

Short Communication

An annotated plant checklist of the southern Nubib Mountains (2516AA)

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Plant collecting in the southern Nubib Mountains in the western Hardap Region in March 2012 by the National Botanical Research Institute nearly tripled the plant species list for this quarter degree square. Some of the species recorded indicate that the mountain range forms an important link between two species-rich areas along the central escarpment – the Naukluft Mountains and the granite koppies at Aus.

The central-southern escarpment in Namibia – the area between the Naukluft Mountains and Aus – has been highlighted as an area that warrants more botanical collecting. It is expected to form a corridor between these two botanically well-known and species-rich areas (Maggs *et al.* 1994). Establishing whether plants show continuous distributions or occur in isolated populations is an important biogeographic question with implications for the conservation of rare species (Murray & Lepschi 2004). Knowledge about plant distributions is required in landscape-level planning and to facilitate the zonation of areas according to different conservation priorities (Wilson *et al.* 2009). This helps to optimize decisions on appropriate land uses. The Nubib Mountains fall into one of the pilot areas of the Namibia Protected Landscape Conservation Areas Initiative – the Greater Sossusvlei-Namib Landscape (MET 2011). To have good spatial information on plant species in this area at this early stage is important.

Methods

Study area

The Nubib Mountains form part of the south-western escarpment in Namibia. They are composed of biotite granite of the same age as the Gamsberg granite, 1100 million years old and belong to the Rehoboth Sinclair Complex (Grünert 2000; Miller 2002). The Nubib Mountains range between 1900 and 2000 m above mean sea level, and rank 15th in terms of importance amongst Namibia's 39 key mountain areas based on topography (Irish 2002).

Plant collecting took place during the period 19-23 March 2012, largely on the mountains and in a valley between two mountain ridges. Species lists were compiled for the quarter degree square that contains the southern portion of the Nubib Mountains, largely on the farms Uitkyk, Nubib and Eckberg. The farm had experienced an average rainy season, with the last recorded rainfall prior to the field survey in early February 2012. No rainfall records were available from the mountain area, but four showers were observed by the owners in the mountain in late January and early February 2012.

Results and Discussion

63 plant species had been collected in this quarter degree square during previous collections. 143 plant species were added to the Herbarium collection during the 3 days of plant collecting in 2012. An additional 34 additional observational records were added to the plant species list (e.g. Figure 1). The plant species lists for this grid now totals 240 species (See Appendix 1).



Figure 1. This member of the mint family, *Mentha longifolia* subsp. *capensis* is rare in Namibia and grows largely in mountain areas (Photo by S. Rügheimer).

New distribution records of interest are a record of the recently re-instated *Cyphostemma seitzianum* and *Selago lepida* (Figures 2 & 3). *Cyphostemma seitzianum* was formerly lumped with *C. bainesii*, but has now been recognized as a separate species (E. Retief, in prep). A record of the attractive herb *Selago lepida* confirms that the plant's range extends along the central-southern escarpment, forming a connection between the populations in the Huns Mountains and those on the Brandberg.



Figure 2. Very similar to *Cyphostemma bainesii*, this low stem succulent has recently been re-instated as *C. seitzianum* in Namibia (Photo by S. Rügheimer).



Figure 3. Growing in higher altitudes in the Nubib Mountains, *Selago lepida* is an attractive perennial herb (Photo by A. Burke).

Some species that had previously been recorded in this grid are also worth mentioning. The rare climber *Cucumella clavipetiolata* is restricted to this section of the escarpment, and inselbergs to the west in this area, but there is also an isolated population on the Brandberg. The dwarf stem succulent *Euphorbia namibensis* has its northern-most distribution boundary here, while the southern Namib sand-sea endemic *Sesamum abbreviatum* has its eastern-most distribution in this quarter degree square.

Although the dedicated effort of a team of botanists tripled the previous plant collections for this quarter degree square, the inventory is by no means complete.

Implications for management

The compiled plant species list can assist to identify areas of conservation importance along the central-southern escarpment and can inform the development of guidelines for management. Apart from the relatively high plant diversity for this arid area, a number of Namibian endemic plant species occur which contribute to the importance of the Nubib Mountains for conservation. Some introduced species were also recorded, largely near the farm houses and where water is available permanently. However, some large *Ricinus communis* plants were also recorded in the valleys in the mountains and these should be eradicated to prevent them from spreading. It is likely that birds had dispersed the seeds to these areas.

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Appendix 1

Plant species of the southern Nubib Mountains recorded in quarter degree square 2516AA

Plant species	Growth form	Common name(s)	Distribution
<i>Abutilon dinteri</i>	Perennial herb		
<i>Abutilon pycnodon</i>	Perennial herb		
<i>Acacia erioloba</i>	Tree	Camelthorn	
<i>Acacia hebeclada subsp. hebeclada</i>	Shrub	Candlepod acacia	
<i>Acacia hereroensis</i>	Tree	Mountain thorn	
<i>Acacia karoo</i>	Tree	Sweet thorn	
<i>Acacia mellifera subsp. detinens</i>	Tree / shrub	Blackthorn	
<i>Achyranthes aspera</i>	Herb		Introduced
<i>Acrotome pallescens</i>	Shrub		
<i>Adenolobus garipensis</i>	Shrub	Butterfly leaf/Gariep neat's foot	
<i>Adenolobus pechuelii</i>	Shrub		
<i>Aloe dichotoma</i>	Tree	Quiver tree	
<i>Amaranthus thunbergii</i>	Herb	Pigweed, Red devil	
<i>Amphiasma divaricatum</i>	Dwarf shrub		Endemic
<i>Anthepphora pubescens</i>	Grass	Wool-grass	
<i>Antiphiona pinnatisecta</i>	Shrub		Endemic
<i>Aptosimum lineare</i>	Shrub		
<i>Aptosimum lugardiae</i>	Herb		
<i>Aptosimum spinescens</i>	Shrub		
<i>Argemone ochroleuca</i>	Herb		Introduced
<i>Aristida adscensionis</i>	Grass		
<i>Asparagus pearsonii</i>	Perennial herb		
<i>Barleria lanceolata</i>	Dwarf shrub		Endemic
<i>Berkheya chamaepeuce</i>	Shrub		
<i>Berkheya spinosissima</i>	Shrub		
<i>Blepharis grossa</i>	Herb	Little desert thistle	
<i>Blepharis mitrata</i>	Herb		
<i>Blepharis pruinosa</i>	Shrub		
<i>Boerhavia hereroensis</i>	Herb		
<i>Boerhavia repens subsp. repens</i>	Herb		
<i>Boscia albitrunca</i>	Tree / shrub	Shepherd's tree	

<i>Boscia foetida</i>	Tree / shrub	Smelly shepherd's tree	
<i>Brachiaria glomerata</i>	Grass		
<i>Brownanthus pseudoschlichtianus</i>	Shrub		
<i>Cadaba aphylla</i>	Shrub		
<i>Calicorema capitata</i>	Shrub	Star of the Namib	
<i>Calostephane divaricata</i>	Herb		
<i>Cardiospermum pechuelii</i>	Shrub		
<i>Catophractes alexandri</i>	Shrub	Trumpet thorn	
<i>Cenchrus ciliaris</i>	Grass	Bloubuffel grass	
<i>Chascanum garipense</i>	Herb	White chascanum	
<i>Cheilanthes marlothii</i>	Fern		
<i>Chenopodium amboanum</i>	Herb		Endemic
<i>Cladoraphis spinosa</i>	Grass	Spiny love grass	
<i>Cleome angustifolia subsp. diandra</i>	Herb	Yellow mouse-whiskers	
<i>Cleome elegantissima</i>	Herb		
<i>Cleome suffruticosa</i>	Perennial herb	Shrubby cleome	
<i>Codon royenii</i>	Perennial herb		
<i>Codon sp nov A</i>	Perennial herb		Endemic
<i>Commicarpus fallacissimus</i>	Herb		
<i>Commiphora glaucescens</i>	Tree	Blue leaved corkwood	
<i>Commiphora tenuipetiolata</i>	Shrub	Satin-bark corkwood	
<i>Corallocarpus welwitschii</i>	Climber		
<i>Crotalaria damarensis</i>	Herb	Rattle bush / wild Lucerne	
<i>Crotalaria leubnitziana</i>	Herb		
<i>Cryptolepis decidua</i>	Shrub		
<i>Cucumis africanus</i>	Herb		
<i>Cucumella cinerea</i>	Climber		
<i>Cucumella clavipetiolata</i>	Herb		Endemic
<i>Cucumis cf. africanus</i>			
<i>Cucumis meeusei</i>	Herb		
<i>Cucumis sagittatus</i>	Herb		
<i>Cymbopogon pospischilii</i>	Grass		
<i>Cyperus fulgens</i>	Sedge		
<i>Cyperus marginatus</i>	Sedge		
<i>Cyperus schinzii</i>	Sedge		
<i>Cyphostemma seitzianum</i>	Succulent	Gouty vine	Endemic
<i>Dactyliandra welwitschii</i>	Herb		

<i>Dicoma capensis</i>	Herb		
<i>Dimorphotheca polyptera</i>	Herb		
<i>Dipcadi platyphyllum</i>	Lily		
<i>Dombeya rotundifolia</i>	Tree / shrub	Wild pear	
<i>Drosanthemum lique</i>	Dwarf shrub		
<i>Drosanthemum subcompressum</i>	Dwarf shrub		
<i>Dyerophytum africanum</i>	Shrub	Desert statice	
<i>Emilia marlothiana</i>	Herb		
<i>Enneapogon cenchroides</i>	Grass	Common nine-awned grass	
<i>Enneapogon desvauxii</i>	Grass		
<i>Enneapogon scaber</i>	Grass	Rock nine-awned grass	
<i>Enneapogon scoparius</i>	Grass		
<i>Eragrostis annulata</i>	Grass		
<i>Eragrostis biflora</i>	Grass		
<i>Eragrostis nindensis</i>	Grass	Perennial love grass / Whether love-grass	
<i>Eragrostis porosa</i>	Grass		
<i>Eragrostis scopelophila</i>	Grass		Endemic
<i>Eriocephalus scariosus</i>	Dwarf shrub		
<i>Euclea undulata</i>	Shrub	Common guarri	
<i>Euphorbia avasmontana</i>	Succulent	Slender candelabra-euphorbia	
<i>Euphorbia glanduligera</i>	Herb		
<i>Euphorbia guerichiana</i>	Shrub		
<i>Euphorbia lignosa</i>	Shrub		Endemic
<i>Euphorbia mauritanica var. mauritanica</i>	Shrub		
<i>Euphorbia namibensis</i>	Succulent		Endemic
<i>Euphorbia virosa</i>	Succulent		
<i>Euryops subcarnosus subsp. vulgaris</i>	Shrub		
<i>Felicia smaragdina</i>	Herb		Endemic
<i>Ficus cordata</i>	Tree	Namaqua fig	
<i>Ficus ilicina</i>	Shrub	Rock-splitting fig	
<i>Fingerhuthia africana</i>	Grass		
<i>Forsskaolea hereroensis</i>	Herb	Namib nettle	
<i>Galenia africana</i>	Dwarf shrub		
<i>Galenia dregeana</i>	Herb		
<i>Galenia papulosa</i>	Herb		
<i>Garuleum schinzii subsp. schinzii</i>	Herb		
<i>Geigeria acaulis</i>	Herb		

<i>Geigeria alata</i>	Herb		
<i>Geigeria ornativa</i>	Herb	Vermeerbossie	
<i>Gisekia africana</i> var. <i>africana</i>	Herb		
<i>Grewia flava</i>	Shrub		
<i>Grewia tenax</i>	Shrub	Small-leaved white cross-berry	
<i>Helichrysum candolleanum</i>	Herb		
<i>Heliotropium ciliatum</i>	Herb		
<i>Heliotropium hereroense</i>	Herb		
<i>Hermannia helianthemum</i>	Herb		
<i>Hermannia minutiflora</i>	Dwarf shrub		
<i>Hermannia modesta</i>	Herb		
<i>Hibiscus elliotiae</i>	Shrub		
<i>Hibiscus engleri</i>	Forb		
<i>Hirpicium gazanioides</i>	Herb		
<i>Pomaria lactea</i>	Herb		
<i>Hypertelis salsoloides</i>	Herb		
<i>Indigastrum argyrea</i>	Herb		
<i>Indigofera charleriana</i>	Perennial herb		
<i>Indigofera auricoma</i>	Herb	Pink desert indigofera	
<i>Indigofera cryptantha</i>	Herb		
<i>Indigofera vicioides</i>	Herb		
<i>Jamesbrittenia glutinosa</i>	Herb		
<i>Kissenia capensis</i>	Shrub	Sandpaper bush	
<i>Kleinia longiflora</i>	Succulent	Sjambokbos	
<i>Kohautia caespitosa</i> subsp. <i>brachyloba</i>	Herb		
<i>Laggera decumbens</i>	Perennial herb		
<i>Lantana dinteri</i>	Shrub		
<i>Launaea intybacea</i>	Herb		
<i>Lepidium africanum</i>	Herb		
<i>Leucosphaera bainesii</i>	Dwarf shrub	Wolbos / silwerbossie	
<i>Leucas pechuelii</i>	Perennial herb		Endemic
<i>Limeum argute-carinatum</i>	Herb		
<i>Limeum myosotis</i>	Herb		
<i>Lithops gesineae</i> var. <i>gesineae</i>	Succulent		Endemic
<i>Lophiocarpus polystachyus</i>	Herb		
<i>Lotononis falcata</i>	Herb		
<i>Lycium bosciifolium</i>	Shrub		

<i>Maerua schinzii</i>	Tree		
<i>Manulea dubia</i>	Herb		
<i>Melhania damarana</i>	Herb		
<i>Melinis repens subsp. grandiflora</i>	Grass	Natal red top	
<i>Mentha longifolia subsp. capensis</i>	Herb		
<i>Mollugo cerviana</i>	Herb	Namibian Gypsophyllum	
<i>Mollugo walteri</i>	Herb		Endemic
<i>Monechma cleomoides</i>	Dwarf shrub	Namib perdebos	
<i>Monechma divaricatum</i>	Perennial herb		
<i>Monechma leucoderme</i>	Dwarf shrub		Endemic
<i>Monsonia senegalensis</i>	Herb		
<i>Montinia caryophyllacea</i>	Shrub	Wild clove-bush	
<i>Moringa ovalifolia</i>	Tree	African moringa	
<i>Myrothamnus flabellifolius</i>	Dwarf shrub	Resurrection bush	
<i>Nelsia quadrangula</i>	Herb		
<i>Nemesia fruticans</i>	Herb		
<i>Neorautanenia mitis</i>	Herb		
<i>Nerine laticoma</i>	Lily		
<i>Nymania capensis</i>	Shrub	Chinese Lanterns	
<i>Ocimum americanum var. americanum</i>	Herb		
<i>Ornithogalum stapffii</i>	Lily		Endemic
<i>Orphanthera albida</i>	Shrub		
<i>Osyris lanceolata</i>	Shrub		
<i>Otoptera burchellii</i>	Shrub		
<i>Ozoroa crassinervia</i>	Tree	Namib resin tree	
<i>Panicum maximum</i>	Grass		
<i>Parkinsonia africana</i>	Tree		
<i>Pavonia rehmannii</i>	Dwarf shrub		Endemic
<i>Pechuel-Loeschea leubnitziae</i>	Shrub		
<i>Peliostomum leucorrhizum</i>	Perennial herb		
<i>Pellaea calomelanos</i>	Fern		
<i>Pentarrhinum insipidum</i>	Climber		
<i>Pentatrachia petrosa</i>	Shrub		
<i>Pentzia pinnatisecta</i>	Herb		
<i>Pergularia daemia var. leiocarpa</i>	Climber		
<i>Petalidium setosum</i>	Shrub	Namib petal-bush	
<i>Phaeoptilum spinosum</i>	Shrub		

<i>Phyllanthus maderaspatensis</i>	Herb		
<i>Phyllanthus pentandrus</i>	herb		
<i>Polygala guerichiana</i>	Herb		Endemic
<i>Portulaca oleracea</i>	Herb		Introduced
<i>Prosopis glandulosa</i>	Tree		Introduced
<i>Psiadia punctulata</i>	Shrub		
<i>Pteronia cylincracea</i>	Dwarf shrub		
<i>Pteronia eenii</i>	Dwarf shrub		Endemic
<i>Pteronia lucilioides</i>	Dwarf shrub		
<i>Pteronia polygalifolia</i>	Shrub		Endemic
<i>Ptycholibium biflorum</i>	Perennial herb		
<i>Pupalia lappacea</i>	Herb		Introduced
<i>Phyllanthus fraternus</i>	Perennial herb		Introduced
<i>Requienia sphaerosperma</i>	Herb		
<i>Rhigozum trichotomum</i>	Shrub	Driedoring	
<i>Searsia burchellii</i>	Shrub		
<i>Searsia marlothii</i>	Shrub		
<i>Ricinus communis</i>	Shrub	Caster oil plant	Introduced
<i>Salsola aphylla</i>	Shrub		
<i>Sarcocaulon marlothii</i>	Shrub	Bushman's candle	Endemic
<i>Sarcostemma viminale</i>	Shrub	Bobbejaantou	
<i>Schinus molle</i>	Tree		Introduced
<i>Schmidtia kalahariensis</i>	Grass	Annula bushman grass	
<i>Selago kurttdinteri</i>	Shrub		
<i>Selago lepida</i>	Perennial herb		Endemic
<i>Senecio flavus</i>	Herb		
<i>Senecio inaequidens</i>	Herb		
<i>Senna italica subsp. arachoides</i>	Herb		
<i>Sericocoma heterochiton</i>	Herb		
<i>Sericorema sericea</i>	Herb		
<i>Sesamum abbreviatum</i>	Herb	Wild sesame	Endemic
<i>Sesamum capense</i>	Herb		
<i>Setaria appendiculata</i>	Herb		
<i>Setaria verticillata</i>	Grass	Bur bristle-grass / rough bristle-grass	
<i>Sida ovata</i>	Herb		
<i>Solanum burchellii</i>	Shrub		
<i>Solanum nigrum</i>	Herb		Introduced

<i>Solanum rigescens</i>	Shrub	
<i>Stipagrostis ciliata</i> var. <i>capensis</i>	Grass	
<i>Stipagrostis namaquensis</i>	Grass	River bushman-grass
<i>Stipagrostis obtusa</i>	Grass	
<i>Stipagrostis uniplumis</i> var. <i>uniplumis</i>	Grass	
<i>Striga gesnerioides</i>	Root parasite	
<i>Talinum caffrum</i>	Herb	
<i>Tapinanthus oleifolius</i>	Parasite	
<i>Tephrosia dregeana</i>	Herb	
<i>Tetragonia calycina</i>	Shrub	
<i>Thamnosma africana</i>	Shrub	
<i>Thesium lineatum</i>	Shrub	
<i>Tragus racemosus</i>	Grass	
<i>Trianthera parvifolia</i> var. <i>parvifolia</i>	Herb	
<i>Tribulus cristatus</i>	Herb	Dubbeltjie / Devil's thorn
<i>Tribulus terrestris</i>	Herb	
<i>Tribulus zeyheri</i>	Herb	
<i>Trichodesma africana</i>	Herb	
<i>Tricholaena monachne</i>	Grass	
<i>Tripteris microcarpa</i> subsp. <i>microcarpa</i>	Herb	Tall desert daisy
<i>Triraphis purpurea</i>	Grass	
<i>Triraphis ramosissima</i>	Grass	
<i>Trochomeria debilis</i>	Herb	
<i>Withania somnifera</i>	Herb	
<i>Ziziphus mucronata</i>	Tree	Buffalo thorn
<i>Zygophyllum pubescens</i>	Shrub	
