

## A preliminary account of the vegetation of the Auas Mountains<sup>1</sup>

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### Abstract

*This paper describes a vegetation survey of the Auas Mountains undertaken during the rainy season of 2004. Six vegetation types are described following an incipient zonation pattern along an altitude gradient from 1 900 to above 2 400 m. A more visible change in vegetation was encountered in the 2 200 to 2 300 m zone, where more montane species reminiscent of winter rainfall flora and karroid plant species appeared. These were present from here onwards up into the highest reaches of the mountains. These vegetation zones are hence of greatest conservation importance.*

### Zusammenfassung

*Dieser Artikel beschreibt die Vegetation der Auasberge. Diese Studie wurde in der Vegetationsperiode 2004 durchgeführt und beschreibt sechs Vegetationstypen, die sich entlang der Höhenstufen gebildet haben. In der Höhenstufe von 2 200 bis 2 300 m zeigt sich eine bemerkbare Veränderung der Vegetation, die durch das Vorkommen vieler Arten, die in Namibia nur in Bergregionen vorkommen, hervorgerufen wird. Das Auftreten karoo-typischer Elemente und Arten der weiter südlich gelegenen Winterregenzzone erfordern einen besonderen Schutzstatus dieser Zone und der höheren Zonen von hier aufwärts.*

**Key words:** Auas Mountains, vegetation zonation, montane species, Namibia

### Introduction

Mountain areas around the globe are of importance for biodiversity conservation (Körner 2000). Many support mountain floras which are restricted to these habitats. The Auas Mountains to the south of Windhoek, which contain the second highest

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<sup>1</sup> (Report for the Namibian National Biodiversity Programme Mountain Ecosystem Working Group)

peaks in Namibia, were predicted to be of great importance for biodiversity conservation in Namibia based on topography, surface area and isolation (Irish 2002).

Although from a botanical point of view the area around Windhoek is one of the best collected areas in Namibia (see Craven in Mendelsohn *et al.* 2002), the mountain flora is to date poorly studied. Vegetation surveys in the area around Windhoek focussed largely on the lowlands (Volk & Leippert 1971; Kellner 1986; Joubert 1997; Strohbach 2001), mainly with an emphasis on grazing potential. Yet the Auas Mountains are believed to support four species endemic to this mountain range (Craven pers. comm.).

The main objective of this study was to provide a descriptive account of the vegetation on the Auas Mountains.

## Study area

The Auas Mountains are a high range of mountains to the south of Windhoek in the centre of Namibia. This vegetation survey was undertaken in the Auas Mountains and their western extension of the Gross-Herzog Friedrichberg and Regenstein.

The climate in the study area is semi-arid with an average rainfall of 300 - 400 mm per annum (Mendelsohn *et al.* 2002). Most rains fall in the summer months (December – March). Due to its position on the highland plateau temperatures are moderate in summer (average maximum 30 - 32°C) and cold (average minimum 4 - 6°C) in winter. Frost occurs on average on 10 - 20 days per annum (Mendelsohn *et al.* 2002).

Miller (2002) described the geology of the Auas Mountains as extremely complex. The majority of the mountain range is composed of quartzites of Damara origin, but there are also layers of schist, amphibolite, marble, conglomerates and gneiss which outcrop at various elevations. Soils are poorly developed regosols. The main mountain presents an approximately 18 km long mountain chain which runs in a west-south-west to east-north-east direction. The surrounding plains are at about 1800-1900 m altitude, the highest peaks rise some 500 m above the surrounding.

The vegetation of the study area has been described as highland shrub land (Burke *et al.* in Mendelsohn *et al.* 2002), a savannah type with a low cover of trees and shrubs, largely dominated by *Acacia* species and a variety of grasses. Part of the Auas Mountains are private farmland, parts belong to the municipality of Windhoek.

## Methods

Due to time constraints a rapid survey technique had to be adopted. For this purpose vegetation was surveyed along belt transects running as close as possible

vertically from the base of the mountain to one of the nearest peaks. Considering habitat morphology (i.e. slopes and to a lesser extent ravines, outcrops and locally occurring plains), survey transects focussed primarily on slope habitat as these constitute the most prominent type of habitat. Along these, cover per species was estimated for each 100 m altitude interval using a modified Braun-Blanquet scale (Mueller-Dombois & Ellenberg 1974). A habitat description accompanied each sample unit and comprised geographic position, altitude, average slope angle and slope aspect. A total of six transects was surveyed this way resulting in 34 sampling units. The transects terminated on the following peaks: Moltkeblick, Stormberg, Auas on Farm Paulinenhof and one unnamed peak on the Farm Aris on the western part of the Auas mountain chain. The survey was undertaken during the growing season February – April 2004.

Voucher specimens of all doubtful and potentially interesting plant species were collected and lodged at the National Botanical Research Institute of Namibia (NBRI). The nomenclature follows Craven (1999). Some 211 specimens were lodged at the NBRI.

The vegetation data were summarised according to altitude zones. These comprised six altitude zones of 1 900 - 2 000 m, 2 000 - 2 100 m, 2 100 - 2 200, 2 200 - 2 300 m, 2 300 - 2 400 m and above 2 400 m. Data from all individual samples were pooled and cross-tabulated and frequency counts were used to distil prominent and characteristic species, omitting single occurrences. The vegetation types were then described according to altitude zone. As there was no major difference in species composition between Auas main (the mountain chain to the east of the main road B1) and Regenstein (the section of the mountains to the west of the B1), these were described together. Where local differences occurred, these differences were described as subunits. Vegetation types were described using dominant and characteristic plant species as descriptors. Slope aspect only showed differences in vegetation in the upper reaches and where appropriate, these are described in a particular altitude zone. Plant species which occurred in a low frequency and showed low cover values are not mentioned in the vegetation type descriptions, but these are included in the attached species list (Appendix 1). Those of biodiversity interest are discussed in the text.

## Results

Overall the vegetation can be described as an open savannah with a tree, shrub and grass component of varying proportions over the mountain range depending on locality, slope aspect and steepness, as well as differential substrate. The vegetation structure is relatively homogenous across the entire mountain range and is characterised by mostly sparsely scattered trees of about 2 - 3 m height. However, the upper reaches show less shrub and tree cover and have been described as grassland. Only at special localities, for example ravines or in riverbeds can trees reach

up to 10 m height. Shrub heights vary between 0.3 - 3 m. Grasses reach between 0.3 - 2 m height. Some 270 plant species were recorded in this survey, but single occurrences were omitted in the species-by-sample table (Appendix 1).

Six main vegetation types with several subunits are described. Their main characteristics are presented in Table 1.

**Table 1.** Main characteristics of main vegetation types in the Auas Mountains.

Name	Altitude (m)	Species richness per plot	Average cover (%)	Additional characteristic species	Samples
<i>Acacia reficiens-Dichrostachys cinerea</i> shrubland	1 900 - 2 000	50 - 57	70	<i>Elionurus muticus</i> , <i>Elephantorrhiza elephantina</i> , <i>E. suffruticosa</i> , <i>Eragrostis nindensis</i> , <i>Fingerhuthia africana</i>	2
Lower altitude <i>Acacia hereroensis-Tarchonanthus camphoratus</i> shrubland	2 000 - 2 100	32 - 75	70	<i>Antheophora pubescens</i> , <i>Brachiaria nigropedata</i> , <i>Cenchrus ciliaris</i> , <i>Dyschoriste pseudirecta</i> , <i>Euclea undulata</i> , <i>Rhus marlothii</i>	6
Medium altitude <i>Acacia hereroensis-Tarchonanthus camphoratus</i> shrubland	2 100 - 2 200	10 - 97	70	<i>Danthoniopsis ramosa</i> , <i>Digitaria eriantha</i> , <i>Eragrostis scopelophila</i> , <i>Euclea undulata</i>	8
Upper altitude <i>Acacia hereroensis-Tarchonanthus camphoratus</i> shrubland	2 200 - 2 300	20 - 89	70	<i>Cineraria canescens</i> , <i>Gymnosporia linearis</i> , <i>Lopholaena cneorifolia</i> , <i>Olea europaea</i> , <i>Osyris lanceolata</i> , <i>Stoebe plumosa</i>	7
<i>Tarchonanthus camphoratus-Danthoniopsis ramosa</i> shrubland	2 300 - 2 400	26 - 83	65	<i>Digitaria eriantha</i> , <i>Eragrostis scopelophila</i> , <i>Hypoestes forskolii</i> , <i>Olea europaea</i>	6

<i>Andropogon schirensis</i> - <i>Digitaria eriantha</i> grassland	> 2 400	27 - 54	60	<i>Danthoniopsis ramosa</i> , <i>Eragrostis nindensis</i> , <i>E. scopelophila</i> , <i>Hypoestes forskoolii</i> , <i>Osyris lanceolata</i> , <i>Pegolettia retrofracta</i> , <i>Stoebe plumosa</i>	5
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**A. 1 900 - 2 000 m:** *Acacia reficiens*-*Dichrostachys cinerea* shrubland

During the survey period the vegetation on these lower slopes was dominated by grasses. Particularly abundant were *Brachiaria nigropedata*, *Elionorus muticus*, *Eragrostis nindensis*, *Eragrostis porosa* and *Fingerhuthia africana*. Dominant woody components comprise *Acacia reficiens*, *Dichrostachys cinerea*, *Elephantorrhiza elephantina* and *E. suffruticosa*. Overall, plant cover reached 70 % and the average height of trees was about 2 m.



*Acacia reficiens*-*Dichrostachys cinerea* shrubland, found between 1 900 – 2 000 m with *Acacia reficiens* and *Catophractes alexandri* in foreground (M. Wittneben).

**A.1.** Subunit with *Acacia mellifera* shrub land on Regenstein

Towards the west, woody vegetation is increasingly characterised by *Acacia mellifera*, often forming locally dominant thickets as found on the lower slopes of

Regenstein, leading to a reduced dominance of the grasses mentioned above. Except for the scattered occurrence of *Combretum apiculatum* ('koedoebush') and a further increase in *Dichrostachys cinerea* and *Lycium eonii*, woody vegetation remains largely coherent with Auas Main. Grassy composition is extended by *Stipagrostis uniplumis* and *Aristida adscensionis*, whereas *Nelsia quadrangula* and *Vernonia poskeana* subsp. *botswanica* add to herbaceous growth here.

**B. 2 000 - 2 100 m:** Lower altitude *Acacia hereroensis*-*Tarchonanthus camphoratus* shrubland

Further up the slopes, *Acacia hereroensis* and *Tarchonanthus camphoratus* become prominent components of the vegetation, often adjoined by *Rhus marlothii* and *Euclea undulata*, both occurring at medium to low densities. Again, grasses provided the highest contribution to vegetation cover during the survey period. Most abundant were *Antheophora pubescens*, *Brachiaria nigropedata*, *Cenchrus ciliaris*, *Heteropogon contortus* and *Melinis repens* subsp. *repens*. *Eragrostis nindensis* grows in all altitudes and can be encountered virtually throughout the mountains. The dwarf shrub *Dyschoriste pseuderecta* was found to grow locally abundant on north-facing slopes. *Gymnosporia linearis* subsp. *lanceolata*, a low shrub, only grew on south facing slopes at low densities. Overall plant cover was approximately 70 % and tree heights reached 4 m.



Scattered shrubs of *Acacia hereroensis* and *Tarchonanthus camphoratus* signify the woody vegetation at altitudes as from 2 000 m upwards (M. Wittneben).



On the Regenstein slopes the vegetation remained, for the greater part, consistent with Auas Main, except for a lower contribution of *Tarchonanthus camphoratus* and *Brachiaria nigropedata*.

**C. 2 100 - 2 200 m:** Medium altitude *Acacia hereroensis*-*Tarchonanthus camphoratus* shrubland

Around 2 100 m, vegetation structure is still largely determined by the type of shrubland mentioned above, but grass cover increases markedly. Particularly *Anthehora pubescens*, *Cenchrus ciliaris*, *Danthoniopsis ramosa* ('kliphawer'), *Digitaria eriantha*, *Eragrostis scopelophila* grow perennially among rocks. They are common both on north- and south-facing slopes. In contrast *Brachiaria nigropedata* and *Heteropogon contortus* occur primarily on slopes facing north. Woody vegetation remains more or less constant with *Dyschoriste pseuderecta* growing on the northern sides, whereas *Euclea undulata* remains attracted to the southern face of the mountains. *Hypoestes forskalii* (a brittle perennial herb growing as a companion species at all altitudes on Auas) is found at low densities among rocks.

Due to the increased role of grasses, plant cover increased by more than 10 % reaching over 70 % with trees and shrubs seldom exceeding 2 – 3 m in height. *Elephantorrhiza elephantina* was only found on north facing slopes of Auas Main but not on Regenstein.



The conspicuous mountain grass *Danthoniopsis ramosa* (foreground) is prominent at altitudes between 2 100 and 2 200 m (A. Burke).

**D. 2 200 - 2 300 m:** Upper altitude *Acacia hereroensis*-*Tarchonanthus camphoratus* shrubland

Similar to the altitudes below, the vegetation at 2 200 m remains an open *Acacia-Tarchonanthus* shrub land as described earlier, dominated by perennial grasses reaching over 70 % cover. Average shrub height remains between 2-3m. *Osyris lanceolata* and *Gymnosporia linearis* subsp. *lanceolata* (low shrubs also found at lower as well as higher altitudes) are particularly frequent here, but never attain high densities. Both perennial grasses *Anthephora pubescens* and *Cenchrus ciliaris* are only rarely encountered from this altitude upwards, possibly marking their upper distribution limit, as can be observed with *Combretum apiculatum* and *Dombeya rotundifolia* as well. Instead, montane species like *Olea europaea* subsp. *africana* (conspicuously glossy leaved, growing as a low tree or shrub) start to occur at low densities. Further prominent examples of this kind are the asteraceous low shrubs *Cineraria cancenscens*, *Lopholaena cneorifolia*, and *Stoebe plumosa* and the perennial grass, *Brachiaria serrata* which mainly grows on the northern slopes. As with the previous altitudinal zone, *Brachiaria nigropedata* and *Heteropogon contortus* are particularly abundant on north-facing slopes, while *Euryops subcarnosus* is present on south-facing slopes only.



Rock debris is very common particularly at higher altitudes as seen here at 2 200 m with *Acacia hereroensis* and *Tarchonanthus camphoratus* on Regenstein (M. Wittneben).



**E. 2 300 - 2 400 m:** *Tarchonanthus camphoratus*-*Danthoniopsis ramosa* shrubland

*Tarchonanthus camphoratus* remains the most prominent shrub occurring with *Danthoniopsis ramosa* which is the most dominant perennial grass, attaining medium to high cover densities. Also abundant are the small shrub *Hypoestes forskalii* and the perennial grasses *Digitaria eriantha* and *Eragrostis scopelophila*. Grass cover dominates by far, with shrubs becoming much less prominent than at lower altitudes leading to a total cover of approximately 65 %. Low trees reaching up to 5 m are occasionally found in ravines but the more common shrubs seldom exceed 3 m in height. Certainly, *Olea europaea* subsp. *africana* constitutes the most conspicuous of all woody plants of the upper Auas Mountains. Although never abundant, it is found regularly growing in ravines and rock outcrops, where it can develop massive trunks.

Medium high shrubs and grasses are dominant on the upper slopes of the Stormberg at an altitude of 2 300 - 2 400 m (A. Burke).



Distribution of grasses is largely coherent with lower altitudes around 2 200 m but certain herbs and dwarf shrubs often found at higher altitudes elsewhere may be encountered. These include the shrubs *Artemisia afra*, *Dianthus namaensis* and *Selago angustibractea* and herbs like *Jamesbrittenia pallida* and *Senecio inaequidens* and quite conspicuously the grass-like poikilohydric *Xerophyta viscosa*. *Senecio inaequidens* favours the south-facing slopes. The small asteraceous *Ursinia nana* occurs from here upwards. The succulent shrubs *Lopholaena cneorifolia* and *Kalanchoe brachyloba* occur mainly on north-facing slopes at this altitude. The small, creeping succulent *Crassula subaphylla* occurs from this altitude upwards.

## F. Above 2 400 m: *Andropogon schirensis*-*Digitaria eriantha* grassland

Grasses are the most dominant vegetation on the highest reaches of the Auas Mountains. *Andropogon schirensis* and *Digitaria eriantha* are most abundant, but also common is *Danthoniopsis ramosa*, while *Eragrostis nindensis* and *Eragrostis scopelophila* are less frequent than at lower altitudes. Although this vegetation type is dominated by grasses, woody plants are also important components of the vegetation here. Amongst the woody components, the shrubs *Hypoestes forskalii*, *Osyris lanceolata*, *Pegolettia retrofracta*, *Stoebe plumosa* and *Wahlenbergia denticulata* are frequent, but rarely abundant. Plant cover averages about 60 % and plant heights reach up to 2 m. Although also occurring at lower altitudes, the endemic grass *Cymbopogon dieterlenii* and the more widespread *Cymbopogon popischilii* grow locally abundant at these very high altitudes.



Above 2 400 m height, grasses become dominant, such as *Eragrostis scopelophila* and *Digitaria eriantha* (A. Burke).

Of conservation importance are populations of the Auas endemic dwarf succulent *Ebracteola montis-moltkei* which only grow near the very highest peaks. Also confined to the highest reaches is the tall shrub *Passerina montana*.

## Discussion

While this study provided a first account of the vegetation of the Auas Mountains, it is, however, based on a once-off survey and was largely restricted to accessible

slopes, omitting sampling in ravines and steep areas, which are likely to harbour more and different plant species. The survey period coincided with an above-average rainy season. Yet due to time and budget constraints, sampling intensity was low, considering the overall high plant diversity of this mountain range. This, for example, is reflected in the low species numbers for some sampling plots (Table 1). Hence this study does by no means provide a complete plant inventory, but focuses on a description of the main vegetation types. For this reason we can also not attempt to discuss biogeographic patterns or undertake a phytosociological analysis, but will point out some peculiarities of particular species which may help to determine their conservation importance. Four species endemic to the Auas Mountain range has been reported so far (Craven pers. comm.). Only two of these, *Cymbopogon dieterlenii* and *Ebracteola montis-moltkei*, were recorded along our sampling transects.

Six main vegetation types were described which are characterised along an altitude gradient.

Although zonation patterns on these semi-arid savannah mountains are not clearly visible such as in mountain areas in higher latitudes, e.g. tropical African mountains ranges (White 1981), there are nevertheless changes in the vegetation along an altitude gradient. Low altitude species are gradually replaced by more montane species along this altitude gradient. This is evident, for example by the occurrence of *Olea europaea* and *Stoebe plumosa* from about 2 200 m upwards. Moreover between 2 200 and 2 300 m several additional species, e.g. *Brachiaria serrata*, *Cineraria canescens* and *Lopholaena cneorifolia*, appear which support the notion that this altitude may present the transitional zone to more montane vegetation. Grasses become dominant in the upper reaches.

Montane vegetation is here characterised by plant species that occur in winter rainfall areas of the northern Cape (e.g. *Lopholaena cneorifolia*, *Passerina montana* and *Stoebe plumosa*) (Germishuizen & Meyer 2003), by karroid plant species of the Nama and Succulent Karroo biomes, such as *Pegolettia retrofracta* and *Senecio cinarescens*, as well as grasses which are in Namibia restricted to mountain areas, e.g. *Brachiaria serrata*, *Danthoniopsis ramosa*, *Eragrostis scopelophila* and *Themeda triandra*. As these are unique plant assemblages in Namibia they deserve special protection. In terms of management, the mountain vegetation above 2200 m altitude hence deserves a special protection status.

Possible factors influencing species composition and this change to more montane vegetation are likely lower temperatures and higher moisture supply (Barthlott & Poremski 2000; Burke 2001) linked to orographic rains, occasional fog and the trapping of clouds which can often be observed from the lowlands. Low grazing pressure on the higher reaches of the Auas Mountains could also contribute to this change in species assemblages, as livestock does not normally graze and browse in the mountain areas. Fire is an extremely important factor in this highland savan-

nah, not sparing the mountains. Large sections of shrubland and grassland on the main Auas chain, for example were burned during a large fire in 2001 (A. Burke pers. obs., P. Schaepe pers. comm.). The effects of this fire were still visible during this survey.

At the coarse level of this study, slope aspect, an important factor in mountain areas of higher latitudes (Sternberg & Shoshany 2001), did not result in major differences in the vegetation, although a few species, for example *Euryops subcarnosus*, may be restricted to a particular slope aspect of the mountains. However, this evident lack of a clear distinction could be (a) due to low sampling intensity with focus on dominant and characteristic species, or (b) show indeed a low influence on vegetation composition at this subtropical latitude. This has been observed on Namib inselbergs (Burke 2001). However, observations during the surveys indicate that there may be differences, but that these are restricted to special habitats such as ravines and steep slopes, which were not included in this survey. These habitats certainly deserve some attention in future.

The main descriptors of the vegetation, namely the woody *Acacia hereroensis* and *Tarchonanthus camphoratus*, are typical central highland plants which are characteristic also in the lowland areas (Volk & Leippert 1971), and many of the plants encountered on the mountains are also present in the lowland areas, such as *Brachiaria nigropedata*, *Combretum apiculatum*, *Eragrostis nindensis* and *Elephantorrhiza suffruticosa*. However, many of the plants growing in the upper reaches are confined to high mountain areas in Namibia, making the Auas plant communities very special. Detailed biogeographic analyses should be undertaken in future to quantify the uniqueness of the flora of the Auas Mountains.

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<b>Appendix 1. Plant species and their occurrence in different altitude zones in the Awas Mountains.</b>				
<b>altitude class</b>				
<b>A: 1900-2000m</b>				
<b>aspect (N=north-facing, S=south-facing)</b>	<b>N</b>	<b>N</b>	<b>S</b>	<b>S</b>
<b>sample code</b>	<b>5201</b>	<b>AU-12</b>	<b>5101</b>	<b>AU-01</b>
<i>Tarchonanthus camphoratus</i>	0.1	2.5	8.75	8.75
<i>Acacia hereroensis</i>	0.1	2.5	2.5	2.5
<i>Hypoestes forskoolii</i>	2.5		0.1	
<i>Digitaria eriantha</i>			2.5	
<i>Eragrostis nindensis</i>	8.75	2.5	2.5	0.1
<i>Eragrostis scopelophila</i>	0.1	2.5	8.75	
<i>Danthoniopsis ramosa</i>			8.75	
<i>Melinis repens</i> subsp. <i>repens</i>	0.1	2.5	0.1	2.5
<i>Pellaea calomelanos</i>	0.1		0.1	
<i>Oxalis purpurascens</i>			0.1	
<i>Brachiaria nigropedata</i>	8.75	2.5	2.5	8.75
<i>Rhus marlothii</i>	0.1	2.5	0.1	2.5
<i>Heteropogon contortus</i>	2.5	2.5	2.5	2.5
<i>Osyris lanceolata</i>				
<i>Chascanum pinnatifidum</i>	0.1			
<i>Gymnosporia linearis</i> subsp. <i>lanceolata</i>			0.1	2.5
<i>Rhynchosia totta</i>	0.1	0.1		
<i>Antheplora pubescens</i>	0.1	2.5	8.75	0.1
<i>Euclea undulata</i>	2.5		2.5	
<i>Cenchrus ciliaris</i>	2.5	2.5	0.1	
<i>Pegolettia retrofracta</i>				
<i>Solanum incanum</i>	0.1		0.1	
<i>Babiana hypogea</i>				
<i>Eriocephalus scariosus</i>				
<i>Felicia muricata</i>				
<i>Andropogon schirensis</i>				
<i>Combretum apiculatum</i>	0.1	2.5	0.1	
<i>Cymbopogon pospischilii</i>			2.5	0.1
<i>Hypoxis iridifolia</i>			0.1	
<i>Kyphocarpa angustifolia</i>	0.1	0.1	0.1	0.1



<i>Talinum caffrum</i>	0.1		0.1	
<i>Wahlenbergia denticulata</i>				
<i>Commelina africana</i> var. <i>krebsiana</i>	0.1		0.1	
<i>Heteromorpha stenophylla</i>			0.1	
<i>Aptosimum arenarium</i>				
<i>Commelina africana</i> var. <i>africana</i>	0.1			0.1
<i>Dombeya rotundifolia</i>	0.1		0.1	
<i>Elionurus muticus</i>	8.75			
<i>Kalanchoe brachyloba</i>	0.1		0.1	
<i>Lopholaena cneorifolia</i>				
<i>Olea europaea</i>				
<i>Ornithoglossum vulgare</i>			0.1	
<i>Osteospermum montanum</i>				
<i>Stoebe plumosa</i>				
<i>Themeda triandra</i>				
<i>Thesium laciniatum</i>				
<i>Aristida adscensionis</i>		2.5		
<i>Dyschoriste pseudirecta</i>	0.1			
<i>Eriocephalus dinteri</i>				
<i>Hirpicium gazanioides</i>			0.1	0.1
<i>Jamesbrittenia lyperioides</i>			0.1	
<i>Phyllanthus pentandrus</i>	0.1		0.1	
<i>Brachiaria serrata</i>				
<i>Cymbopogon caesius</i>				
<i>Dianthus namaensis</i>				
<i>Dicoma anomala</i> subsp. <i>gerrardii</i>				
<i>Euphorbia spartaria</i>				0.1
<i>Fingerhuthia africana</i>	8.75			
<i>Hibiscus pusillus</i>				0.1
<i>Jamesbrittenia pallida</i>				
<i>Lotononis calycina</i>				
<i>Microchloa caffra</i>		0.1	0.1	0.1
<i>Ocimum americanum</i>	0.1	0.1		
<i>Schmidtia pappophoroides</i>	2.5	2.5	0.1	
<i>Selago angustibractea</i>				
<i>Solanum delagoense</i>				

<i>Anthospermum rigidum</i>				
<i>Bidens biternata</i>				
<i>Blepharis integrifolia</i> var. <i>integrifolia</i>	0.1		0.1	
<i>Cheilanthes marlothii</i>			0.1	
<i>Cineraria canescens</i>				
<i>Cyperus margaritaceus</i>				
<i>Elephantorrhiza suffruticosa</i>	2.5	2.5		
<i>Ipomoea holubii</i>	0.1			
<i>Ipomoea obscura</i>				
<i>Lantana dinteri</i>				
<i>Lycium eenii</i>	0.1	2.5		
<i>Monsonia burkeana</i>				
<i>Polygala uncinata</i>				
<i>Solanum rigescentoides</i>				
<i>Tephrosia rhodesica</i>	0.1			
<i>Ursinia nana</i>				
<i>Vernonia poskeana</i> subsp. <i>botswanaica</i>	0.1	2.5		
<i>Adromischus</i> sp.				
<i>Albuca</i> sp.	0.1			
<i>Andropogon chinensis</i>				
<i>Antizoma angustifolia</i>	0.1		0.1	
<i>Calostephane marlothiana</i>				
<i>Cheilanthes hirta</i> var. <i>brevipilosa</i>		0.1		
<i>Cheilanthes multifida</i>				
<i>Cleome rubella</i>		0.1	0.1	0.1
<i>Crassula subaphylla</i> var. <i>subaphylla</i>				
<i>Cymbopogon dieterlenii</i>				
<i>Diospyros ramulosa</i>				
<i>Ebracteola montis-moltkei</i>				
<i>Evolvulus alsinoides</i>	0.1	0.1		
<i>Hibiscus fleckii</i>				
<i>Hibiscus sulfuranthus</i>	0.1			
<i>Nelsia quadrangula</i>		2.5		
<i>Rhus lancea</i>	0.1		0.1	
<i>Selago alupecurioides</i>				
<i>Senecio cinarescens</i>				

<i>Stipagrostis uniplumis</i> var. <i>uniplumis</i>	0.1	2.5		0.1
<i>Tagetes minuta</i>				
<i>Ziziphus mucronata</i>		0.1	0.1	
<i>Aizoanthemum dinteri</i>				
<i>Aptosimum lineare</i>			0.1	
<i>Aristida meridionalis</i>			2.5	0.1
<i>Boophone disticha</i>				
<i>Chenopodium schraderianum</i>				
<i>Cotyledon orbiculata</i>				
<i>Elephantorrhiza elephantina</i>	2.5			
<i>Enneapogon cenchroides</i>		2.5		2.5
<i>Eragrostis echinochloidea</i>	0.1		0.1	0.1
<i>Eragrostis porosa</i>	8.75			
<i>Frankenia pomonensis</i>				
<i>Geigeria ornativa</i>				
<i>Hebenstretia integrifolia</i>				
<i>Heliophila carnosia</i>				
<i>Hermannia modesta</i>		0.1	0.1	
<i>Hermbstaedia odorata</i>	0.1			
<i>Moraea polystachya</i>				
<i>Osteospermum muricatum</i> subsp. <i>longiradiatum</i>				
<i>Pentarrhinum insipidum</i>			0.1	
<i>Phyllanthus</i> sp.				
<i>Senecio inaequidens</i>				
<i>Sida chrysantha</i>			0.1	
<i>Thesium xerophyticum</i>				
<i>Trochomeria macrocarpa</i>	0.1			
<i>Vigna frutescens</i>	0.1			
<i>Xerophyta viscosa</i>				
<i>Acacia mellifera</i>		8.75		
<i>Amaranthus praetermissus</i>				
<i>Asparagus exuvialis</i>	0.1		0.1	
<i>Crassula capitella</i> subsp. <i>nodulosa</i>				
<i>Dichrostachys cinerea</i>	2.5	8.75		
<i>Dicoma macrocephala</i>				

<i>Dipcadi glaucum</i>				
<i>Eragrostis rigidior</i>				
<i>Cheilanthes marlothii</i>				
<i>Fockea angustifolia</i>				
<i>Gisekia africana</i>			0.1	
<i>Gladiolus permeabilis</i>				
<i>Gladiolus saccatus</i>				
<i>Helichrysum obtusum</i>				
<i>Helichrysum tomentosulum</i> <i>subsp. tomentosulum</i>				
<i>Hermannia quartiniana</i>				
<i>Kyllinga alba</i>			0.1	
<i>Lantana sp.</i>		0.1		
<i>Lessertia candida</i>				
<i>Limeum argute-carinatum</i>			0.1	
<i>Montinia caryophyllacea</i>	0.1	2.5		
<i>Namacodon schinzianum</i>				
<i>Oxygonum alatum</i>	0.1		0.1	
<i>Raphionacme velutina</i>		0.1		0.1
<i>Silene burchellii burchellii</i>				
<i>Sphedamnocarpus pruriens subsp. pruriens</i>				
<i>Tristachya superba</i>				
<i>Acacia karroo</i>				2.5
<i>Albizia anthelmintica</i>	0.1	2.5		
<i>Aloe littoralis</i>				
<i>Anthospermum sp.</i>				
<i>Aristida congesta</i>				
<i>Aristida effusa</i>				0.1
<i>Asparagus sp.</i>				
<i>Barleria lancifolia</i>	0.1	2.5		
<i>Dicoma dinteri</i>		0.1		
<i>Diospyros lycioides</i>				
<i>Drimia sanguinea</i>				
<i>Enneapogon scoparius</i>			0.1	
<i>Eragrostis 04013</i>			8.75	
<i>Eurypos subcarnosus</i>				

<i>Hermannia sp.</i>		0.1		
<i>Hibiscus trionum</i>				
<i>Ipomoea bolusiana</i>				
<i>Jamesbrittenia huillana</i>				
<i>Kalanchoe sp.</i>				
<i>Kohautia caespitosa</i>		0.1	0.1	
<i>Leonotis ocymifolia</i>				
<i>Lepidium africanum</i>				
<i>Leucas glabrata</i> var. <i>glabrata</i>				
<i>Monelytrum luederitzianum</i>				0.1
<i>Pegolettia senegalensis</i>		0.1		
<i>Pergularia daemia</i>				
<i>Pollichia campestris</i>				
<i>Rhus tenuinervis</i>				
<i>Sida ovata</i>				
<i>Solanum rigescens</i>			0.1	
<i>Tribulus terrestris</i>			0.1	
<i>Tricholaena capensis</i> subsp. <i>arenaria</i>				
<i>Acacia reficiens</i>	2.5	8.75		
<i>Artemisia afra</i>				
<i>Cyperus fulgens</i>			2.5	
<i>Ehretia alba</i>				
<i>Eragrostis lehmanniana</i> var. <i>lehmanniana</i>		2.5		
<i>Hermannia affinis</i>			0.1	2.5
<i>Passerina montana</i>				
<i>Phlyctidocarpa flava</i>				
<i>Pogonarthria squarrosa</i>		2.5		
<i>c.f. Mariscus rehmannianus</i>				

<b>Appendix 1. Plant species and their occurrence in different altitude zones in the Auas Mountains.</b>						
<b>altitude class</b>						
<b>B: 2000-2100m</b>						
<b>aspect (N=north-facing, S=south-facing)</b>	<b>S</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>S</b>	<b>S</b>
<b>sample code</b>	<b>AU-11</b>	<b>5202</b>	<b>5301</b>	<b>AU-13</b>	<b>5102</b>	<b>5106</b>
<i>Tarchonanthus camphoratus</i>	2.5	8.75	0.1	2.5	8.75	
<i>Acacia hereroensis</i>	8.75	2.5	2.5	2.5	8.75	
<i>Hypoestes forskalii</i>	2.5	0.1	2.5	2.5	0.1	
<i>Digitaria eriantha</i>		0.1	2.5		2.5	
<i>Eragrostis nindensis</i>		2.5	2.5	2.5	2.5	
<i>Eragrostis scopelophila</i>	2.5	0.1	2.5	2.5	18.75	
<i>Danthoniopsis ramosa</i>				2.5	2.5	
<i>Melinis repens subsp. repens</i>	8.75	2.5	2.5	2.5		
<i>Pellaea calomelanos</i>	0.1	0.1	0.1	0.1	0.1	
<i>Oxalis purpurascens</i>		0.1			0.1	
<i>Brachiaria nigropedata</i>	18.75	18.75	2.5	2.5		
<i>Rhus marlothii</i>		0.1	0.1	2.5	0.1	
<i>Heteropogon contortus</i>	2.5	2.5	8.75	2.5		
<i>Osyris lanceolata</i>	0.1				0.1	
<i>Chascanum pinnatifidum</i>		0.1	0.1			
<i>Gymnosporia linearis subsp. lanceolata</i>	0.1				2.5	
<i>Rhynchosia totta</i>		0.1	2.5	0.1		
<i>Antheophora pubescens</i>	8.75	2.5	2.5	2.5	2.5	
<i>Euclea undulata</i>			2.5	2.5	8.75	
<i>Cenchrus ciliaris</i>		2.5	2.5	2.5	0.1	
<i>Pegolettia retrofracta</i>			0.1			
<i>Solanum incanum</i>					0.1	0.1
<i>Babiana hypogea</i>						
<i>Eriocephalus scariosus</i>		0.1	0.1		0.1	
<i>Felicia muricata</i>		0.1				
<i>Andropogon schirensis</i>						2.5
<i>Combretum apiculatum</i>		0.1	0.1	2.5		8.75
<i>Cymbopogon pospischilii</i>		0.1		0.1		
<i>Hypoxis iridifolia</i>						0.1
<i>Kyphocarpa angustifolia</i>	2.5	0.1	0.1	0.1		



<i>Talinum caffrum</i>	0.1	0.1	0.1		0.1	
<i>Wahlenbergia denticulata</i>						
<i>Commelina africana</i> var. <i>krebsiana</i>		0.1			0.1	
<i>Heteromorpha stenophylla</i>					0.1	
<i>Aptosimum arenarium</i>	0.1		0.1	0.1		
<i>Commelina africana</i> var. <i>africana</i>		0.1	0.1	0.1		
<i>Dombeya rotundifolia</i>		0.1		2.5		2.5
<i>Elionurus muticus</i>	0.1		2.5			
<i>Kalanchoe brachyloba</i>			0.1			
<i>Lopholaena cneorifolia</i>						
<i>Olea europaea</i>						
<i>Ornithoglossum vulgare</i>			0.1		0.1	
<i>Osteospermum montanum</i>			0.1		2.5	
<i>Stoebe plumosa</i>						
<i>Themeda triandra</i>			2.5			2.5
<i>Thesium laciniatum</i>		0.1	0.1			
<i>Aristida adscensionis</i>			0.1	2.5		
<i>Dyschoriste pseudirecta</i>		8.75	0.1	0.1		
<i>Eriocephalus dinteri</i>				0.1		
<i>Hirpicium gazanioides</i>	0.1		0.1	0.1		
<i>Jamesbrittenia hyperioides</i>					0.1	
<i>Phyllanthus pentandrus</i>		0.1	2.5			
<i>Brachiaria serrata</i>						
<i>Cymbopogon caesius</i>					8.75	
<i>Dianthus namaensis</i>						
<i>Dicoma anomala</i> subsp. <i>gerrardii</i>						
<i>Euphorbia spartaria</i>						
<i>Fingerhuthia africana</i>		0.1	0.1	2.5	8.75	
<i>Hibiscus pusillus</i>	0.1	0.1				
<i>Jamesbrittenia pallida</i>						
<i>Lotononis calycina</i>	0.1	0.1	0.1			
<i>Microchloa caffra</i>			0.1	2.5	0.1	
<i>Ocimum americanum</i>		0.1				
<i>Schmidtia pappophoroides</i>	2.5	0.1	0.1			
<i>Selago angustibractea</i>						
<i>Solanum delagoense</i>		0.1	0.1			0.1

<i>Anthospermum rigidum</i>						
<i>Bidens biternata</i>					0.1	
<i>Blepharis integrifolia</i> var. <i>integrifolia</i>						
<i>Cheilanthes marlothii</i>		0.1			0.1	
<i>Cineraria canescens</i>						
<i>Cyperus margaritaceus</i>		0.1	0.1			
<i>Elephantorrhiza suffruticosa</i>		0.1	2.5			8.75
<i>Ipomoea holubii</i>		0.1				0.1
<i>Ipomoea obscura</i>		0.1	0.1			
<i>Lantana dinteri</i>			2.5			2.5
<i>Lycium eonii</i>		0.1	0.1			
<i>Monsonia burkeana</i>						
<i>Polygala uncinata</i>						
<i>Solanum rigescentoides</i>						
<i>Tephrosia rhodesica</i>		0.1				0.1
<i>Ursinia nana</i>						
<i>Vernonia poskeana</i> subsp. <i>botswanica</i>			0.1	2.5		
<i>Adromischus</i> sp.						
<i>Albuca</i> sp.		0.1	0.1			
<i>Andropogon chinensis</i>	2.5		0.1	2.5		
<i>Antizoma angustifolia</i>		0.1			0.1	
<i>Calostephane marlothiana</i>						
<i>Cheilanthes hirta</i> var. <i>brevipilosa</i>						
<i>Cheilanthes multifida</i>						
<i>Cleome rubella</i>	0.1				0.1	
<i>Crassula subaphylla</i> var. <i>subaphylla</i>						
<i>Cymbopogon dieterlenii</i>			2.5			
<i>Diospyros ramulosa</i>						
<i>Ebracteola montis-moltkei</i>						
<i>Evolvulus alsinoides</i>	2.5	0.1	0.1			
<i>Hibiscus fleckii</i>	0.1			0.1		
<i>Hibiscus sulfuranthus</i>	0.1	0.1	0.1	0.1		
<i>Nelsia quadrangula</i>		0.1	0.1	0.1		
<i>Rhus lancea</i>						
<i>Selago alupecurioides</i>						
<i>Senecio cinarescens</i>					0.1	

<i>Stipagrostis uniplumis</i> var. <i>uniplumis</i>	2.5		2.5			
<i>Tagetes minuta</i>						
<i>Ziziphus mucronata</i>	0.1		0.1	2.5		
<i>Aizoanthemum dinteri</i>		0.1				
<i>Aptosimum lineare</i>						
<i>Aristida meridionalis</i>			2.5			
<i>Boophone disticha</i>						
<i>Chenopodium schraderianum</i>						
<i>Cotyledon orbiculata</i>						0.1
<i>Elephantorrhiza elephantina</i>		2.5				
<i>Enneapogon cenchroides</i>						
<i>Eragrostis echinochloidea</i>			0.1			
<i>Eragrostis porosa</i>			2.5			
<i>Frankenia pomonensis</i>						
<i>Geigeria ornativa</i>		0.1	0.1	0.1		
<i>Hebenstretia integrifolia</i>					0.1	
<i>Heliophila carnosia</i>						
<i>Hermannia modesta</i>			0.1			
<i>Hermbstaedtia odorata</i>	2.5		0.1	0.1		
<i>Moraea polystachya</i>						
<i>Osteospermum muricatum</i> subsp. <i>longiradiatum</i>						
<i>Pentarrhinum insipidum</i>			0.1			0.1
<i>Phyllanthus</i> sp.	2.5			0.1		
<i>Senecio inaequidens</i>						
<i>Sida chrysantha</i>		0.1				0.1
<i>Thesium xerophyticum</i>				0.1		
<i>Trochomeria macrocarpa</i>			0.1			
<i>Vigna frutescens</i>		0.1				0.1
<i>Xerophyta viscosa</i>						
<i>Acacia mellifera</i>			0.1			
<i>Amaranthus praetermissus</i>			0.1		0.1	
<i>Asparagus exuvialis</i>					0.1	
<i>Crassula capitella</i> subsp. <i>nodulosa</i>						
<i>Dichrostachys cinerea</i>		0.1		2.5		
<i>Dicoma macrocephala</i>	0.1		0.1			

<i>Dipcadi glaucum</i>		0.1				
<i>Eragrostis rigidior</i>				2.5		
<i>Cheilanthes marlothii</i>						
<i>Fockea angustifolia</i>						
<i>Gisekia africana</i>						
<i>Gladiolus permealibis</i>						
<i>Gladiolus saccatus</i>						
<i>Helichrysum obtusum</i>						
<i>Helichrysum tomentosulum</i> <i>subsp. tomentosulum</i>			0.1			
<i>Hermannia quartiniana</i>					0.1	
<i>Kyllinga alba</i>					0.1	
<i>Lantana sp.</i>						
<i>Lessertia candida</i>				0.1		
<i>Limeum argute-carinatum</i>					0.1	
<i>Montinia caryophyllacea</i>		0.1				
<i>Namacodon schinzianum</i>						0.1
<i>Oxygonum alatum</i>		0.1				
<i>Raphionacme velutina</i>						
<i>Silene burchellii burchellii</i>						
<i>Sphedamnocarpus pruriens</i> <i>subsp. pruriens</i>						
<i>Tristachya superba</i>						
<i>Acacia karroo</i>						
<i>Albizia anthelmintica</i>		0.1				
<i>Aloe littoralis</i>						0.1
<i>Anthospermum sp.</i>						
<i>Aristida congesta</i>			0.1			
<i>Aristida effusa</i>	18.75					
<i>Asparagus sp.</i>				0.1		
<i>Barleria lancifolia</i>		2.5				
<i>Dicoma dinteri</i>						
<i>Diospyros lycioides</i>						
<i>Drimia sanguinea</i>	0.1			0.1		
<i>Enneapogon scoparius</i>			2.5			
<i>Eragrostis 04013</i>					2.5	

<i>Eurypos subcarnosus</i>						
<i>Hermannia sp.</i>	8.75					
<i>Hibiscus trionum</i>						
<i>Ipomoea bolusiana</i>		0.1		0.1		
<i>Jamesbrittenia huillana</i>					0.1	
<i>Kalanchoe sp.</i>				0.1		
<i>Kohautia caespitosa</i>						
<i>Leonotis ocymifolia</i>						
<i>Lepidium africanum</i>					0.1	
<i>Leucas glabrata</i> var. <i>glabrata</i>						
<i>Monelytrum luederitzianum</i>				2.5		
<i>Pegolettia senegalensis</i>				2.5		
<i>Pergularia daemia</i>				0.1		
<i>Pollichia campestris</i>			0.1			
<i>Rhus tenuinervis</i>						
<i>Sida ovata</i>						
<i>Solanum rigescens</i>					0.1	
<i>Tribulus terrestris</i>						
<i>Tricholaena capensis</i> subsp. <i>arenaria</i>						
<i>Acacia reficiens</i>						
<i>Artemisia afra</i>						
<i>Cyperus fulgens</i>					0.1	
<i>Ehretia alba</i>						
<i>Eragrostis lehmanniana</i> var. <i>lehmanniana</i>	2.5					
<i>Hermannia affinis</i>						
<i>Passerina montana</i>						
<i>Phlyctidocarpa flava</i>						
<i>Pogonarthria squarrosa</i>	0.1					
<i>c.f. Mariscus rehmannianus</i>	0.1					

<b>Appendix 1. Plant species and their occurrence in different altitude zones in the Auas Mountains.</b>								
altitude class C: 2100-2200m								
aspect (N=north-facing, S=south-facing)	S	S	S	N	N	N	S	S
sample code	5107	AU-05	AU-10	5203	5302	AU-14	5103	5104
<i>Tarchonanthus camphoratus</i>	0.1	8.75	8.75	2.5	0.1	8.75	2.5	2.5
<i>Acacia hereroensis</i>		2.5	8.75	0.1	0.1	8.75	8.75	2.5
<i>Hypoestes forskaoilii</i>		0.1	2.5	2.5	2.5		0.1	2.5
<i>Digitaria eriantha</i>		18.75	18.75	0.1	0.1	0.1	8.75	2.5
<i>Eragrostis nindensis</i>		0.1		2.5	2.5	8.75	2.5	2.5
<i>Eragrostis scopelophila</i>		18.75	8.75	8.75	8.75	2.5	8.75	
<i>Danthoniopsis ramosa</i>		8.75	8.75		8.75		8.75	8.75
<i>Melinis repens</i> <i>subsp. repens</i>		2.5	2.5	0.1	2.5	2.5		2.5
<i>Pellaea calomelanos</i>		0.1	0.1	0.1	0.1	0.1	0.1	0.1
<i>Oxalis purpurascens</i>		0.1	2.5	0.1	0.1		0.1	
<i>Brachiaria nigropedata</i>			8.75	18.75	8.75	8.75		
<i>Rhus marlothii</i>			2.5	0.1	0.1			
<i>Heteropogon contortus</i>			2.5	2.5	8.75	2.5		2.5
<i>Osyris lanceolata</i>					0.1		0.1	2.5
<i>Chascanum pinnatifidum</i>					0.1			
<i>Gymnosporia linearis</i> <i>subsp. lanceolata</i>	0.1				0.1		0.1	
<i>Rhynchosia totta</i>			2.5	0.1	0.1	0.1		
<i>Anthephora pubescens</i>			2.5	2.5	0.1	2.5		
<i>Euclea undulata</i>		0.1	2.5		0.1		2.5	
<i>Cenchrus ciliaris</i>		2.5	8.75	2.5	0.1	8.75		
<i>Pegolettia retrofracta</i>					0.1			0.1
<i>Solanum incanum</i>		0.1	0.1			0.1		0.1
<i>Babiana hypogea</i>				0.1	0.1			0.1
<i>Eriocephalus scariosus</i>	0.1			0.1	0.1		2.5	0.1
<i>Felicia muricata</i>					0.1		0.1	0.1
<i>Andropogon schirensis</i>					0.1			
<i>Combretum apiculatum</i>				2.5	0.1	2.5		



<i>Cymbopogon pospischilii</i>								2.5
<i>Hypoxis iridifolia</i>				0.1	0.1		0.1	0.1
<i>Kyphocarpa angustifolia</i>				0.1	0.1			
<i>Talinum caffrum</i>		0.1	0.1	0.1	0.1			
<i>Wahlenbergia denticulata</i>					0.1		0.1	2.5
<i>Commelina africana</i> <i>var. krebsiana</i>				0.1	0.1			0.1
<i>Heteromorpha</i> <i>stenophylla</i>			0.1			0.1	0.1	
<i>Aptosimum arenarium</i>				0.1	0.1	2.5		
<i>Commelina africana</i> <i>var. africana</i>		0.1			0.1			
<i>Dombeya rotundifolia</i>				0.1	0.1	0.1		
<i>Elionurus muticus</i>					0.1			
<i>Kalanchoe brachyloba</i>					0.1			0.1
<i>Lopholaena cneorifolia</i>					0.1		0.1	0.1
<i>Olea europaea</i>					0.1		0.1	
<i>Ornithoglossum vulgare</i>					0.1			0.1
<i>Osteospermum montanum</i>				0.1			2.5	2.5
<i>Stoebe plumosa</i>							2.5	2.5
<i>Themeda triandra</i>					8.75			
<i>Thesium lacinulatum</i>					0.1		0.1	0.1
<i>Aristida adscensionis</i>		0.1	2.5		0.1	0.1		
<i>Dyschoriste pseuderecta</i>				8.75	2.5	0.1		
<i>Eriocephalus dinteri</i>		0.1						
<i>Hirpicium gazanioides</i>				0.1				0.1
<i>Jamesbrittenia</i> <i>hyperioides</i>	0.1							2.5
<i>Phyllanthus pentandrus</i>				0.1	0.1			
<i>Brachiaria serrata</i>					0.1			0.1
<i>Cymbopogon caesius</i>					0.1			2.5
<i>Dianthus namaensis</i>								
<i>Dicoma anomala</i> <i>subsp. gerrardii</i>					0.1			
<i>Euphorbia spartaria</i>					0.1			
<i>Fingerhuthia africana</i>					0.1	2.5		2.5
<i>Hibiscus pusillus</i>				0.1	0.1			

<i>Jamesbrittenia pallida</i>		0.1						
<i>Lotononis calycina</i>								
<i>Microchloa caffra</i>				0.1				
<i>Ocimum americanum</i>					0.1			
<i>Schmidtia pappophoroides</i>				8.75	0.1			
<i>Selago angustibractea</i>					0.1		2.5	2.5
<i>Solanum delagoense</i>				0.1	0.1			
<i>Anthospermum rigidum</i>					0.1		0.1	0.1
<i>Bidens biternata</i>		0.1	2.5			0.1		
<i>Blepharis integrifolia</i> <i>var. integrifolia</i>				0.1	0.1			
<i>Cheilanthes marlothii</i>					0.1		0.1	0.1
<i>Cineraria canescens</i>								
<i>Cyperus margaritaceus</i>				0.1	0.1			
<i>Elephantorrhiza suffruticosa</i>				0.1				
<i>Ipomoea holubii</i>				0.1	0.1	2.5		
<i>Ipomoea obscura</i>					0.1			
<i>Lantana dinteri</i>				0.1	0.1			
<i>Lycium eenii</i>	8.75							
<i>Monsonia burkeana</i>					0.1			2.5
<i>Polygala uncinata</i>					0.1			0.1
<i>Solanum rigescentoides</i>			2.5			0.1		
<i>Tephrosia rhodesica</i>				0.1	0.1			
<i>Ursinia nana</i>								
<i>Vernonia poskeana</i> <i>subsp. botswanica</i>						2.5		
<i>Adromischus sp.</i>							0.1	
<i>Albuca sp.</i>					0.1			
<i>Andropogon chinensis</i>					0.1	2.5		
<i>Antizoma angustifolia</i>				0.1			0.1	
<i>Calostephane marlothiana</i>					0.1			
<i>Cheilanthes hirta</i> <i>var. brevopilosa</i>		0.1						
<i>Cheilanthes multifida</i>							0.1	0.1

<i>Cleome rubella</i>		0.1						
<i>Crassula subaphylla</i> var. <i>subaphylla</i>								
<i>Cymbopogon dieterlenii</i>					0.1			
<i>Diospyros ramulosa</i>					0.1			0.1
<i>Ebracteola montis-</i> <i>moltkei</i>								
<i>Evolvulus alsinoides</i>				0.1				
<i>Hibiscus fleckii</i>		0.1	0.1			0.1		
<i>Hibiscus sulfuranthus</i>					0.1			
<i>Nelsia quadrangula</i>						0.1		
<i>Rhus lancea</i>								
<i>Selago alupecuroides</i>								
<i>Senecio cinarescens</i>	8.75							
<i>Stipagrostis uniplumis</i> var. <i>uniplumis</i>				0.1				
<i>Tagetes minuta</i>		0.1	2.5		0.1			
<i>Ziziphus mucronata</i>					0.1			
<i>Aizoanthemum dinteri</i>				0.1				
<i>Aptosimum lineare</i>								0.1
<i>Aristida meridionalis</i>								
<i>Boophone disticha</i>					0.1			
<i>Chenopodium</i> <i>schraderianum</i>		0.1						
<i>Cotyledon orbiculata</i>								
<i>Elephantorrhiza</i> <i>elephantina</i>				2.5	8.75			
<i>Enneapogon cenchroides</i>		0.1			0.1			
<i>Eragrostis</i> <i>echinochloidea</i>								
<i>Eragrostis porosa</i>				0.1	0.1			
<i>Frankenia pomonensis</i>								
<i>Geigeria ornativa</i>								
<i>Hebenstretia integrifolia</i>								0.1
<i>Heliophila carnosia</i>							0.1	0.1
<i>Hermannia modesta</i>								0.1
<i>Hermbstaedtia odorata</i>						0.1		

<i>Moraea polystachya</i>			0.1					
<i>Osteospermum muricatum</i> <i>subsp. longiradiatum</i>			2.5					
<i>Pentarrhinum insipidum</i>					0.1			
<i>Phyllanthus sp.</i>			0.1			0.1		
<i>Senecio inaequidens</i>								
<i>Sida chrysantha</i>				0.1				
<i>Thesium xerophyticum</i>						0.1		
<i>Trochomeria macrocarpa</i>				0.1	0.1			
<i>Vigna frutescens</i>					0.1			
<i>Xerophyta viscosa</i>								
<i>Acacia mellifera</i>					0.1	0.1		
<i>Amaranthus praetermissus</i>					0.1			
<i>Asparagus exuvialis</i>								
<i>Crassula capitella</i> <i>subsp. nodulosa</i>							0.1	
<i>Dichrostachys cinerea</i>								
<i>Dicoma macrocephala</i>				0.1				
<i>Dipcadi glaucum</i>				0.1	0.1			0.1
<i>Eragrostis rigidior</i>								
<i>Cheilanthes marlothii</i>						2.5		
<i>Fockea angustifolia</i>					0.1			
<i>Gisekia africana</i>		0.1						
<i>Gladiolus permeabilis</i>						0.1		
<i>Gladiolus saccatus</i>								
<i>Helichrysum obtusum</i>							0.1	
<i>Helichrysum tomentosulum</i> <i>subsp. tomentosulum</i>					0.1			
<i>Hermannia quartiniana</i>								
<i>Kyllinga alba</i>				0.1				
<i>Lantana sp.</i>			0.1					
<i>Lessertia candida</i>		0.1						
<i>Limeum argute-carinatum</i>								
<i>Montinia caryophyllacea</i>					0.1			

<i>Namacodon schinzianum</i>								
<i>Oxygonum alatum</i>				0.1				
<i>Raphionacme velutina</i>						0.1		
<i>Silene burchellii</i> <i>burchellii</i>								0.1
<i>Sphedamnocarpus</i> <i>pruriens</i> subsp. <i>pruriens</i>				2.5				
<i>Tristachya superba</i>								
<i>Acacia karroo</i>								
<i>Albizia anthelmintica</i>								
<i>Aloe littoralis</i>								
<i>Anthospermum</i> sp.								
<i>Aristida congesta</i>								
<i>Aristida effusa</i>						0.1		
<i>Asparagus</i> sp.								
<i>Barleria lancifolia</i>								
<i>Dicoma dinteri</i>						0.1		
<i>Diospyros lycioides</i>					0.1			
<i>Drimia sanguinea</i>								
<i>Enneapogon scoparius</i>					0.1			
<i>Eragrostis</i> 04013					0.1			
<i>Eurypos subcarnosus</i>							0.1	0.1
<i>Hermannia</i> sp.								
<i>Hibiscus trionum</i>					0.1			
<i>Ipomoea bolusiana</i>								
<i>Jamesbrittenia huillana</i>								
<i>Kalanchoe</i> sp.		0.1						
<i>Kohautia caespitosa</i>						0.1		
<i>Leonotis ocymifolia</i>								
<i>Lepidium africanum</i>								
<i>Leucas glabrata</i> var. <i>glabrata</i>								
<i>Monelytrum</i> <i>luederitzianum</i>								
<i>Pegolettia senegalensis</i>						0.1		
<i>Pergularia daemia</i>						0.1		
<i>Pollichia campestris</i>					0.1			

<i>Rhus tenuinervis</i>								
<i>Sida ovata</i>					0.1			
<i>Solanum rigescens</i>							0.1	
<i>Tribulus terrestris</i>					0.1			
<i>Tricholaena capensis</i> <i>subsp. arenaria</i>								2.5
<i>Acacia reficiens</i>								
<i>Artemisia afra</i>								
<i>Cyperus fulgens</i>								
<i>Ehretia alba</i>	8.75						0.1	
<i>Eragrostis lehmanniana</i> <i>var. lehmanniana</i>								
<i>Hermannia affinis</i>								
<i>Passerina montana</i>								
<i>Phlyctidocarpa flava</i>			2.5					
<i>Pogonarthria squarrosa</i>								
<i>c.f. Mariscus</i> <i>rehmannianus</i>			2.5					

<b>Appendix 1. Plant species and their occurrence in different altitude zones in the Auas Mountains.</b>							
<b>altitude class</b>	<b>D: 2200-2300m</b>						
<b>aspect (N=north-facing, S=south-facing)</b>	<b>S</b>	<b>S</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>S</b>	<b>S</b>
<b>sample code</b>	<b>AU-04</b>	<b>AU-09</b>	<b>5204</b>	<b>5303</b>	<b>AU-15</b>	<b>5105</b>	<b>AU-03</b>
<i>Tarchonanthus camphoratus</i>	18.75	2.5	8.75	8.75	8.75	2.5	
<i>Acacia hereroensis</i>	8.75	18.75	2.5	0.1	2.5	2.5	
<i>Hypoestes forskoolii</i>	0.1	8.75	8.75	2.5	0.1		2.5
<i>Digitaria eriantha</i>	18.75	18.75	2.5	2.5	2.5		18.75
<i>Eragrostis nindensis</i>	2.5		2.5	0.1	2.5		2.5
<i>Eragrostis scopelophila</i>	37.5	18.75	2.5	8.75			18.75
<i>Danthoniopsis ramosa</i>	2.5	18.75	2.5	2.5	0.1		8.75
<i>Melinis repens subsp. repens</i>	0.1		0.1	2.5	2.5		
<i>Pellaea calomelanos</i>			0.1	0.1	0.1		
<i>Oxalis purpurascens</i>	0.1	2.5	0.1	0.1	0.1		
<i>Brachiaria nigropedata</i>			18.75	8.75	18.75	2.5	
<i>Rhus marlothii</i>			0.1	0.1			
<i>Heteropogon contortus</i>			8.75	2.5	8.75	2.5	
<i>Osyris lanceolata</i>		2.5	0.1	0.1		2.5	0.1
<i>Chascanum pinnatifidum</i>			0.1	0.1	0.1	0.1	
<i>Gymnosporia linearis subsp. lanceolata</i>	2.5	2.5	0.1	0.1			2.5
<i>Rhynchosia totta</i>			0.1	0.1	0.1		
<i>Antheophora pubescens</i>			2.5				
<i>Euclea undulata</i>	0.1	2.5	0.1				
<i>Cenchrus ciliaris</i>			0.1				
<i>Pegolettia retrofracta</i>				0.1	0.1	2.5	
<i>Solanum incanum</i>	0.1		0.1				
<i>Babiana hypogea</i>			0.1	0.1	0.1	0.1	
<i>Eriocephalus scariosus</i>						2.5	
<i>Felicia muricata</i>			0.1	0.1		0.1	
<i>Andropogon schirensis</i>			2.5	0.1		2.5	
<i>Combretum apiculatum</i>			0.1	0.1			
<i>Cymbopogon pospischilii</i>				2.5			8.75

<i>Hypoxis iridifolia</i>			0.1	0.1		0.1	
<i>Kyphocarpa angustifolia</i>			0.1	0.1			
<i>Talinum cafferum</i>			0.1			2.5	
<i>Wahlenbergia denticulata</i>				0.1			
<i>Commelina africana</i> <i>var. krebsiana</i>			0.1	0.1			
<i>Heteromorpha stenophylla</i>				0.1			
<i>Aptosimum arenarium</i>			0.1		0.1		
<i>Commelina africana</i> <i>var. africana</i>				0.1			
<i>Dombeya rotundifolia</i>				0.1	0.1		
<i>Elionurus muticus</i>			2.5				
<i>Kalanchoe brachyloba</i>			0.1	0.1			
<i>Lopholaena cneorifolia</i>				0.1			
<i>Olea europaea</i>				0.1	2.5		0.1
<i>Ornithoglossum vulgare</i>			0.1		0.1	0.1	
<i>Osteospermum montanum</i>			0.1	0.1		2.5	
<i>Stoebe plumosa</i>							0.1
<i>Themeda triandra</i>		2.5	2.5	8.75			
<i>Thesium lacinulatum</i>			0.1	0.1			
<i>Aristida adscensionis</i>				0.1	2.5		
<i>Dyschoriste pseuderecta</i>					0.1	2.5	
<i>Eriocephalus dinteri</i>	0.1	2.5					2.5
<i>Hirpicium gazanioides</i>			0.1		0.1		
<i>Jamesbrittenia hyperioides</i>				0.1			
<i>Phyllanthus pentandrus</i>			0.1	0.1			
<i>Brachiaria serrata</i>			2.5	0.1			
<i>Cymbopogon caesius</i>			0.1	0.1			
<i>Dianthus namaensis</i>						0.1	0.1
<i>Dicoma anomala</i> <i>subsp. gerrardii</i>				0.1			
<i>Euphorbia spartaria</i>				0.1	0.1	2.5	
<i>Fingerhuthia africana</i>							
<i>Hibiscus pusillus</i>			0.1		0.1		
<i>Jamesbrittenia pallida</i>	0.1						2.5
<i>Lotononis calycina</i>			0.1				



<i>Microchloa caffra</i>			0.1				
<i>Ocimum americanum</i>				0.1		0.1	
<i>Schmidtia pappophoroides</i>							
<i>Selago angustibractea</i>				0.1			
<i>Solanum delagoense</i>			0.1	0.1			
<i>Anthospermum rigidum</i>			0.1	0.1			
<i>Bidens biternata</i>	0.1				0.1		
<i>Blepharis integrifolia</i> var. <i>integrifolia</i>			0.1				
<i>Cheilanthes marlothii</i>							
<i>Cineraria canescens</i>		0.1		0.1			
<i>Cyperus margaritaceus</i>			0.1	0.1			
<i>Elephantorrhiza suffruticosa</i>			0.1				
<i>Ipomoea holubii</i>				0.1			
<i>Ipomoea obscura</i>			0.1	0.1			
<i>Lantana dinteri</i>			0.1	0.1			
<i>Lycium eenii</i>			0.1				
<i>Monsonia burkeana</i>			0.1	0.1			
<i>Polygala uncinata</i>			0.1	0.1			
<i>Solanum rigescentoides</i>		0.1		0.1	0.1		
<i>Tephrosia rhodesica</i>							
<i>Ursinia nana</i>				0.1			
<i>Vernonia poskeana</i> subsp. <i>botswanica</i>					0.1	2.5	
<i>Adromischus</i> sp.				0.1			
<i>Albuca</i> sp.			0.1				
<i>Andropogon chinensis</i>					2.5		
<i>Antizoma angustifolia</i>							
<i>Calostephane marlothiana</i>				0.1			
<i>Cheilanthes hirta</i> var. <i>brevi-pilosa</i>	0.1						
<i>Cheilanthes multifida</i>				0.1			
<i>Cleome rubella</i>							
<i>Crassula subaphylla</i> var. <i>subaphylla</i>							
<i>Cymbopogon dieterlenii</i>							
<i>Diospyros ramulosa</i>			0.1	0.1			

<i>Ebracteola montis-moltkei</i>				0.1			
<i>Evolvulus alsinoides</i>							
<i>Hibiscus fleckii</i>	0.1						
<i>Hibiscus sulfuranthus</i>							
<i>Nelsia quadrangula</i>							
<i>Rhus lancea</i>	0.1			0.1		0.1	
<i>Selago alupecurioides</i>	0.1	2.5					8.75
<i>Senecio cinarescens</i>		0.1				2.5	
<i>Stipagrostis uniplumis</i> var. <i>uniplumis</i>							
<i>Tagetes minuta</i>	0.1						
<i>Ziziphus mucronata</i>							
<i>Aizoanthemum dinteri</i>						0.1	
<i>Aptosimum lineare</i>				0.1		0.1	
<i>Aristida meridionalis</i>							
<i>Boophone disticha</i>				0.1			
<i>Chenopodium schraderianum</i>	0.1	0.1		0.1			
<i>Cotyledon orbiculata</i>				0.1			
<i>Elephantorrhiza elephantina</i>			0.1				
<i>Enneapogon cenchroides</i>				0.1			
<i>Eragrostis echinochloidea</i>			0.1				
<i>Eragrostis porosa</i>			2.5				
<i>Frankenia pomonensis</i>					0.1		2.5
<i>Geigeria ornativa</i>			0.1		0.1		
<i>Hebenstretia integrifolia</i>							
<i>Heliophila carnosa</i>							
<i>Hermannia modesta</i>			0.1				
<i>Hermbstaedtia odorata</i>							
<i>Moraea polystachya</i>				0.1			0.1
<i>Osteospermum muricatum</i> subsp. <i>longiradiatum</i>	2.5	2.5			0.1		
<i>Pentarrhinum insipidum</i>							
<i>Phyllanthus sp.</i>					0.1		
<i>Senecio inaequidens</i>					0.1		2.5
<i>Sida chrysantha</i>			0.1				
<i>Thesium xerophyticum</i>					2.5		

<i>Trochomeria macrocarpa</i>			0.1				
<i>Vigna frutescens</i>			0.1				
<i>Xerophyta viscosa</i>				0.1		0.1	0.1
<i>Acacia mellifera</i>							
<i>Amaranthus praetermissus</i>						0.1	
<i>Asparagus exuvialis</i>			0.1				
<i>Crassula capitella</i> <i>subsp. nodulosa</i>							
<i>Dichrostachys cinerea</i>							
<i>Dicoma macrocephala</i>			0.1				
<i>Dipcadi glaucum</i>							
<i>Eragrostis rigidior</i>							
<i>Cheilanthes marlothii</i>					2.5		
<i>Fockea angustifolia</i>			0.1	0.1			
<i>Gisekia africana</i>	0.1			0.1			
<i>Gladiolus permeabilis</i>				0.1			
<i>Gladiolus saccatus</i>				0.1			
<i>Helichrysum obtusum</i>				0.1			
<i>Helichrysum tomentosulum</i> <i>subsp. tomentosulum</i>						2.5	
<i>Hermannia quartiniana</i>	0.1		0.1				
<i>Kyllinga alba</i>							
<i>Lantana sp.</i>					0.1		
<i>Lessertia candida</i>							0.1
<i>Limeum argute-carinatum</i>				0.1			
<i>Montinia caryophyllacea</i>							
<i>Namacodon schinzianum</i>							
<i>Oxygonum alatum</i>							
<i>Raphionacme velutina</i>					0.1		
<i>Silene burchellii burchellii</i>				0.1			
<i>Sphedamnocarpus pruriens</i> <i>subsp. pruriens</i>				8.75		0.1	
<i>Tristachya superba</i>							
<i>Acacia karroo</i>							
<i>Albizia anthelmintica</i>							
<i>Aloe littoralis</i>							

<i>Anthospermum sp.</i>				0.1			
<i>Aristida congesta</i>			0.1				
<i>Aristida effusa</i>							
<i>Asparagus sp.</i>					0.1		0.1
<i>Barleria lancifolia</i>							
<i>Dicoma dinteri</i>					0.1		
<i>Diospyros lycioides</i>				0.1			2.5
<i>Drimia sanguinea</i>					0.1		
<i>Enneapogon scoparius</i>							
<i>Eragrostis 04013</i>							
<i>Eurypos subcarnosus</i>	0.1						
<i>Hermannia sp.</i>					0.1		
<i>Hibiscus trionum</i>			0.1	0.1			
<i>Ipomoea bolusiana</i>			0.1				
<i>Jamesbrittenia huillana</i>				0.1			
<i>Kalanchoe sp.</i>							
<i>Kohautia caespitosa</i>							
<i>Leonotis ocyimifolia</i>				0.1			
<i>Lepidium africanum</i>	0.1						0.1
<i>Leucas glabrata var. glabrata</i>	0.1						
<i>Monelytrum luederitzianum</i>					2.5		
<i>Pegolettia senegalensis</i>							
<i>Pergularia daemia</i>							
<i>Pollichia campestris</i>						0.1	
<i>Rhus tenuinervis</i>				0.1			
<i>Sida ovata</i>				0.1			
<i>Solanum rigescens</i>							
<i>Tribulus terrestris</i>				0.1			
<i>Tricholaena capensis subsp. arenaria</i>							
<i>Acacia reficiens</i>							
<i>Artemisia afra</i>							2.5
<i>Cyperus fulgens</i>							
<i>Ehretia alba</i>							
<i>Eragrostis lehmanniana var. lehmanniana</i>							

<i>Hermannia affinis</i>							
<i>Passerina montana</i>							
<i>Phlyctidocarpa flava</i>							
<i>Pogonarthria squarrosa</i>							
<i>c.f. Mariscus rehmannianus</i>							

<b>Appendix 1. Plant species and their occurrence in different altitude zones in the Auas Mountains.</b>					
<b>altitude class</b>					
<b>E: 2300-2400m</b>					
<b>aspect (N=north-facing, S=south-facing)</b>	<b>S</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>S</b>
<b>sample code</b>	<b>AU-08</b>	<b>5205</b>	<b>5304</b>	<b>AU-16</b>	<b>AU-02</b>
<i>Tarchonanthus camphoratus</i>	8.75	2.5	8.75	8.75	0.1
<i>Acacia hereroensis</i>		2.5	0.1	8.75	0.1
<i>Hypoestes forskaolii</i>	2.5	8.75	0.1	8.75	2.5
<i>Digitaria eriantha</i>	2.5	0.1	2.5	8.75	18.75
<i>Eragrostis nindensis</i>		2.5	0.1		
<i>Eragrostis scopelophila</i>		8.75	8.75		
<i>Danthoniopsis ramosa</i>	8.75	0.1	18.75	8.75	8.75
<i>Melinis repens subsp. repens</i>		0.1		2.5	
<i>Pellaea calomelanos</i>		0.1	0.1	0.1	0.1
<i>Oxalis purpurascens</i>	0.1	0.1	0.1		
<i>Brachiaria nigropedata</i>		8.75	2.5	8.75	
<i>Rhus marlothii</i>	2.5	0.1			
<i>Heteropogon contortus</i>		18.75			
<i>Osyris lanceolata</i>	2.5	0.1	0.1	2.5	0.1
<i>Chascanum pinnatifidum</i>		0.1	0.1	0.1	0.1
<i>Gymnosporia linearis subsp. lanceolata</i>	2.5	0.1			
<i>Rhynchosia totta</i>		0.1	0.1	0.1	
<i>Antheppora pubescens</i>		2.5			
<i>Euclea undulata</i>	2.5	0.1		2.5	
<i>Cenchrus ciliaris</i>			0.1		
<i>Pegolettia retrofracta</i>	0.1	0.1	0.1	2.5	
<i>Solanum incanum</i>	0.1	0.1			
<i>Babiana hypogea</i>		0.1	0.1	0.1	
<i>Eriocephalus scariosus</i>		0.1	0.1		
<i>Felicia muricata</i>		0.1	0.1		
<i>Andropogon schirensis</i>		0.1	0.1	2.5	
<i>Combretum apiculatum</i>					
<i>Cymbopogon pospischilii</i>		0.1	0.1		8.75
<i>Hypoxis iridifolia</i>		0.1	0.1		
<i>Kyphocarpa angustifolia</i>					

<i>Talinum caffrum</i>					
<i>Wahlenbergia denticulata</i>		0.1	0.1	2.5	0.1
<i>Commelina africana</i> var. <i>krebsiana</i>			0.1		
<i>Heteromorpha stenophylla</i>	2.5	0.1	0.1	2.5	
<i>Aptosimum arenarium</i>		0.1			
<i>Commelina africana</i> var. <i>africana</i>	0.1				
<i>Dombeya rotundifolia</i>					
<i>Elionurus muticus</i>		0.1	0.1		8.75
<i>Kalanchoe brachyloba</i>		0.1	0.1	0.1	
<i>Lopholaena cneorifolia</i>		0.1	0.1	2.5	0.1
<i>Olea europaea</i>		0.1	0.1	0.1	0.1
<i>Ornithoglossum vulgare</i>			0.1		
<i>Osteospermum montanum</i>		0.1	0.1		
<i>Stoebe plumosa</i>		0.1	0.1		0.1
<i>Themeda triandra</i>		2.5	8.75		
<i>Thesium laciniatum</i>		0.1	0.1		
<i>Aristida adscensionis</i>					
<i>Dyschoriste pseudirecta</i>					
<i>Eriocephalus dinteri</i>	0.1				0.1
<i>Hirpicium gazanioides</i>					
<i>Jamesbrittenia hyperioides</i>		0.1	0.1		
<i>Phyllanthus pentandrus</i>		0.1			
<i>Brachiaria serrata</i>		2.5	0.1	2.5	
<i>Cymbopogon caesius</i>		0.1		0.1	
<i>Dianthus namaensis</i>		0.1	0.1	0.1	0.1
<i>Dicoma anomala</i> subsp. <i>gerrardii</i>		0.1	0.1	0.1	0.1
<i>Euphorbia spartaria</i>			0.1	2.5	
<i>Fingerhuthia africana</i>					
<i>Hibiscus pusillus</i>		0.1			
<i>Jamesbrittenia pallida</i>	2.5			0.1	0.1
<i>Lotononis calycina</i>		0.1	0.1		
<i>Microchloa caffra</i>					
<i>Ocimum americanum</i>		0.1			
<i>Schmidtia pappophoroides</i>					
<i>Selago angustibractea</i>		0.1	8.75		
<i>Solanum delagoense</i>			0.1		

<i>Anthospermum rigidum</i>		0.1	0.1		
<i>Bidens biternata</i>			0.1		
<i>Blepharis integrifolia</i> var. <i>integrifolia</i>		0.1			
<i>Cheilanthes marlothii</i>		0.1			
<i>Cineraria canescens</i>		0.1	0.1	0.1	
<i>Cyperus margaritaceus</i>					
<i>Elephantorrhiza suffruticosa</i>					
<i>Ipomoea holubii</i>					
<i>Ipomoea obscura</i>		0.1	0.1		
<i>Lantana dinteri</i>		0.1			
<i>Lycium eonii</i>		0.1			
<i>Monsonia burkeana</i>		0.1	0.1		
<i>Polygala uncinata</i>		0.1			
<i>Solanum rigescentoides</i>			0.1	0.1	
<i>Tephrosia rhodesica</i>		0.1			
<i>Ursinia nana</i>		0.1	0.1		0.1
<i>Vernonia poskeana</i> subsp. <i>botswanaica</i>					
<i>Adromischus</i> sp.		0.1	0.1		
<i>Albuca</i> sp.		0.1			
<i>Andropogon chinensis</i>					
<i>Antizoma angustifolia</i>					
<i>Calostephane marlothiana</i>		0.1	0.1		
<i>Cheilanthes hirta</i> var. <i>brevipilosa</i>	0.1				0.1
<i>Cheilanthes multifida</i>		0.1	0.1		
<i>Cleome rubella</i>					
<i>Crassula subaphylla</i> var. <i>subaphylla</i>			0.1	0.1	
<i>Cymbopogon dieterlenii</i>			0.1		
<i>Diospyros ramulosa</i>			0.1		
<i>Ebracteola montis-moltkei</i>		0.1	0.1		
<i>Evolvulus alsinoides</i>					
<i>Hibiscus fleckii</i>					
<i>Hibiscus sulfuranthus</i>					
<i>Nelsia quadrangula</i>				0.1	
<i>Rhus lancea</i>	2.5				
<i>Selago alupecurioides</i>	0.1			0.1	2.5
<i>Senecio cinarescens</i>			0.1		



<i>Stipagrostis uniplumis</i> var. <i>uniplumis</i>				
<i>Tagetes minuta</i>	0.1			
<i>Ziziphus mucronata</i>				
<i>Aizoanthemum dinteri</i>		0.1		
<i>Aptosimum lineare</i>			0.1	
<i>Aristida meridionalis</i>				
<i>Boophone disticha</i>		0.1	0.1	
<i>Chenopodium schraderianum</i>			0.1	
<i>Cotyledon orbiculata</i>		0.1		0.1
<i>Elephantorrhiza elephantina</i>				
<i>Enneapogon cenchroides</i>				
<i>Eragrostis echinochloidea</i>				
<i>Eragrostis porosa</i>				
<i>Frankenia pomonensis</i>				0.1
<i>Geigeria ornativa</i>				
<i>Hebenstretia integrifolia</i>			0.1	0.1
<i>Heliophila carnosia</i>				
<i>Hermannia modesta</i>				
<i>Hermbstaedtia odorata</i>				
<i>Moraea polystachya</i>			0.1	
<i>Osteospermum muricatum</i> subsp. <i>longiradiatum</i>				2.5
<i>Pentarrhinum insipidum</i>				
<i>Phyllanthus</i> sp.				
<i>Senecio inaequidens</i>	0.1			0.1
<i>Sida chrysantha</i>				
<i>Thesium xerophyticum</i>				2.5
<i>Trochomeria macrocarpa</i>				
<i>Vigna frutescens</i>				
<i>Xerophyta viscosa</i>			0.1	0.1
<i>Acacia mellifera</i>				
<i>Amaranthus praetermissus</i>				
<i>Asparagus exuvialis</i>				
<i>Crassula capitella</i> subsp. <i>nodulosa</i>			0.1	0.1
<i>Dichrostachys cinerea</i>				
<i>Dicoma macrocephala</i>				

<i>Dipcadi glaucum</i>					
<i>Eragrostis rigidior</i>	0.1				
<i>Cheilanthes marlothii</i>	0.1			0.1	
<i>Fockea angustifolia</i>		0.1			
<i>Gisekia africana</i>					
<i>Gladiolus permeabilis</i>			0.1		
<i>Gladiolus saccatus</i>			0.1		
<i>Helichrysum obtusum</i>			0.1		
<i>Helichrysum tomentosulum</i> <i>subsp. tomentosulum</i>			0.1		
<i>Hermannia quartiniana</i>					
<i>Kyllinga alba</i>		0.1			
<i>Lantana sp.</i>				0.1	
<i>Lessertia candida</i>		0.1			
<i>Limeum argute-carinatum</i>			0.1		
<i>Montinia caryophyllacea</i>					
<i>Namacodon schinzianum</i>					0.1
<i>Oxygonum alatum</i>					
<i>Raphionacme velutina</i>					
<i>Silene burchellii burchellii</i>		0.1			
<i>Sphedamnocarpus pruriens subsp. pruriens</i>		0.1			
<i>Tristachya superba</i>		0.1	0.1		
<i>Acacia karroo</i>	8.75		0.1		
<i>Albizia anthelmintica</i>					
<i>Aloe littoralis</i>		0.1	0.1		
<i>Anthospermum sp.</i>			0.1		
<i>Aristida congesta</i>		0.1			
<i>Aristida effusa</i>					
<i>Asparagus sp.</i>					
<i>Barleria lancifolia</i>					
<i>Dicoma dinteri</i>					
<i>Diospyros lycioides</i>					
<i>Drimia sanguinea</i>					
<i>Enneapogon scoparius</i>					
<i>Eragrostis 04013</i>					
<i>Eurypos subcarnosus</i>					

<i>Hermannia sp.</i>					
<i>Hibiscus trionum</i>					
<i>Ipomoea bolusiana</i>					
<i>Jamesbrittenia huillana</i>		0.1			
<i>Kalanchoe sp.</i>	0.1				
<i>Kohautia caespitosa</i>					
<i>Leonotis ocymifolia</i>		0.1	0.1		
<i>Lepidium africanum</i>					
<i>Leucas glabrata var. glabrata</i>					0.1
<i>Monelytrum luederitzianum</i>					
<i>Pegolettia senegalensis</i>					
<i>Pergularia daemia</i>				0.1	
<i>Pollichia campestris</i>					
<i>Rhus tenuinervis</i>			0.1		
<i>Sida ovata</i>			0.1		
<i>Solanum rigescens</i>					
<i>Tribulus terrestris</i>					
<i>Tricholaena capensis subsp. arenaria</i>	0.1				
<i>Acacia reficiens</i>					
<i>Artemisia afra</i>			0.1		
<i>Cyperus fulgens</i>					
<i>Ehretia alba</i>					
<i>Eragrostis lehmanniana var. lehmanniana</i>					
<i>Hermannia affinis</i>					
<i>Passerina montana</i>					
<i>Phlyctidocarpa flava</i>	2.5				
<i>Pogonarthria squarrosa</i>					
<i>c.f. Mariscus rehmannianus</i>					

<b>Appendix 1. Plant species and their occurrence in different altitude zones in the Auas Mountains.</b>				
<b>altitude class</b>				
<b>F: &gt; 2400m</b>				
<b>aspect (N=north-facing, S=south-facing)</b>	<b>S</b>	<b>N</b>	<b>N</b>	<b>N</b>
<b>sample code</b>	<b>AU-07</b>	<b>5206</b>	<b>5305</b>	<b>AU-06</b>
<i>Tarchonanthus camphoratus</i>			2.5	
<i>Acacia hereroensis</i>		2.5	0.1	
<i>Hypoestes forskoolii</i>	8.75	8.75	2.5	2.5
<i>Digitaria eriantha</i>	8.75	2.5	2.5	8.75
<i>Eragrostis nindensis</i>	2.5	2.5		2.5
<i>Eragrostis scopelophila</i>		2.5		2.5
<i>Danthoniopsis ramosa</i>	2.5	8.75	18.75	
<i>Melinis repens</i> subsp. <i>repens</i>		2.5		2.5
<i>Pellaea calomelanos</i>	0.1			
<i>Oxalis purpurascens</i>	0.1	0.1	0.1	0.1
<i>Brachiaria nigropedata</i>				
<i>Rhus marlothii</i>	0.1	0.1	0.1	0.1
<i>Heteropogon contortus</i>				
<i>Osyris lanceolata</i>		0.1	0.1	
<i>Chascanum pinnatifidum</i>	2.5	0.1	0.1	0.1
<i>Gymnosporia linearis</i> subsp. <i>lanceolata</i>		0.1	0.1	
<i>Rhynchosia totta</i>			2.5	
<i>Antheppora pubescens</i>				
<i>Euclea undulata</i>				
<i>Cenchrus ciliaris</i>				
<i>Pegolettia retrofracta</i>	0.1	2.5	2.5	0.1
<i>Solanum incanum</i>		0.1		0.1
<i>Babiana hypogea</i>		0.1	0.1	0.1
<i>Eriocephalus scariosus</i>		0.1	0.1	
<i>Felicia muricata</i>	0.1	0.1	0.1	0.1
<i>Andropogon schirensis</i>	18.75	8.75	2.5	8.75
<i>Combretum apiculatum</i>				
<i>Cymbopogon pospischilii</i>		2.5	8.75	
<i>Hypoxis iridifolia</i>		0.1		
<i>Kyphocarpa angustifolia</i>				

<i>Talinum caffrum</i>				
<i>Wahlenbergia denticulata</i>	2.5	0.1	0.1	0.1
<i>Commelina africana</i> var. <i>krebsiana</i>			0.1	
<i>Heteromorpha stenophylla</i>			0.1	
<i>Aptosimum arenarium</i>		0.1		
<i>Commelina africana</i> var. <i>africana</i>				0.1
<i>Dombeya rotundifolia</i>				
<i>Elionurus muticus</i>	8.75			0.1
<i>Kalanchoe brachyloba</i>				
<i>Lopholaena cneorifolia</i>		0.1	0.1	
<i>Olea europaea</i>			0.1	
<i>Ornithoglossum vulgare</i>		0.1		
<i>Osteospermum montanum</i>				
<i>Stoebe plumosa</i>	8.75	2.5	0.1	0.1
<i>Themeda triandra</i>		2.5	2.5	
<i>Thesium lacinulatum</i>			0.1	
<i>Aristida adscensionis</i>				
<i>Dyschoriste pseudirecta</i>				
<i>Eriocephalus dinteri</i>	2.5			2.5
<i>Hirpicium gazanioides</i>				
<i>Jamesbrittenia hyperioides</i>		0.1	0.1	
<i>Phyllanthus pentandrus</i>				
<i>Brachiaria serrata</i>		2.5		
<i>Cymbopogon caesius</i>		2.5		
<i>Dianthus namaensis</i>	0.1	0.1		
<i>Dicoma anomala</i> subsp. <i>gerrardii</i>		0.1		0.1
<i>Euphorbia spartaria</i>			0.1	
<i>Fingerhuthia africana</i>				
<i>Hibiscus pusillus</i>				
<i>Jamesbrittenia pallida</i>	0.1			0.1
<i>Lotononis calycina</i>	0.1			0.1
<i>Microchloa caffra</i>				
<i>Ocimum americanum</i>		0.1		
<i>Schmidtia pappophoroides</i>				
<i>Selago angustibractea</i>		0.1	2.5	
<i>Solanum delagoense</i>				

<i>Anthospermum rigidum</i>				
<i>Bidens biternata</i>				
<i>Blepharis integrifolia</i> var. <i>integrifolia</i>		0.1		
<i>Cheilanthes marlothii</i>				
<i>Cineraria canescens</i>		0.1	0.1	
<i>Cyperus margaritaceus</i>		0.1		
<i>Elephantorrhiza suffruticosa</i>				
<i>Ipomoea holubii</i>				
<i>Ipomoea obscura</i>				
<i>Lantana dinteri</i>				
<i>Lycium eenii</i>				
<i>Monsonia burkeana</i>		0.1		
<i>Polygala uncinata</i>		0.1		0.1
<i>Solanum rigescentoides</i>				
<i>Tephrosia rhodesica</i>				0.1
<i>Ursinia nana</i>	0.1	0.1		0.1
<i>Vernonia poskeana</i> subsp. <i>botswanaica</i>				
<i>Adromischus</i> sp.		0.1	0.1	
<i>Albuca</i> sp.				
<i>Andropogon chinensis</i>				
<i>Antizoma angustifolia</i>				
<i>Calostephane marlothiana</i>		0.1	0.1	
<i>Cheilanthes hirta</i> var. <i>brevipilosa</i>	0.1			
<i>Cheilanthes multifida</i>			0.1	
<i>Cleome rubella</i>				
<i>Crassula subaphylla</i> var. <i>subaphylla</i>	0.1	0.1	0.1	0.1
<i>Cymbopogon dieterlenii</i>	8.75		2.5	0.1
<i>Diospyros ramulosa</i>		0.1		
<i>Ebracteola montis-moltkei</i>		2.5	0.1	0.1
<i>Evolvulus alsinoides</i>				
<i>Hibiscus fleckii</i>				
<i>Hibiscus sulfuranthus</i>				
<i>Nelsia quadrangula</i>				
<i>Rhus lancea</i>				
<i>Selago alupeкуроoides</i>				
<i>Senecio cinarescens</i>			0.1	

<i>Stipagrostis uniplumis</i> var. <i>uniplumis</i>				
<i>Tagetes minuta</i>				2.5
<i>Ziziphus mucronata</i>				
<i>Aizoanthemum dinteri</i>		0.1		
<i>Aptosimum lineare</i>				
<i>Aristida meridionalis</i>			0.1	2.5
<i>Boophone disticha</i>			0.1	
<i>Chenopodium schraderianum</i>				
<i>Cotyledon orbiculata</i>			0.1	
<i>Elephantorrhiza elephantina</i>				
<i>Enneapogon cenchroides</i>				
<i>Eragrostis echinochloidea</i>				
<i>Eragrostis porosa</i>				
<i>Frankenia pomonensis</i>	0.1			0.1
<i>Geigeria ornativa</i>				
<i>Hebenstretia integrifolia</i>		0.1		
<i>Heliophila carnosia</i>	0.1	0.1		0.1
<i>Hermannia modesta</i>				
<i>Hermbstaedia odorata</i>				
<i>Moraea polystachya</i>			0.1	
<i>Osteospermum muricatum</i> subsp. <i>longiradiatum</i>				
<i>Pentarrhinum insipidum</i>			0.1	
<i>Phyllanthus</i> sp.				
<i>Senecio inaequidens</i>	2.5			
<i>Sida chrysantha</i>				
<i>Thesium xerophyticum</i>	0.1			
<i>Trochomeria macrocarpa</i>				
<i>Vigna frutescens</i>				
<i>Xerophyta viscosa</i>				
<i>Acacia mellifera</i>				
<i>Amaranthus praetermissus</i>				
<i>Asparagus exuvialis</i>				
<i>Crassula capitella</i> subsp. <i>nodulosa</i>		0.1		
<i>Dichrostachys cinerea</i>				
<i>Dicoma macrocephala</i>				
<i>Dipcadi glaucum</i>				

<i>Eragrostis rigidior</i>	2.5			2.5
<i>Cheilanthes marlothii</i>				
<i>Fockea angustifolia</i>				
<i>Gisekia africana</i>				
<i>Gladiolus permeabilis</i>			0.1	
<i>Gladiolus saccatus</i>		0.1	0.1	
<i>Helichrysum obtusum</i>		0.1		
<i>Helichrysum tomentosulum subsp. tomentosulum</i>				
<i>Hermannia quartiniana</i>				0.1
<i>Kyllinga alba</i>				
<i>Lantana sp.</i>				
<i>Lessertia candida</i>				
<i>Limeum argute-carinatum</i>				
<i>Montinia caryophyllacea</i>				
<i>Namacodon schinzianum</i>	0.1			0.1
<i>Oxygonum alatum</i>				
<i>Raphionacme velutina</i>				
<i>Silene burchellii burchellii</i>		0.1		
<i>Sphedamnocarpus pruriens subsp. pruriens</i>				
<i>Tristachya superba</i>		0.1	2.5	
<i>Acacia karroo</i>				
<i>Albizia anthelmintica</i>				
<i>Aloe littoralis</i>				
<i>Anthospermum sp.</i>		0.1		
<i>Aristida congesta</i>				
<i>Aristida effusa</i>				
<i>Asparagus sp.</i>				
<i>Barleria lancifolia</i>				
<i>Dicoma dinteri</i>				
<i>Diospyros lycioides</i>				
<i>Drimia sanguinea</i>				
<i>Enneapogon scoparius</i>				
<i>Eragrostis 04013</i>				
<i>Eurypos subcarnosus</i>				
<i>Hermannia sp.</i>				
<i>Hibiscus trionum</i>				



<i>Ipomoea bolusiana</i>				
<i>Jamesbrittenia huillana</i>				
<i>Kalanchoe sp.</i>				
<i>Kohautia caespitosa</i>				
<i>Leonotis ocymifolia</i>				
<i>Lepidium africanum</i>				
<i>Leucas glabrata</i> var. <i>glabrata</i>	0.1			
<i>Monelytrum luederitzianum</i>				
<i>Pegolettia senegalensis</i>				
<i>Pergularia daemia</i>				
<i>Pollichia campestris</i>				
<i>Rhus tenuinervis</i>			0.1	
<i>Sida ovata</i>				
<i>Solanum rigescens</i>				
<i>Tribulus terrestris</i>				
<i>Tricholaena capensis</i> subsp. <i>arenaria</i>	0.1			
<i>Acacia reficiens</i>				
<i>Artemisia afra</i>				
<i>Cyperus fulgens</i>				
<i>Ehretia alba</i>				
<i>Eragrostis lehmanniana</i> var. <i>lehmanniana</i>				
<i>Hermannia affinis</i>				
<i>Passerina montana</i>		8.75		2.5
<i>Phlyctidocarpa flava</i>				
<i>Pogonarthria squarrosa</i>				
<i>c.f. Mariscus rehmannianus</i>				