

SCROPHULARIACEAE

NEMESIA ZIMBABWENSIS, A NEW RECORD FOR THE FSA REGION WITH NOTES ON ITS PHYTOGEOGRAPHICAL SIGNIFICANCE

Since its description by Rendle (1932), and subsequent treatment in the *Flora zambesiaca* (Philcox 1990), *Nemesia zimbabweensis* Rendle (= *N. montana* Norl.) was known only from the Masvingo District and Eastern Highlands of Zimbabwe and the adjacent high-altitude area of Gorongosa in Mozambique. The oldest known herbarium collection of the species dates from 1929 when Rendle collected the type specimen at Great Zimbabwe, Masvingo District.

***Nemesia zimbabweensis* Rendle** in *Journal of Botany* 70: 95 (1932). Type: Zimbabwe, Great Zimbabwe, Rendle 329 n.v. (BM, holo.).

Nemesia montana Norl.: 100 (1951). Type: Zimbabwe, Mt Inyangani, Fries, Norlindh & Weimarck 3586 (LD, holo.; K, PRE!, iso.).

Philcox (1990) considered *Nemesia montana* Norl. (Norlindh & Weimarck 1951) as conspecific with *N. zimbabweensis*. Originally *N. montana* was characterized as a perennial with sessile to shortly petiolate (up to 3 mm long) leaves, and *N. zimbabweensis* as an annual with petioles 3–7 mm long. Philcox (1990) pointed out that both sessile and petiolate leaves may occur on the same specimen, hence his recognition of only a single species, described by him as either annual or biennial. Within its range the species is easily distinguished from other members of the genus by its broadly ovate leaves. Herbarium specimens of plants from shady or marshy habitats have weakly branched herbaceous stems with relatively long internodes and tend to have sessile leaves. This creates the impression that they are annuals. Plants from more exposed habitats, for example rock crevices or regularly burned grassland along forest edges, are often more branched and tend to have distinctly stalked leaves; they clearly are short-lived perennials.

Recent collecting in the province of Limpopo, South Africa, has confirmed the presence of *N. zimbabweensis* in the Leolo Mountains, Sekhukhuneland, where it was recorded on 4 December 1999 (Van Wyk & Siebert 13454 in PRU). A study of the *Nemesia* material in the National Herbarium (PRE), Pretoria, has subsequently revealed three earlier collections of the same species from Afromontane vegetation along the Great Escarpment to the north of the Leolo Mountains, near Haenertsburg, also in Limpopo. The last-named three collections have sessile leaves and were provisionally determined as showing affinity to *N. montana* by Prof. O.M. Hilliard in 1985. These records confirm the presence of *N. zimbabweensis* in the FSA region and show a clear disjunction of ± 400 km from the nearest existing record at Great Zimbabwe (Figure 6).

On the Leolo Mountains, *N. zimbabweensis* is currently only known from a single patch of relict Afromontane Forest associated with rocky outcrops at an altitude of 1 800 m asl (Siebert *et al.* 2003). The mean annual rainfall is ± 900 mm and mist occurs frequently. Here it occurs as a lithophyte, with plants sparsely distributed along moist, rocky ledges in the forest where they grow in pockets of sandy humus. At this locality the leaves are

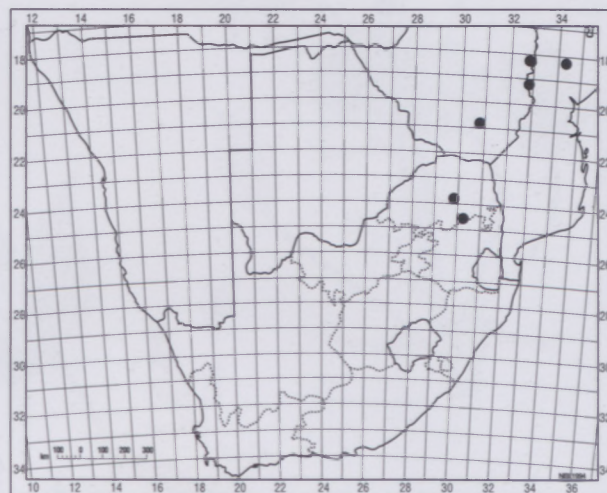


FIGURE 6.—Known distribution of *Nemesia zimbabweensis*.

mainly distinctly petiolate. Plants tend to branch basally and are clearly short-lived perennials. The flowers are white, often tinged with lilac, and the nectar guides are dark purple. In all the Limpopo collections of this taxon, there is a complete lack of long glandular trichomes on the calyx lobes (Figure 7). These trichomes are characteristically present in plants from Zimbabwe and Mozambique.

The Leolo Mountains fall within the core area of the Sekhukhuneland Centre of Plant Endemism [SC] (Siebert *et al.* 2003). Intriguing disjunct distributions between the SC and parts of Zimbabwe have also been recorded in other species, for example *Melhanian randii* (Verdoorn 1981), *Plectranthus venter* (Edwards *et al.* 2000), *P. dolomiticus* (Edwards *et al.* 2001) and *Raphionacme chimanimaniana* (Victor 2002). In addition, the SC also shows disjunct plant distributions with other regions of South Africa, for instance with Eastern Cape (forms of *Asparagus intricatus* and *Schotia latifolia*), Griqualand West in Northern Cape (*Gnidia polycephala* and *Nuxia gracilis*), the Limpopo River Valley further north in Limpopo (*Decorsea schlechteri* and *Sesamothamnus lugardii*) and North-West (*Amphiglossa triflora* and *Rhigozum obovatum*). The SC is therefore not only of special biogeographical significance for its high levels of local endemism, but also for the observation that it seems to have served as a refuge/repository for relict plant taxa perhaps dating from several different episodes of climatically-induced vegetational shifts over a long period of time.

Owing to the restricted distributions of the Sekhukhuneland-Zimbabwe disjuncts, the threat status of these taxa has been assessed, namely *Melhanian randii* (Sterculiaceae), *Plectranthus venter* (Lamiaceae) and *Raphionacme chimanimaniana* (Apocynaceae) are all considered as Vulnerable (Siebert *et al.* 2002; Victor 2002). Hilton-Taylor (1996) considered *Plectranthus dolomiticus* (Lamiaceae) as Insufficiently Known. Siebert *et al.* (2002) provisionally assessed *N. zimbabweensis* as Critically Endangered in South Africa owing to the ongoing destruction



FIGURE 7.—A, *Nemesia zimbabweensis*, Van Wyk & Siebert 13454 in PRU. Specimen collected on the Leolo Mountains, Sekhukuneland; B, note complete lack of long glandular trichomes on calyx lobes. Scale bars: A, 20 mm; B, 5 mm.

by humans of the particular forest patches where it occurs. For instance, a new and more accessible road has been built to the summit of the Leolo Mountains and wood harvesters are now felling the last remaining large trees of *Prunus africana* and *Kiggelaria africana*. In due course the forest microclimate will change and *N. zimbabweensis* will probably disappear. The Woodbush and Haenertsburg collections date from 1913, 1935 and 1954 respectively. Since then, agriculture and the large-scale establishment of alien tree plantations have destroyed much of the natural grassland and associated wetland vegetation in these two areas. The lack of any recent collections from this area suggests that the species is either very rare, or extirpated due to habitat destruction.

There is an urgent need to assess the conservation status, not only of rare plant species, but also that of the rare

plant communities that harbour disjunct satellite populations of these taxa. In addition to their considerable biogeographical significance, outlier populations may also represent distinct ecotypes worthy not only of protection, but perhaps even formal taxonomic recognition at the infraspecific level. In this regard it is noteworthy that the Limpopo collections of *N. zimbabweensis* differ from their northern counterparts in the complete lack of long glandular trichomes (Figure 7B). Plants from Zimbabwe and Mozambique are sparsely glandular-pubescent, the long trichomes being most consistently present on the calyx, the lobes of which are ciliate. Although the Limpopo plants appear to be glabrous, minute, almost sessile, glandular trichomes with globose heads are present, especially on the lower surface of young leaves. These structures are visible only under very high magnification (40×) with a dissection microscope and although

not previously reported, seem to be present in material from the whole range of the species.

Specimens examined

LIMPOPO.—2329 (Pietersburg): Woodbush, Mountain Home Farm. (–DD), *Mogg 14684* (PRE); 1 mile north of Haenertsburg. (–DD), *Codd 8418* (PRE); Haenertsburg. (–DD), *Pott 4813* (PRE). 2430 (Pilgrim's Rest): summit of Leolo Mountains. (–CA), *Van Wyk & Siebert 13454* (PRE, PRU).

ZIMBABWE.—1832 (Mutare): Inyanga [Nyanga] Dist., Gairesi Ranch on P.E.A. border 6 miles north of Troutbeck. (–BB), *Robinson 1979* (PRE, SRGH); Inyanga [Nyanga] Dist., Mount Inyangani [Nyangani]. (–BD), *Goodier & Phipps 68* (PRE, SRGH), *Fries, Norlindh & Weimarck 3586* (PRE), *Sturgeon s.n. GHS16956* (K, SRGH), *Wattmough 740* (PRE); Inyanga [Nyanga]. (–BD), *Norlindh & Weimarck 4557* (PRE). 1932 (Melsetter): Vumba [Bvumba] Mountains. (–BB), *Ferrar 3952, 3953* (PRE), *Obermeyer 2147* (PRE). 2030 (Masvingo): Masvingo Dist., Great Zimbabwe. (–BD), *Balsinhas & Kersberg 2179* (LMA, PRE), *Wild 3036* (K, SRGH).

MOZAMBIQUE.—1834 (Vila Paiva de Andrada): Gorongosa, Mount Gogogo. (–AC), *Schelppe 444* (BM).

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