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ZALUZIANSKYA (SCROPHULARIACEAE) IN SOUTH EASTERN  
AFRICA AND THE CORRECT APPLICATION OF THE NAMES  
Z. CAPENSIS AND Z. MARITIMA

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ABSTRACT. The two sections recognized by Bentham under the generic synonym *Nycterinia* are accepted in *Zaluzianskya*, sect. *Zaluzianskya* and sect. *Holomeria*. Those members of sect. *Zaluzianskya* that have the corolla lobes red outside, white within, are revised. The group comprises 19 species and has its centre of distribution in the Cape-Natal Drakensberg and its outliers. Two names, *Z. capensis* and *Z. maritima*, that have long been grossly misused, are redefined and shown to be restricted to Cape Province: *Z. capensis* now includes *Z. coriacea*, *Z. dentata* and *Z. longiflora*; *Z. maritima* now includes *Z. lychnidea*, *Z. spathacea* and *Z. natalensis*, previously in synonymy under *Z. maritima*, are reinstated; *Z. montana* is reduced to *Z. ovata*. Nine new species are described, one from Riversdale, the remainder from the summer rainfall area. Three species of sect. *Holomeria* that are found in the summer rainfall area are included in the revision. Vegetative characters, the occurrence of zygomorphic and actinomorphic corollas, day-flowering and night-flowering species, and the geographical distribution of the species are discussed. An appendix gives a revised list of the genus for Natal and corrections to the names used in some recent publications.

INTRODUCTION

In 1977 we revised the genus *Glumicalyx* Hiern and transferred to it three species previously placed in *Zaluzianskya*. At the same time we noted that the species of *Zaluzianskya* itself were very poorly understood and that, even for Natal and adjacent areas where we had done fieldwork, it was likely to be some time before a synopsis of the genus became possible (Hilliard & Burtt, 1977: 159). We are now attempting this for the summer rainfall area of southern Africa, extending our treatment to the species of the southern and south-western Cape only insofar as elucidation of the much-misused names *Z. capensis*, *Z. dentata*, *Z. longiflora* and *Z. maritima* makes necessary.

In Hiern's account of the genus in *Flora Capensis* (Hiern, 1904) the names *Z. maritima* and *Z. capensis* were used in a very wide sense, and they

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have since been applied with gay abandon to plants from as far north as Zimbabwe. On careful examination the material recently covered by these names proves to form a group of closely related species and neither *Z. maritima* nor *Z. capensis* reaches northwards as far as Natal. We now exclude from *Z. maritima* the two species *Z. natalensis* and *Z. spathacea* included in synonymy by Hiern, and only one of his five named varieties (var. *fragrantissima*) remains within the restricted concept of the species. Nevertheless we include in *Z. maritima* the next species in Hiern's account, *Z. lychnidea*, which was founded on a cultivated specimen of *Z. maritima*. Similarly with *Z. capensis*: much of the material so named must be excluded but we do not think that the two species following in *Flora Capensis* (*Z. longiflora* and *Z. dentata*) can be retained.

The species of this group are closely related to one another and remain difficult to discriminate. Bentham (1836) and Hiern (1904) were both hopelessly handicapped by seeing too few specimens and by having no field knowledge of the genus. Many of the species are separated by differences in habit and rootstock that are not always apparent in dried specimens. We ourselves realize that our field knowledge outside Natal is inadequate, but we have at least been able to see *Z. capensis* and *Z. maritima* from near their type localities. More fieldwork is needed in the Transvaal. Reluctantly we have decided that any attempt to deal with *Zaluzianskya* in Zimbabwe, where there may be three species, would be premature. More collecting must be done and rootstocks must be included in the specimens. We have, however, indicated the probable position of these plants in the notes after their southern allies, *Z. glareosa*, *Z. angustifolia* and *Z. distans*.

#### THE GENUS AND ITS SUBDIVISION

The generic name *Zaluzianskya* F. W. Schmidt is now conserved (Staffleu et al. 1978: 390). Bentham (1836, 1846), who made the first thorough study of the species, used the name *Nycterinia* D. Don, which was then correct; the transfers to *Zaluzianskya* were made by Walpers (1844). The genus falls into two distinct groups, which Bentham (1846) recognized under *Nycterinia* as sections: sect. *Zaluzianskya* (corolla lobes deeply bifid) and sect. *Holomeria* (corolla lobes entire). Sections were not recognized by Hiern (1904), but the two groups are clear-cut and as the genus contains some 35 species it is large enough to warrant formal subdivision. The two sections are therefore now taken back into use.

Bentham further divided sect. *Zaluzianskya* into two subsections or series (he did not indicate precise rank): § *Lychnideae* (corolla tube papillose) and § *Selaginoideae* (corolla tube glabrous). Sect. *Holomeria* he defined not only by entire corolla lobes, but also by a glabrous corolla tube. However, additional species have been discovered since with entire lobes but papillose corolla tubes. Theoretically therefore it is possible to divide each section into two subsections, one with glabrous the other with papillose corolla tube. The parallelism is worth noting, but this further subdivision of the sections does not seem of any practical value at present. Another parallel subdivision of both sections could be made by segregating the species with only two fertile stamens: *Z. villosa* F. W. Schmidt in sect. *Zaluzianskya*, *Z.*

*bolusii* Hiern, *Z. diandra* Diels, *Z. ramosa* Hiern and *Z. nemesioides* Diels in sect. *Holomeria*. Once again such action would be of no immediate practical value.

#### SPECIES LIMITS

The species of *Zaluzianskya* sect. *Zaluzianskya* are closely allied and few are easy to identify. Of those few *Z. pulvinata* is the most distinctive; the cushions formed by the numerous rosettes of rather thick leaves are peculiar to this species and even young plants with a single flowering rosette can usually be placed with certainty. Nevertheless within this unmistakable facies a considerable diversity of leaf-form is found (see notes under the species); it is the habit that is distinctive. And so we find too, though to a less obvious degree, with many other species. It is this that makes them distinctive in the field, but often hard to distinguish in the herbarium, where incomplete specimens may well be indeterminate.

It may be thought that the species limits have been drawn too finely here, but we have considered it right to try to distinguish the entities that seem to be recognizably different in the field. Our concepts are based on extensive collecting, so that we have recognized these taxonomic units by their repeated occurrence. In total we have made about 180 collections, covering all the species enumerated except *Z. muirii*, *Z. katharinae* and *Z. peduncularis*. We have ranked each entity as a species, deeming it best to treat them all as equivalent units even though there is sometimes only a single trustworthy difference between two of them: for instance, the short dense non-elongating inflorescence is virtually the only character that distinguishes *Z. natalensis* from *Z. spathacea*.

It is often the specimens at the edge of the geographical range of species that cause most problems. Thus *Z. angustifolia*, centred in the Amatola Mts in Eastern Cape Province, is easily distinguished in that area, but specimens from the Transkei and southern Natal become more difficult. Similarly with specimens from the northern (Transvaal) end of the range of *Z. spathacea* and *Z. elongata*. However, such difficulties may simply be due to the lack of intensive collecting in those areas. Such uncertainties must be recognized as a spur to further study, not as an excuse for failing to move towards a more critical classification. One thing is clear, a great deal more work is needed in *Zaluzianskya* before its taxonomy can be regarded as well understood.

Several species may occur in the same general area. For instance, on the adjoining farms 'Allendale' and 'Storm Heights' (Lions River district, Natal) we found *Z. microsiphon*, *Z. spathacea*, *Z. glareosa* and *Z. pulvinata*. The first two occupy the same sort of habitat, open grass slopes, but are probably well isolated from one another as *Z. microsiphon* is day-flowering while *Z. spathacea* is night-flowering and presumably moth-pollinated. *Z. glareosa* was in the wet gravelly ground of an overgrown trackway, while *Z. pulvinata* was found around rock sheets. Similarly in the Garden Castle Forest Reserve (Underberg distr., Natal), in the Pillar Cave valley leading to Mashai Pass, we found *Z. glareosa* in gravelly soil of the stream valley and *Z. microsiphon* on the grass slopes and turf of the

stabilized boulder-bed up to about 1980 m. *Z. pulvinata* was around rock sheets on the ridge flanking the valley at about 2100 m. Higher up the valley, *Z. ovata* was found under rocks in the stream valley and *Z. chrysops* was on the bare earth of the banks of the boulder-bed and of erosion gullies. Thus microhabitat preferences, or a difference in pollinators, generally keep the species apart and we have no clear evidence yet that hybridization takes place.

#### MORPHOLOGICAL CHARACTERS

Soon after we started to collect *Zaluzianskya* we dug up a specimen of the plant we now know to be *Z. microsiphon*. We were amazed to find that this single-stemmed plant arose from a rootstock whose crown was covered, just below soil level, by a dense mass of loose white somewhat fleshy buds. We also noted the more obvious characters: that the corolla was zygomorphic, the limb was held vertically and the corolla lobes were densely glandular on the inner surface. On consulting *Flora Capensis* we found no mention of any of these characters, but they have proved of immense help in elucidating the species of this genus. Such plants as this were being currently referred to *Z. maritima*, which has no basal buds, a regular corolla, the limb held horizontally and the lobes glabrous above.

The rootstock character raises interesting biological problems. A plant of *Z. microsiphon* may have about 30 suppressed buds at its base, but there is seldom more than one developed stem. How many years can these suppressed buds exist? And is it one of these that provides next year's flowering stem? Other species (e.g. *Z. elongata*, *Z. glareosa*) carry just a few buds, but in *Z. microsiphon*, *Z. spathacea* and *Z. natalensis* they are numerous. *Z. pulvinata*, and to a less extent *Z. angustifolia*, forms a cushion of numerous leaf rosettes; are these equivalent to the suppressed buds of *Z. microsiphon*?

The pollination biology of the species of *Zaluzianskya* sect. *Zaluzianskya* with red and white corollas should prove a profitable field of study: in the first place, there is the striking contrast between actinomorphic flowers opening at dusk and then becoming fragrant, and zygomorphic odourless flowers opening during the day. Secondly, the limbs of actinomorphic corollas are held horizontally, those of zygomorphic corollas vertically. This is so even in the slightly zygomorphic corollas of *Z. elongata* and *Z. oreophila*, both of which open at night. The inside of the corolla lobes in zygomorphic flowers is creamy or greenish white, not the pure white of the actinomorphic corollas.

Thirdly, actinomorphic corollas usually have a thick circler of long unicellular hairs around the mouth; these are either wanting or weakly developed in zygomorphic corollas. In the markedly zygomorphic corolla of *Z. microsiphon*, the four anthers lie on the lower side of the mouth, leaving a clear passage above from which the style protrudes. In actinomorphic corollas, the mouth is occluded by the two small horizontal anthers, and the stigma emerges between them. The tips of the two included anthers often contribute to the occlusion of the mouth.

It has long been noted that the corolla of *Zaluzianskya* sect. *Zaluzianskya*

has a distinctly caryophyllaceous appearance, due to the deeply bifid corolla lobes resembling the bifid petals of *Silene*, *Cerastium*, etc. In the Drakensberg, where some of the night-flowering species of *Zaluzianskya* are found, there are also night-flowering species of *Silene*, such as *S. burchelli* Otth and *S. undulata* Ait., in the same area. In both *Silene* and *Zaluzianskya* the petals, or lobes, become slightly reflexed when the flower is fully open. Together these plants of two widely different families may form a floral guild attracting similar pollinators and combining to give the pollinator population a better chance of survival. The same situation is almost certainly found in other areas, as *Silene* species are widespread in south east African grasslands where *Zaluzianskya* is also found. The phenomenon is paralleled in the Drakensberg by mixed populations of *Cephalaria galpiniana* Szabo (Dipsacaceae) and *Brownleea galpinii* Bolus (Orchidaceae), which have remarkably similar globular heads of creamy-white flowers, and of *Stachys sessilis* Gürke (Labiatae) and *Disa oreophila* Bolus (Orchidaceae) whose inflorescences also have a strong superficial resemblance.

There is an interesting variant in the colour pattern of these red- and white-flowered species of *Zaluzianskya*. Sometimes the centre of the corolla limb is coloured a brilliant orange. This appears to be the rule in the species we have called *Z. chrysops*, but in *Z. ovata* and *Z. distans* it seems to be only an occasional variant and we have been unable to find that it has taxonomic significance. Biological significance it must surely have, but what that is remains to be discovered.

The colour in these orange-eyed species is in the cell-sap of the epidermal cells. In the Drakensberg species of sect. *Holomeria*, *Z. rubrostellata*, there is a quite different colour pattern. The inside of the corolla lobes is a bright canary yellow and around the corolla mouth there is a brilliant scarlet star-shaped patch. Here the colour is in a special tissue. Some other species of sect. *Holomeria* are known to have similar markings at the centre of the corolla. Colour patterns in *Zaluzianskya* clearly deserve more extensive study.

#### PHYTOGEOGRAPHY

*Zaluzianskya* is one of several S African genera that are represented in the Drakensberg Centre largely by perennials, but in the southern or south-western Cape largely by annual species. Other such genera in Scrophulariaceae are *Diascia*, *Nemesia* and *Hebenstretia*, while examples in another family are *Felicia* and *Cotula* (Compositae).

In *Zaluzianskya* it is sect. *Zaluzianskya*, and in particular the group of species with the corolla limb red outside white within, that is centred on the Drakensberg and Lesotho. The species tail-off rapidly both northwards (though there may be as many as three species in Zimbabwe) and southwards (where only *Z. capensis* reaches the Cape Peninsula). There is however a small group of five to six species that are small annuals with different colour patterns and these are centred on the southern and south-western Cape. *Zaluzianskya* sect. *Holomeria* consists wholly of annuals and this too has a southern centre of distribution. *Z. peduncularis* reaches the

eastern Cape (Pirie Mts); *Z. crocea* goes further north along the Witteberg to Naude's Nek on the Barkly East-Maclear boundary, while *Z. rubrostelata* is restricted to the Lesotho plateau and nearby. Then there is a remarkable disjunction northwards until *Z. elgonensis* is met: it was described from Mt Elgon on the Kenya-Uganda border (Hedberg, 1970) but is now also known from Kilimanjaro.

All but six of the 19 species of *Zaluzianskya* sect. *Zaluzianskya* treated here occur in Natal or on its borders. They can therefore be analysed according to the system of phytogeographical groups devised by Hilliard (1978) for the Natal Composites. Five species belong to group 1 (Drakensberg endemics in the broad sense defined by Hilliard). Three belong to group 2, and show extensions southwards from the Drakensberg: one of these species, *Z. ovata*, reaches as far south as the mountains around Worcester, a degree of extension not shown amongst the Compositae and necessitating a slight amendment to the definition of the group, which previously reached 'occasionally the Nieuwveld Mts'. A further five species belong to group 4, which represents the submontane extension of the Drakensberg group. One of the five does not occur in the Drakensberg proper, but fits happily with a few other species mentioned here by Hilliard (1978, p. 417 para. 3). There is one coastal Natal endemic, *Z. pachyrrhiza*, which is therefore referable to group 2. The position of *Z. pilosa* is a little doubtful as it is as yet known outside Natal only from one record in the E Transvaal. *Z. angustifolia* approaches group 9 (Cape species just reaching southern Natal), but its position is also dubious as the Natal specimens are not typical.

The central block of the Drakensberg Centre with its narrow mountain extensions north and south, rather like a seed with a filiform appendage at each end, is clearly a seminal area for *Zaluzianskya* sect. *Zaluzianskya*. Outside it there is a coastal group (*Z. pachyrrhiza* in the north, *Z. maritima*, *Z. muirii* and *Z. capensis* further south) to which it is linked by a few species of intermediate altitude, such as *Z. natalensis* and *Z. pilosa* in Natal, *Z. angustifolia* in the eastern Cape. There is no indication in sect. *Zaluzianskya* of a link between the Drakensberg Centre and the mountains of Tropical East Africa: Inyanga, on the Zimbabwe-Mozambique border, is the northernmost record of the section. The only tropical link in *Zaluzianskya* is in sect. *Holomeria* represented in E Africa by *Z. elgonensis* as mentioned above.

**Zaluzianskya** F. W. Schmidt, Neue Selt. Pflanzen 11 (1793); Walpers, Repert. Sp. Nov. 3: 306 (1844); Hiern in Thistelton-Dyer, Fl. Cap. 4(2): 333 (1904), nom. conserv.—non *Zaluzianskia* Necker (= *Marsilea* L.)

Syn.: *Nycterinia* D. Don in Sweet, Brit. Fl. Gard. ser. 2, 239 (1834); Benth. in Hook., Comp. Bot. Mag. 1: 369 (1836) & in DC., Prodr. 10: 348 (1846). Type: *N. lychnidea* D. Don

Type species: *Z. villosa* F. W. Schmidt

#### Sect. *Zaluzianskya*

Corolla lobes deeply bifid.

**Sect. *Holomeria* (Benth.) Hilliard & Burtt, comb. nov.**

Corolla lobes entire or emarginate

Lectotype: *Z. divaricata* (Thunb.) Walp.Syn.: *Nycterinia* D. Don sect. *Holomeria* Benth. in DC., Prodr. 10: 350 (1846).

The species originally referred to this section in *Nycterinia* were *N. divaricata* (Thunb.) Benth., *N. peduncularis* Benth., *N. pusilla* Benth., *N. villosa* Benth. (= *Z. benthamiana* Walp.). We choose *Z. divaricata* as lectotype as it is the longest known and best known species.

## KEY TO THE SPECIES

- 1a. Corolla lobes deeply notched (sect. *Zaluzianskya*) . . . . . 2
- 1b. Corolla lobes entire or emarginate (sect. *Holomeria*) . . . . . 24
- 2a. Upper surface of corolla lobes glandular at least in lower part, mouth either not bearded with long unicellular hairs or rarely a few hairs present on the anticous side . . . . . 3
- 2b. Upper surface of corolla lobes either glabrous or glandular, if glandular, then mouth well bearded . . . . . 4
- 3a. Corolla limb zygomorphic, held vertically, a few hairs sometimes present on anticous side of mouth; perennial herb with a thick clump of vegetative buds on the crown . . . . . 1. *Z. microsiphon*
- 3b. Corolla limb regular, held more or less horizontally, beard wanting; annual or weakly perennial, but lacking vegetative buds on the crown . . . . . 12. *Z. muirii*
- 4a. Stems either glabrous or with coarse retrorse eglandular hairs . . . . . 5
- 4b. Stems with coarse spreading hairs with or without a glandular tip, sometimes short fine spreading glandular hairs as well . . . . . 20
- 5a. Corolla lobes glabrous above (ignore tiny glands that may be present near the sinuses of the corolla lobes adjacent to the circlet) . . . . . 6
- 5b. Corolla lobes glandular above at least in the lower part . . . . . 16
- 6a. Corolla limb slightly zygomorphic (the anticous lobe slightly isolated from the other four), held vertically . . . . . 7
- 6b. Corolla limb regular, held more or less horizontally . . . . . 8
- 7a. Leaves coarsely toothed, pilose at least on the lower surface; corolla tube usually 17–30mm long . . . . . 13. *Z. oreophila*
- 7b. Leaves either entire or with a few small teeth, usually glabrous or with a few hairs on margins and midline; corolla tube usually 30–40mm long . . . . . 7. *Z. elongata*
- 8a. Upper surface of corolla lobes bright orange in the lower half . . . . . 15. *Z. chrysops*
- 8b. Corolla lobes wholly white above . . . . . 9
- 9a. Plant pulvinate with many crowded green leaf rosettes forming dense cushions or small mats . . . . . 4. *Z. pulvinata*
- 9b. Plant not pulvinate though leaf rosettes sometimes present on the crown, but few, not forming cushions nor mats . . . . . 10
- 10a. Plants strongly perennial, with either a thick clump of vegetative buds on the crown or a thickened woody taproot, which may bear a few

- small buds or loose leaf tufts on the crown (specimens flowering in the seedling stage will not key out). E Cape to Natal ..... 11
- 10b. Plants either annuals or short-lived perennials with the taproot not exceeding c.4mm in diam. and lacking basal vegetative buds. Cape to E Cape ..... 15
- 11a. Cauline leaves mostly up to 2mm broad ..... 12
- 11b. Cauline leaves mostly at least 3mm broad ..... 13
- 12a. Inflorescences usually with 10-25 flowers, corolla lobes usually 3-5mm long ..... 6. *Z. schmitziae*
- 12b. Inflorescences usually with up to 9 flowers, corolla lobes usually 5-8mm long ..... 5. *Z. angustifolia*
- 13a. Plant developing a thick clump of vegetative buds on the crown, stem simple ..... 2. *Z. spathacea*
- 13b. Plants without a thick clump of vegetative buds on the crown, at most a few small ones, stems either simple or branched (or with axillary leaf tufts) ..... 14
- 14a. Stem simple; leaves glabrous or nearly so. Coastal ..... 9. *Z. pachyrrhiza*
- 14b. Stems either branched or with axillary tufts, simple mainly in young specimens and then leaves hairy. Inland ..... 14. *Z. glareosa*
- 15a. Leaves almost fleshy, elliptic, more or less entire, glabrous or with a few hairs on margins and midline below ..... 10. *Z. maritima*
- 15b. Leaves herbaceous, linear to elliptic, often toothed, frequently only narrow leaves entire, usually sparsely to densely pilose, rarely glabrous ..... 11. *Z. capensis*
- 16a. Cauline leaves mostly linear, spreading, mostly 60-90 x 0.75-3mm ..... 5. *Z. angustifolia*
- 16b. Cauline leaves mostly elliptic, at least the upper ones ascending; if spreading, then c.7-17mm broad ..... 17
- 17a. Stems either branched or with small axillary leaf tufts, leaves mostly 7-17mm broad, both surfaces pilose ..... 8. *Z. pilosa*
- 17b. Stems simple ..... 18
- 18a. Crown without a thick clump of vegetative buds, root becoming woody and carrot-like ..... 9. *Z. pachyrrhiza*
- 18b. Crown with a thick clump of vegetative buds ..... 19
- 19a. Inflorescence remaining short and thick in fruit, not elongating to reveal the axis; calyx usually 16-30mm long ..... 3. *Z. natalensis*
- 19b. Inflorescence elongating in fruit to reveal the axis; calyx usually 12-15mm long ..... 2. *Z. spathacea*
- 20a. Corolla lobes glabrous above (ignore tiny glandular hairs adjacent to the circlet of long simple hairs) ..... 21
- 20b. Corolla lobes glandular above in lower half ..... 23
- 21a. Corolla tube 21-27mm long; leaves and bracts rhomboid-ovate, tips recurved ..... 16. *Z. turritella*
- 21b. Corolla tube 27-58mm long; leaves oblong, elliptic or ovate, tips not recurved ..... 22
- 22a. Plant herbaceous, often flowering in the seedling stage, later several-stemmed from the crown; leaves usually more than twice as long as broad ..... 14. *Z. glareosa*
- 22b. Plant with many twiggy branches forming low interwoven clumps; leaves usually only twice as long as broad ..... 18. *Z. ovata*



- 23a. Most leaves ovate or cuneate in outline, abruptly contracted to a petiolar part ..... 17. *Z. katharinae*  
 23b. Leaves elliptic to elliptic-ovate, gradually narrowed to the petiolar part..... 19. *Z. distans*  
 24a. Leaves mostly in basal rosette; stem simple or with sharply ascending branches from base, more or less nude below the inflorescence..... 20. *Z. peduncularis*  
 24b. Leaves basal and, usually, cauline; stems with spreading branches usually leafy below inflorescence..... 25  
 25a. Corolla lobes yellow above, marked at base with a broad median scarlet bar ..... 21. *Z. rubrostellata*  
 25b. Corolla lobes initially white above, turning pink or light violet later ..... 22. *Z. crocea*

**1. *Zaluzianskya microsiphon*** (O. Kuntze) K. Schum. in Just, Jahresb. 26 (1): 395 (1900); Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 344 (1904).

Type: Natal, Van Reenen's Pass, 1800m, 20 iii 1894, *Kuntze* (K).

Syn.: *Nycterinia microsiphon* O. Kuntze, Rev. Gen. Pl. 3(2): 238 (1898).

*Zaluzianskya maritima* var. *breviflora* Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 336 (1904). Lectotype: Natal, Van Reenen's Pass, 6000ft, 5 iii 1895, *Schlechter* 6988 (K; BOL, G, GRA, S, isolecto.).

*Z. maritima* var. *atro-purpurea* Hiern, loc. cit. Lectotype: Natal, East Griqualand, mountains around Kokstad, 5500ft, ii 1883, *Tyson* 1354 (K; BOL mixed with *Z. spathacea*, NBG, PRE, isolecto.).

*Z. maritima* var. *grandiflora* Hiern, loc. cit. Type: Natal, East Griqualand, Mount Currie, 5200ft, ii 1884, *Tyson* 1733 (BOL, NBG, PRE).

Perennial herb with a thick clump of partly subterranean vegetative buds at the crown; stems often solitary, sometimes 2 or 3, usually simple, sometimes producing 1-3 secondary spikes below the main spike, erect, up to c.40cm long, pilose with retrorse white hairs, leafy. *Radical leaves* often more or less rosulate at flowering, oblanceolate or elliptic, mostly 35-90 × 8-20mm; cauline leaves ascending, elliptic or oblong, mostly 20-65 × 4-9 (-20)mm, becoming slightly smaller upwards and passing imperceptibly into floral bracts; all leaves with margins entire, obscurely toothed, or callose toothed particularly in upper part, hairy at least on margins and midline. *Spike* dense, often very long, accounting for about half the total stem length, shorter in weak specimens. *Bracts* mostly 15-30mm long, elliptic or lanceolate, margins entire or with 1 or 2 pairs of callose teeth near the tip, hairy at least on margins and midline. *Flowers* opening in sunshine. *Calyx* 8-12mm long, hairy at least on margins. *Corolla* tube (16-) 20-40 (-52)mm long, glandular-puberulous, limb held vertically, zygomorphic, mouth often glabrous, sometimes with a few large unicellular hairs, rarely thinly bearded, on the anticous side; lobes deeply notched, the secondary lobes themselves sometimes notched, pink, scarlet or crimson and glandular-puberulous outside, creamy- or greenish-white inside, glandular-puberulous at least on claw of lobes. *Stamens* 4, all visible in the mouth, the two short anthers usually shortly exerted, the two long ones often partly included, sometimes far exerted. *Capsule* 12-15 × 4mm.

## Selected citations:

- TRANSVAAL. Pietersburg distr., Iron Crown Mountain south of Haenertsburg, 28 ii 1957, *Meeuse* 9831 (PRE; the K specimen is *Z. spathacea*); Wakkerstroom, 6200ft, 2 ii 1917, *Beeton* 215 (SAM); North Hill, *Galpin* 9788 (PRE; the K specimen is *Z. distans*); Farm Oshoek, 28 xii 1975, *Devenish* 1620 (E, NU).
- NATAL. Utrecht distr., farm Naauwhoek, 5 ii 1977, *Devenish* 1679 (E, NU). Newcastle distr., Normandien Pass, 6600ft, 21 xii 1963, *Hilliard* 2415 (NU). Klip River distr., Van Reenen, 5500ft, 20 i 1908, *Wood* 10889 (E); farm Nolens Volens, 5600ft, 3 i 1979, *Hilliard & Burt* 11893 (E, NU). Bergville distr., Oliviershoek Pass, 16 i 1886, *Wood* 3489 (K); Royal Natal National Park, Basuto Gate area, c.7000ft, 1 ii 1978, *Stewart* 2036 (E, K, NU); Cathedral Peak Forestry Reserve, 6450ft, 8 i 1951, *Killick* 1257 (K, PRE). Estcourt distr., Cathkin Peak, 6-6500ft, 1 ii 1932, *Galpin* 11773 (BOL, K, PRE); Giant's Castle Game Reserve, 6300ft, 2 i 1966, *Trauseld* 510 (NU, PRE). Lion's River distr., farm Allendale, c.7000ft, 8 i 1976, *Hilliard & Burt* 8753 (E, NU). Mpendhle distr., upper Loteni, c.8000ft, 25 xii 1972, *Wright* 1343 (NU). Underberg distr., Cobham Forest station, c.5400ft, 18 iii 1977, *Hilliard & Burt* 9692 (E, NU); Sani Pass, c.8000ft, *Hilliard & Burt* 9740 (E, NU); Bushman's Nek, path to Thamathu Cave, 2 ii 1976, *Hilliard & Burt* 8893 (E, NU). Polela distr., Mawahqua Mountain, farm Sunset, 6500ft, 20 i 1973, *Rennie* 332 (E, NU); Mawahqua, 6-7000ft, ii 1894, *Evans* 219 (NH). Alfred distr., top of new Ingeli Pass, c.5300ft, 17 ii 1962, *Acocks* 22008 (K, PRE); Zuurberg, 5500ft, 3 iii 1974, *Hilliard* 5469 (E, NU). Mt Currie distr., Mount Currie, 5700ft, 24 i 1944, *Edwards* 73 (NU). Matatiele, 6000ft, 26 iii 1936, *Galpin* 14255 (PRE).
- TRANSKEI. Baziya Mountain, 4700ft, 10 ii 1981, *Hilliard & Burt* 13888 (E, NU); Satanna's Nek [near Engcobo], 22 ii 1980, *Batten* 520 (E, NU).
- CAPE-TRANSKEI BORDER. Maclear distr., Kwenke [Ntywenka], 5200ft, i 1896, *Bolus* 8756 (BOL, K).
- LESOTHO. Maseru distr., Blue Mountain Pass, 8500ft, 10 i 1979, *Hilliard & Burt* 12023 (E, NU). Satsanna's Peak, c.9300ft, 17 iii 1904, *Galpin* 6798 (GRA, K, PRE). Near Qacha's Nek, Masepu, 17 iii 1936, *Galpin* 14092 (K, PRE). Ramatseliso's Pass, 7000ft, 29 i 1938, *Fawkes* 313 (NBG). Sehlabathebe, xii 1976, *Schmitz* 7134 (PRE). Mamalapi, 8500ft, 19 i 1957, *Marais* 1292 (PRE). Meniaming River, 6500ft, 7 i 1955, *Coetzee* 479 (PRE). Little Bokong Valley, 8500ft, 5 i 1947, *Jacot Guillarmod* 314 (PRE).
- ORANGE FREE STATE. Bethlehem distr., Golden Gate, 22 i 1951, *Compton* 22465 (NBG). Harrismith distr., Platberg, 30 xii 1975, *Hilliard & Burt* 8697 (E, NU); *ibidem*, 10 i 1974, *Jacobsz* 2505 (K, NBG, PRE); Kerkenberg, 4 i 1979, *Hilliard & Burt* 11914 (E, NU); Rensburg's Kop, ii 1962, *Jacobsz* 189 (K, PRE). Witzieshoek, Qwaqwa Mountain, 6300ft, 8 i 1979, *Hilliard & Burt* 11975 (E, NU); Bester's Vlei, 6000ft, *Flanagan* 2033 (PRE, SAM).

Kuntze, followed by Hiern, described *Z. microsiphon* as having only two stamens, but this is not so: there are four, as is usual in this whole group of allied species. The isotype at Kew is an old stem, the main spike in fruit, and only a small side branch has flowers. These are malformed, with abnormally short tube and lobes, but four stamens are present, visible in the mouth.

There is a solitary record from the top of Iron Crown Mountain south of Haenertsburg in the north-eastern Transvaal, but the general range of the species is from the low Drakensberg on Natal's northern border and the NE Orange Free State south along the high Drakensberg and through Lesotho to the mountains around Engcobo in the Transkei, between 1525 and 2745m above sea level. It favours rocky grassland and flowers mainly between January and March.

*Zaluzianskya microsiphon* is still common in stony grassland at the summit of Van Reenen's Pass, the type locality, and a specimen collected there by Schlechter became one of the syntypes of Hiern's *Z. maritima* var. *breviflora*. The varietal name is apt, because plants in the general area of the low Drakensberg, as well as in Lesotho and along the high Drakensberg as far south as the upper Loteni, may have corolla tubes only 16–25mm long, but some plants with longer corollas also occur. Plants with a very large corolla limb and the long pair of anthers often far exerted are particularly common in southern Natal, though they occur elsewhere over the range of the species. Hiern described some of these specimens as *Z. maritima* var. *atro-purpurea* and *Z. maritima* var. *grandiflora*, but the varietal names are not worth upholding: *atro-purpurea* is an artefact of drying, and there is no discontinuity in corolla size nor is there a distinct geographical patterning to the distribution of small-flowered and large-flowered plants.

Despite variation in corolla size, *Z. microsiphon* is very easily recognized by its strongly zygomorphic corolla limb with the lobes glandular above and the mouth glabrous or nearly so. Living plants are unmistakable as the flowers open in sunshine and the limb is held vertically. The affinity of *Z. microsiphon* lies with *Z. natalensis* and *Z. spathacea*, both of which have actinomorphic corollas. They are all species of similar single-stemmed growth with a mass of undeveloped buds on the crown of the rootstock, and they are all found on open grassy hillsides.

## 2. *Zaluzianskya spathacea* (Benth.) Walp., Repert. 3: 306 (1844).

Lectotype: Cape [Lady Grey distr.] at the top of the Witteberg, Drège (K).  
Syn.: *Nycterinia spathacea* Benth. in Hook., Comp. Bot. Mag. 1: 369 (1836).

*Zaluzianskya maritima* (L.f.) Walp. var. *pubens* Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 336 (1904). Lectotype: Zululand, dry plains, Gerrard 1210 (K).

[*Z. maritima* auct. non (L.f.) Walp.; Gumbleton in Gard. Chron. ser. 3, 42: 161 fig. 64 (1907), Skan in Bot. Mag. t. 8215 (1908).  
Cultivated plant from Barberton, S E Transvaal (K).]

Perennial herb with a thick clump of partly subterranean vegetative buds at the crown; stems solitary to several, simple, erect or ascending, up to 40cm long, usually with retrorse white hairs, sometimes glabrous, leafy. *Leaves* at the base of the stem elliptic or oblanceolate, often narrowed to a petiole-like base, 30–100 × 8–18mm, becoming narrowly elliptic to elliptic-oblong upwards and sharply ascending, 30–70 × 5–12 (–18)mm, a little smaller below the inflorescence, margins usually entire or obscurely toothed, rarely coarsely toothed, hairy at least on the margins and midline. *Spike* elongating in fruit. *Bracts* 18–23mm long, lanceolate, margins entire

or with one or two pairs of callose teeth near the tips, hairy at least on the margins and midline. *Flowers* opening at dusk or in dull light. *Calyx* 12-15 (-17)mm long, either glabrous except for hairy margins, or thinly hairy all over. *Corolla* tube (36-) 40-60mm long, glandular-puberulous, limb held horizontally, regular; mouth with a thick cirlet of unicellular hairs, sometimes developed on upper side only; lobes deeply notched, 6-10mm long, crimson and glandular-puberulous outside, white inside, either glabrous or glandular particularly in lower half. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* c.12-15 x 4mm.

Selected citations:

TRANSVAAL. Sibasa distr., Tate Vondo, 1250m, 23 xi 1979, *Netshiungani* 844 (PRE). Tzaneen distr., Duiwelskloof, 24 vi 1929, *Galpin* 10949 (PRE); Wolkberg, New Agatha Forest Station, c.5300ft, *Hilliard & Burt* 14305 (E, NU). Lydenburg distr., farm Zwagershoek, i 1930, *Obermeyer* 326 (PRE); summit Mount Anderson, 7300ft, 24 xii 1932, *Smuts & Gillett* 2372 (PRE); Mokobu Forest Reserve, 20 i 1953, *Marais* 42 (K, PRE); Mac Mac, 14 iii 1981, *Hilliard & Burt* 14345 (E, NU). Pilgrim's Rest distr., Graskop, 16 i 1921, *Pole-Evans* 125 (PRE); near Sabie, Bakenkop, 8 iii 1981, *Hilliard & Burt* 14272 (E, NU). Barberton distr., summit Saddleback Mountain, 5000ft, 22 ii 1890, *Galpin* 829 (GRA, K, PRE, SAM); Godwan River, Berlin, i 1923, *Hofmeyr* 110 (PRE). Belfast distr., Dullstroom, 6600ft, 30 xii 1933, *Galpin* 13124 (PRE). Ermelo distr., Lake Chrissie, Billy's Vlei, 29 xi 1926, *Pole-Evans* PRE 13142 (PRE); Spitskop, xii 1915, *Pott* TM 15102 (PRE). Volksrust distr., i 1912, *Jenkins* TM 12092 (PRE).

NATAL. Utrecht distr., farm Glen Athol near Charlestown, c.6000ft, i 1928, *Smith* 5686 (PRE). Klip River distr., Van Reenen, 5500ft, 20 i 1908, *Wood* 10889 (NU). Bergville distr., below Organ Pipes Pass, c.8000ft, 22 i 1953, *Edwards* 1174 (NU, PRE). Estcourt distr., Kamberg Nature Reserve, 7200ft, 27 xii 1968, *Hilliard & Burt* 5711 (E, NH, NU); Giant's Castle, 7000ft, xii 1914, *Symons* 231 (PRE). Mpendhle distr., Storm Heights, c.7000ft, 15 xii 1978, *Hilliard & Burt* 11768 (E, NU); Vergelegen Nature Reserve, c.6000ft, 2 i 1978, *Hilliard & Burt* 11188 (E, NU). Underberg distr., Bamboo Mountain, xii 1973, *Grice* s.n. (NU). Polela distr., Mawahqua Mountain, farm Glengariff, 6500ft, *Rennie* 1244 (NU).

TRANSKEI. Baziya Mountain, 4700ft, 10 ii 1981, *Hilliard & Burt* 13887 (E, NU). Cala, 20 ii 1910, *Pegler* 1675 (PRE). Insizwa, 27 i 1895, *Schlechter* 6507 (GRA).

CAPE. Stutterheim distr., summit Mount Kemp, 28 i 1979, *Hilliard & Burt* 12429 (E, NU); *ibidem*, 13 i 1947, *Compton* 19211 (NBG); summit Kologha Range, c.4500ft, 8 v 1943, *Acocks* 9795 (PRE); Thomas River, 3000ft, i 1893, *Flanagan* 1715 (BOL, PRE, SAM); Dohne Hill, 5000ft, 1897, *Sim* 20363 (PRE). Stockenstrom div., Katberg, iii 1896, *Galpin* 2081 (PRE). Hogsback, 23 xii 1926, *Grant* 2799 (PRE). Bedford distr., Baviansrivierberg, 5000ft, 19 iv 1950, *Killick* 842 (GRA, PRE). Barkly East distr., Saalboom Nek, c.6900ft, 21 i 1979, *Hilliard & Burt* 12269 (E, NU). Somerset East distr., Boschberg, 4500ft, xii, *MacOwan* 1632 (K, GRA); Brintjies Hoogte, *Scott Elliott* 569 (E).

LESOTHO. Schlabathebe, 2300-2500m, xii 1974, *Rutledge* 245 (PRE).

ORANGE FREE STATE. Witzieshoek distr., path to The Sentinel, c.8700ft, 27

xii 1975, Hilliard & Burt 8661 (E, NU). Harrismith distr., farm Groenloof, near Natal border, 5600ft, 17 i 1978, Müller & Viljoen 39 (PRE).

*Zaluzianskya spathacea* ranges from the eastern mountains and south eastern Highveld of the Transvaal and western Swaziland, to the highlands of Natal (recorded between 1525 and 2650m above sea level), Lesotho, the Transkei and the Cape as far west as Boschberg and Bruintjes Hoogte, near Somerset East. It grows in grassland, often in rocky places, flowering principally between December and February, but as late as April.

When Bentham first described the species he cited two specimens: Tambukiland near Silo east of the Winterberg and on the Katrivierberg, Ecklon (S), and at the top of the Witberg, Drège (K). Both specimens have small glandular hairs on the upper surface of the corolla lobes. We have broadened Bentham's species concept to include plants with corolla lobes glabrous above. In the Transvaal glandular and eglandular specimens seem to be equally common, but all Natal specimens have the corolla lobes eglandular above, and this seems to be the commoner condition in both the Transkei and the Cape.

*Zaluzianskya spathacea* is allied to *Z. natalensis*, from which it differs in its inflorescence, which elongates in fruit to reveal the axis; in *Z. natalensis*, the inflorescence remains congested even in fruit, with the axis invisible. Also the calyx is generally shorter in *Z. spathacea*, being mostly 12–15mm long, not mostly 16–30mm long.

It is also possible to confuse *Z. spathacea* with *Z. elongata*; see under that species.

### 3. *Zaluzianskya natalensis* Hochst. in Flora 27(2): 834 (1844).

Type: 'In m. Bosjemann Rand, Natal' [World's View above Pietermaritzburg], 3000ft, Dec., Krauss (n.v.).

Perennial herb with thick clump of partly subterranean vegetative buds at the crown, one occasionally developing into a leaf rosette; stem usually solitary, simple, stout, erect to 35cm, with retrorse hairs, leafy becoming bracteate upwards. Leaves mostly 60–90 × 15–25mm, rapidly decreasing in size and passing imperceptibly into bracts, upper leaves sharply ascending, all elliptic, tapering at both ends, margins entire or callose-toothed, thinly hairy or hairs confined to margins and veins. Spike short, dense, not elongating in fruit, the axis usually remaining invisible, up to c.90 × 25mm. Bracts resembling the leaves but smaller, imbricate, obscuring part of the bract above, mostly 20–40 × 6–15mm, margins entire or with an occasional callose tooth. Flowers opening at dusk or in dull light. Calyx c.16–30mm long, glabrous except for hairy margins. Corolla tube 32–50mm long, glandular-puberulous, limb held horizontally, regular; mouth with thick cirlet of long unicellular hairs; lobes deeply notched, (5–) 6–8mm long, crimson and glandular-puberulous outside, white inside with minute scattered glandular hairs particularly on lower half. Stamens 4, 2 short anthers shortly exerted, 2 long ones included. Capsule c.16 × 5mm.

#### Selected citations:

SWAZILAND. Mbabane distr., Ukutula, 12 xii 1954, Compton 24800 (NBG,

PRE); Hlatikulu, 4100ft, *Stewart* 67 (K); Swaziland, 1 ii 1905, *Burt Davy* 2729 (PRE).

NATAL. Utrecht distr., xii 1915, *Wahl* TM 15537 (PRE). Babanango distr., *King* 249 (PRE). Ngotshe distr., Ngome, c.4000ft, 2 ix 1977, *Hilliard & Burt* 9940 (E, NU); *ibidem*, *Gerrard* 1209 (K). Nkandla distr., Qudeni, Nkonyeni, 10 iii 1963, *Hilliard* 1412 (NU). Dundee distr., Helpmekaar-Elandskraal road, 22 v 1965, *Shirley* s.n. (NU). Umvoti distr., Greytown, 3600ft, 12 ii 1939, *Galpin* 14816 (PRE). Eshowe distr., i 1950, *Lawn* 1521 (NH). Lion's River distr., farm Glen Fern, c.5500ft, *Wright* 1390 (E, NU); Lidgetton, 4200ft, 13 ii 1920, *Mogg* 6732 (PRE). Pietermaritzburg distr., World's View, 3500ft, iii 1947, *Williams* 81 (NU). Pinetown distr., Kloof, 16 ii 1949, *Moberley* 4 (NU); Everton, 12 i 1965, *Coleman* 16 (NH). Inanda distr., 20 ix 1878, *Wood* 26 (K, SAM). Ixopo distr., farm Lynn Avis, 4350ft, 21 ix 1964, *Crewe* 20 (NU); Mabedhlaan Halt on Creighton road, 3 i 1978, *Shirley* s.n. (NU). Alfred distr., near Weza, Zuurberg, c.4500ft, 26 ii 1975, *Hilliard & Burt* 8059 (E, NU); Zuurberg, 4000ft, ii 1884, *Tyson* 1730 (BOL, NBG, PRE).

TRANSKEI. Umzimkulu distr., summit Mount Malowe, c.4900ft, 17 i 1978, *Hilliard & Burt* 11225 (E, NU); Clydesdale, 3000ft, iii 1886, *Tyson* 863 (BOL, K, SAM).

We have not seen the type of *Z. natalensis*, but Krauss's specimen was collected on the escarpment above Pietermaritzburg, where the species still flourishes. Hochstetter's description was brief: '*Caule simpliciter, foliis internodiis longioribus, elongato-lanceolatis, integerrimis glabris, spica terminali densa*', but it calls attention to one of the distinguishing features of the species, namely, its short dense inflorescence, which does not elongate even in fruit. The inflorescence of *Z. maritima*, with which *Z. natalensis* has hitherto been confused, may also be dense, but the mass of buds on the crown of the rootstock at once distinguishes *Z. natalensis*, which also has simple stems, never branching from the base as they frequently do in *Z. maritima*. Also, at least the upper cauline leaves are ascending, not spreading as in *Z. maritima*, and this imparts a different facies to *Z. natalensis*.

*Zaluzianskya natalensis* is most likely to be confused with *Z. spathacea*; see under that species.

*Zaluzianskya natalensis* has been recorded from Forbes Reef, Mbabane and Hlatikulu districts in Swaziland, whence it ranges through Natal at altitudes from 600 to 1700m above sea level, to Umzimkulu district in the Transkei, where it has been recorded on Mount Malowe, and the Zuurberg near Kokstad in southernmost Natal (East Griqualand). It grows in grassland, flowering principally between January and March, but there is one record as early as September and a few as late as April.

#### 4. *Zaluzianskya pulvinata* Killick in *Kirkia* 1: 105 (1965).

Type: Natal, Bergville distr., between Sentinel Gate and base of Sentinel cliffs, c.9000ft, 3 xii 1953, *Killick & Marais* 2204 (PRE).

Cushion-forming perennial herb, taproot eventually up to c.10mm diam., woody, 1 to several leaf rosettes crowded on the crown, or spreading rhizomatously into small mats. *Stems* 1 from each rosette, terminal, simple, erect

or ascending, mostly 3–10cm long, exceptionally up to 15–20cm, clad in retrorse white hairs, either leafy or almost wholly bracteate. *Radical leaves* mostly 10–25 (–30) × 1–5 (–9)mm, elliptic or spatulate tapering to a broad, flat petiole-like part accounting for up to half the total leaf length, bases closely imbricate, apex obtuse to acute, frequently broken-off and then thickly callosed, margins entire or obscurely toothed, sometimes glabrous, usually a few coarse hairs on margins and midline, rarely sparsely hairy all over, often thick-textured; *cauline leaves* broad-based, otherwise more or less resembling the radical leaves, ascending. *Spike* short or long, usually remaining dense. *Bracts* usually shorter and much broader than the leaves, mostly (9–) 12–20 (–26) × 4–9mm, elliptic, obtuse to acuminate, broad-based and clasping the calyx, margins entire or with 1 or 2, rarely more, pairs of callose teeth near apex, hairy as the leaves. *Flowers* opening at dusk or in dull light and then sweetly scented. *Calyx* 8–12mm long, thinly hairy on upper margins and sometimes on keels, occasionally hairs wanting. *Corolla* tube 30–50mm long, glandular-puberulous, limb held horizontally, regular; mouth with circlet of long unicellular hairs; lobes deeply notched, mostly 5–8mm long, crimson and glandular-puberulous outside, white inside, either eglandular or with a few minute glands near the sinuses. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* c.8–10 × 4mm.

Selected citations:

TRANSVAAL. Barberton distr., Kaapsche Hoop, 9 iii 1981, *Hilliard & Burt* 14239 (E, NU). Wakkerstroom distr., farm Rusfontein, 6000ft, 7 xi 1976, *Hilliard & Burt* 9182 (E, NU).

NATAL. Utrecht distr., farm Naauwhoek, c.2200m, 13 xii 1975, *Devenish* 1611 (E, NU). Newcastle distr., Normandien Pass, c.6800ft, 21 xii 1963, *Hilliard* 2390 (NU). Bergville distr., Bezuidehouth's Pass, c.5700ft, 10 xii 1976, *Hilliard & Burt* 9464 (E, NU). Mont aux Sources, xi 1930, *Schweickerdt* TM 32948 (PRE). Estcourt distr., Giant's Castle Game Reserve, c.7500ft, 20 xii 1964, *Trauseld* 310 (NU). Lion's River distr., Fort Nottingham Commonage, 5500ft, 26 x 1976, *Hilliard & Burt* 9055 (E, NU); farm Ivanhoe, 5500ft, 20 x 1965, *Moll* 2602 (NU, PRE); farm Storm Heights, 7000ft, 15 xii 1978, *Hilliard & Burt* 11716 (E, NU); Mount Gilboa, c.5500ft, 28 x 1976, *Hilliard & Burt* 9103 (E, NU). Mpendhle distr., farm Tillietudlem, c.5600ft, 9 xii 1980, *Hilliard & Burt* 13851 (E, NU). Underberg distr., Sani Pass, c.8000ft, 6 i 1977, *Hilliard & Burt* 9630 (E, NU); Garden Castle N.R., Pillar Cave Valley, c.6000ft, 4 xi 1977, *Hilliard & Burt* 10402 (E, NU); Bushman's Nek, Thamathu Pass, c.8000ft, 5 ii 1976, *Hilliard & Burt* 8959 (E, NU). Polela distr., Mawahqua Mountain, Sunset farm, 10 xi 1973, *Hilliard & Burt* 7172 (E, NU).

TRANSKEI. Tabankulu Mountain, c.5000ft, 18 xi 1973, *Hilliard & Burt* 7329 (E, NU).

CAPE. Lady Grey distr., Witteberg, Joubert's Pass, c.7700ft, 18 i 1979, *Hilliard & Burt* 12178 (E, NU). Barkly East distr., farm Beddgelert, slopes of Mount Avoca, 8200ft, xii 1981, *Hilliard & Burt* 14717 (E, NU); below farm Pitlochrie, c.5800ft, xii 1981, *Hilliard & Burt* 14725 (E, NU); Ben Mcdhui, 8500ft, xii 1981, *Hilliard & Burt* 14673 (E, NU); ibidem, 11 iii 1904, *Galpin* 6796, 6797 (PRE).

LESOTHO. Sehlabathebe area, Devil's Knuckles, 3000m, 8 xii 1979, *Davis & Davis* 207/B (NU); Sehlabathebe, 2450m, 5 xii 1977, *Hoener* 1899 (E, NU); Sani, north of pass towards saddle, c.9800ft, 8 i 1977, *Hilliard & Burt* 9660 (E, NU); 1 mile south of Giant's Castle Pass, c.10000ft, 11 xii 1963, *Wright* 1612 (NU); Likolobeng, 9300ft, 28 xii 1948, *Jacot Guillarmod* 722 (PRE); 42km from Maseru on mountain road, 9000ft, 21 xii 1967, *Jacot Guillarmod* 5927 (PRE); Big Likhoele Mountain above Qatheneng, 25 xi 1916, *Dieterlen* 1254 (PRE). Butha Buthe distr., upper Hololo Valley, 1750m, 13 xi 1980, *Richardson* 143 (NU).

ORANGE FREE STATE. Harrismith distr., Rensburg's Kop, 13 xi 1965, *Van Ginkel* 408 (PRE); Platberg, 2420m, 10 i 1974, *Jacobsz* 2507 (NBG, PRE); *ibidem*, 30 xii 1975, *Hilliard & Burt* 8698 (E, NU). Witzieshoek distr., Witzieshoek road, 9000ft, 9 xi 1967, *v/d Zeyde* s.n. (NBG); *Bester's Vlei*, 5300ft, ii 1893, *Bolus* 8220 (BOL); Witzieshoek, ii 1917, *Junod* TM 17486 (PRE).

*Zaluzianskya pulvinata*, long known but only recently described, ranges from the south east Transvaal, where it has been recorded around Kaapsche Hoop, Belfast, Badplaats and Carolina, through the low Drakensberg on the Transvaal-Orange Free State-Natal border, Lesotho, where it reaches 3000m, Natal above 1550m, and Tabankulu Mountain in the Transkei, to the Cape Drakensberg as far south as Saalboom Nek and the Witteberg, both near Barkly East.

The specific epithet draws attention to the cushions of leaf rosettes that are characteristic of the species.

*Zaluzianskya pulvinata* grows in bare stony places, often around the edges and in the crevices of rock sheets, or among rock outcrops. Flowering reaches its peak in November and December, but at lower altitudes may begin in October and continue into January. The habitat may, at times, be harsh, and this is reflected in great variation in stature and in leaf size. On the low Drakensberg, from QwaQwa Mountain to Platberg, the basal leaves are characteristically narrow and linear, but the plants are otherwise typical *Z. pulvinata*. This area tends to be drier than the main Natal Drakensberg and the broader-leaved form recurs at Wakkerstroom and at Kaapsche Hoop, which are again wetter areas. Included in our broad concept of *Z. pulvinata* is an extreme form from the area between Belfast, Badplaats, Lake Chrissie and Carolina. The leaves are exceptionally long and narrow and the bracts are remarkably long-acuminate (*Hilliard & Burt* 6044, E, K, NU, PRE, from a rock platform between Badplaats and Lake Chrissie, and *Jenkins* TM 6796, PRE, from Belfast). *Compton* 22368 (NBG) collected at Mbabane (Swaziland) in January 1951, and *Hilliard & Burt* 8537 (E, NU) from Itala Nature Reserve near Louwsberg in Northern Natal, resemble these plants, but the corolla lobes are glandular above in the lower part. *Reynolds* 5839 (K, PRE), collected south of Belfast, lacks basal rosettes, but is otherwise indistinguishable from the collections made by *Hilliard & Burt* and by *Jenkins*. *Moss & Rogers* 1258, PRE, is another exceptionally well-grown specimen without radical leaves. Specimens from elsewhere in the Transvaal fall within the narrower variation range of *Z. pulvinata*.

5. *Zaluzianskya angustifolia* Hilliard & Burt, species nova *Z. pulvinatae*



affinis sed ob caules foliis angustissimis patentibus saepe ramunculos nanos axillares gerentibus praeditos (nec foliis ascendentibus ramunculis absentibus) differt; etiam cum *Z. capensi* (L.f.) Walp. confusa, sed habitu perenni, summo caudice alabastra vegetativa aggregata vel foliorum rosulas gerente facile distinguenda.

Perennial herb forming small mats or low cushions, taproot becoming thick and woody, crown often with crowded vegetative buds, these sometimes developing into small crowded leaf rosettes. *Stems* several from the crown, prostrate or decumbent, simple to well-branched, wiry, mostly 7–20cm long, exceptionally to c.30cm, clad in retrorse white hairs, leafy, dwarf axillary shoots often present. *Radical leaves*, if present, oblong, very short; *cauline leaves* 10–35 × 0.75–1.5 (–3)mm, more or less spreading, linear, narrowly oblong, or rarely some lower leaves narrowly elliptic, margins entire or with a few small callose teeth, thinly hairy, or hairs very sparse, or wanting. *Spike* short, dense, elongating somewhat in fruit, flowers usually 1–9, very rarely a few more. *Bracts* unlike the leaves, c.12–30mm long, lanceolate acuminate, margins entire or with an occasional callose tooth, indumentum as on leaves. *Flowers* opening at dusk or in dull light, then sweetly scented. *Calyx* 8–12mm long, hairy on upper margins and sometimes on keels. *Corolla* tube (27–) 35–45mm long, glandular-puberulous, limb held horizontally, regular, mouth with circling of long unicellular hairs sometimes weakly developed on anticous side; lobes deeply notched, (4–) 5–8mm long, crimson and glandular-puberulous outside, white inside, usually eglandular, or sometimes a few minute glandular hairs near the base, rarely glandular hairs scattered over lower half of each lobe. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* c.10–15 × 3–5mm.

Type: E Cape, 3226 DA, Stockenström distr., Katberg Pass, on summit, 5800ft, hard bare ground, 26 i 1979, *Hilliard & Burt* 12405 (NU holo., E iso.).

#### Selected citations:

CAPE. 3226 DA, Stockenström div., Katberg Pass, c.1280m, i 1921, *Schonland* 4296 (GRA). 3226 DB, Hogsback, c.1525m, 11 xii 1977, *Hilliard & Burt* 10994 (E, NU); ibidem, 1465m, 13 iv 1955, *Johnson* 1179 (PRE); ibidem, 1280m, 14 iv 1942, *Giffen* 1440 (PRE); ibidem, 8 x 1946, *Esterhuysen* 13254 (BOL). Keiskammahoek distr., Mt Thomas, 1220m, 22 iii 1948, *Story* 3431 (PRE); top of Kologha range, c.1400m, 8 v 1943, *Acocks* 9794 (PRE). 3227 CB, Stutterheim distr., Mount Kemp, c.1400m, 14 xii 1977, *Hilliard & Burt* 11036 (E, NU); Dohne Hill, 1525m, 1897, *Sim* 20356 (NU, PRE). King William's Town, 600m, i 1891, *Sim* 217 (PRE). Pirie Mountain, 900m, iii 1910, *Godfrey* 55 (GRA).

TRANSKEI. 3127 DB, Engcobo distr., Satanna's Nek between Engcobo and Elliot, c.1370m, 13 x 1980, *Hilliard & Burt* 13104 (E, NU). Tabankulu distr., Tabankulu Mountain, 16 xi 1973, *Hilliard & Burt* 7280 (E, NU).

*Zaluzianskya angustifolia* forms small mats or low cushions on bare hard earth in the crevices of outcropping rocks, or around rocks in grassland, flowering between August and May. It can be recognized by its wiry prostrate or decumbent stems, very narrow leaves and few-flowered spikes.

The vegetative buds massed in a tight knot on the crown sometimes grow into small leaf rosettes, and there is a strong tendency towards the development of tufts of short leaves in the axils of the lower primary leaves.

It is closely allied to *Z. schmitziae*, with which it is easily confused; see below under that species.

The typical plant, which lacks glandular hairs on the upper surface of the corolla lobes, has been collected from a number of montane sites in the eastern Cape, at Katberg, Hogsback, the Kologha range and in the King William's Town and Stutterheim areas, as well as further north on the mountains near Queenstown, and around Engcobo and Tabankulu in the neighbouring Transkei.

We have included within the broad circumscription of *Z. angustifolia* specimens that differ in having glandular hairs on the upper surface of the corolla lobes, and leaves up to 3mm broad. These have been recorded from southern Natal, at Izingolweni and the nearby cliffs above the Umtamvuna, as well as across the border in the Transkei, at Mateku in Pondoland, and near Port St Johns. All these localities lie on Table Mountain Sandstone: TRANSKEI. Port St Johns, 180m, i 1896, *Flanagan* 2596 (PRE); 3129 BD Pondoland, Mateku waterfall, 11 xi 1970, *Strey* 10165 (K, PRE); between St John's River [i.e. Umzimvubu] and Umsikaba river, below 300m, *Drège* s.n. (K).

NATAL. Port Shepstone distr., Umtamvuna Nature Reserve, c.300m, 26 iv 1977, *Hilliard & Burt* 10236 (E, NU); Izingolweni, 6 v 1884, *Wood* 3038 (K).

Then there appears to be a great disjunction to the northern Transvaal. A specimen collected on the Blaauberg plateau near the north western end of the Zoutpansberg (*Strey & Schlieben* 8541, PRE) is indistinguishable in the herbarium from typical *Z. angustifolia* from the eastern Cape. Other specimens, from the Zoutpansberg itself near Louis Trichardt (*Gerstner* 6107, Happy Rest, *Breyer* TM 19401, both PRE, and *Schlieben* 7078, farm Rusfontein near Louis Trichardt, K), as well as from Woodbush (*Rehmann* 6002, K), are lankier and less branched, but are clearly close to *Z. angustifolia*. However, they also form a link to specimens from Zimbabwe that we mention under *Z. glareosa*.

**6. *Zaluzianskya schmitziae* Hilliard & Burt, species nova** *Z. angustifoliae* affinis sed ob caudicem alabastris vegetativis aggregatis destitutum, ob caules erectos (nec prostratos nec decumbentes) haud aequae ramosos, ob inflorescentiam plerumque 10–25-floram (nec usque 9-floram tantum), ob corollae lobos 3–5mm longos (nec 5–8mm) distinguitur.

Perennial herb, taproot eventually thick and woody, crown without a tight cluster of vegetative buds. *Stems* several from the crown, simple or sparingly branched, usually erect, rarely decumbent, 15–30cm long, clad in retrorse white hairs, dwarf leafy axillary shoots sometimes present. *Radical leaves* rarely present and then very loosely tufted, they and sometimes the lowermost leaves c.15–46 × 2–4mm, elliptic, tapering to a broad petiolar part, usually with a few small obscure callose teeth near tip; *cauline* leaves mostly 20–40 × 1–2mm, more or less spreading, linear, base slightly broadened, clasping, apex ± obtuse, margins entire or with a few small callose teeth near tip, thinly hairy on both surfaces. *Spike* usually

elongating in fruit, flowers mostly 10–25, fewer on weak branches. *Bracts* unlike the leaves, c.15–27mm long, lanceolate acuminate, margins usually entire, or occasionally with a few callose teeth near apex, hairy on margins, or margins and midline, occasionally hairy all over backs. *Flowers* opening at dusk or in dull light, but twice recorded as open in bright light. *Calyx* 8–10mm long, hairy at least on margins and keels. *Corolla* tube 25–39mm long, glandular-puberulous, limb held horizontally, regular; mouth with circlet of long unicellular hairs; lobes deeply notched, 3–5mm long, red and glandular-puberulous outside, white inside, eglandular. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsules* c.9 × 5mm.

Type: Lesotho, Makhaleng Valley near Molimo Nthuse Pass, c.2070m, 11 i 1979, *Hilliard & Burt* 12058 (NU holo., E iso.).

Selected citations:

CAPE. 3027 CB, Lady Grey distr., Witteberg, Joubert's Pass, c.2250m, 18 i 1979, *Hilliard & Burt* 12160 (E, NU). Barkly East distr., river crossing near farm Pitlochrie, xii 1980, *Hilliard & Burt* 14726 (E, NU). 3127 A-B border, Saalboom Nek, c.2100m, 21 i 1979, *Hilliard & Burt* 12308 (E, NU). Maclear distr., Naude's Nek, 24 ii 1980, *Batten* 522 (E, NU). Queenstown distr., Lesseyton Mountains, i 1896, *Galpin* 1993 (PRE; the GRA specimen under this number is *Z. angustifolia* from Intaba Magwele Mountains, collected in ii 1896). Graaff Reinets, farm Riet Vlei, 5 iii 1930, *Galpin* 10009 (PRE).

ORANGE FREE STATE. Thaba 'Nchu distr., Thaba 'Nchu Mountain, 23 i 1963, *Roberts* 2347 (PRE). Ficksburg, Strathcona, 4 iii 1936, *Fawkes* 136 (NBG). Harrismith distr., near Swinburne, farm Grootvlei, 30 i 1961, *Jacobsz* 18 (PRE). Bethlehem distr., 4 miles SE Bethlehem on Kestel road, 1675m, 16 ii 1967, *Scheepers* 1428 (K, PRE); Golden Gate National Park, c.2200m, i 1963, *Liebenberg* 6859 (PRE).

LESOTHO. Leribe distr., Thaba Putsoa wood lot, 25 i 1980, *Richardson* 134 (NU); Leribe, *Dieterlen* 407 (PRE, SAM) & 773 (NBG, PRE). Roma, 1675m, 20 ii 1960, *Ruch* 1577 (PRE). Berea distr., Monethi's, 1675m, 1 i 1957, *Jacot Guillarmod* 1926 (PRE). 2927 BD, Maseru distr., Mountain Road, between Rual and Mpao, iii 1977, *Schmitz* 7461 (PRE, ROML); Maseru, 25 i 1951, *Compton* 22535 (NBG).

This species is named in memory of our friend Marthe Schmitz (Marthe Ruch) who was tragically killed in a motor accident between Roma and Maseru in April 1982, on the very road about which she had warned us. Marthe was everybody's botanical *aide* in Lesotho; she had put in a great deal of work in the Roma herbarium, had done much useful collecting, and had published part 1 of *Grasses of Lesotho*. Her book on the wild flowers of Lesotho has been published posthumously. She first collected this *Zaluzianskya* in 1960 and was with us in the field when we collected the type material.

*Zaluzianskya schmitziae* commonly grows on sandstone rocks, but it has also been recorded on basaltic gravels. It ranges from the Bethlehem and Harrismith districts of the Orange Free State through western Lesotho and neighbouring parts of the Orange Free State to the Witteberg and the Cape

Drakensberg, with one record from Graaff Reinet. Peak flowering is in January and February.

It is closely allied to *Z. angustifolia*. They differ principally in habit, *Z. schmitziae* having generally erect and only sparingly branched stems, while well-grown specimens of *Z. angustifolia* form small mats of prostrate or decumbent well-branched stems; *Z. schmitziae* lacks the tight knots of vegetative buds that are often present on the crown of *Z. angustifolia*. *Zaluzianskya schmitziae* usually carries more flowers in the inflorescence than *Z. angustifolia*; and the limb is often smaller. It is distinguished from *Z. glareosa* by the narrower leaves and smaller flowers.

**7. *Zaluzianskya elongata* Hilliard & Burt, species nova** *Z. oreophila* affinis sed foliis integris vel remote denticulatis (nec grosse dentatis) glabris vel parce pilosis (nec ut minimum subtus pilosis), corollae tubo plerumque 30-40mm longo (nec plerumque 17-30mm) recedit.

Perennial herb, taproot and crown becoming thick and woody, vegetative buds, when present, small, not developing into a thick clump; stems several from the crown in old plants, ascending, up to 60cm long, often simple, sometimes branched, clad in retrorse white hairs, leafy. *Leaves* on lower part of stem 35-70 × 2-8 (-10)mm, becoming smaller and often more distant upwards, uppermost generally 15-25 × 1.5mm, sometimes broader, rarely up to 40mm long, all more or less ascending, oblong-elliptic or linear, margins entire or with a few small callose teeth, often glabrous or with hairs on margins and midline, rarely hairy all over. *Spike* long, narrow, elongating as the flowers open and capsules develop, small secondary spikes sometimes developing below the main fruiting spike. *Bracts* lanceolate, (9-) 10-14 (-20)mm long, margins entire, glabrous or hairy as the leaves. *Flowers* opening at dusk or in dull light and then scented. *Calyx* 8-10 (-13)mm long, either glabrous except for marginal hairs, or sometimes hairs better developed, exceptionally hairy all over. *Corolla* tube 30-40 (-44)mm long, glandular-puberulous, limb held vertically, somewhat zygomorphic; mouth with circlet of long unicellular hairs often poorly developed or wanting on the anticous side; the two upper lobes fractionally more united than the 3 lower, the anticous lobe slightly isolated from the other 4 and often narrower, lobes deeply notched, 3.5-5 (-6)mm long, crimson and glandular-puberulous outside, white and glabrous inside. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* 10-15 × 4-5mm.

Type: Natal, Underberg distr., Bamboo Mountain, 1675-1980m, 8 iv 1977, Hilliard & Burt 10080 (NU holo., E iso.).

Selected citations:

NATAL. Mount Currie distr., Commonage N of Kokstad, c.1525m, 22 ii 1962, Acocks 22047 (PRE); East Griqualand, 1525-1800m, iii 1883, Tyson 1271 (BOL, K, PRE, SAM). Mpendhle distr., Loteni Nature Reserve, 1525m, 17 xi 1979, Phelan 451 (E, NU). Ixopo distr., Highflats to Umzinto road, Umtwalume river crossing, 13 i 1975, Hilliard & Burt 7641 (E, NU). Estcourt distr., Kamberg Nature Reserve, Stillerust Vlei, 7 i 1976, Hilliard & Burt 8734 (E, NU); Giant's Castle Game Reserve, 1465m, 2 i 1966, Trauseld 509 (NU, PRE). Port Shepstone distr., Oribi Flats, 600m, vii 1947,

*Harding* s.n. (NU). Lion's River distr., Merrivale, 8 ii 1978, *Gardiner* s.n. (NU). Mooi River distr., Meteor Ridge, 12 iii 1920, *Mogg* 7103 (PRE). Richmond distr., Byrne, farm Wiveton, 21 i 1973, *Stewart* 1648 (NU). Pietermaritzburg distr., Baynesfield, farm Lynmouth, 750m, 23 ix 1964, *Hilliard* 2879 (NU). New Hanover distr., near Wartburg, King's Hill Halt, 28 xii 1970, *Gordon-Gray* 6323 (E, NU). Durban distr., Westville, 365m, 13 i 1947, *Thomas* s.n. (NU). Umvoti distr., Ahrens, farm Mowbray, c.1525m, 9 ii 1946, *Fisher* 952 (NH, NU, PRE). Ngotshe distr., Itala Nature Reserve, c.1525m, 4 iv 1977, *Hilliard & Burt* 10014 (E, NU). Dundee distr., Mpati Mountain, 13 ii 1965, *Shirley* s.n. (NU). Utrecht distr., near Charlestown, 1800m, i 1938, *Smith* 5632 (PRE). Bergville distr., Royal Natal National Park, c.1460m, ii 1982, *Hilliard & Burt* 15458 (E, NU); *ibidem*, 29 xii 1969, *Ross* 2239 (K, NH, PRE); Cathedral Peak Forestry Reserve, Ndedema Valley, 16 iv 1978, *Hilliard* 8139 (E, NU).

TRANSKEI. Near Umtata Falls, 18 ii 1927, *Grant* 3507 (PRE).

SWAZILAND. Mbabane distr., Ukutula, c.1220m, 20 ii 1956, *Compton* 25262 (NBG, PRE); Hawane Falls, 1370m, 3 i 1958, *Compton* 27398 (NBG, PRE).

TRANSVAAL. Potchefstroom distr., farm Welverdiend, 25 i 1941, *Louw* 829 (PRE); Krugersdorp distr., 4 miles NE Krugersdorp, c.1700m, 5 ii 1956, *Acocks* 18719 (PRE). Johannesburg, Jeppe's Town Ridge, 1800m, ii 1898, *Gilfillan* in herb. Galpin 1479 (GRA, K, PRE). Silverton, 12 ii 1976, *Venter* 708 (PRE). Wakkerstroom distr., Honey Moon Kloof, 2135m, 5 ii 1930, *Galpin* 9785 (PRE). Barberton, *Rogers* 25847 (PRE). Carolina, *Rogers* 11566 (PRE). Lydenburg distr., Pilgrim's Rest, *Rogers* 14626 (PRE); Mariepskop, Thalene, 12 xii 1963, *Van der Schijff* 6449 (PRE); 2530 BB, near Sabie, Witklip Forest Station, 8 iii 1981, *Hilliard & Burt* 14259 (E, NU, PRE). Tzaneen distr., The Downs, *Junod* 4233 (PRE).

*Zaluzianskya elongata* ranges from the eastern highlands and Highveld of the Transvaal to western Swaziland and Natal, where it is common between c.460 and 1800m above sea level, and it reaches at least as far south as Umtata in the Transkei, but this region is poorly collected. It grows among rock outcrops and on rocky or stony ridges in grassland, and in the Drakensberg it also occurs in stabilized boulder beds. Flowers may be found between September and April.

The species is characterized by its slightly zygomorphic flowers arranged in lax elongated spikes. The manner in which the leaves diminish in size and become distant upwards also imparts a characteristic facies, but this is not apparent in all specimens.

*Zaluzianskya elongata* has been frequently misidentified as *Z. capensis* but it is easily distinguished from that species by its perennial habit as well as by its flowers and inflorescence. Poor specimens are easily confused with *Z. pachyrrhiza*, but living material and good dried specimens are readily distinguishable by their different rootstock and zygomorphic flowers. Again, if the specimen lacks basal parts or is otherwise poor, confusion can arise with *Z. spathacea*. This species normally has a thick clump of vegetative buds on the crown, and the flowers are regular. However, this is not always easy to see, and calyx length may be of some help: at least 12mm long in *Z. spathacea*, only rarely reaching that length in *Z. elongata*. We

have not been able to place all Transvaal specimens satisfactorily: specimens with basal parts as well as good field notes are needed.

**8. *Zaluzianskya pilosa* Hilliard & Burt, species nova** *Z. spathaceae* affinis sed caulibus plerumque ramosis (nec simplicibus), foliis caulinis patentibus (nec acute ascendentibus) distinguitur.

Perennial herb, crown eventually thick and woody with clumped vegetative buds, stems several from the crown, erect or ascending, up to 35cm long, usually branched or at least with axillary vegetative buds, pilose with long retrorse white hairs, leafy. *Leaves* spreading, mostly 35–60 × 7–17mm, biggest about the middle of the stem, elliptic, tapering at both ends, margins obscurely to distinctly callose-toothed particularly in the upper half, both surfaces pilose. *Spike* elongating in fruit. *Bracts* leaflike, but smaller and diminishing in size upwards. *Flowers* opening at dusk or in dull light. *Calyx* 10–15mm long, pilose. *Corolla* tube c.34–50mm long, glandular-puberulous, limb held horizontally, regular; mouth with cirlet of long unicellular hairs; lobes deeply notched, 6–8mm long, red and glandular-puberulous outside, white and glandular-puberulous inside particularly in lower half. *Stamens* 4, 2 short anthers shortly exerted, 2 long anthers included. *Capsule* 11–13 × 4–5mm.

Type: Natal, New Hanover distr., Table Mountain, iii 1946, *Johnstone* 84 (NU holo.).

Selected citations:

NATAL. New Hanover distr., Table Mountain, iii 1946, *Killick* 7 (E); ibidem, 900m, 31 iii 1948, *Killick* 86 (NU); ibidem, 9 iii 1926, *McClellan* 92 & 178 (PRE); Laager Farm, 31 i 1982, *Davis & Davis* 224 (NU); ibidem, *Davis & Davis* 223 (E, NU). Ndwedwe distr., Little Noodsberg, 29 xii 1965, *Strey* 6254 (NH, PRE). Vryheid distr., Tendeka, i 1955, *Mattison* 21 (NU).

TRANSVAAL. Pietersburg distr., The Downs, Marake, iv 1945, *Crundall* s.n. (PRE).

*Zaluzianskya pilosa* is distinguished from its closest allies, *Z. spathaceae*, *Z. pachyrrhiza* and *Z. natalensis*, by its branching habit (apparently simple stems usually have axillary vegetative buds, which never occur in the other three species), and by its spreading cauline leaves. The specific epithet draws attention to the shaggy pubescence that is characteristic of the species.

*Zaluzianskya pilosa* grows in rocky grassland and flowers principally between December and January; a few late flowers may be present in March and April, when capsules will already have formed. It is an ill-known species that requires further investigation in the field. The majority of collections in Natal have come from sandy soils over Table Mountain Sandstone, but a plant collected from The Downs in the north eastern Transvaal (cited above) cannot be distinguished from Natal specimens.

A few further specimens from Natal may belong here; they agree with *Z. pilosa* in floral details, but differ somewhat in habit and leaves. *Hilliard* 1199, NU (Nkandla distr., Nomangci, c.1280m, 16 i 1963) has simple stems without axillary buds and narrower upper leaves. Three specimens from Botha's Hill and Harrison Flats (which lie over the Table Mountain Sandstone series in Camperdown district, not far from Table Mountain)

resemble the Nkandla plant, but one of them has a branching stem (*Francois* 112, NU, Botha's Hill, with branched stem; *Hilliard & Burt* 7571, E, NU, and *Stirton* 1006, PRE, from Harrison's Flats, with simple stems). In facies, these specimens are not unlike *Z. elongata*, but differ in their regular corollas with the lobes glandular above. *Zaluzianskya elongata* grows in the same general area, and it is not impossible that hybridity is involved.

**9. *Zaluzianskya pachyrrhiza*** Hilliard & Burt, *species nova* a *Z. maritima* radice palari incrassata et corollae lobis fere semper in pagina superiore glanduloso-puberulis (nec glabris) distinguenda. A *Z. natalensi* et *Z. spathacea*, etiam affinis, alabastris numerosis in summo caudice absentibus, et a *Z. natalensi* insuper infructescencia elongata axe inter flores visibili (nec compacta axe occulto) distincta.

Syn.: [*Z. natalensis* auct. non Bernh.; Harvey, Thes. Cap. 1: 37 fig. 58 (1859)].

Perennial herb, taproot becoming much thickened and often carrot-like with age, up to 15mm diam., crown without a thick clump of vegetative buds though a few buds may be present; stems one or several from the crown, simple, erect or ascending, up to 45cm long, with retrorse white hairs, leafy. *Leaves* on lower part of stem mostly 40–70 × 4–19mm, decreasing in size upwards, at least upper leaves sharply ascending, all elliptic, lanceolate or oblong-elliptic, margins entire or with a few callose teeth, glabrous or with a few hairs on margins and midline. *Spike* several- to many-flowered, elongating in fruit. *Bracts* lanceolate, obtuse to shortly acuminate, mostly 13–24mm long, margins entire or with an occasional callose tooth towards the apex, glabrous. *Flowers* opening at dusk or in dull light. *Calyx* (9–) 10–13 (–14)mm long, glabrous except for hairy margins at tips. *Corolla* tube 35–52mm long, glandular-puberulous, limb held horizontally, regular; mouth with cirlet of unicellular hairs; lobes deeply notched, 5–8 (–10)mm long, rose pink to dark crimson and glandular-puberulous outside, white inside, generally glandular-puberulous, rarely glabrous. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* 12–13 × 4mm.

Type: Natal, Hlabisa distr., St Lucia Game Park, 23 v 1977, *Hilliard & Burt* 10347 (NU holo., E iso.).

#### Selected citations:

NATAL. Hlabisa distr., St Lucia Game Park, 15 viii 1975, *Pooley* 1750 (E, K, NU); *ibidem*, 30 x 1968, *Ward* 6690 (NH, NU, PRE); near Monzi turnoff on road to Mtubatuba, 9 viii 1977, *Pooley* 1867 (E, NU); Dukuduku, 22 xi 1964, *Strey* 5508 (NH, NU, PRE); Hluhluwe Game Reserve, 460m, 21 i 1956, *Ward* 2935 (NU, NH, PRE). Ingwavuma distr., Lebombo Mountains near Gwalaweni Forest, 26 i 1963, *Strey* 4667 (NH, K). Lower Umfolozi distr., Richard's Bay, 27 xii 1974, *J. D. Ward* 21 (NU). Mtunzini distr., Ngoye Forest, 7 ii 1980, *Stewart* 2158 (NU); Tugela Beach, 18 i 1952, *Johnson* 400 (NBG). Lower Tugela distr., Maidstone, 15 ii 1945, *Hillary* 88 (NU). Inanda distr., Groeneberg, 480m, 16 iii 1956, *Johnson* 1325 (NH). Durban distr., Port Natal, [that is, Durban] *Gueinzus* s.n. (K, PRE); Durban, Clairmont, 15m, 13 ix 1893, *Wood* 4931 (E, PRE); *ibidem*, 15 viii 1893, *Schlechter* 3094 (E, GRA, K, PRE). Port Shepstone distr.,

Margate, ii 1931, *Rump* s.n. (E, NH, NU); Uvongo, 25 xii 1963, *Strey* 4886 (NH, PRE); St Michael's-on-Sea, 25 xii 1966, *Strey* 7084 (K, NH, PRE); Umtamvuna river cliffs, 3 i 1937, *Mogg* 13378 (K, PRE).

*Zaluzianskya pachyrrhiza* has been much confused with *Z. maritima*, but is easily distinguished by its thick perennial rootstock; also the stems of *Z. pachyrrhiza* never branch from the base as those of *Z. maritima* frequently do, at least the upper leaves are ascending, not spreading as in *Z. maritima*, and the corolla lobes are nearly always glandular-puberulous above, not glabrous or with only a few glandular hairs near the mouth. It is closely allied to *Z. natalensis*, which also has simple stems, ascending leaves and corolla lobes glandular-puberulous above, but instead of a carrot-like rootstock, *Z. natalensis* has a thick clump of vegetative buds on the crown, and the inflorescence remains short and thick even in fruit, while that of *Z. pachyrrhiza* elongates. This elongation is clearly shown in Harvey's figure (*Thesaurus Capensis* 1: 37 fig. 58, 1859) of a specimen collected by Sander-son on Clairmont Flats, Durban, which Harvey mistakenly took to be *Z. natalensis*.

*Z. pachyrrhiza* has been recorded along the Natal coast from the Lebombo Mountains and Lake St Lucia in the north to the Umtamvuna in the south, from sea level to c.500m. It grows in sandy grassland and may be found in flower in any month.

It does not overlap geographically with *Z. spathacea*, which is a montane species, but it can be distinguished from it in Natal by the corolla lobes being glandular above, as well as by the lack of vegetative buds at the crown.

Poor dried specimens of *Z. pachyrrhiza* and *Z. elongata* can also be confused (living specimens are easily distinguished by the regular versus irregular corollas); but the corolla lobes of *Z. pachyrrhiza* are nearly always glandular inside, and both calyx and corolla lobes are often longer than in *Z. elongata*.

**10. *Zaluzianskya maritima*** (Linn. f.) Walp., *Repert.* 3: 307 (1844); Hiern in Thiselton-Dyer, *Fl. Cap* 4(2): 335 (1904) p. p. min.

Type: Cape, Uitenhage distr., sea coast near Zeekoe river, *Thunberg* (sheet 14408 in herb. Thunberg, UPS).

Syn.: *Erinus maritimus* Linn. f., *Suppl.* 287 (1781).

[*Erinus lychnideus* auct., non (L.) L.f.; Lindl. in *Bot. Reg.* 9: t. 748 (1823); Sims in *Bot. Mag.* 51: t. 2504 (1824); Lodd., *Bot. Cab.* 10: t. 957 (1824); Geel, *Sert. Bot. Cl.* 14 (1832)].

*Nycterinia maritima* (Linn. f.) Benth. in Hook., *Comp. Bot. Mag.* 1: 369 (1836), p.p.

*N. lychnidea* D. Don in Sweet, *Brit. Fl. Gard. ser.* 2, 3: t. 239 (1835). Lectotype: Sweet, *Brit. Fl. Gard. ser.* 2, 3: t. 239 (1835), based on plant cultivated by Patrick Neill at Canonmills, Edinburgh.

*Zaluzianskya lychnidea* (D. Don) Walp., *Repert.* 3: 307 (1844); Hiern in Thiselton-Dyer, *Fl. Cap.* 4(2): 337 (1904); Hilliard & Burtt in *Notes RBG Edinb.* 37: 316 (1979).

*Z. maritima* var. *fragrantissima* Hiern in Thiselton-Dyer, *Fl. Cap.* 4(2): 336 (1904). Types: Cape, Knysna div., sand hills at Pletten-



berg Bay, *Burchell* 5318 (K) and mouth of the Great Fish River, *Burchell* 3726 (K).

Herb mostly 10–30cm high, annual or sometimes persisting for more than one season, taproot becoming woody, rarely exceeding 4mm diam., stem simple or branched from the base, clad in retrorse white hairs, leafy, often with axillary leaf tufts. *Leaves* mostly 15–45 (–70) × (3–) 4–8mm, spreading, elliptic, base tapered, apex obtuse to subacute, margins entire or with a few small callose teeth, often somewhat fleshy, nearly glabrous or with coarse hairs on the margins and midline below. *Spike* often short and dense, sometimes elongating in fruit. *Bracts* resembling the leaves but often shorter and broader. *Flowers* opening at dusk or in dull light and then sweetly scented. *Calyx* 8–14mm long, glabrous except for hairs on margins. *Corolla* tube 25–50mm long, glandular-puberulous, limb held horizontally, regular; mouth with cirlet of long unicellular hairs; lobes deeply notched, 5–9mm long, crimson and glandular-puberulous outside, white inside, eglandular or with a few glandular hairs near the base. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* 10–14 × 4–5mm.

Selected citations:

TRANSKEI. Umsikaba river mouth, ii 1977, *Green* s.n. (NU); ibidem, 5 viii 1972, *Coleman* 597 (NH); Mazeppa Bay, 22 iii 1950, *Ross* s.n. (NBG); Qora River mouth, 29 xii 1921, *Hilner* 494 (PRE).

CAPE. Komgha distr., Kei Mouth, *Flanagan* 49 (NH, PRE); Haga-Haga, 15 xii 1977, *Hilliard & Burt* 11078 (E, NU). East London distr., Rocklyffe, 17 xii 1977, *Hilliard & Burt* 11119 (E, NU); ibidem, 2 ii 1977, *Batten* 257 (E, NU); West Bank, *Rattray* 151 (BOL, GRA). Alexandria distr., Kenton-on-Sea, mouth of Kariega river, 6 xii 1977, *Hilliard & Burt* 10869 (E, NU); Kwenqura river mouth, xii 1900, *Galpin* 5797 (GRA, PRE); Port Alfred, iv 1916, *Tyson* 12992 (PRE). Port Elizabeth distr., Port Elizabeth, 24 vii 1919, *Britten* 2087 (PRE). Humansdorp distr., Witte Els Bosch, x 1936, *Fourcade* 5348 (BOL); Eerste River, *C. Esterhuysen* s.n. (BOL). Knysna distr., Plettenberg Bay, 24 xii 1947, *Codd* 3578 (PRE). George distr., The Wilderness, 7 xi 1979, *Hugo* (PRE); Groenvlei, 13 xi 1972, *Taylor* 8316 (PRE).

*Zaluzianskya maritima* is aptly named, for it commonly grows on the foreshore along the seaward margin of the dune scrub, but it can also be found on sandy grass slopes overlooking the sea; flowers may be found in any month. It ranges from George to beyond the Umntentu river on the Transkeian coast, just south of Natal's border along the Umtamvuna river, where *Z. pachyrrhiza* occurs at its southernmost recorded station. Only further exploration of the Transkeian coast will show if these two closely allied species are truly allopatric.

The name *Z. maritima* has been misapplied to a number of grassland species, which range as far north as Zimbabwe. These species all differ from *Z. maritima* in their perennial habit, which is evinced by their possession of either swollen and sometimes carrot-like rootstocks or tight masses of vegetative buds on the crown. They differ from each other in a variety of both vegetative and floral characters. *Zaluzianskya maritima* itself is characterized by its somewhat thickened woody taproot lacking any buds at the crown, its branching habit (though it will flower when very young and still

single-stemmed) and spreading leaves. The leaves are usually fleshy; they are herbaceous only in specimens growing on grassy slopes some distance from the beach. It is closely allied to *Z. capensis*, which is partly sympatric in the eastern part of its range. There is little difficulty in separating them visually, yet it is surprisingly difficult to find communicable characters. The thick and mostly more or less entire leaves of *Z. maritima* give it a distinctive facies, and as there are no measurable parameters to separate it from *Z. capensis* it could be thought of as a maritime form of that species. But this does not appear to be so, as specimens of *Z. capensis* from coastal dunes retain their characteristically thin herbaceous leaves.

There is little doubt that the cultivated plant on which D. Don based his genus *Nycterinia*, and the species *N. lychnidea*, was *Z. maritima*. This plant had till then been known in cultivation as *Erinus lychnideus*, but Don realized that it was not the plant to which that name rightly belonged (now = *Sutera lychnidea* (L.) Hiern) and that it was wrongly placed in *Erinus*. No doubt he used the epithet *lychnidea* again because it was already associated with the plant in gardens and its retention would ease the change from *Erinus* to *Nycterinia*.

**11. *Zaluzianskya capensis* (L.) Walp.,** Repert. 3: 307 (1844); Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 338 (1904) incl. vars; Levyns in Adamson & Salter, Fl. Cape Penins. 712 (1950).

Lectotype: LINN 789.5.

Syn.: *Erinus capensis* L., Mant. alt. 252 (1771).

*E. aethiopicus* Thunb., Prodr. Pl. Cap. 102 (1794) & Fl. Cap. 473 (1823). Type: in herb. Thunb., sheet 14397 (UPS).

*Nycterinia capensis* (L.) Benth. in Hook., Comp. Bot. Mag. 1: 370 (1836), incl. vars.

*N. coriacea* Benth. in Hook., Comp. Bot. Mag. 1: 369 (1836) & in DC., Prodr. 10: 348 (1846). Type: Cape, Mountains near Cape Town, *Ecklon* (SAM iso.).

*N. dentata* Benth. in Hook., Comp. Bot. Mag. 1: 370 (1836).

Lectotype: Cape, Paarl Mountain, *Drège* (K; E, TCD, isolecto.).

*N. longiflora* Benth. in Hook., Comp. Bot. Mag. 1: 370 (1836) & in DC., Prodr., 10: 340 (1846). Type: Cape, Khamiesberg, near Ezelsfontein and on Roodeberg, *Drège* (K; E iso.).

*Zaluzianskya coriacea* (Benth.) Walp., Repert. 3: 306 (1844).

*Zaluzianskya dentata* (Benth.) Walp., Repert. 3: 307 (1844); Hiern in Fl. Cap. 4(2): 339 (1904).

*Z. longiflora* (Benth.) Walp., Repert. 3: 307 (1844); Hiern in Fl. Cap. 4(2): 339 (1904).

Herb, mostly 10–40cm high, either annual or persisting for more than one season, taproot eventually woody, up to 4mm diam., stem initially simple, erect, soon branching from the base, side branches often decumbent, simple or branched, clad in retrorse white hairs, leafy, often with axillary leaf tufts. *Leaves* extremely variable, mostly 13–40 (–60) × 1–6 (–10)mm, spreading, linear to elliptic, apex subacute, base narrowed in broader leaves and then sometimes petiole-like, margins either entire (usually but not always in the narrower leaves) or obscurely to prominently toothed, teeth patent, occasionally glabrous, usually sparsely to densely

pilose. *Spike* few- to many-flowered, often short and dense, elongating in fruit. *Bracts* resembling the upper leaves. *Flowers* opening at dusk or in dull light and then sweetly scented. *Calyx* 6–11mm long, usually with at least a few hairs on the upper margins, ribs sparsely to densely pilose. *Corolla* tube 25–35 (–40)mm long, glandular-puberulous; limb held horizontally, regular; mouth with cirlet of long unicellular hairs, sometimes poorly developed or developed on one side only; lobes deeply notched, (3–) 4–7 (–8)mm long, red and glandular-puberulous outside, white inside, eglandular. *Stamens* 4, 2 short anthers, shortly exerted, 2 long ones included. *Capsule* 6–12 × 4mm.

Selected citations:

CAPE. Bathurst distr., S of Southwell, Hopewell, c.600ft, 11 ix 1951, *Acocks* 16138 (PRE). Albany distr., Coombs Valley, i 1969, *Bayliss* 4414 (NBG); Grahamstown, mountain drive, 28 ix 1970, *Schonland* 3742 (GRA, PRE); 3km from Grahamstown on Port Alfred road, 9 iii 1973, *Stirton* 763 (E, NU). Alexandria distr., Alexandria, 10 viii 1972, *Osborne* 116 (GRA). Port Elizabeth distr., between Koega and Sundays rivers, *Ecklon & Zeyher* 50 (GRA); Port Elizabeth, western suburbs of town, 11 x 1980, *Stewart* 2175 (E, NU). Uitenhage distr., Bethelsdorp, ix 1908, *Paterson* 124 (GRA); near Uitenhage, 16 ix 1890, *Schlechter* 2518 (E, PRE). Uniondale distr., Avontuur Poort, 2600ft, xii 1925, *Fourcade* 3198 (BOL). Knysna distr., Groenvlei, 11 xii 1955, *Levy* 10259 (BOL); Goukamma Pass, 23 xi 1944, *Fourcade* 6509 (BOL). George distr., Wilderness, 18 xi 1952, *van Niekerk* 225 (BOL). Ladismith distr., Seven Weeks Poort, 2500ft, 12 xi 1938, *Compton* 7333 (NBG). Riversdale distr., coast, ix 1924, *Muir* 3443 (GRA); Still Bay, vi 1909, *Muir* 5262 (PRE). Bredasdorp distr., Potteberg, 19 ix 1954, *Esterhuysen* 23277 (BOL); Bredasdorp Poort, 5 viii 1940, *Esterhuysen* 3006 (BOL). Swellendam distr., Lemoenshoek Mountains, near Heidelberg, *Stokoe* SAM 64338 (SAM). Caledon distr., Gordon's Bay, just beyond village on road to Hangklip, 1 x 1980, *Hilliard & Burt* 13084 (E); Hangklip, 4 ix 1942, *Henderson* 1158 (NBG); Mossel river, 4 x 1952, *Compton* 23668 (NBG); Betty's Bay, 1 x 1980, *Hilliard & Burt* 13089 (E, NU); Genadendal, 2000ft, 2 iv 1897, *Schlechter* 2005 (PRE). Cape Peninsula, Hout Bay, 17 viii 1940, *Compton* 9148 (NBG); Vlakkenberg, 17 x 1947, *Compton* 20168 (NBG); middle slopes Table Mountain, 21 ix 1980, *Hilliard & Burt* 13031 (E, NU); Devil's Peak, 1100ft, xi 1886, *Bolus* 8034 (BOL). Malmesbury distr., Mamre Hills, 22 ix 1942, *Compton* 13765 (NBG); NW of Conterberg, near Darling, ix 1933, *Pillans* 6891 (BOL). Ceres distr., Bokkeveld Tafelberg, 5500ft, 8 xii 1940, *Compton* 10084 (NBG); Mitchell's Pass, 3500ft, 10 ix 1896, *Schlechter* 8933 (BOL, GRA, PRE); Gydo Pass, 1938, *Häfstrom & Acocks* 1245 (PRE). Stellenbosch distr., Banhoek Valley, 1 x 1945, *Esterhuysen* 11913 (BOL, PRE); Simonsberg, 400m, 6 ix 1946, *Strey* 802 (PRE). Worcester distr., Witteberg, Slanghoek Mountains, 15 ix 1953, *Esterhuysen* 22312 (BOL). Clanwilliam distr., N Cedarbergen, E side Krakadouw Peak, 3000ft, 27 x 1945, *Esterhuysen* 12259 (BOL). Calvinia distr., Lokenburg, c.2200ft, 16 x 1953, *Acocks* 17439 (PRE). Piquetberg distr., Zebra Kop, 3500ft, 9 xi 1934, *Pillans* 7366 (BOL). Albert distr., New Hantam, *Drège* 7896 (PRE).

In describing *Erinus capensis*, Linnaeus cited *Lychnidea villosa* . . . . Burm. afr. 138 t. 49 f. 4. His description and specimens in no way fit Burmann's description and illustration and Burmann's plant is correctly cited by Hiern (*Fl. Cap.* 4(2): 290, 1904) as *Sutera lychnidea* L., Pl. Rar. Afr., where Burm. afr. 138 t. 49 f. 4 is quoted! Despite the fact that Hiern wrote 'cf. *Erinus capensis* L.' there is no doubt that the combination made by Walpers had this basionym and the Linnaean specimens 789.5, 789.6 belong here. We chose 789.5 as lectotype.

*Zaluzianskya capensis* ranges from the Khamiesberg and the mountains near Calvinia, Clanwilliam and Piquetberg south on both mountain slopes and flats to the Peninsula and neighbouring districts, thence east on the southern faces of the coastal ranges as well as along the coast to Albany and Bathurst districts in the eastern Cape. It grows in sandy places, often among shrubs, from near sea level to c.900m. Flowering has been recorded between March and December, but July to October are the principal months.

*Zaluzianskya capensis* is extremely variable in leaf morphology, which shows a continuous range from very narrow leaves, which may be entire or prominently toothed, to broad and obscurely to prominently toothed. Linnaeus gave the name *Erinus capensis* to a plant with long narrow toothed leaves, similar to those of Thunberg's *Erinus aethiopicus*, while Bentham based his *Nycterinia dentata* on a plant with broad and prominently toothed leaves drawn out at the base into a petiole-like part. The placement of intermediate specimens has plagued botanists ever since as there is no discontinuity between the two types. Levyns (in Adamson & Salter, *Fl. Cap. Pen.* 712-713, 1950) kept up the name *Z. dentata*, but clearly had little confidence in the characters used, namely wider leaves and evident petioles. The name of *Z. coriacea* was ignored by Levyns although the type came from mountains near Cape Town! The leaves of both *Z. coriacea* and *Z. longiflora* are about 2mm broad with spreading teeth and fall within the variation range of *Z. capensis*.

Two specimens from further east than the general range of *Z. capensis*, and from higher altitudes, need mention: Hilliard & Burt 10596 (E, NU) from Cradock, Mountain Zebra National Park, Bankberg, c.1525m, and Giffen 1603 (PRE) from Sandile's Kop, 32.47S 26.51E, at 2130m. The Bankberg specimen came from stony strips between rock sheets, the Sandile's Kop specimen from rocky ledges. They are clearly the same plant, and can probably be referred to *Z. capensis*.

**12. *Zaluzianskya muirii* Hilliard & Burt, species nova** *Z. capensis* affinis sed corollae tubo brevior 15-21mm longo (nec 25-40mm), corollae lobis supra glandulosis (nec eglandulosis) et ore corollae pilis longis unicellularibus destituto differt.

Herb, 15-40cm high, either annual or perhaps persisting for more than one season, taproot eventually woody, up to 3mm diam., stem initially simple, later branching from the base and higher, clad in retrorse white hairs, leafy, often with axillary leaf tufts. *Leaves* mostly 15-40 x 1-3mm, spreading, linear to narrowly elliptic, subacute, tapering to a petiole-like base in larger leaves, margins entire or with a few pairs of spreading lobes, thinly hairy. *Spike* few- to many-flowered, elongating in fruit. *Bracts* resembling the upper leaves. *Flowers* probably opening at dusk. *Calyx*

6–8mm long, pilose on upper margins and ribs. *Corolla* tube 15–21mm long, glandular-puberulous; limb held horizontally, regular; mouth not bearded; lobes deeply notched, red and glandular-puberulous outside, white inside, glandular-puberulous on the lower half. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* not seen.

Type: Cape, 3421 AC, Riversdale distr., south of Riversdale, Wankoe se Rante, c.700ft, 6 ix 1975, *Oliver* 5982 (PRE holo.).

CAPE. 3421 AD, hills of government reserve opposite Still Bay, 100–600ft, iv 1909, *Muir* 161 (GRA); dunes near Still Bay, x 1929, *Muir* 4461 (PRE); Still Bay, 60m, 24 viii 1979, *Bohnen* 6163 (PRE); 10 miles south of Albertinia, c.600ft, 30 vii 1962, *Acocks* 22550 (PRE); Cape Infanta, maritime side of Potteberg, 19 x 1948, *Blum* 225 (E).

*Zaluzianskya muirii* is known from only a small area around Riversdale, Albertinia and Still Bay in the south western Cape, where it grows among shrubs on sand at altitudes ranging from near sea level to about 210m. Flowering is principally between June and September. It has hitherto been confused with its close ally, *Z. capensis*, from which it is easily distinguished by its shorter corolla tube, corolla lobes glandular above in the lower half, and lack of a cirlet of long hairs around the mouth.

The specific epithet honours the late Dr John Muir, who did such valuable work on the flora of Riversdale.

**13. *Zaluzianskya oreophila*** Hilliard & Burt, *species nova* quoad formam corollae *Z. elongatae* similis, sed foliis grosse dentatis (nec integris nec pauciter callosodentatis) subtus saltem pilosis (nec glabris vel fere glabris), corollae tubo plerumque 17–30mm (nec 30–40mm) longo differt.

Annual herb, or possibly surviving for more than one season, taproot remaining thin, no clump of vegetative buds at crown, stems solitary and erect in young plants, several from the crown and ascending in older plants, usually simple, mostly 10–30cm long, clad in retrorse white hairs, leafy. *Radical leaves* usually present only on young plants, oblanceolate, c.18–30 × 7–10mm; *cauline leaves* more or less ascending, elliptic or oblong, mostly 15–40 × 2–5mm, slightly smaller upwards, margins coarsely toothed, upper small leaves with 1 or 2 pairs of teeth near apex, upper surface sparsely pilose or almost glabrous, lower surface thinly pilose. *Spike* elongating as the flowers open. *Bracts* lanceolate, 11–15 (–20)mm long, margins usually with 1 or 2 pairs of teeth near the tip, rarely entire, indumentum as on leaves. *Flowers* opening at dusk or in dull light. *Calyx* 6–9mm long, margins hairy. *Corolla* tube 17–30 (–35)mm long, glandular-puberulous, limb held vertically, somewhat zygomorphic; mouth with cirlet of long unicellular hairs, often poorly developed on the anticous side; the anticous lobe slightly isolated from the other 4, lobes deeply notched, 4–5mm long, crimson and glandular-puberulous outside, white and glabrous inside. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* not seen.

Type: Lesotho, Mokhotlong distr., 2929 CB, Sani Top, east of pass, c.2900m, 14 i 1976, *Hilliard & Burt* 8806 (NU holo., E iso.).

LESOTHO. Mokhotlong distr., near Sani River, 2865m, 2 i 1974, *Hilliard* 5448 (E, NU); ibidem, c.2895m, 7 i 1977, *Hilliard & Burt* 9643 (E, NU);

ibidem, 2850m, 15 i 1977, *Killick* 4123 (K, PRE); Thabana Ntlenyana, 3200m, 21 i 1955, *Coetzee* 591 (PRE); at Mokhotlong, 2135m, i 1953, *Liebenberg* 5861 (PRE). 2928 BB, between Oxbow and Mokhotlong, c.3200m, 15 i 1973, *Wenger* 1672 (PRE); Cathedral Peak area, Cleft Peak, c.3000m, 21 i 1956, *Edwards* 1153 (NU).

CAPE. Barkly East distr., Naude's Nek Pass on Rhodes side, c.2286m, 13 xii 1976, *Stewart* 1889 (E, K, NU); below summit of Naude's Nek Pass, Maclear side, c.2600m, *Bigalke* 18 (NU).

*Zaluzianskya oreophila* has been recorded from the summit of the Drakensberg from the Oxbow area in the north to Naude's Nek in the south, between 2285m and 3200m above sea level. It grows in grassland or silty loam, and is particularly common at Sani Top in wet rough grassland near streams, often growing in the shelter of small bushes and grass tussocks. It flowers in December and January.

It resembles *Z. elongata*, a coarser more glabrous plant of much lower altitudes, in having slightly zygomorphic flowers that are carried vertically like the strongly zygomorphic flowers of *Z. microsiphon*. The mouth of the corolla is bearded, as in most of the species with red and white actinomorphic corollas; all these species with a bearded mouth open at dusk or in dull light. The flowers of *Z. microsiphon* open during the day, in bright light, and the mouth of the corolla tube is not bearded.

**14. *Zaluzianskya glareosa* Hilliard & Burt, species nova** *Z. capensi* affinis sed habitu perenni, summo caudice alabastris vegetativis praedito differt.

Herbaceous, taproot becoming woody, up to 10mm diam., flowering initially in the seedling stage, then stems solitary, simple, erect, later branching from the base and surviving for more than one season, these stems either simple or branched, decumbent or ascending, becoming woody at the base with small vegetative buds but never with a thick clump of vegetative buds, up to c.45cm long, hairy with  $\pm$  retrorse or spreading white hairs, leafy, often with axillary leaf tufts. *Leaves* spreading, mostly 15–50 (–60)  $\times$  2–8 (–15)mm, linear, oblong, or narrowly elliptic, rarely broadly elliptic, base sometimes petiole-like, margins entire or with a few small callose teeth, or occasionally more coarsely toothed, thinly hairy. *Spike* initially condensed, often few-flowered, elongating in fruit. *Bracts* 15–20 (–30)mm long, lanceolate, entire or with 1 or 2 pairs of teeth near the apex, hairy. *Flowers* opening at dusk or in dull light and then emitting a spicy fragrance. *Calyx* 7–13mm long, hairy. *Corolla* tube 27–50mm long, glandular-puberulous, limb held horizontally, regular; mouth with circlet of long unicellular hairs; lobes deeply notched, 5–10mm long, crimson and glandular-puberulous outside, white inside, glabrous or sometimes with a few minute glandular hairs near the base. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* 8–11  $\times$  4–5mm.

Type: Natal, Underberg distr., Cobham Forest Reserve, Upper Polela Cave area, 2300–2375m, 15 ii 1979, *Hilliard & Burt* 12510 (NU hol., E iso.).

Selected citations:

NATAL. Underberg distr., Garden Castle Forest Reserve, c.1900m, 31 i 1975, *Hilliard & Burt* 7886 (E, NU); Bushman's Nek, Thamathu Pass,

c.2300m, 4 ii 1976, *Hilliard & Burtt* 8948 (E, NU); Sani Pass, c.2440m, 22 iii 1977, *Hilliard & Burtt* 9787 (E, NU). Polela distr., Mawahqua Mountain, Sunset Farm, 1675m, 13 i 1978, *Rennie* 892 (NU). Alfred distr., Weza, Zuurborg, 1675m, 17 ii 1976, *Hilliard & Burtt* 9039 (E, NU). Port Shepstone distr., Izotsha, 13 iii 1973, *Strey* 11116 (NU). Mpendhle distr., Vergelegen Nature Reserve, c.1890m, 2 i 1978, *Hilliard & Burtt* 11187 (E, NU); Loteni Nature Reserve, 1585m, 9 xii 1979, *Phelan* 467 (NU); Kamberg area, Storm Heights, c.2100m, 15 xii 1978, *Hilliard & Burtt* 11717 (E, NU). Lion's River distr., Mt Gilboa, summit, 29 xii 1978, *Hilliard & Burtt* 11852 (E, NU); Fort Nottingham Commonage, c.1700m, 6 ii 1978, *Wright* 2431 (E, NU). Richmond distr., Peak of Byrne, c.1675m, 17 iv 1977, *Hilliard & Burtt* 10169 (E, NU). Estcourt distr., summit spine of Kamberg, 2042m, 4 ii 1976, *Wright* 2344 (NU); Giant's Castle Game Reserve, Bushman's River Pass, 2745m, xii 1969, *Wright* 940 (NU); Tabamhlope mountain, 1800m, 14 iii 1937, *West* 106 (PRE). Bergville distr., Cathedral Peak Forest Reserve, Ndedema Valley near Schoongezicht cave, 16 iv 1978, *Hilliard* 8135 (E, NU); Cathedral Peak Forestry Research Station, 1 v 1947, *Crook* 352 (PRE); Royal Natal National Park, Tugela Gorge above chain ladder, c.1850m, 6 ii 1982, *Hilliard & Burtt* 15459 (E, NU); [Oliviershoek Pass], Little Switzerland, 1800m, 18 iii 1979, *Macklin* 3 (NU). Klip River distr., Van Reenen Pass, Windy Corner, 31 xii 1975, *Hilliard & Burtt* 8717 (NU); Colling's Pass, c.1675m, 18 iii 1947, *Acocks* 13488 (PRE).

ORANGE FREE STATE. Witzieshoek, road to The Sentinel, c.2225m, 26 xii 1975, *Hilliard & Burtt* 8636 (E, NU); Mont aux Sources, chain ladder, 2745m, 28 iii 1946, *Schelpé* 1450 (NU).

CAPE. Maclear distr., below summit Naude's Nek Pass, Maclear side, c.2600m, 29 xii 1977, *Bigalke* 14 (NU).

TRANSKEI. Umzimkulu distr., farm 'Ebuta', summit Mount Malowe, c.1500m, 17 i 1978, *Hilliard & Burtt* 11224 (E, NU). Baziya Mountain, Mpolompo Valley, 1370m, 11 ii 1981, *Hilliard & Burtt* 13940 (E, NU). Kentani, 1200ft, ii 1905, *Pegler* 406 (BOL, PRE). Near Butterworth, 26 x 1951, *Taylor* 3649 (NBG).

*Zaluzjanskya glareosa* is widely distributed along the face of the Natal Drakensberg and through the midlands of Natal from Colling's and Van Reenen's Passes (Klip River district) to the Cape Drakensberg, and the mountains about Murraysburg and Graaff Reinet, mainly between 1200 and 2750m above sea level, but exceptionally down to c.400m in southern Natal and Transkei. Its northernmost station is probably on the hills around Wakkerstroom on the Transvaal-Natal border, but we have seen only poor material from this area. It is essentially a plant of bare areas, and can be found in gritty patches in the boulder beds of streams, in grit and silt patches over rock sheets and around the edges and in the crevices of rock sheets in grassland, or sometimes in the grass itself, particularly on steep slopes. In open places, away from competition with other plants, it soon develops a more or less sprawling well-branched bushy habit; in competition with grass, it may be single-stemmed. It flowers between December and April.

*Zaluzjanskya spathacea*, with which *Z. glareosa* can be confused, is found in grassland and has a thick clump of vegetative buds on the crown.

Confusion can also arise with *Z. schmitziae*, but that has narrower leaves and smaller flowers.

An allied plant occurs in the Belingwe district of Zimbabwe, differing in its corolla lobes being glandular on the upper surface (*Simon, Pope & Biegel* 2445 and *Pope* 959, both K). Similar plants from Inyanga (e.g. *Norlindh & Weimarck* 4888, K, PRE), Manica district (*Teague* SL, K), Makoni district (*Rutherford-Smith* 529, K) and Mazoe (*Eyles* 548, K), also need further study.

**15. *Zaluzianskya chrysops*** Hilliard & Burt, **species nova** *Z. glareosae* affinis sed foliis ad basin aggregatis superne remotioribus (nec secundum caulem aequae distributis), corollae lobis dimidio inferiore vivide aurantiacis (nec omnino albis) differt.

Herbaceous, flowering initially in the seedling stage, then stems solitary, simple, erect, later branching from the base and surviving for more than one season, these stems simple or sparingly branched low down, erect or decumbent, eventually somewhat woody at the base but without a thick clump of vegetative buds on the crown, 3.5–15cm long, hairy with coarse retrorse white hairs. *Leaves* crowded towards the base of the stem, distant upwards, lower leaves mostly 10–40 × 5–15mm, elliptic to subrotund, apex obtuse, base narrowed to a petiole-like part, margins subentire to coarsely toothed, both surfaces thinly pilose; cauline leaves similar but smaller, sessile. *Spike* few-flowered, crowded, scarcely elongating in fruit. *Bracts* similar to the cauline leaves. *Flowers* opening at dusk or in dull light. *Calyx* 8–10mm long, margins and keels hairy. *Corolla* tube c.30–43mm long, glandular-puberulous, limb held horizontally, regular; mouth with circlet of long unicellular hairs; lobes deeply notched, 5–7mm long, dark red and glandular-puberulous outside, glabrous inside, white in upper half, vivid orange in lower. *Stamens* 4, 2 short anthers slightly exerted, 2 long ones included. *Capsule* c.10 × 4mm.

Type: Natal, Underberg distr., Garden Castle Nature Reserve, Pillar Cave valley, 1908m and above, 4 xi 1977, *Hilliard & Burt* 10415 (NU holo., E iso.).

NATAL. Underberg distr., Garden Castle Nature Reserve, Pillar Cave valley, 2100–2285m, 8 i 1982 (fruiting only), *Hilliard & Burt* 15035 (E, NU); Sani Pass, S-facing summit cliffs near top, c.2865m, 17 i 1976, fruit only, *Hilliard & Burt* 8857 (E); ibidem, c.2600m, 17 ii 1982, fruit only, *Hilliard & Burt* 15507 (NU). Mpendhle distr., ridge SE of Giant's Castle, headwaters of Elandshoek R., c.8100ft, 5 i 1983, *Hilliard & Burt* 16198 (E, NU).

LESOTHO. Mokhotlong distr., Sani Top, NE of chalet, 3050m, fruit only, 17 i 1976, *Hilliard & Burt* 8844 (E). Sehlabathebe, gorge of Tsoelikane, xi 1979, *Schmitz* 8794 (NU); Sehlabathebe area, Devil's Knuckles, 3000m, 8 xii 1979, *Davis & Davis* 207/A (NU).

*Z. chrysops* has been recorded with certainty only from the southern Natal Drakensberg and adjoining Sehlabathebe area in Lesotho. A specimen collected at the end of March 1946 on Mont aux Sources (*Schelp* 1382A, NU) may be this species, but the specimen, in fruit only, is a very poor one.



The plants favour damp bare areas, such as the stabilized boulder beds of mountain streams and their flanking earth and rubble banks and gravel patches and scree on mountain tops, between c.1980m and 3000m. They flower between October and December.

Although *Z. chrysops* is allied to *Z. glareosa*, from which it is immediately distinguished by its crowded basal leaves and orange-eyed flowers, it may be confused with *Z. ovata*, especially the orange-eyed form of that species, but again, the crowded basal leaves will distinguish it; also, the hairs on the stems are retrorse in *Z. chrysops*, spreading in *Z. ovata*.

**16. *Zaluzianskya turritella*** Hilliard & Burt in Notes RBG Edinb. 37: 318 (1979).

Type: Lesotho, Mokhotlong distr., escarpment south of Sani Pass, c.2990m, 18 i 1976, *Hilliard & Burt* 8876 (NU holo., E iso.).

Annual herb, taproot slender, crown unthickened, stems 2.5–10cm long, simple or with 2–6 branches from the base, these branches simple or shortly branched near the base, erect or decumbent, clad in spreading gland-tipped hairs, closely leafy. *Leaves* mostly 8–20 × 5–15mm, thick-textured, rhomboid-ovate, contracted to a broad petiole-like part, apex obtuse to subacute recurved-spreading, margins entire or obscurely crenate to bluntly toothed in upper half, both surfaces nearly glabrous to sparsely hairy, some hairs gland-tipped, dark green above, beetroot red below, aromatic. *Spikes* short, crowded. *Bracts* leaflike, mostly larger than the leaves and increasing in size upwards. *Flowers* opening at dusk or in dull light. *Calyx* 7–9mm long, glandular-pubescent on the upper margins and ribs. *Corolla* tube 21–27mm long, glandular-puberulous, limb held horizontally, regular; mouth with cirlet of long unicellular hairs; lobes deeply notched, 5–6mm long, dark red and glandular-puberulous outside, white and glabrous inside. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* (immature) 9 × 5.5mm.

LESOTHO-NATAL border, Sani, saddle on escarpment north of pass, c.3000m, 8 i 1977, *Hilliard & Burt* 9661 (E, NU); Schlabathebe area, Devil's Knuckles, 3000m, 8 xii 1979 [sterile], *Davis & Davis* 204 (NU); Giant's Castle Game Reserve, Upper Injasuti, 3300m, 28 i 1966, *Trauseld* 546 (NU); summit Giant's Castle, 3150m, 23 i 1968, *Killick* 3901 (K, PRE). LESOTHO. Mokhotlong distr., Thabana Ntlenyana, 3300m, 21 i 1955, *Coetzee* 590 (PRE); *ibidem*, 18 i 1955, *Jacot Guillarmod* 2327 (PRE).

*Zaluzianskya turritella* is known only from the summit plateau of the Drakensberg along the Natal-Lesotho border between the Upper Injasuti area and the Devil's Knuckles (Thaba Ntšo) just outside Schlabathebe National Park in Lesotho and adjacent to Bushman's Nek in southern Natal. It grows in gravel and silt patches derived from basalt, between 2940m and 3300m above sea level, flowering in January.

When we originally described the species we thought it without close affinity but there may be an affinity with *Z. ovata* with which it shares the character of spreading glandular hairs on the stems as well as broad petiolate leaves. Despite being an annual of very short stature, the leaves and bracts are surprisingly large and thick, and their dark colouring and the dark backs to the corolla lobes make the plants difficult to see against their background of dark gravel and silt.

**17. *Zaluzianskya katharinae*** Hiern in Thiselton-Dyer, Fl. Cap. 4 (2): 341 (1904); Lucas & Pike, Wild Flowers of the Witwatersrand 78, pl. XIV d (1971).

Lectotype: Transvaal, Johannesburg, Jeppestown Ridge, 6000ft, ii 1898, *Gilfillan* in herb. *Galpin* 1478 (K; PRE isolecyto.).

Shrubby, loosely branched, stems straggling, sometimes prostrate or decumbent, up to 60cm long, clad in coarse spreading hairs, mostly gland-tipped, leafy. *Leaves* mostly 10–30 × 4–25mm, elliptic, ovate or cuneate in outline, margins coarsely toothed, apex acute, base cuneate, narrowed into the petiole, petioles mostly 4–10mm long, both blade and petiole coarsely pubescent with glandular and eglandular hairs. *Spikes* very lax, few- to many-flowered. *Bracts* leaflike. *Flowers* opening at dusk or in dull light and then scented. *Calyx* 12–16mm long, coarsely glandular-pubescent. *Corolla* tube 35–52mm long, glandular-puberulous, limb held horizontally, regular; mouth with cirlet of long unicellular hairs; lobes deeply notched, 7.5–12mm long, pink to crimson and glandular-puberulous outside, white and glandular-puberulous inside. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* 12–15 × 5–6mm.

Selected citations:

TRANSSVAAL. Zoutpansberg distr., 9 miles east of Louis Trichardt, farm Rusfontein, *Schlieben* 7225 (K); 5 miles west of Wylie's Poort, 4800ft, 22 viii 1930, *Hutchinson & Gillett* 4381 (BM, K). Lydenburg distr., Ohrigstad Dam Nature Reserve, 5500ft, 10 xi 1971, *Jacobsen* 1798 (PRE); Zwagershoek, i 1930, *Obermeyer* 325 (PRE). Pilgrim's Rest distr., 6 vii 1961, *van der Schijff* 5620 (K, PRE). Machadodorp distr., Elandshoogte, 1940m, 16 ii 1978, *Richardson* 55 (E, NU). Carolina distr., The Brook, 5600ft, 5 iii 1956, *Codd* 9502 (K, PRE). Middelburg distr., xi 1910, *Jenkins* TM 9827 (PRE). Johannesburg distr., Johannesburg, *Bryant* C 46 (BM, K, SAM); Melville Koppies Nature Reserve, 4 iii 1977, *van Jaarsveld* 1815 (NBG). Krugersdorp distr., Witpoortje, ii 1929, *Murray* 470 (PRE). Potchefstroom distr., Elandsfontein, 6 iv 1945, *Louw* 1423 (PRE).

The species was named in honour of Mrs Katharine Saunders, who collected it near Heidelberg while journeying to Johannesburg from her home on the coast of Natal. Her specimen is in fruit and bears only withered flowers; the Gilfillan collection is in much better condition and has therefore been selected as lectotype.

*Zaluzianskya katharinae* is known only from the Transvaal, where it ranges from the Zoutpansberg down the eastern mountains as far as the environs of Carolina, thence westwards to the Witwatersrand and the nearby Suikerbosrand at Heidelberg, and hills near Potchefstroom. It favours damp and partially shaded places among rock outcrops and on cliffs; many collectors have recorded it on quartzite rocks. It can possibly be found in flower in any month, but the most frequent records are between January and April.

**18. *Zaluzianskya ovata*** (Benth.) Walp., Repert. 3: 307 (1844); Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 340 (1904); Trauseid, Wild Flow. Natal Drakensberg 172 (colour plate), 173 (1969).

Type: Cape [Lady Grey distr.], Wittebergen, *Drège* s.n. (K).

Syn.: *Nycterinia ovata* Benth. in Hook., Comp. Bot. Mag. 1: 370 (1836).

*Zaluzianskya montana* Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 342 (1904). Type: [Lesotho], summit Mont aux Sources, 9500ft, Jan., *Flanagan* 2032 (K, PRE, SAM).

Strongly aromatic twiggly shrublet forming loose clumps, stems sometimes prostrate or decumbent, up to c.45cm long, brittle, much branched, clad in long coarse spreading white hairs, gland-tipped or not, or these hairs occasionally wanting, as well as short spreading gland-tipped hairs, leafy. *Leaves* mostly 15–60 × 4–35mm, narrowly to broadly elliptic or ovate, apex obtuse to subacute, base cuneate, tapering into a short petiole-like part, margins subentire to coarsely and often somewhat irregularly toothed or lobulate, both surfaces shaggy with gland-tipped hairs. *Spikes* 1- to several-flowered, the flowers then usually crowded. *Bracts* resembling the leaves but smaller. *Flowers* opening at dusk or in dull light. *Calyx* 8–13mm long, glandular-pubescent. *Corolla* tube 30–58mm long, glandular-puberulous; limb held horizontally, regular; mouth with cirlet of long unicellular hairs, sometimes weakly developed on anticous side, or wanting; lobes deeply notched, c.6–11mm long, pink to crimson and glandular-puberulous outside, glabrous inside, usually white, sometimes brilliant orange near-base. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* 7–11 × 4–6mm.

#### Selected citations:

ORANGE FREE STATE. Harrismith distr., Platberg, One Man Pass, c.7000ft, 13 xii 1976, *Hilliard & Burt* 9610 (E, NU). Witzieshoek, footpath to The Sentinel, c.8700ft, 26 xii 1975, *Hilliard & Burt* 8621 (E, NU). Ficksburg, *Potts* 1972 (SAM). c. 15 miles east of Marquard, farm De Hoek, 9 x 1965, *Munro* s.n. (PRE).

LESOTHO. Leribe, Malavaneng, 5–6000ft, 23 xi 1912, *Dieterlen* 929 (PRE, SAM). Maseru distr., Makhaleng, 12 x 1948, *Compton* 21037 (NBG); Molimo Nthuse Pass, c.7000ft, 12 i 1979, *Hilliard & Burt* 12083 (E, NU); Blue Mountain Pass c.8500ft, 10 i 1979, *Hilliard & Burt* 12026 (E, NU); Roma Valley, viii 1974, *Schmitz* 4219 (PRE). Mokhotlong distr., Sani Top, 9500ft, 2 i 1974, *Hilliard* 5447 (E, NU); Black Mountains, 10400–10600ft, 13 i 1976, *Hilliard & Burt* 8766 (E, NU); Sehlabathebe National Park, 2325m, 4 xii 1976, *Hoener* 1698 (NU). Semonkong, c.7000ft, 28 xi 1976, *Davidson* 3045 (PRE). Below Maletsunyane Falls, 19 x 1946, *Esterhuysen* 13180 (K, PRE). Summit Drakensberg, Cleft Peak area, c.9800ft, 1 xii 1953, *Killick & Marais* 2171 (K, PRE).

NATAL. Bergville distr., Royal Natal National Park, Tugela Valley, 30 x 1938, *Häfstrom & Acocks* 1250 (PRE); Cathedral Peak Forestry Reserve, foot of Tlanyaku Pass, 24 x 1973, *Hilliard & Burt* 6913 (E, NU). Estcourt distr., Giant's Castle Game Reserve, c.8500ft, 20 xii 1964, *Trauseld* 309 (NU, PRE); slope beneath Giant's Castle, c.8500ft, 11 xii 1973, *Wright* 1611 (E, NU). Underberg distr., Sani Pass, 9200–9400ft, 9 i 1977, *Hilliard & Burt* 9665 (E, NU); Garden Castle Forest Reserve, Pillar Cave Valley, c.6500ft, 4 xi 1977, *Hilliard & Burt* 10414 (E, NU); Umzimouti valley, 6500–6700ft, 27 xi 1976, *Hilliard & Burt* 9334 (E, NU); headwaters of Mlahlangubo river, 7600–8500ft, 26 xi 1980, *Hilliard & Burt* 13686 (E,

NU). Alfred distr., Ngeli Mountain, c.6000ft, 4 i 1969, *Hilliard & Burt* 5837 (E, K, NH, NU).

TRANSKEI. Ramatseliso's Beacon, 2350m, 23 x 1976, *Boardman* 172 (PRE). CAPE. Barkly East distr., Witteberg, Ben Mcdhui, 9700ft, 11 iii 1904, *Galpin* 6793 (PRE); Witteberg, Joubert's Pass, 7500-7700ft, 18 i 1979, *Hilliard & Burt* 12188 (E, NU); Saalboom Nek, c.6900ft, 21 i 1979, *Hilliard & Burt* 12288 (E, NU). Maclear distr., near top of Naude's Nek, Maclear side, c.8000ft, 15 xii 1976, *Stewart* 1922 (E, K, NU). Queenstown distr., near Bailey, Andriesberg, 6500ft, i 1897, *Galpin* 2276 (K, PRE). Graaff Reinet distr., Koudeveldberge SE of Doornbosch, 6000ft, 6 xi 1974, *Oliver* 5204 (K, PRE). Prince Albert div., Seven Weeks Poort Mountain, 2300m, *Andreae* 1191 (PRE). Ladismith div., Swartberg, Toverkop, 6500ft, 16 xii 1956, *Esterhuysen* 26799 (K). Calvinia distr., Akkerendam, c.4800ft, 14 xi 1955, *Acocks* 18627 (K, PRE). Worcester div., Hex River Mountains, 6400ft, 17 xii 1948, *Esterhuysen* 14882 (K, PRE); Keeromsberg, 5-6000ft, 22 xi 1956, *Esterhuysen* 26634 (K, PRE); Waaihoek Peak, 6400ft, 25 xii 1950, *Esterhuysen* 18205 (K, NBG, PRE). Tulbagh div., Great Winterhoek, 6000ft, 31 xii 1951, *Esterhuysen* 19779 (PRE); Little Winterhoek, 1600m, xii 1884, *Marloth* 496 (PRE).

There is nothing in habit, foliage or floral detail to distinguish the types of *Z. ovata* and *Z. montana*. In his key to species in *Flora Capensis*, Hiern (loc. cit.) separated them on supposed differences in the indumentum of the corolla tube: 'shortly pubescent outside' (*ovata*) and 'glandular-puberulous outside' (*montana*), but in the descriptions that follow the corolla tubes of both *ovata* and *montana* are said to be glandular-puberulous.

The upper surface of the corolla lobes is usually wholly white; in some specimens there may be a greenish tinge around the mouth of the corolla tube, but, much more striking, there is occasionally a vivid orange patch at the base of each lobe. Orange-eyed specimens have been recorded in the Natal Drakensberg (Sani Pass at c.2745-2865m; Giant's Castle Game Reserve at 2745m; Cleft Peak area at c.3000-3200m), and have been illustrated by Trausel (1969, 170, as *Z. distans*). Galpin, collecting in Beacon Buttress gully (below Mont aux Sources), recorded specimens with 'blood red centre' at 3140m, and found the normal plant nearby at c.3050m.

These colour patches are often impossible to detect in dried material, so one has to rely on the collector's notes (if any), but they are probably as rare as the herbarium records suggest: we are ourselves acquainted with the species over a wide area in Natal, Lesotho, the north eastern Cape and north eastern Orange Free State, but of our 25 collections, only one is of the orange-eyed plant. A specimen from Seven Week's Poort in the Swartberg, southern Cape, was recorded as having 'mouth of tube yellow' (*Andreae* 1191, PRE), but it is just possible that this is merely a reference to the pair of exerted anthers.

The presence or absence of these colour patches seems to be of no taxonomic significance; *Z. distans*, which is closely allied to *Z. ovata*, shows varying degrees of development of colour patches (see under *Z. distans*). But their biological significance needs elucidation.

*Z. ovata* displays considerable variation in leaf size, but much of this can be attributed to environmental conditions. At very high altitudes, plants

may be found on bare silty slopes or on broken mountainsides, but the more usual habitat is partially shaded cliff faces, and, especially at high altitudes or during dry spells, growing conditions must be rigorous. Both the geographical and the altitudinal range of the species is considerable: from Platberg near Harrismith in the north-eastern Orange Free State to the high Drakensberg about Mont aux Sources, where the boundaries of the OFS, Natal and Lesotho meet, through the mountains of Lesotho, the Natal Drakensberg and its outlier, Ngeli Mountain, the Cape Drakensberg and nearby Andriesberg and Witteberg, thence across the mountains to the Koudeveldberg near Graaff Reinet, the Swartberg near Ladismith, southern Cape, the mountains about Tulbagh and Worcester in the south western Cape, and Akkerendam near Calvinia, western Cape. The altitudinal range in the southern and western Cape is between c.1460m and 2130m, but in Natal and Lesotho the upper limit appears to be c.3230m, the lower 1950m.

The species flowers mainly between October and January.

**19. *Zaluzianskya distans*** Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 341 (1904).

Lectotype: Natal, Van Reenen, 5-6000ft, 3 iii 1898, flowers chocolate outside, white within, *Wood* 7906 (K).

Syn.: *Z. latifolia* [Schinz ex] O. Hoffm. & Muschler in Ann. Nat. Hofmus.

Wien 24: 323 (1910), nomen, written on *Schlechter* 6944 (ex Z, K) syntype of *Z. distans*.

Herbaceous, flowering in seedling stage, then stem solitary, simple, erect, later loosely and laxly branched from the base and surviving for more than one season, main branches then becoming woody at the base but without a thick clump of vegetative buds, stems up to c.40cm long, ascending, loosely branched, somewhat hoary with coarse spreading white hairs, gland-tipped or not, as well as much shorter glandular hairs, leafy. *Leaves* spreading, mostly 20-60 × 9-30mm, elliptic to elliptic-ovate, the base sometimes petiole-like, margins obscurely and irregularly toothed or the toothing more pronounced and regular, both surfaces glandular-hairy. *Spike* few- to many-flowered, lax, often remarkably so. *Bracts* 14-30 × 5-15mm, becoming smaller upwards, the lower ones in particular leaflike and distant, elliptic or ovate, toothed and hairy as in the leaves. *Flowers* opening at dusk or in dull light. *Calyx* 8-11 (-15)mm long, hairy. *Corolla* tube 24-50mm long, glandular-puberulous, limb held horizontally, regular; mouth with circlet of long unicellular hairs; lobes deeply notched, 4-10 (-13)mm long, crimson and glandular-puberulous outside, either white inside or bright orange to pale yellow in lower half, and there usually glandular-puberulous. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* c.10-12 × 4-5mm.

Selected citations:

TRANSVAAL. Lydenburg distr., Mount Anderson, 7300ft, 24 xii 1932, *Smuts & Gillett* 2358 (PRE). Wakkerstroom distr., Kastrol, 7000ft, i 1971, *Beeton* 123 (NBG, PRE); Paardekop range, c.7500ft, 2 ii 1930, *Galpin* 8787 (K, PRE).

ORANGE FREE STATE. Harrismith distr., Platberg, Donkey Pass, 30 xii 1975, *Hilliard & Burt* 8700 (E, NU); Platberg, 2400m, 10 i 1974, *Jacobsz*

2506 (K, NBG, PRE); Harrismith Botanic Garden, i 1979, *Hilliard & Burt* 11958 (E, NU).

NATAL. Utrecht distr., Naauwhoek, 6800ft, 7 i 1962, *Devenish* 800 (K, PRE). Newcastle distr., near Charlestown, 5-6000ft, 25 ii 1895, *Wood* 5721 (K). Klip River distr., 5500 ft, 22 i 1908, *Wood* 10734 (NBG, PRE). Bergville distr., The Cavern, 6500ft, i 1956, *Hodson* 38 (NU). Polela distr., Mawahqua Mountain, farm Glengariff, upper Nkife Gorge, 5800ft, 27 xii 1981, *Rennie* 1280 (E, NU).

*Zaluzianskya distans* has been recorded from Mount Anderson in the eastern Transvaal, then along the low Drakensberg on the Natal-Transvaal border, from the farm Naauwhoek, east of Wakkerstroom, and the nearby Paardekop range, to Van Reenen and The Cavern in Bergville district, immediately north of Royal Natal National Park. It is locally common on Platberg at Harrismith. There is a solitary record from Mawahqua Mountain near Bulwer in southern Natal. *Z. distans* favours damp shady places, and may be found under scrub and boulders near streams or in the shelter of large rocks and scrub on steep mountain slopes, flowering between December and March. Its altitudinal range is between 1765m and 2200m.

The specific epithet is apt, for the lower bracts are usually widely spaced and are so leaf-like that each lower flower seems to spring from the axil of a leaf rather than a bract. The presence of an orange band around the mouth is a variable character; specimens from Platberg show a wide range from white around the mouth through green to pale yellow to bright orange. Mr Devenish recorded 'a bright scarlet ring' on his number 506 (K), but his number 800 (K) is merely 'white inside'.

*Zaluzianskya distans* is closely allied to *Z. ovata*; they differ in habit and frequently in the disposition of the flowers, but these distinctions are not always apparent in herbarium specimens, particularly when the material is scrappy and notes inadequate.

*Zaluzianskya ovata* is shrubby with well-branched stems; *Z. distans* is a short-lived perennial with fewer main stems than *Z. ovata* and these are mostly simple, at most sparingly branched. In *Z. ovata*, the spikes are few-flowered, and the internodes usually remain short as the capsules form; in *Z. distans*, the spikes are often many-flowered and the internodes usually elongate to a remarkable degree. But there are exceptions: an occasional specimen of *Z. ovata* may have a somewhat lax inflorescence, and occasionally the flowers of *Z. distans* may remain somewhat crowded.

The two species favour different habitats, and this is most striking on Platberg at Harrismith, the only locality we know where they are sympatric: *Z. ovata* grows in damp shady places on the summit cliffs, while *Z. distans* is down on the slopes, sheltering under big rocks and shrubs.

An allied species occurs in the Inyanga district of Zimbabwe and in neighbouring Moçambique. It has the somewhat spreading hairs on the stems that are characteristic of *Z. distans* but the inflorescence is more crowded and with less leaf-like bracts (e.g. *Philcox et al.* 8909 (E, K); *Norlindh & Weimarck* 4691 (K, PRE); *Wild* 4476 (K, PRE)).

**20. *Zaluzianskya peduncularis*** (Benth.) Walp., Repert. 3: 308 (1844); Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 349 (1904).

Type: Cape, Albany, near Theopolis, *Ecklon* (K; iso. E).

Syn.: *Nycterinia peduncularis* Benth. in Hook., Comp. Bot. Mag. 1: 371 (1836) & in DC., Prodr. 10: 350 (1846).

Annual herb, taproot slender, unthickened, stems 5–30cm tall, solitary or several from the base, simple (but there are often axillary leaf tufts), pubescent, nearly nude. *Leaves* mostly radical, these up to 50 × 18mm, roughly half the length petiolar, blade elliptic or lanceolate, apex subacute, margins entire or obscurely toothed, thinly pubescent; cauline leaves in 1 or 2 pairs, similar but smaller, petiolar part shorter. *Spike* few-flowered, capitate, not or scarcely elongating in fruit. *Bracts* not resembling the leaves, c.9–13mm long, lanceolate, tips acute, recurved, margins entire or sparingly toothed, sparsely pubescent especially on margins and midline. *Flowers* probably opening at dusk or in dull light. *Calyx* c.6–7mm long, pubescent. *Corolla* tube c.12–23mm long, minutely glandular-puberulous; limb regular, held horizontally; mouth glabrous; lobes c.2.5 × 1.75mm, entire or slightly emarginate, 'ochrous' (Bolus). *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* 7–9 × 3–4mm.

Selected citation:

E CAPE. Stutterheim distr., Dohne Hill, 5000ft, 1897, *Sim* 20360 (E, NU).

Like *Z. crocea* this small annual has a remarkably wide distribution, though it appears to be an uncommon plant. From the Albany district, it ranges westward to Ceres and Little Namaqualand. *Sim* 20360 provides a northward extension in the eastern Cape and, despite being 85 years old, does not appear to have been previously published.

**21. *Zaluzianskya rubrostellata*** Hilliard & Burt in Notes RBG Edinb. 37: 317 (1979); Trauseld, Wild Flow. Natal Drakensberg 172 (colour photograph), 173, as *Z. pulvinata* (1969).

Type: Lesotho, above Sani Pass, east of chalet, 2920m, 17 i 1976, *Hilliard & Burt* 8849 (E holo., NU iso.).

Annual herb, taproot long and slender, not thickened, stems 4–10 (–14)cm long, solitary or several from the base, simple or sparingly branched, erect or decumbent, sparsely pubescent, distantly leafy. *Radical leaves* up to c.20 × 5mm, spatulate, thick-textured, apex subacute, margins entire or obscurely toothed, glabrous or with a few hairs on margins and midline; *cauline leaves* similar but smaller. *Spike* few-flowered, dense, not elongating in fruit. *Bracts* leaf-like, the tips recurved. *Flowers* opening at dusk or in dull light. *Calyx* 5–7mm long, glandular-puberulous. *Corolla* tube 22–27mm long, glandular-puberulous; limb regular, held horizontally; mouth with circlet of long unicellular hairs; lobes c.5 × 2mm, entire or slightly emarginate, purplish-brown and glandular-puberulous outside, glabrous and bright canary yellow inside marked with a vivid scarlet median bar at the base, forming a star around the mouth. *Stamens* 4, 2 short anthers shortly exerted, 2 long ones included. *Capsule* c.8 × 4mm.

## Selected citations:

NATAL-LESOTHO-ORANGE FREE STATE border. Mont aux Sources, 2500m, iv 1913, *Dyke* 5405 in herb. Marloth (PRE).

LESOTHO. Maseru distr., Molimo Nthuse, 2300m, 6 xi 1975, *Schmitz* 6293A (PRE). Mafateng distr., Matelile high Malutis, Qoang Mountain, 6 i 1918, *Dieterlen* 1302 (PRE). Mokhotlong distr., Magapung valley, 10800ft, 20 i 1955, *Coetzee* 589 (PRE); Sani Top, 9500ft, 30 xii 1973, *Hilliard* 5398 (E, NU); ibidem, 2865m, 12 i 1977, *Killick* 4082 (PRE); slopes of Hodson's Peak, 2900m, 16 i 1977, *Killick* 4163 (PRE). 2928 BB, Marakabies, 33km NW Mokhotlong, 3000m, 6 iv 1972, *Weger* 1594 (PRE).

CAPE. Lady Grey distr., Joubert's Pass, c.7700ft, 18 i 1979, *Hilliard & Burt* 12183 (E). Barkly East distr., base of Doodman's Krans, c.8500ft, 7 iii 1904, *Galpin* 6794 (PRE). Ben Mcdhui, c.8500ft, 3 xii 1981, *Hilliard & Burt* 14674 (E, NU). Maclear distr., below summit Naude's Nek, Maclear side, c.2600m, *Bigalke* 15 (NU).

*Zaluzianskya rubrostellata* is known only from the high Lesotho plateau and neighbouring parts of the Cape, from Mont aux Sources in the north to Naude's Nek and Ben Mcdhui in the Cape Drakensberg, and the nearby Witteberg, between 2300m and 3300m above sea level. It grows in bare silt patches among rock sheets or in loose soil on bare banks and broken cliffs, flowering between December and February.

It is allied to *Z. elgonensis* Hedberg, known only from Mt Elgon and Kilimanjaro in Tropical Africa, and to *Z. divaricata* (Thunb.) Walp., from the south western Cape. Both these species are also small annual herbs, with more or less entire corolla lobes that are purplish-brown outside, yellow or cream inside with orange median bars; but while the mouth of *Z. divaricata* is partially bearded, that of *Z. elgonensis* is not. In this it agrees with *Z. gilioides* Schlechter, from the western and central Cape, to which it is remarkably similar in facies. *Zaluzianskya elgonensis* is the most northerly representative of what is essentially a southern African genus, and it is of considerable phytogeographical interest that it belongs to sect. *Holomeria*, of which *Z. rubrostellata* in the Drakensberg is otherwise the most northerly member. The species that occur in Zimbabwe and neighbouring parts of Moçambique are perennial herbs with red and white deeply bifid corolla lobes and belong to sect. *Zaluzianskya*.

**22. *Zaluzianskya crocea*** Schlechter in J. Bot. 35: 221 (1897); Hiern in Thiselton-Dyer, Fl. Cap. 4(2): 346 (1904).

Type: Cape, Queenstown div., near Bailey, summit of Andriesberg, 6700ft, iv 1895, *Galpin* 1927 (GRA, K, PRE).

Annual herb, taproot long and slender, not thickened, stems 1.5–10 (–15)mm long, solitary or several from the base, simple, erect or decumbent, thinly pilose with long spreading white hairs, distantly leafy. *Radical leaves* up to c.40 × 8–10mm, spatulate, apex subacute, margins entire to distinctly toothed, almost glabrous to thinly hairy; *cauline leaves* similar but smaller. *Spike* usually many-flowered, elongating as the flowers open, but remaining congested. *Bracts* leaf-like, always pilose at least on margins and midline. *Flowers* opening in sunlight. *Calyx* 5–7mm long,



pilose on upper margins and ribs. *Corolla* tube 17–30mm long, glandular-puberulous, limb regular, held horizontally; mouth with circlet of long unicellular hairs; lobes c.3.5×2mm, entire or emarginate, often bluntly spathulate, yellow to coppery orange or brown and glandular-puberulous outside, glabrous and white fading to pink or light violet inside. *Stamens* 4, 2 short anthers exerted, 2 long ones included. *Capsule* 5–7×3mm.

Selected citations:

ORANGE FREE STATE. Bloemfontein distr., Tempe farm, 26 viii 1922, *Potts* 3514 (PRE).

LESOTHO. Buffalo river waterfall, 8500ft, 13 iii 1904, *Galpin* 6791 (PRE).

CAPE. Lady Grey distr., Witteberg, Joubert's Pass, i 1925, *Thode* A506 (PRE). Barkly East distr., Rhodes to Naude's Nek, 7800ft, 21 ii 1971, *Hilliard & Burt* 6687 (E, K, MO, NBG, NU, PRE). Cradock distr., Mountain Zebra Park, 5000ft, 9 ix 1968, *Pentzhorn* 5808 (PRE). Molteno distr., Broughton, 6300ft, xii 1892, *Flanagan* 1619 (PRE, SAM). Middelburg distr., Dwarsvlei, 4200ft, 1 x 1964, *Acocks* 23524 (PRE). Richmond distr., Rhenosterfontein, 6000ft, 26 iv 1950, *Acocks* 15818 (PRE). Graaff Reinet distr., Graaff Reinet, x 1905, *Lawrie* in herb. Marloth 4200 (PRE). De Aar distr., Groenpan, viii 1946, *Brueckner* 728 (PRE); Qaggafontein, c.4000ft, 6 v 1946, *Acocks* 12610 (PRE). Willowmore distr., farm Rietfontein, 24 vi 1961, *Van Breda* 1196 (PRE). Somerset East distr., Kommadagga, 2000ft, 10 viii 1963, *Bayliss* 1568 (PRE). Albany distr., Fish River valley, Heatherton Towers, 1500ft, 18 vi 1961, *Jacot Guillarmod* 3994 (PRE); near Committees, 1000ft, v 1928, *Dyer* 1541 (GRA).

*Zaluzianskya crocea* has a very odd distribution in the central and eastern Cape, from De Aar (30° 46'S, 23° 54'E), Murraysburg (31° 58'S, 23° 45'E), Graaff Reinet (32° 15'S, 24° 32'E) and Willowmore (33° 10'S, 23° 37' E) north east to the environs of Bloemfontein in the Orange Free State and east to the mountains about Queenstown and the Cape Drakensberg, just entering the southernmost tip of Lesotho, here and on the Cape Drakensberg attaining its highest recorded altitude of 2600m. Further south, in Albany district, it descends as low as 365m in the valley of the Great Fish River. It favours bare ground around rock sheets and other open sandy or silty places. Its flowering time is as odd as its distribution, beginning as early as May or even April and continuing into February and March.

Although it is allied to *Z. rubrostellata*, the relationship is not close.

#### APPENDIX

##### Corrections to some recent publications

a. ROSS, J. H. 1973. Flora of Natal (Bot. Survey Mem. 39). Pretoria.

A revised list of species of *Zaluzianskya*, to replace that on p. 314, is given below: those marked with an asterisk are only known in the high Drakensberg on the Natal-Lesotho border. Excluded species are listed at the end.

*Z. angustifolia* Hilliard & Burt

*Z. chrysops* Hilliard & Burt

- Z. distans* Hiern
- Z. elongata* Hilliard & Burt
- Z. glareosa* Hilliard & Burt
- Z. microsiphon* (O. Kuntze) K. Schum.
- Z. natalensis* Bernh.
- Z. oreophila* Hilliard & Burt\*
- Z. ovata* (Benth.) Walp. (incl. *Z. montana* Hiern)
- Z. pachyrrhiza* Hilliard & Burt
- Z. pilosa* Hilliard & Burt
- Z. pulvinata* Killick
- Z. rubrostellata* Hilliard & Burt\*
- Z. spathacea* Benth.
- Z. turritella* Hilliard & Burt\*

Excluded species

- Z. alpestris* Diels = *Glumicalyx nutans* (Rolfe) Hilliard & Burt
- Z. flanaganii* Hiern = *Glumicalyx flanaganii* (Hiern) Hilliard & Burt
- Z. goseloides* Diels = *Glumicalyx goseloides* (Diels) Hilliard & Burt

b. KILLICK, D. 1963. An account of the plant ecology of the Cathedral Peak area of the Natal Drakensberg (Bot. Survey Mem. 34). Pretoria.

The species of *Zaluzianskya* (p. 136) are re-determined as follows; original names first, with collector's number:

- Z. capensis* (1902): *Z. elongata* Hilliard & Burt
- Z. longiflora* (2171): *Z. ovata* (Benth.) Walp.
- Z. maritima* (1257, 1306): *Z. microsiphon* (O. Kuntze) K. Schum.
- Z. ovata* (1834): correct
- Z. pulvinata* (1584, 2204): correct

c. LETTY, C. 1962. Wild Flowers of the Transvaal. Pretoria.

- Z. maritima*, p. 296, pl. 147. 1: *Z. elongata* Hilliard & Burt

d. TRAUSELD, W. R. 1969. Wild Flowers of the Natal Drakensberg. Cape Town.

The species under *Zaluzianskya* (pp. 172-173) are re-determined as follows; original names first with collector's number:

- Z. alpestris* (496): *Glumicalyx nutans* (Rolfe) Hilliard & Burt
- Z. distans* (309): *Z. ovata* (Benth.) Walp.
- Z. goseloides* (254): *Glumicalyx goseloides* (Diels) Hilliard & Burt
- Z. maritima* (510): *Z. microsiphon* (O. Kuntze) K. Schum.
- Z. pulvinata* (310, 484, 546): *Z. rubrostellata* Hilliard & Burt
- Z. ovata* (308, 483): *Z. ovata* (Benth.) Walp., orange-mouthed form

e. BATTEN, A. & BOKELMANN, H. 1966. Wild Flowers of the Eastern Cape. Cape Town.

- Z. divaricate*, p. 130, pl. 103.7: correct
- Z. maritima*, p. 129, pl. 103.2: correct

f. PEARSE, R. O. 1978. Mountain Splendour. Cape Town.

Re-determination is difficult as the photographs and text are not backed up by specimens.

- p. 181, fig. 1. *Z. distans*: top part of plant only, not determinable, but from text ('plants growing singly') probably *Z. spathacea* (Benth.) Walp.
- p. 181, fig. 2. *Z. ovata*: correct
- p. 181, fig. 3. *Z. maritima*: *Z. microsiphon* (O. Kuntze) K. Schum., but the plant described as *Z. maritima* (p. 180) is different, having a regular flower opening at night; the reference to an orange eye suggests that this was *Z. distans*, possibly from Platberg, Harrismith; the only species on the Drakensberg that may have orange-eyed flowers are *Z. ovata* and *Z. chrysops*, neither of which grow in grassland at 1800m.

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