. *Abrus precatorius*. *Systema Naturae*, ed. 12,2: 472. Bernard Quariten Ltd. London.
- MAJOR, K.S., SIMPSON, R.A.V.C. & BANERJEE, G.B.V.C. 1932. Cases of poisoning in the horse with ratti seed (*Abrus precatorius*) by oral administration. *The Indian Journal of Veterinary Science and Animal Husbandry* 11,1: 60.



- MASUPA, T.T. 2009. *Abrus precatorius* L. subsp. *africanus* Verd. [www.plantzafrica.com/plantab/abruspre-cafri.htm](http://www.plantzafrica.com/plantab/abruspre-cafri.htm). Accessed on 2012/02/15.
- MEYER, E. 1836. Leguminosae. *Commentariorum de Plantis Africae Australioris* 1: 126.
- NADKARNI, K.M. 1910. *Indian plants and drugs with their medicinal properties and uses*. Norton and Co., Madras.
- PIRES DE LIMA, A. 1921. *Brotéria Série Botanica* 19:127.
- SMITH, C.A. 1966. Common Names of South African Plants. *Memoirs of the Botanical Survey of South Africa* No. 35. Botanical Research Institute, Pretoria.
- SUBRAMANIAN, E.H., VISWANATHAN, E.H. & KRISHNAMURITHY, G. 1973. An improved thin-layer chromatographic method for the detection of *Abrus precatorius* seeds. *Current Science* 42,14: 499.
- VERDCOURT, B. 1970. Studies in the Leguminosae-Papilionoideae for the 'Flora of Tropical East Africa'. *Kew Bulletin* 24,2: 235.
- VIGUIER, R. 1952. Leguminosae. *Notulae Systematicae* 14: 172.
- WATT, J.M. & BREYER-BRANDWIJK, M.G. 1932. Leguminosae. *Medicinal and poisonous plants of southern Africa*: 77. Livingstone, Edinburgh & London.
- [www.bmrg.org.au/information.php/2/106/379](http://www.bmrg.org.au/information.php/2/106/379). Accessed 2012.

T. NKONKI\*§ T. JACA\* and GILLIAN CONDY\*

---

\* South African National Biodiversity Institute, Private Bag X101, Pretoria, 0001 South Africa.  
§ Author for correspondence: [t.nkonki@sanbi.org.za](mailto:t.nkonki@sanbi.org.za)