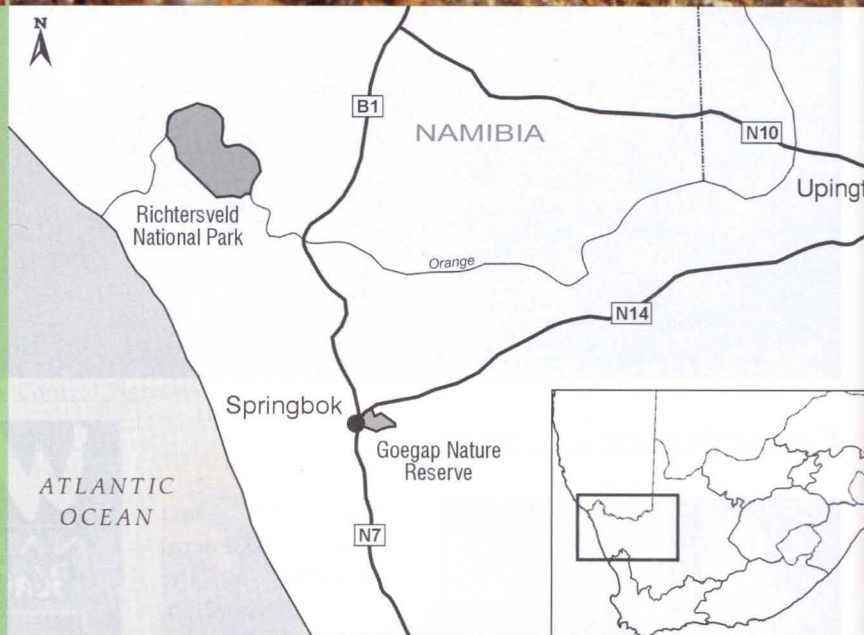


LEFT: Literally meaning 'rock flower' klipblom *Colpias mollis* grows in crevices and cracks in the granite rocks of Namaqualand. This is the white-flowering klipblom growing on a rock face in the Goegap Nature Reserve near Springbok. It seems as if white-flowering specimens are generally found from Springbok northwards into the Richtersveld, while the yellow-flowering plants (RIGHT) occur to the west and south of Springbok. Photos: H.M. Steyn

Klipblom

Plant of the granite boulders

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ABOVE: Map of the Namaqualand area, by Sally Adam, Technodraft.

Picturesque granite hills and sandy plains are characteristic of the Namaqualand landscape. These granite domes not only increase the effective rainfall on the slopes below them, but also provide a habitat where the beautiful, but often overlooked klipblom *Colpias mollis*, a member of the family Scrophulariaceae, thrives.

Most plants of Namaqualand are adapted to survive the long, dry summers by means of succulence, by adopting a therophytic life form (in which their life cycle is completed within a single growing season after which seeds are produced) or by a mass production of seeds. Klipblom, which means 'rock flower' in Afrikaans, however, is neither succulent nor therophyte, but a spring-flowering 'chasmophyte' (a plant that grows in rock crevices) and is confined to crevices in granite boulders throughout Namaqualand. Although widespread, not much about this interesting plant is known.

Klipblom is a low shrublet (see accompanying box for more detail) that produces showy clusters of flowers in spring. The flowers secrete oil, and are pollinated by a specific *Rediviva* bee (Hymenoptera, Melittidae). The female bees collect oil

and pollen from the flowers, while the males patrol the plants, presumably in search of receptive females. Pollen grains of klipblom are small and have a tendency to stick together - ensuring easy attachment and transfer. Appendages, called elaiosomes that contain lipid reserves are found on the seeds, and ants are therefore suspected to be responsible for their dispersal. However, after fertilization, the flower stalks turn away from the sunlight in the direction of the rock. This phenomenon is described as a type of 'autochory' (the plant itself acting as dispersal agent) as the plant seeks a crack where the capsule deposits its seeds. Seeds thus germinate under the same conditions as the mother plant and survival of the species is ensured.

Klipblom plants are not restricted to a certain aspect or type of slope, but it seems that they generally occupy east or south-facing rock faces. These plants have to withstand not only a shortage of water and nutrients, but also wide temperature fluctuations without the shading benefits provided by neighbouring plants. However, although the granite rocks seem to be a harsh, inhospitable environment, it is possible

that the mist condensing on the rocks and collecting in the rock crevices, together with the meagre rainfall, creates a unique and quite liveable environment for these plants.

According to most books, the flowers of klipblom are sulphur-yellow, but specimens with a white corolla and yellow throat are known to occur in the Goegap Nature Reserve in the Springbok area and in the Richtersveld National Park.

From personal observations and herbarium specimens, it seems as if white-flowering specimens are general-

ly found from Springbok northwards into the Richtersveld, while the yellow-flowering plants occur to the west and south of Springbok.

During August and September 1998, 2001 and 2002 several white- and yellow-flowering plants were studied and interesting observations were made that need to be tested. White flowers seem to be smaller than yellow ones; yellow flowers have a distinct clove-like smell, while the white flowers are slightly sweet-scented; and the yellow-flowering plants are more open and sparse, while the white-flowering

plants are compact and densely hairy. It is doubtful whether the colour and scent differences can be attributed to pollinator-mediated selection, as the only known oil-collecting bee small enough to visit the flowers successfully is *Rediviva albifasciata*.

Further research is necessary to answer questions surrounding the dispersal of seeds and the colonization mode of klipblom, as well as about the morphological and physiological adaptations enabling this extraordinary plant to survive and thrive on these dry, hot rock faces.

Acknowledgements

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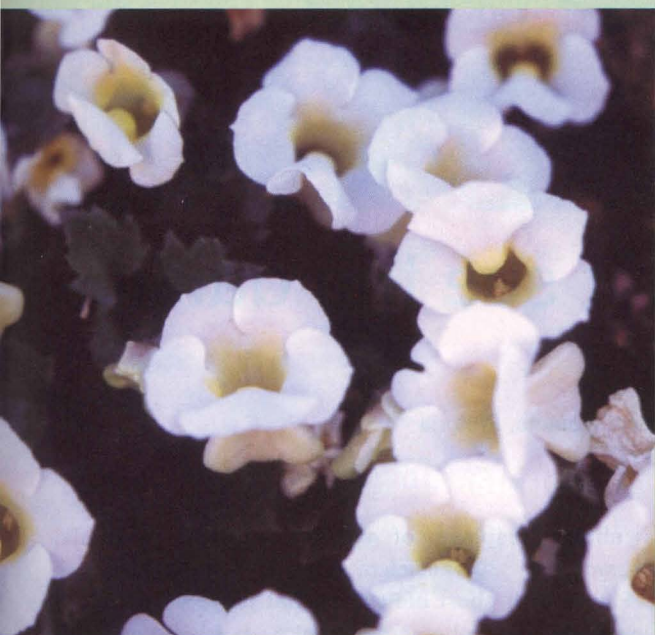
Further reading

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LEFT: Close-up of the white flowers of klipblom *Colpias mollis*. The flowers secrete oil, and are pollinated by a specific oil-collecting bee. Photo: H.M. Steyn

BELOW: After fertilization, amazingly, the flower stalks turn away from the sunlight and grow in the direction of the rock, seeking a crack for the capsule to deposit its seeds, which will then germinate in similar conditions to the parent plant. Photo: H.M. Steyn

Botanical description of klipblom

THE GENUS *Colpias* consists of a single species, which is endemic to the dry north-western parts of South Africa and possibly Namibia. It is a low, much-branched shrublet with brittle branches covered with soft hairs and it produces showy clusters of flowers in spring. The leaves are alternate, hairy, egg-shaped or triangular, with toothed or incised margins. The perianth is divided into a five-partite calyx covered with soft hairs and a tubular corolla, hairless and somewhat curved at the base with two short pouches, lined with oil-secreting trichomes. The capsules are hairless, dehiscent along the partition and contain many oblong, black seeds covered with small grains and wrinkles.

