

PEARSONIA CALLISTOMA

A second dolomite endemic legume species discovered in the Northern Province.

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The north-eastern Transvaal Escarpment, also known as the Wolkberg Centre, is an important centre of endemism in South Africa. The area hosts a large number of endemic species, 71% of which occur on nutrient-poor quartzite-derived soils and the remainder occurs on fertile dolomite-derived soils. Although the dolomite hosts less than half the number of endemics that occur on quartzite-derived substrates, the degree of endemism is higher on dolomite. The Legalametse Nature Reserve falls largely within the Chuniespoort Formation, which constitutes the dolomite component of the Wolkberg Centre. Legalametse has a relatively high species richness, and many taxa that occur within Legalametse do not match existing material. Among these, Stalmans found a very hairy new species of *Pearsonia* in 1989 that did not match any of the species already described.

The new species, named *Pearsonia callistoma*, has been found at Makwens, on the farm

Pearsonia callistoma is a dense, rounded shrublet. Photo: Gael Campbell-Young.

The Downs and at Haffenden Heights in the Legalametse Nature Reserve. It has also been collected near the Wolkberg Caves and on the farm Morgendal in the Ribbokkop area, south-west of the escarpment. All of these localities occur on dolomite, which gives us reason to believe that the new species is a dolomite endemic. Only one other legume species, *Lotononis pariflora*, has been recorded as a dolomite endemic in the Wolkberg Centre. *Pearsonia callistoma* is thus the second.

Pearsonia callistoma resembles the genus *Argyrobium* and has even been sorted among *Argyrobium* specimens in herbarium collections. The similarity to *Argyrobium* lies in the silky or silvery-hairy appearance of the shrubs. Also, the leaves of *P. callistoma* and *Argyrobium* are stalked and trifoliate with small stipules, and the leaflets appear to have white margins because of the presence of dense, silky white hairs. However, the calyx and corolla of



Makwens at The Downs in Legalametse Nature Reserve – one of the areas where *Pearsonia callistoma* occurs. Photo: Gael Campbell-Young.

P. callistoma are definitely those of *Pearsonia*. When keyed out, the material comes to *P. uniflora*, but is quite clearly **not** that species. *P. uniflora* occurs in Mozambique, Swaziland and a number of localities in the former Transvaal region, like Loskop Dam, Pietersburg, Barberton, Nelspruit, Sabie and the Wolkberg Centre.

The twelve species of *Pearsonia* are centred in the grasslands of the southern Afrotropical Region – mostly in the Drakensberg and Inyangani Centres. Six species occur in the sour grassveld region of South Africa, and four extend into eastern Zimbabwe, with one of these extending further to Malawi. Most of the species occur in the Pilgrim's Rest to Barberton area, where they show remarkable variability. Within the southern edge of this region, variability warrants the subdivision of some of the species into subspecies.

WHY IS THERE A HIGH DEGREE OF ENDEMISM ON DOLOMITE-DERIVED SOILS?

To give an exact explanation for this phenomenon would be impossible, because endemism is the product of a number of interactive environmental and biotic factors. Endemics are often associated with nutritionally peculiar soils such as those derived from gypsum, limestone, dolomite or serpentine, or those containing heavy metals. Dolomitic soils are acidic, rich in nutrients (especially calcium and magnesium) and have low levels of phosphorus. As dolomites occur in drier areas, nutrients are not significantly leached out. Sharp changes in climate, often due to geological causes, also contribute to endemism. In the Wolkberg Centre, the escarpment, which receives rain on the lowveld side and less on the highveld side, is a prime example of this, and the diverse habitats which result from the exposed escarpment create ample opportunity for plants to adapt to specific habitats.





A number of *Pearsonia* species are narrow endemics. *P. mesopontica* and *P. flava* occur in the Chimanimani Mountains and Katangan Centre respectively, both of which are well known centres of endemism. *P. metallifera* is restricted to serpentine soils of the Great Dyke in Zimbabwe and *P. madagascariensis* is

restricted to a very small area in northwestern Madagascar. *P. hirsuta*, a new species described in 1998, similarly has a restricted distribution, being known only from four localities in the Lydenburg area. Thus *Pearsonia* has a significant number of isolated taxa.

Description

Pearsonia callistoma is a dense, rounded shrublet about 0.2-0.5 m tall. The stems are robust and upright (as opposed to the slender, lax stems of *P. uniflora*) and become woody with age. All parts of the plant (except for the larger parts of the petals and stamens) are densely covered with white or yellowish hairs, which are long and extremely dense on the calyces and pods. The plants of *P. uniflora* are not as densely hairy as those of *P. callistoma*. The leaves of *P. callistoma* are trifoliolate, with two small stipules at the base of the leaf-stalk. The leaflets are elliptic or broader at the top than at the base, shaped like an upside-down egg and terminate abruptly in a little point. The leaflets of *P. callistoma* are shorter, but broader (8-17x4-10 mm) than those of *P. uniflora*. The long, white, velvety hairs on the leaflets are denser below than above, giving the surface, and especially the margins, a white appearance. Flowers are borne in racemes opposed by leaves and the flowers are larger in

P. callistoma (14-17 mm long) than in *P. uniflora* (9-15 mm long). There is a small bract at the base of the flower-stalk and paired bracteoles occur at the tip. The calyx is densely hairy and larger (11-14 mm long) than that of *P. uniflora* (7-11 mm long). The pale yellow petals, which sometimes fade pink or brown, protrude only slightly from the densely hairy calyx, which is longer in *P. callistoma* than in *P. uniflora*. The standard petal is quite hairy on the back near the top and the wing petals are much longer than the fused keel petals. The ovary has a dense covering of long, white hairs and contains about fifteen ovules. The pods, which are 24-31 x 4-5 mm in size, appear densely grey-hairy when fresh. The seeds are 1-2 mm long and mostly yellow. All the hairs become golden-yellow when the plants are dried as herbarium specimens. *P. callistoma* is known to flower in January, April and May.

The name *callistoma* is derived from the Greek words *calli*, meaning beautiful, lovely or charming and *stoma*, meaning mouth. This refers to the small, puckered mouth that is formed by the protrusion of the standard and wing petals beyond the calyx lobes, which is quite charming.

Conservation status

P. callistoma, of which the distribution area is less than 500 km², is currently well conserved in three of the four localities in which it is known to occur. Two of these are within the Legalameetse Nature Reserve and another is within the Wolkberg Caves Nature Reserve.



The flowers of *Pearsonia callistoma* with their hairy calyces and pods, and pale yellow petals.
Photo: Trevor Campbell-Young.

The Ribbokkop area has been identified as an area of high priority deserving protection. If the protection status of the area should change, the future survival of the known populations of *P. callistoma* could be in jeopardy. ♀

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