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The Sneeuwberg: A new centre of floristic endemism on the Great Escarpment, South Africa

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Abstract

The Sneeuwberg mountain complex (Eastern Cape) comprises one of the most prominent sections of the Great Escarpment in southern Africa but until now has remained one of the botanically least known regions. The Sneeuwberg is a discrete orographical entity, being delimited in the east by the Great Fish River valley, in the west by the Nelspoort Interval, to the south by the Plains of Camdeboo, and to the north by the Great Karoo pediplain. The highest peaks range from 2278 to 2504 m above sea level, and the summit plateaux range from 1800 to 2100 m. Following extensive literature review and a detailed collecting programme, the Sneeuwberg is reported here as having a total flora of 1195 species of which 107 (9%) are alien species, 33 (2.8%) are endemic, and 13 (1.1%) near-endemic. Five species previously reported as Drakensberg Alpine Centre (DAC) endemics are now known to occur in the Sneeuwberg (representing range extensions of some 300–500 km). One-hundred-and-five species (8.8%) are DAC near-endemics, with the Sneeuwberg being the western limit for most of these. Ten species (0.8%) represent disjunctions across the Karoo Interval from the Cape Floristic Region (CFR) to the Sneeuwberg. In all, some 23 significant range extensions, eight new species, and several rediscoveries are recorded. We conclude by recognising the Sneeuwberg as a new centre of endemism along the Great Escarpment, with floristic affinities with the Albany Centre and the DAC, and links to the CFR.

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1. Introduction

The possibility that the Sneeuwberg could be considered as a centre or sub-centre of endemism in its own right was first raised by Weimarck (1941) in his discussion on the Karoo Interval. Weimarck (1941) considered the Sneeuwberg as a possible sub-centre within the CFR, based on the presence of several disjunct CFR species. He suggested that the Sneeuwberg may parallel his Hantam–Roggeveld Centre, which was considered a sub-centre of his North-west Centre. However, he eventually excluded the Sneeuwberg as a centre of endemism owing to the paucity of CFR elements (Weimarck, 1941).

Despite this, the concept of the Sneeuwberg as a centre of endemism was perpetuated by Nordenstam (1969), who recognised the region as a centre of diversity and endemism for the genus *Euryops* Cass. His concept of the Sneeuwberg Centre (or “Sneeuwbergen Centre” as published) included the Stormberg, Great Winterberg and Amatola Mountains. It is thus a montane region centred on the Great Escarpment between Nordenstam’s (1969) Drakensberg Centre and Weimarck’s (1941) Cape Centre. Nordenstam (1969) indicates that this Sneeuwberg Centre could possibly be sub-divided further, although he does not suggest how, and further noted that the region was poorly known and its importance needed further investigation. At the family level, Koekemoer (1996) identified eight putative centres of Asteraceae diversity in southern Africa, the Sneeuwberg region being one, but termed by her the “Middelburg Centre”.

Hilton-Taylor (1987), following the work of Weimarck (1941) and Nordenstam (1969) also recognised the existence of

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the Sneeuwberg Centre within the Western Cape Domain (sensu Werger, 1978) and adjacent areas.

In contrast to these workers who considered the Sneeuwberg unusual if not discrete, Van Wyk and Smith (2001) included the Sneeuwberg in their broadly defined Albany Centre of Endemism. However, the delimitation of the Albany Centre is by no means clear. The concept of an Albany Centre was first introduced by Weimarck (1941) as the Zuurburg Subcentre, a sub-centre within the CFR based on Cape elements and the endemic Cape genus *Oldenburgia* Less. Croizat (1965) later described an Albany Centre based on *Euphorbia* L. and which comprised the Great Fish River drainage basin (Van Wyk and Smith, 2001). Thicket is now considered the most obvious and typical aspect of the Albany Centre (Hamilton, 1994; Van Wyk and Smith, 2001). Hamilton (1994) also considers the Albany Centre to be a transitional centre of endemism for genera centred in the Cape, Nama-karoo and Maputo–Pondoland regions. Based on the current broad delimitation, the Albany Centre is believed to have approximately 4000 species/intra-specific taxa, of which more than 600 are endemic or near-endemic, and many of which are succulents (Hamilton, 1994; Van Wyk and Smith, 2001).

White (1978) included the Sneeuwberg in his afro-montane archipelago, in Africa south of the Limpopo stretching from Knysna to the Soutpansberg (Bester, 1998). Various centres of endemism have been defined within this region i.e. the Wolkberg, Sekhukhune, Barberton, Soutpansberg and DAC of Van Wyk and Smith (2001). The definition of such centres is perhaps challenging given the phylogeographical commonality between them (Hilliard and Burt, 1987; Van Wyk and Smith, 2001; Carbutt and Edwards, 2006; Mucina and Rutherford, 2006). Mucina and Rutherford (2006) have accordingly proposed a “Northern Sourveld Endemics” concept for the total afro-montane escarpment in southern Africa, comparable to Stuckenberg’s (1962) Eastern Highlands Centre for palaeogenic invertebrate fauna. The largest and perhaps most important of these afro-montane centres is the DAC, considered to be a possible hub between the CFR, the northern Great Escarpment (as far north as the Chimanimani–Nyanga mountains in Zimbabwe/Mozambique), and the midlands of KwaZulu–Natal, Transkei and Pondoland (Van Wyk and Smith, 2001; Carbutt and Edwards, 2004; Mucina and Rutherford, 2006). Van Wyk and Smith’s (2001) DAC is defined as “alpine” (based on climate and not floristics) and occurs above 1800 m in the Eastern Cape Drakensberg, Witteberg, Lesotho Highlands, Malutis and KwaZulu–Natal Drakensberg. The grasslands and afro-montane forests below 1800 m are excluded from this definition of the DAC (Van Wyk and Smith, 2001). Van Wyk and Smith’s (2001) DAC is a smaller version of Phillips’s (1917) Eastern Mountain Region, which includes the DAC as well as the surrounding highlands above 1525 m as far south as Queenstown and the mountains in the Transkei (Hilliard and Burt, 1987; Bester, 1998; Carbutt and Edwards, 2006). Carbutt and Edwards (2004) in their definition of the DAC also use the 1800 m contour, but include outliers above 1800 m such as the Kamberg (2095 m) and Ngele Range (2698 m), following on from Hilliard and Burt (1987) in this regard. The DAC as defined by these authors is estimated to have between 2200 and 2618 species, of which between 334 (13%) and 400 (18.2%) are endemic (Van Wyk and

Smith, 2001; Carbutt and Edwards, 2006). Carbutt and Edwards indicate that some 595 species (24%) are considered to be DAC near-endemics. Other notable proposals of a DAC include Weimarck’s (1941) Drakensberg Centre, which includes the Stormberg thus overlapping with Nordenstam’s (1969) “Sneeuwbergen Centre”, and Nordenstam’s (1969) Drakensberg Centre.

Mucina and Rutherford (2006) have proposed a revision of the southern African afro-montane centres, and propose six centres in the Grassland Biome, namely the Soutpansberg, Wolkberg, Sekhukhune, Barberton, Midlands and DAC. Their DAC is the widest of all the DAC concepts, and includes the Stormberg, Great Winterberg–Amatolas and the Bankberg or Boschberg (part of the Sneeuwberg), effectively extending the DAC well to the south-west to include these fragmented but high sections of the south-eastern Great Escarpment.

Here we document and analyse the floristic diversity of the Sneeuwberg, with special emphasis on levels of endemism and floristic relationships with the various centres mentioned above. In this paper, we firstly delimit the Sneeuwberg Centre, secondly discuss the history of botanical exploration and land use, thirdly present a synopsis of the abiotic and biotic environments, and finally detail the methods and results of our floristic surveys and phylogeographic analyses. Based on our results and analyses, we motivate for the formal recognition of the Sneeuwberg Centre of Endemism.

1.1. Defining and delimiting the Sneeuwberg Centre

The name ‘Sneeuwberg’ (historically “Sneeuwbergen”, meaning ‘snow mountains’; Henning, 1975; Smith, 1976) has been applied in various ways to a significant portion of the southern African Great Escarpment in the Cradock, Murraysburg, Richmond, Graaff-Reinet, Nieu-Bethesda and Middelburg Districts of the Great Karoo, mostly in the Eastern Cape Province, South Africa (Fig. 1). Given the complexity of historical names and associated confusion (Palmer, 1966; Archer, 2000), the Sneeuwberg is here defined explicitly as the discrete orographic entity forming a mountain arc some 200 km in length and which incorporates (from west to east) the Onder-Sneeuwberg, Kamdebooberge, Meelberg, Koudeveldberge, Toorberg, Winterhoekberge, Compassberg, Lootsberg, Renosterberg, Agter-Renosterberg, Wapadsberg, Nardousberg, Tandjiesberg, Coetzeeberg, Bankberg, Aasvoëlkrans, Groot Bruintjieshoogde and Boschberg. Although the Boschberg is climatically different from the rest of the Sneeuwberg, it has been included as it forms part of the same discrete entity of Great Escarpment. The Sneeuwberg is separated from the western Great Escarpment (Nuweveldberge) by Nordenstam’s (1969) “Nelspoort Interval” formed by the Gouritz–Kariega drainage basin, and from the eastern Great Escarpment (Great Winterberg–Amatola mountains) by the Great Fish River valley (Phillipson, 1987) (here termed the “Fish River Interval”). A montane bridge around the north of the Great Fish River basin (the Kikvorsberg and the Suurburg in the Noupoot and Steynsburg Districts) links the Sneeuwberg to the Stormberg. The Plains of Camdeboo, made famous by Palmer’s (1966) book and part of Weimarck’s (1941)

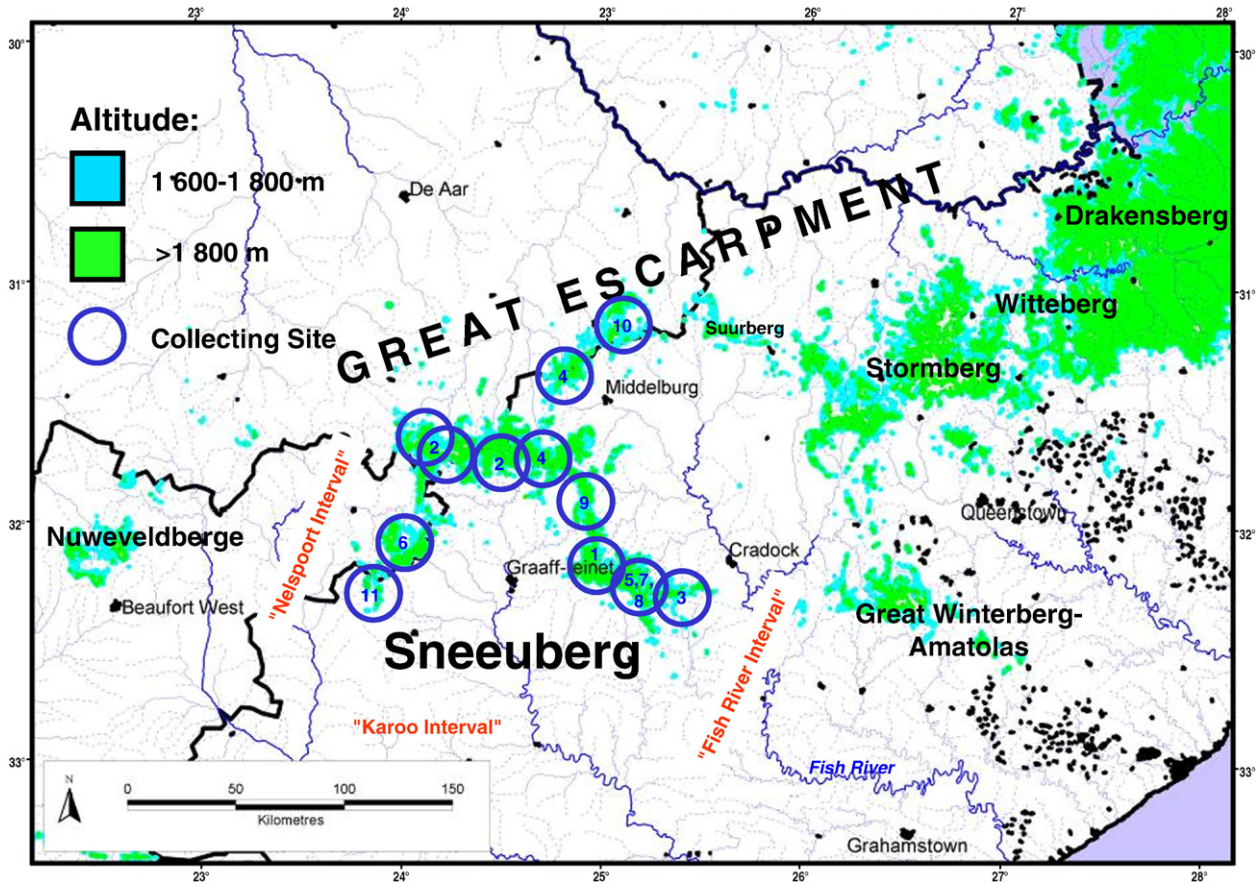


Fig. 1. Map showing the location of the Sneeu Berg mountain complex in the south-east Great Escarpment, South Africa. Circles indicate areas investigated during this survey; numbers correspond with Table 1.

“Karoo Interval”, separates the Sneeu Berg from the Cape Fold Belt to the south.

The high-altitude floras of southern and central Africa are incompletely documented, including that of the Sneeu Berg (Carbutt and Edwards, 2001; Küper et al., 2006). In general, the Sneeu Berg is a very poorly collected mountain range (Nordenstam, 1969; Hilliard, 1994), despite being one of the most prominent mountain ranges in the Great Escarpment (Boardman et al., 2003; Holmes et al., 2003). Botanical efforts to date have been mostly confined to specific taxonomic studies (e.g. Nordenstam, 1969; Whitehouse, 2002; Oliver, pers. comm.), and there is no indication of the Sneeu Berg ever having been comprehensively treated in terms of its flora, or in a detailed biogeographic comparison with other portions of the Great Escarpment in southern Africa. The closest work in this regard is Weimarck’s (1941) work on the endemic centres of the CFR, Nordenstam’s (1969) treatment of *Euryops*, and Carbutt and Edwards’s (2001) consideration of high-altitude Cape elements in Africa. In addition, several species from the Sneeu Berg are only known by their type material (Golding, 2002: e.g. *Apodolirion bolusii* Baker).

1.2. Pioneer botanical work

Carl Thunberg and Francis Masson would have been the earliest collectors in the Sneeu Berg as they intended to visit the

area in 1773 to 1774, but they were thwarted by difficulties and had to abandon the idea (Gunn and Codd, 1981). William Burchell passed through the area in 1812 and 1813 (McKay, 1943), and the brothers C. & J. Drège collected on the Compassberg and Renosterberg in 1829 (Gunn and Codd, 1981). The vast majority of pioneer botanical was however done by Harry Bolus between 1865 and 1875 while he lived in Graaff-Reinet (Gunn and Codd, 1981). He particularly collected on the Oudeberg to the north of Graaff-Reinet and on the mountains around Graaff-Reinet, but also made trips to the Boschberg (1866, 1867), Compassberg (1868), Nardousberg (1873) and the Koudeveldberge (1872, 1873) (Bolus, unpublished collecting book, vol. 1, housed in BOL). Numerous species from the region were discovered by Harry Bolus and have been named after him (e.g. *Pteronia bolusii* E. Phillips). Several species collected by him have not since been encountered again until recently when several were rediscovered during field work for this research (see later). Two contemporaries of Harry Bolus were Peter MacOwan, who collected extensively on the Boschberg and Groot Brintjieshoogde (Phillipson, 1987), and William Tyson, who collected in the Koudeveldberge (Gunn and Codd, 1981).

More recent work has been done on the Mountain Zebra National Park (MZNPN) area of the Sneeu Berg by A.M. Barnard (1952–1955), L.C.C. Liebenberg (1960s; Penzhorn, 1970), and by Pond et al. (2002). Other more recent collectors in the

Sneeuberg region have been H.P. Linder (1980's), B. Nordenstam (*Euryops*, 1950's), J.P.H. Acocks (Middelburg District), A.R. Palmer (Cape Midlands, 1980's), N.A. Helme (Nardousberg), C. Hobson (Aberdeen), E.G.H. Oliver (*Ericaceae*) and C. McMaster (Boschberg). It is not known how many specimens these collectors acquired. Key collections of Sneeu-berg specimens are kept at PRE, BOL, GRA, and the reference herbaria at MZNP and the Camdeboo National Park.

1.3. Historical land-use and vegetation

Since the establishment of European farmlands in the area from the 1770's (Boardman et al., 2003), the vegetation of the Sneeu-berg can be expected to have been modified to some degree. The primary land-use has been stock grazing, with the higher altitude grasslands being used for cattle and the lower shrublands for sheep and goats (Boardman et al., 2003). Very high stock densities in the Sneeu-berg for the duration of a century, peaking between the 1940s and 1960s, may have converted marginal grasslands to shrublands, this being exacerbated by periodic drought (Boardman et al., 2003). Such overgrazing of the higher altitude grasslands has possibly resulted in a dominance of the unpalatable *Merxmuellera disticha* (Nees) Conert grass at the expense of more palatable grasses such as *Themeda triandra* Forssk. and *Tetrachne dregei* Nees (Meadows and Watkeys, 1999). Farms managed according to a strict rotational fire and grazing regime are dominated by *T. triandra* at medium altitudes and by greater grass diversity than the otherwise dominant *M. disticha* at higher altitudes. These may be suggestive of 'normal' grass biodiversity and abundance. Historical over-stocking in thicket areas has also left a legacy of *Portulacaria afra* Jacq. extinction on some farms (Acocks, 1988; Palmer, 1990; Mucina and Rutherford, 2006).

Gully erosion is associated with historical overgrazing in high and low altitude water-courses, and there is a prevalence of sheet erosion in lower altitude areas (Keay-Bright and Boardman, 2007). The Seekoeirivier (arising at the north-western base of the Compassberg), was historically described as a system of vleis with intermittent pools used by hippopotamus (Boardman et al., 2003). It is currently a series of deep dongas, the erosion believed to have been initiated by the high wagon traffic and associated grazing and trampling by oxen and livestock after the opening of the Kimberley diamond fields in the 1870s (Boardman et al., 2003). The presence of such dongas is common throughout the Sneeu-berg however, and a combination of concentrated grazing and watering of livestock along such wetland systems on local farms is the likely reason for their tragic demise. It would appear that most low-altitude wetland systems in the Sneeu-berg have been severely degraded in this manner. In general, wetlands in the Sneeu-berg have not fared well historically, and those that are not eroded out are often locally threatened by current live-stock grazing and trampling. Most previously extensive wetlands at lower altitudes have been eroded out (e.g. Holmes, 1998) and no longer function as such.

There has been a recent shift towards game farming and associated eco-tourism in the region, and it is likely that most of the original game species except Black Rhinoceros and Lion are

now represented in the numerous game farms in the region. Rangeland management will remain an important concern for the management/restoration of natural vegetation cover on these farms.

2. Physical and biotic aspects of the study area

2.1. Geology

The geology of the Sneeu-berg is dominated by Jurassic dolerite sills, dykes, basins, belljar intrusions, laccoliths and inclined sheets that have intruded into the older Beaufort Group sandstones and mudstones of the Karoo Supergroup (Du Toit, 1920; Van der Walt, 1980; Palmer, 1988, 1991; Hill, 1993; De Klerk et al., 2002; Van Zijl, 2006). These dolerites are considered to be (at least in part) the feeder veins of the lava outpourings which terminated the Karoo depositional sequence at the breakup of Gondwana (Du Toit, 1920; Brink, 1983; Van Zijl, 2006), but as many as seven individual dolerite injections are believed to have taken place over time (Kent, 1980). The Beaufort sediments belong to the Late Permian Adelaide Subgroup (Hill, 1993). Metamorphic or "baked" sediments comprising hornfels and quartzites occur along the contact zones between the sedimentary strata and the dolerite intrusions (Hill, 1993).

2.2. Geomorphology

The Great Escarpment, in the form of mountain ranges with dramatic scarp slopes, is considered to be the oldest geomorphological feature of the Great Karoo (Watkeys, 1999) representing a passive relict of the Gondwana continental margin (Hill, 1993; Matmon et al., 2002). The structurally resistant nature of the Karoo dolerites has contributed to its continuing presence (Du Toit, 1920; Pond et al., 2002), and it is easily recognisable by its massive, prow-shaped ramparts.

In the Sneeu-berg the Great Escarpment forms a wide dissected region rather than a single scarp (Hill, 1993; Watkeys, 1999), being the result of head-ward erosion by south-flowing rivers such as the Sundays, Great Fish and Little Fish Rivers as well as a host of smaller streams (Hill, 1993). This has resulted in the continental watershed being pushed back by some 60 km from the main southern scarps of the Sneeu-berg. The continental watershed now runs from the Winterhoekberge (in the Richmond District – not to be confused with the ranges of similar names in the Uitenhage District) through to the Compassberg, north-east along the Agter-Renosterberg, then east along the Kikvorsberg and Suurberg, and south-east along the Bamboesberge. On the Compassberg there is 800 m between the headwaters that drain to the Atlantic and Indian Oceans (as evidenced on the 1:50 000 topographic sheets 3124DA and DC), indicating that the Compassberg is "close" to being isolated south of the continental watershed by a process of stream-piracy.

Partridge and Maud (1987) in their landmark paper on southern African erosion surfaces simply place the Sneeu-berg, together with all high lying areas of the Great Escarpment, into "mountainous areas above the African surface" (Partridge and

Maud, 1987: their Fig. 12). These represent landscapes older than the African cycle of erosion, and the higher peaks are considered to be remnants of the Jurassic/Gondwanan surface (Agnew, 1958). The intervening sections of escarpment are described as “other dissected areas” with “major structural control commonly present” (Partridge and Maud, 1987: their Fig. 12). The Plains of Camdeboo to the south represent the Post-African I surface, while the interior plateau north of the Great Escarpment represents the African surface (Partridge and Maud, 1987). The Sundays, Great Fish and Little Fish Rivers valleys represent the beginnings of the Post-African II erosion surface. Although the Sneeuberg is considered to simply pre-date the African surface, it comprises a fairly consistent double-plateau system, at ca. 1800 and at ca. 2100 m throughout the range (the two levels are for example clearly evident on the Sneeuberg north-west of Compassberg). The four major peaks (see below) in the Sneeuberg all stand as pyramids above the 2100 m plateau. These plateaux may represent structural control from horizontal sills, but may also suggest planing prior to the African surface (Partridge, pers. comm.), and are interpreted as such for the Amatola Mountains, with the highest peaks representing remnants of the Gondwanan surface (Agnew, 1958).

The Sneeuberg contains the highest peaks in the Great Escarpment west of the Eastern Cape Drakensberg. The Compassberg, at 2504 m, is one of the highest free-standing southern African peaks outside of the Drakensberg Massif and Lesotho Highlands (Readers Digest Atlas of Southern Africa, sine anno; see Fig. 2E). It is formed from an inclined dolerite sheet, such sheets being considered typical of the higher points in the Karoo (this is in contrast to the usual “tafelkop” nature of the Karoo mesas, more typical inland of the Great Escarpment and that result from horizontal sills; Du Toit, 1920). The next highest peak in the Sneeuberg, the Nardousberg (2429 m), follows the same structural pattern as that of the Compassberg, and this is repeated for the third (unnamed) peak, 2298 m near the Renosterberg and fourth highest peak (Toorberg, 2278 m) in the Sneeuberg. These peaks are all typically capped with a mass of irregular, angular boulders, probably the legacy of the severe climate in which mechanical weathering from frost action and shattering is dominant (Watkeys, 1999).

Other landforms in the Sneeuberg include bell-shaped dolerite intrusions which are present in the Blinkberg and Bankberg, and the resultant convex cliffs, summit rainwater rock pools and wetlands with high sinuosity are unusual for the Sneeuberg. Columnar dolerite (Du Toit, 1920) is common at medium altitudes (ca. 1600–1800 m) and free standing columns occasionally occur (e.g. the famous Valley of Desolation in the Camdeboo National Park). The abundant vertical to near-vertical rock scarps throughout the Sneeuberg vary from minor (<5 m in height) to major (>50 m in height). Such south-facing scarps provide almost all-day shade, and consequently provide a cool, often moist environment for annual and herbaceous species ill-equipped for the arid Karoo environment. Numerous afro-montane and Cape elements are found in these locations, and scarps in general in the Sneeuberg provide an important mesic micro-habitat (e.g. Van der Walt, 1980). Many of these scarps are

also associated with seeps. The higher scarps are often characterised by scree slopes at their bases. Dissected, rocky kloofs (valleys) – often flanked by tors comprising exposed, balancing dolerite corestones (Boardman et al., 2003) – are common throughout the Sneeuberg foothills (1200–1500 m).

2.3. Soils

Soils of the Sneeuberg are very broadly described as “undifferentiated soils” of the Great Escarpment by Watkeys (1999), with duplex soils occurring in the eastern area of higher rainfall, or locally in areas of higher precipitation (Watkeys, 1999). From observation soils in the Sneeuberg are nutrient poor, shallow soils on sedimentary strata; moderately deep, richer loamy-clay vertisols occur on upper, gentler, dolerite slopes; and black, deep (>1 m), heavy turf clays in the often extensive (>1 ha) upland *Merxmuellera macowanii* (Stapf) Conert wetlands on the summit plateau (above 1800 m). Steep, rocky slopes are characterised by shallow Mispah and Glenrosa soils forms (Hartmann, 1988; Holmes, 1998), and Quaternary alluvial soils of limited extent but often significant depth (>2 m) occur on floodplains and along drainage lines at the base of the mountains (Palmer, 1988; Mucina and Rutherford, 2006).

2.4. Climate

The Sneeuberg is located in the climatic tension zone between the arid west and moist east (Van der Walt, 1980). Kopke (1988) places the Sneeuberg region as transitional to autumn and summer maximum rainfall in the Eastern Cape, e.g. Graaff-Reinet has its mean annual precipitation (MAP) evenly distributed between spring, summer and autumn (Cannon, 1924). The region receives the edge of all major weather systems in southern Africa (Desmet and Cowling, 1999). There is evidence of wet and dry oscillations every 10 to 12 years in the region (Palmer, 1988; Boardman et al., 2003); Palmer (1966) notes the historical occurrence of severe droughts in the region, as well as years of high rainfall and deep snowfalls.

The surrounding plains have a lower MAP than the mountains themselves (Van der Walt, 1980; Pond et al., 2002; Mucina and Rutherford, 2006). For example Graaff-Reinet at 750 m receives 353 mm (Palmer, 1991) and Cradock at 900 m receives 316 mm (Desmet and Cowling, 1999), while the Farm Toorberg at 1300 m receives about 500 mm (Kritzinger, pers. comm.) and on the Farm Compassberg at 1720 m MAP is 517 mm (Boardman et al., 2003). Holmes (1998) indicates that most of the higher-lying areas of the Sneeuberg receive between 400 and 500 mm per annum, with the eastern section (from the Nardousberg to the Bankberg) receiving between 500 and 600 mm. Rain is typically in the form of thunderstorms with heavy showers (De Klerk et al., 2001) and has a reliability of 65–70% (Palmer, 1988). The rainfall peaks in late summer (March; Van der Walt, 1980; Boardman et al., 2003) as a result of tropical disturbances (Desmet and Cowling, 1999) while equinoctial rains from cut-off lows, winter rains, and snowfalls are important forms of precipitation (Desmet and Cowling, 1999; Watkeys, 1999; De Klerk et al., 2001; Pond et al., 2002).



Fig. 2. A selection of photographs of the Sneeuwberg mountain complex: (A) Karoo Escarpment Grassland, Toorberg (1900–2200 m); (B) Camdeboo Escarpment Thicket, Farm Kleinfontein (1100 m); (C) Eastern Lower Karoo, Asante Sana Private Game Reserve (900 m); (D) Fynbos elements, Toorberg (2100 m); (E) Compassberg (summit 2503 m), as viewed from the north-west; (F) Perennial stream on the Koudeveldberge (1900 m).

The Boschberg receives the highest rainfall in the study area, probably well over 600 mm given Somerset East's MAP of 591 mm at 750 m of altitude (Palmer, 1991; Holmes, 1998) and as evidenced by its afro-montane forest and moister grassland (Palmer, 1991; Mucina and Rutherford, 2006). Other forms of

precipitation in the Sneeuwberg are infrequent hail (Van der Walt, 1980), dew (Desmet and Cowling, 1999), and mist (Pond et al., 2002). The region has 52 frost days recorded (Mucina and Rutherford, 2006), these mostly occurring between May and October (Van der Walt, 1980).

The low-altitude plains are warmer than the mountains, with average maximum temperatures in summer varying from 23–28 °C, and in winter from 16–23 °C (De Klerk et al., 2001). The average minimum temperatures in summer vary from 6–14 °C and in winter from 0–8 °C (De Klerk et al., 2001). Temperatures in the mountains are cooler as a result of altitude (Van der Walt, 1980; Kopke, 1988) and minimum temperatures can drop to as low as –10 °C in the higher areas (Boardman et al., 2003). Local names such as “Koudeveldberge”, “Sneeuberg”, “Winterhoekberge” attest to these cool montane conditions. Humidity varies from 59% to 85% with no readily discernible pattern (Van der Walt, 1980).

There is a summer dominance of south-easterly winds of 1.1–7.9 m/s (Van der Walt, 1980; Palmer, 1991), although winds from the north-western quadrant are stronger (8.0–13.8 m/s) if not as dominant (Palmer, 1991). Calm days account for 21.1% of wind data (Palmer, 1991). Winter data indicates a strong dominance of winds from the north-western quadrant (Van der Walt, 1980; Palmer, 1991), reaching strengths of between 8.0 and 13.8 m/s (Palmer, 1991). Winds are mostly local in nature (Desmet and Cowling, 1999) and Kopke (1988) notes that local winds from the south-east along the escarpment each afternoon moderate the average daily temperatures, especially in summer. Palmer (1966) noted that farmers in the Sneeuuberg foothills appreciate the affect this moist wind has on the vegetation. Hot dry north winds dominate in January and February causing mid-summer drought (Kopke, 1988).

Micro-climates in the Sneeuuberg are created by aspect. South- and south-east facing scarps are noticeably moister and cooler compared to north- and north-west scarps and slopes as they receive a higher incidence of mist, rain and shade (Pond et al.,

2002). The higher peaks have their own micro-climate characterised by persistent wind and extremely low temperatures in winter and during cold fronts.

The available moisture to vegetation in the Sneeuuberg is sufficient to maintain afro-montane grassland at higher altitudes (above 1800 m), and to support mesic fynbos and afro-montane forest on the Kamdebooberge and the Boschberg.

2.5. Vegetation

The Eastern Cape is well known to be a meeting place of several biomes (Cowling, 1983; Palmer, 1990, 1991), this being the result of the major climatic, topographic and geological transitions that occur in that Province (Cowling, 1983; Vlok et al., 2003). This meeting of biomes is no less apparent in the Sneeuuberg region, resulting in complex vegetation gradients (Palmer, 1991).

2.5.1. Grassland biome

The dominant grassland vegetation unit in the Sneeuuberg is Karoo Escarpment Grassland (Mucina and Rutherford, 2006; Fig. 2A) which generally occurs above 1600 m. Typical grass species include *Ehrharta calycina* J.E.Sm., *Melica decumbens* Thunb., *Merxmuellera macowanii*, *M. disticha*, *Tetrachne dregei*, *Karoochloa purpurea* (L.f.) Conert and Tuerpe, *Helictotrichon* spp., and specialist grasses such as *Festuca* spp. and *Brachypodium bolusii* Stapf at the base of scarps and *Pentaschistis airoides* subsp. *jugorum* (Stapf) H.P. Linder in moist crevices and on high peaks. The grassland is replaced above ca. 2100 m on rocky peaks and stony plateaux by an “Arid Fynbos” (White, 1978; Low and Rebelo, 1998). Forbs and geophytes are well represented throughout this grassland

Table 1
Collecting localities in the Sneeuuberg mountain complex during the study period (2005–2008).

Localities	Dates	Collectors	Grids
1. Asante Sana Private Game Reserve (Petersburg) and Nardousberg (Graaff-Reinet District).	October, December 2005; January, March, November 2006; April 2008.	Clark VR, Barker NP, Devos N; Clark VR, Coombs G; McKenzie RJ, Weston P, Clark VR; Clark VR, Ramdhani S; Clark VR, Crause I.	3224BB, BD, 3225AC
2. Compassberg and adjacent NW mountains (Richmond, Middelburg & Graaff-Reinet Districts).	February 2006, 2007.	Clark VR, Devos N, McKenzie RJ; Clark VR, McKenzie RJ.	3124CB, CD, DA, DC
3. Swaershoek Pass and Schurftberg (Bankberg) (Cradock District).	March 2006; November, December 2007.	McKenzie RJ, Weston P, Clark VR; Clark VR, Rose M.	3225BC
4. Lootsberg Pass, Renosterberg and adjacent mountains (Middelburg District).	April 2006.	Clark VR, Ngcobo L, Pienaar C.	3124DB, DD
5. Aasvoëlkrans/Buffelshoek-se-pas (behind Pearston, Graaff-Reinet District).	October 2006, November 2007.	Clark VR, Ramdhani S; Clark VR, Rose M.	3225AC, AD
6. Meelberg, Koudeveldberge and Toorberg (Murraysburg & Graaff-Reinet Districts).	November 2006, December 2007.	Clark VR, Te Water Naudé T; Clark VR, Pienaar C.	3223BB, 3224AA
7. Tandjiesberg–Coetzeeberg (behind Pearston, Graaff-Reinet District).	December 2006.	Clark VR, Coombs G.	3225AC
8. Blinkberg (Cradock District).	March 2007, December 2007.	Clark VR, McKenzie RJ; Clark VR, Rose M.	3225AC
9. Wapadsberg (Cradock & Graaff-Reinet Districts).	December 2007.	Clark VR, Pienaar C.	3124DD
10. Kikvorsberge (Noupoort & Colesburg Districts).	January, February 2008.	Clark VR, Pienaar C, Lochner EJ.	3125AA
11. Kamdebooberge (behind Aberdeen, Graaff-Reinet District).	April, June 2008.	Clark VR, Crause I; Clark VR, Pienaar C.	3223BD

Numbering corresponds with Fig. 1.

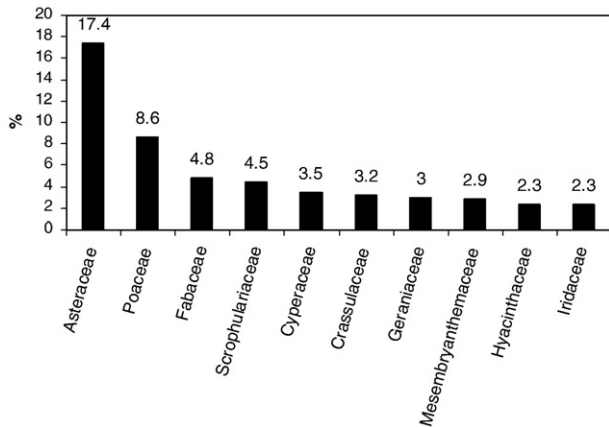


Fig. 3. The top ten angiosperm families in the Sneeuberg mountain complex.

unit. Minor grassland types in the region are Amatola Montane Grassland on the Boschberg, and Bedford Dry Grassland occurs along the southern foot of the escarpment below the Groot Bruintjieshoogde and Boschberg (Mucina and Rutherford, 2006).

2.5.2. Forest biome

Southern Mistbelt Forest occurs on the southern slopes of the Boschberg (Mucina and Rutherford, 2006), and moist thicket/scarp forest approaching afro-montane forest occurs on the Kamdebooberge, on the Buffelshoek escarpment behind Pearston, and on the Bruintjieshoogde. Temperate forest elements are present in mesic niches in the remainder of the Sneeuberg but do not come near afro-montane in character or composition. Typical such species found throughout the Sneeuberg are *Celtis africana* Burm.f., *Kiggelera africana* L., *Maytenus acuminata* (L.f.) Loes. var. *acuminata* and *Searsia krebsiana* (C. Presl ex Engl.) Moffett.

2.5.3. Albany thicket biome

Camdeboo Escarpment Thicket is the dominant vegetation on the Sneeuberg foothills between Aberdeen and Pearston at altitudes of ca. 1000–1400 m (Mucina and Rutherford, 2006; Fig. 2B). *Portulacaria afra* is the historically dominant species (Mucina and Rutherford, 2006). The vegetation structure is comprised of dense, often thorny, woody shrubs such as *Acacia karroo* Hayne, *Carissa bispinosa* (L.) Desf. ex Brenan (= *C. haematocarpa* (Eckl.) A.DC.), *Euclea crispa* (Thunb.) Gürke subsp. *crispa*, *Pappia capensis* Eckl. and Zeyh., *Grewia robusta* Burch., *Ehretia rigida* (Thunb.) Druce subsp. *rigida*, *Searsia* spp., *Gymnosporia linearis* (L.f.) Loes. subsp. *linearis*, *G. buxifolia* (L.) Szyszyl, and *Boscia oleoides* (Burch. ex DC.) Tölken up to 3 m tall in dense clumps, with a matrix of *P. afra* up to 3 m tall and scattered *Aloe ferox* Mill. up to 4 m tall (Palmer, 1990).

Eastern Cape Escarpment Thicket occurs on the northern and southern slopes of the Bankberg and Boschberg (Mucina and Rutherford, 2006). Great Fish Thicket occurs along the Great Fish River and Little Fish Rivers, the former to Cradock and the latter into the Swaershoek area (Mucina and Rutherford, 2006).

2.5.4. Nama-Karoo biome

Eastern Lower Karoo dominates the Plains of Camdeboo (Mucina and Rutherford, 2006; Fig. 2C). This vegetation unit forms the lower altitude context for the base of the Sneeuberg escarpment and adjacent plains and is distinguished from other Nama-karoo types by its higher proportion of succulent dwarf and larger woody shrubs (Mucina and Rutherford, 2006). The vegetation is typically sparse, consisting of low bushes and succulents up to 50 cm and comprising species such as *Sarcocaulon camdeboense* Moffett, *Eriocephalus ericoides* (L.f.) Druce subsp. *ericoides*, *Pentzia incana* (Thunb.) Kuntze, *P. globosa* Less., *Delosperma* spp. and *Ruschia* spp. (Low and Rebelo, 1998).

Mucina and Rutherford's (2006) Upper Karoo Hardeveld is an ambiguous vegetation type in the Sneeuberg, and is reputed to include most of the crest and steep south-facing slopes of the Great Escarpment between Teekloofpas and Graaff-Reinet (Mucina and Rutherford, 2006). This is considered to be one of the richer floras of the Nama-Karoo Biome, but in the Sneeuberg area is often difficult to distinguish from adjacent thicket and other vegetation units (Mucina and Rutherford, 2006).

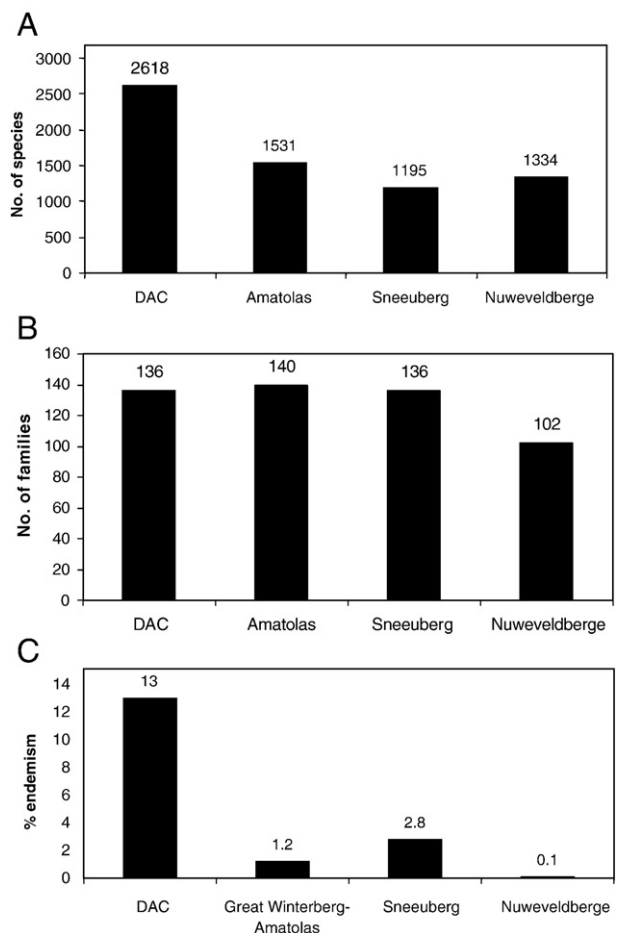


Fig. 4. Floristic comparisons along the south-east Great Escarpment: (A) Species richness (Great Winterberg excluded); (B) Family level diversity (Great Winterberg excluded); (C) Levels of endemism. DAC = Drakensberg Alpine Centre.

Table 2

Endemic plant species of the Sneeuberg mountain complex, together with collection and habitat notes (* denotes type or other specimens viewed on the Aluka Foundation: African Plants Initiative website: <http://www.aluka.org/>).

Species	Family	Our and other collections	Notes	References
<i>Acmadenia</i> sp. nov. 1 aff. <i>sheilae</i> I. Williams	Rutaceae	Clark VR, Crause I 130, Kamdebooberge, 1606 m, April 2008.	Endemic to the Kamdebooberge behind Aberdeen. This is a range extension of ca. 150 km for the genus from the CFR onto the Great Escarpment. <i>A. sheilae</i> occurs on the Roodeberg, Swartberg and Touwsberg (Ladismith District).	Williams (1982); Trinder-Smith, pers. comm.
<i>Adromischus fallax</i> Tölken	Crassulaceae	Bolus H 758*, Tandjiesberg, 1390 m, 1870.	Occurs in Camdeboo Escarpment Thicket. Recollected more recently by E. Van Jaarsveld.	Tölken (1978); Van Jaarsveld, pers. comm.
<i>Apodolirion bolusii</i> Baker	Amaryllidaceae	Bolus H 717*, Cave Mountain, 1390 m, 1868.	Only known from the type. Occurs in Camdeboo Escarpment Thicket.	Golding (2002); Dold, pers. comm.
<i>Bergeranthus nanus</i> A.P.Dold & S.A.Hammer	Mesembryanthemaceae	Clark VR, Rose M 390, 399, Bankberg (Schurftberg), 1800 m, December 2007.	Valley of Desolation (Graaff-Reinet District) and Swaershoek (Cradock District). Occurs in Camdeboo Escarpment Thicket and Karoo Escarpment Grassland, 1173–1200 m.	Dold et al. (2005); Dold, pers. comm.
<i>Cliffortia bolusii</i> Diels ex C.Whitehouse	Rosaceae	Bolus H 260, Nardousberg, 1770 m, 1873.	Only known from the type. Occurs in Karoo Escarpment Grassland.	Whitehouse (2002); Whitehouse & Fellingham (2007); Whitehouse, pers. comm.
<i>Conium</i> sp. no. 4 (Hilliard and Burtt, 1985b)	Apiaceae	Bolus H 189, Graaff-Reinet, sine anno. Hilliard OM, Burtt BL 10650, Renosterberg, 1800 m, 1977. Clark VR, McKenzie RJ 177, Compassberg, 2260 m, February 2007. Clark VR, McKenzie RJ 429, Blinkberg, 2009 m, March 2007. Clark VR, Rose M 313, Bankberg, 1874 m, December 2007. Clark VR, Rose M 524, Blinkberg, 1877 m, December 2007. Clark VR, Crause I 25, Asante Sana Private Game Reserve, 1843 m, April 2008.	Only two previous collections known. Recollected throughout the N & E Sneeuberg: common above 1700 m along moist cliff-bases and other upland rocky areas in Karoo Escarpment Grassland. Taxonomy being considered by P. Winter, A.R. Magee et al. – possibly part of <i>Conium fontanum</i> Hilliard & B.L.Burtt complex.	Hilliard and Burtt (1985b); Winter, pers. comm.
<i>Delosperma</i> sp. nov. 1 aff. <i>D. dyeri</i> L.Bolus	Mesembryanthemaceae	Only known from a specimen collected by E.G.H. Oliver in 2004 (Nardousberg, 2400 m) and a photograph by N. Helme in 2004.	Considered to be an undescribed species with affinities to <i>D. dyeri</i> . Occurs in Karoo Escarpment Grassland.	Burgoyne, pers. comm.
<i>Diascia ramosa</i> Scott-Elliot	Scrophulariaceae	Scott Elliot GF 488*, Boschberg, 1200 m, ca. 1888. MacOwan P 1968*, Boschberg, 1360 m, sine anno.	Only known from two specimens. Habitat recorded as “in bush”.	Hilliard and Burtt (1984)
<i>Dierama grandiflorum</i> G.J.Lewis	Iridaceae		Occurs on the Boschberg from 1300–1400 m in Amatola Montane Grassland, and on the Oudeberg in Karoo Escarpment Grassland.	Hilliard and Burtt (1991); McMaster (2007)
<i>Erica passerinoides</i> (Bolus) E.G.H.Oliv.	Ericaceae	Bolus H 2582*, Koudeveldberge-Toorberg, 1872.	Recollected by E.G.H. Oliver in 2004 at the same locality. Endemic to the Toorberg plateau, Karoo Escarpment Grassland.	Oliver, pers. comm.
<i>Euryops dentatus</i> B.Nord.	Asteraceae	Tyson W 295*, Koudeveldberge, 1879. Tyson W 5761*, Murraysburg District, 1881. Clark VR, Pienaar C 381, Koudeveldberge, 1600–1800 m, December 2007. Clark VR, Crause I 127, Kamdebooberge, 1421 m, April 2008. Clark VR, Pienaar C 618, Kamdebooberge, 1403 m, June 2008.	Recollected on the southern and eastern slopes of the Koudeveldberge and Toorberg in December 2007 and on the Kamdebooberge in April and June 2008. Locally abundant in Karoo Escarpment Grassland and fynbos.	Nordenstam (1969); Nordenstam, pers. comm.
<i>Euryops exsudans</i> B. Nord. & V.R. Clark	Asteraceae	Palmer AR 2938, MZNP, November 1980. Clark VR, Coombs G 110, E of Nardousberg (Asante Sana Private Game Reserve), 1900 m, December 2005. McKenzie RJ, Weston P, Clark VR 175, as above, 1877 m, March 2006. Clark VR, Ramdhani S 453, as above, 1600 m, November 2006. Clark VR, Pienaar C 118, Wapadsberg, 2109 m, December 2007. Clark VR, Crause I 54, Nardousberg ridge (Asante Sana Private Game Reserve), 1919 m, April 2008.	First known record is from the Bankberg in MZNP. Occurs on the Sneeuberg E of Nardousberg, 1800–2100 m, and on the Wapadsberg at 2000 m in Karoo Escarpment Grassland. Locally abundant.	Nordenstam, pers. comm.; Nordenstam et al. (2009)

<i>Euryops proteoides</i> B. Nord. & V.R. Clark	Asteraceae	Clark VR, Coombs G 105, E of Nardousberg (Asante Sana Private Game Reserve), 2014 m, December 2005. Clark VR, Ramdhani S 452, as above, November 2006. Clark VR, Coombs G 553, Sneeuweberg behind Pearston, 1300–2000 m. Clark VR, Crause I 40, 55, E of Nardousberg (Asante Sana Private Game Reserve), 1650–1919 m, April 2008.	Occurs on the Sneeuweberg–Tandjiesberg–Coetzeesberg behind Pearston, from 1300–2100 m along streams and in moist Karoo Escarpment Grassland. Locally abundant.	Nordenstam, pers. comm.; Nordenstam et al., 2009
<i>Faurea</i> sp. nov. 1	Proteaceae	Clark VR, Crause I 106, Kamdebooberge, 1396 m, April 2008. Clark VR, Pienaar C 609, Kamdebooberge, 1403 m, June 2008.	Only known from one population in the Kamdebooberge, behind Aberdeen, at 1400 m in dense fynbos. Locally abundant.	Rourke, pers. comm.
<i>Ficinia compasbergensis</i> Drège	Cyperaceae	Many – very well collected.	Found throughout the Sneeuweberg in Karoo Escarpment Grassland, 1600–2100 m. Common.	Muasya, pers. comm. Howis, pers. comm.
<i>Gazania caespitosa</i> Bolus	Asteraceae	Bolus H 2578*, Koudeveldberge, 1872. Clark VR, Ramdhani S 448, Sneeuweberg E of Nardousberg, 2115 m, November 2006. Clark VR, Te Water Naudé T 235, 307, Toorberg–Koudeveldberge–Meelberg, 2000–2100 m, November 2006. Clark VR, Crause I 46, Nardousberg ridge, 2171 m, April 2008. Clark VR, Crause I 182, Kamdebooberge, 1614 m, April 2008. Clark VR, Crause I 275, Kamdebooberge, 1614 m, April 2008.	Locally abundant on the Toorberg–Koudeveldberge–Meelberg above 1800 m. Range extension to the E of the Nardousberg where locally abundant. Also common on the Kamdebooberge.	
<i>Haworthia marumiana</i> var. <i>batesiana</i> (Uitewaal) M.B.Bayer	Asphodelaceae		Valley of Desolation and Tandjiesberg (Graaff-Reinet), also now known from the Kamdebooberge. Occurs in Camdeboo Escarpment Thicket. and montane shrubland, usually on cliffs (Note: listed by Rubin et al., 2001 as occurring in the Nuweveldberge but the taxonomy of this species is difficult; distribution here as per M.B. Bayer, pers. comm.).	Bayer, pers. comm.; Dold, pers. comm.
<i>Helichrysum tysonii</i> Hilliard	Asteraceae	Hilliard OM, Burt BL 10626*, Lootsberg, 1977. Clark VR, Te Water Naudé T 231, Koudeveldberge, 2000 m, November 2006. Clark VR, McKenzie RJ 6, NW of Compassberg, 1900 m, February 2007. Clark VR, Rose M 478, Blinkberg, 1997 m, December 2007. Clark VR, Pienaar C 130, Wapadsberg, 2041 m, December 2007.	Originally known from the Renosterberg, Lootsberg & Compassberg. Recollected throughout the Sneeuweberg. Common at higher altitudes.	Hilliard (1983)
<i>Hermannia</i> sp. nov. 1	Sterculiaceae	Clark VR, Barker NP, Devos N 7, E of Nardousberg (Asante Sana Private Game Reserve), 1600 m, October 2005. Clark VR, Coombs G 141, 212, 336, as above, above 1800 m, December–January 2005–2006. Clark VR, McKenzie RJ 196, 442, Blinkberg, 2090 m, March 2007. Clark VR, Ramdhani S 371, Sneeuweberg behind Pearston, 1350 m, October 2006. Clark VR, Ramdhani S 431, E of Nardousberg (Asante Sana Private Game Reserve), 1900 m, November 2006.	Abundant from the Nardousberg to Aasvoëlkrans (Pearston), above 1800 m.	Gwynne-Evans, pers. comm.
<i>Hermannia</i> sp. nov. 2	Sterculiaceae	Collected by D. Gwynne-Evans, 2006.	Boschberg.	Gwynne-Evans, pers. comm.
<i>Hesperantha helmei</i> Goldblatt & J.C.Manning	Iridaceae	Helme NA 1134, Nardousberg, 2300 m, 2004. Clark VR, Te Water Naudé T 266, Toorberg, 2017 m, November 2006.	Known from the Nardousberg. and from the Toorberg.	Goldblatt and Manning (2007); Goldblatt, pers. comm.
<i>Huernia kennedyana</i> Lavrinos	Apocynaceae	Collected by H.W. James in 1930, H.C. Kennedy in 1964 and P.V. Bruyns in 1977.	Only known from the Farm Welgemoed, north of the Bankberg on a “flat mountain top”.	Brodie (1998); Bruyns (2005)
<i>Indigofera</i> sp. nov. 1	Fabaceae	Clark VR, Te Water Naudé T 335, Toorberg–Koudeveldberge–Meelberg, 2100 m, November 2006. Clark VR, Pienaar C 511, Toorberg, 1780 m, December 2007.	Summit plateau of the Koudeveld, Toorberg & Meelberg. Locally common on summit turf soils.	Schrire, pers. comm.
<i>Indigofera</i> sp. nov. 2	Fabaceae	Clark VR, Coombs G 208, E of Nardousberg (Asante Sana Private Game Reserve), 1853 m, December 2005. Clark VR, Coombs G 635, Sneeuweberg behind Pearston, 1950 m, December 2006.	Mountain slopes and summit plateau above 1700 m, Sneeuweberg E of Nardousberg. Locally common.	Schrire, pers. comm.

(continued on next page)

Table 2 (continued)

Species	Family	Our and other collections	Notes	References
<i>Kniphofia acraea</i> Codd	Asphodelaceae	McKenzie RJ, Weston P, Clark VR 1, Swaershoek Pass, 1590 m, 2006.	Occurs on the Bankberg and Boschberg, in Karoo Escarpment Grassland and Amatola Montane Grassland. Locally abundant.	Dold and McMaster (2005) Ramdhani, pers. comm.
<i>Lessertia sneeuwbergensis</i> Germish.	Fabaceae	Acocks JPH 13547, 16516, 16536, Lootsberg area, 1947–1952.	Only known from the Lootsberg and mountains to the north. Occurs in Karoo Escarpment Grassland.	Germishuizen (1992)
<i>Ornithogalum</i> sp. nov. 1 aff. <i>flexuosum</i> (Thunb.) U. & D.Müll.-Doblies	Hyacinthaceae	Clark VR, Rose M 498, Blinkberg, 2125 m, December 2007. Clark VR, Pienaar C 414, mid-plateau SE of Koudeveldberge, 1495 m, December 2007.	Locally common on rocky plateau areas near Koudeveldberge and E of the Nardousberg. Possibly throughout the Sneeu-berg.	Manning, pers. comm.
<i>Ruschia complanata</i> L.Bolus	Mesembryanthemaceae	James HW 472*, summit of “Zwagershoek Mountain”, Cradock, 1932. Clark VR, Te Water Naudé T 279, Toorberg, 2100 m, November 2006.	Other misidentified specimens may exist.	Burgoyne, pers. comm.
<i>Selago bolusii</i> Rolfe	Scrophulariaceae	Bolus H 695*, Graaff-Reinet, sine anno.	Occurs on the mountains around Graaff-Reinet. Numerous specimens which fit Hilliard’s (1999) description have been collected since 2005, but verification of their status would be preferable; in the interim these specimens have been named <i>S. cf. bolusii</i> .	Hilliard (1999)
<i>Selago crassifolia</i> (Rolfe) Hilliard	Scrophulariaceae	Tyson W 177*, Sneeu-berg, Murraysburg District, 1879.	Only know from the type (possibly from the Koudeveldberge).	Hilliard (1999)
<i>Selago retropilosa</i> Hilliard	Scrophulariaceae	Hilliard OM, Burt BL 10651*, Lootsberg, 1977. Clark VR, Te Water Naudé T 100, Koudeveldberge, 1900 m, November 2006. Clark VR, McKenzie RJ 144, NW of Compassberg, 2080 m, February 2007. Clark VR, McKenzie RJ 367, Blinkberg, 1850 m, March 2007.	Previously only known from the type. Recollected throughout the Sneeu-berg. Common at higher altitudes.	Hilliard (1999)
<i>Syringodea pulchella</i> Hook.f.	Iridaceae		Occurs between Middelburg and Graaff-Reinet, and on the Boschberg and Renosterberg.	De Vos (1983)
<i>Trichodiadema olivaceum</i> L.Bolus	Mesembryanthemaceae		Somerset East (Camdeboo Escarpment Thicket & grassland).	Dold, pers. comm.; Burgoyne, pers. comm.

Eastern Upper Karoo occurs on the plains to the north of the Sneeuberg and is transitional between the Grassland Biome and the Nama-Karoo Biome (Mucina and Rutherford, 2006).

2.5.5. Fynbos elements

True fynbos as defined for the Fynbos Biome or the CFR (i.e. having Ericaceae, Proteaceae and Restionaceae as the dominant components; Low and Rebelo, 1998; Mucina and Rutherford, 2006) occurs in the study area only on the Goewermetsberg in the Kamdeboberge. This “CFR outlier” is a ca. 50 ha, dense patch dominated by *Erica leucopelta* Tausch (Ericaceae), *Faurea* sp. nov. (Proteaceae), several restio species including the conspicuous *Rhodocoma capensis* Steud., and the Rutaceae species *Agathosma venusta* (Eckl. & Zeyh.) Pillans and *A. cf. capensis* (L.) Dummer (Trinder-Smith, pers. comm.). The CFR-endemic genus *Acmadenia* Bartl. & H.L.Wendl. is represented by one new species (Trinder-Smith, pers. comm.). The nearest similar fynbos is on the south-east escarpment slopes of the Toorberg (ca. 20 km north–north-east), where *A. venusta* and *E. leucopelta* are dominant (1700–1900 m).

Although no other true CFR patches are known to occur in the Sneeuberg, “Cape elements” as defined by Carbutt and Edwards (2001) are present throughout the Sneeuberg (Carbutt and Edwards, 2001, 2004), and are referred to by Van der Walt (1980) as “arid fynbos” and by Nordenstam (1969) as “false macchia”. Such elements are typically located along cliff-lines, on rocky plateaux at higher altitudes (ca. 2100 m), and on the higher peaks (Fig. 2D). Species include *A. venusta* (Toorberg area), *Euryops exsudans* B.Nord. & V.R.Clark (Nardousberg and Wapadsberg), *Passerina montana* Thoday, *Ischyrolepis distracta* (Mast.) H.P.Linder, *Erica woodii* Bolus var. *woodii*, *E. caespitosa* Hilliard & B.L.Burt, *E. passerinoides* (Bolus) E.G. H.Oliv. (Toorberg), *E. leucopelta*, *Erica* sp. aff. *reenensis* Zahlbr. (Nardousberg), *Cliffortia eriocephalina* Cham., *C. ramosissima* Schltr., *C. bolusii* Diels ex C.Whitehouse (Nardousberg), *C. montana* Weim. (Toorberg), *Thesium gnidiaceum*

A.DC., *Muraltia alticola* Schltr. and *M. alopecuroides* (L.) DC. Lower altitude (1300–1600 m) Cape elements include *Otholobium macradenium* (Harv.) C.H.Stirt., *Lotononis caerulea* (E.Mey.) B.-E.Van Wyk, *Psoralea glabra* E.Mey. and *Aspalathus acicularis* E.Mey. subsp. *acicularis*. *Diceronthamnus rhinocerotis* (L.f.) Koekemoer, considered an arid Cape element (Mucina and Rutherford, 2006) is common throughout the Sneeuberg from ca. 1500–1800 m, and an undescribed Renosterveld unit may be present. Carbutt and Edwards (2001) note the Sneeuberg to have only a third of the Cape elements compared to the Drakensberg Alpine Centre (DAC), perhaps due to the Sneeuberg’s drier climate (Linder et al., 1993; Carbutt and Edwards, 2004), and probably also from under-collecting.

2.5.6. Azonal vegetation

Azonal vegetation types in the study area include montane wetlands above 1800 m, consisting of headwater sponges, rainwater pools, seeps, streams and floodplains and may be analogous to Mucina and Rutherford’s (2006) Drakensberg Wetlands. Many of these high-altitude perennial and seasonal marshlands are dominated by *Merxmüllera macowanii*. The soil profile consists of black humus-rich clays to a depth of at least 2 m and comprises perennially moist headwater systems fed by summer rains and winter snows. Lower altitude wetlands and floodplains (1600–1800 m) in broad upland valleys are dominated by *Eleocharis limosa* (Schrud.) Schult., often in extensive stands (>0.5 ha). Rocky watercourses above 1800 m (Fig. 2F) are often dominated by species such as *Buddleja salviifolia* (L.) Lam., *Leucosidea sericea* Eckl. & Zeyh., *Miscanthus capensis* (Nees) Anders., *Geranium* spp. and *Phygelius capensis* E.Mey. ex Benth.

The middle reaches (1200–1600 m) of the deeper valleys are densely wooded and are composed of a composite of “bushveld” (e.g. *Olea europaea* subsp. *africana* (Mill.) P.S.Green), thicket (e.g. *Searsia pallens* (Eckl. & Zeyh.) Moffett) and afro-montane (e.g. *S. krebsiana* and *L. sericea*) elements, and may best be

Table 3

Species endemic to the Sneeuberg mountain complex and to one or more of the adjacent sections of the Great Escarpment i.e. the Stormberg, Great Winterberg–Amatolas and/or Nuweveldberge.

Species	Family	Details	References
<i>Alepidea macowani</i> Dummer	Apiaceae	Sneeuberg, Great Winterberg–Amatolas.	Mucina and Rutherford (2006); Winter, pers. comm.
<i>Cineraria vagans</i> Hilliard	Asteraceae	Sneeuberg, Amatolas and possibly the intervening mountains (Boschberg, Great Winterberg).	Hilliard and Burt (1988)
<i>Clutia impedita</i> Prain	Euphorbiaceae	Appears to be an endemic from the Stormberg, Great Winterberg–Amatolas and Sneeuberg.	
<i>Crassula exilis</i> subsp. <i>cooperi</i> (Regal) Tölken.	Crassulaceae	Sneeuberg, Stormberg.	Tölken (1977)
<i>Erica brownleeae</i> Bolus	Ericaceae	Boschberg, Great Winterberg–Amatolas.	Baker and Oliver (1967)
<i>Euryops galpinii</i> Bolus	Asteraceae	Sneeuberg, Stormberg, Great Winterberg–Amatolas.	Nordenstam (1969)
<i>Euryops trilobus</i> Harv.	Asteraceae	Sneeuberg, Stormberg.	Nordenstam (1969)
<i>Hermannia violacea</i> (Burch. ex DC.) K.Schum.	Sterculiaceae	Boschberg, Great Winterberg–Amatolas.	Gwynne-Evans, pers. comm.
<i>Huernia piersii</i> N.E.Br.	Apocynaceae	Sneeuberg, Amatolas, Stormberg.	Bruyns (2005)
<i>Jamesbrittenia crassicaulis</i> (Benth.) Hilliard	Scrophulariaceae	Sneeuberg, Bamboesberge, Wildeschutsberg, Andriesberg (Stormberg).	Hilliard (1994)
<i>Notobubon laevigatum</i> (Aiton) A.R.Magee	Apiaceae	Nuweveldberge, Sneeuberg.	Winter, pers. comm.
<i>Polemannia grossulariifolia</i> Eckl. & Zeyh.	Apiaceae	Sneeuberg, Great Winterberg–Amatolas.	Winter, pers. comm.
<i>Wahlenbergia laxiflora</i> (Sond.) Lammers	Campanulaceae	Boschberg, Katberg (Great Winterberg).	Adamson (1955b)

Table 4
Additional significant rediscoveries and range extensions recorded in the Sneeuweberg mountain complex during the study period (2005–2008).

Species	Family	Collection records	Notes	References
<i>Agathosma</i> cf. <i>capensis</i> (L.) Dummer	Rutaceae	Clark VR, Crause I 229, Kamdebooberge, 1606 m, April 2008.	<i>A. capensis</i> is one of the most widely distributed species in the CFR. Range extension of ca. 150 km from the CFR onto the Kamdebooberge where locally common.	Pillans (1950); Trinder-Smith, pers. comm.
<i>Agathosma venusta</i> (Eckl. & Zeyh.) Pillans	Rutaceae	Clark VR, Te Water Naudé T 280, Toorberg–Meelberg–Koudeveldberge, 2050–2200 m, November 2006. Clark VR, Pienaar C, Toorberg, 1600–1850 m, December 2007. Clark VR, Crause I 201, Kamdebooberge, 1300–1600 m, April 2008.	This is a CFR species with an outlying population in the western Sneeuweberg. The species was previously collected on the Koudeveldberge in 1872 by H. Bolus and also by W. Tyson in the same area. Locally abundant on the moist escarpment slopes of the Toorberg and Kamdebooberge, and on the summit of the Toorberg, Meelberg and Koudeveldberge.	Pillans (1950); Trinder-Smith, pers. comm.
<i>Asclepias humilis</i> (E.Mey.) Schltr.	Apocynaceae	Clark VR, Coombs G 205, E of Nardousberg (Asante Sana Private Game Reserve), 1850 m, December 2005. Clark VR, Coombs G 604, 609, Sneeuweberg behind Pearston, 2029 m, December 2006. Clark VR, McKenzie RJ 267, Blinkberg, 2000 m, March 2007.	A DAC endemic (98% of records for this species are in the DAC). Common above 2000 m in the eastern sections of the Sneeuweberg. Locally common. A range extension of ca. 300 km	Carbutt and Edwards (2006); Bester, pers. comm.
<i>Conium</i> sp. no. 3 (Hilliard and Burtt, 1985b)	Apiaceae	Clark VR, Crause I 69, E of Nardousberg (Asante Sana Private Game Reserve), 1919 m, April 2008.	Known from Underberg (KwaZulu-Natal), the Eastern Cape Drakensberg and the Amatolas. Taxonomy being considered by P. Winter, A.R. Magee et al. – possibly part of <i>Conium fontanum</i> Hilliard & B.L.Burtt complex. A range extension of ca. 200 km onto the Sneeuweberg E of the Nardousberg.	Hilliard and Burtt (1985b); Winter, pers. comm.
<i>Corycium flanaganii</i> (Bolus) Kurzweil & H.P.Linder	Orchidaceae	Clark VR, Ramdhani S 206, Sneeuweberg behind Pearston, 1800 m, October 2006. Clark VR, Rose M 464, Blinkberg, 2075 m, December 2007. Clark VR, Pienaar C 44, Wapadsberg, 2148 m, December 2007.	A DAC near-endemic. A range extension of ca. 200 km from the Stormberg to the Sneeuweberg. Common in high altitude turf marshlands above 1700 m on Sneeuweberg E of Nardousberg and on the Wapadsberg.	Linder and Kurzweil (1999); Carbutt and Edwards (2006); Bellstedt, pers. comm.
<i>Disa harveiana</i> Lindl. subsp. <i>harveiana</i>	Orchidaceae	Clark VR, Te Water Naudé T 305, Meelberg, 2100 m, November 2006.	Endemic to the mountains of the CFR. A range extension of ca. 150 km from the Swartberg and Outeniquas across the Karoo interval to the Meelberg.	Linder and Kurzweil (1999); Bellstedt, pers. comm.
<i>Ehrharta longigluma</i> C.E.Hubb.	Poaceae	Clark VR, Coombs G 189, E of Nardousberg (Asante Sana Private Game Reserve), 2000 m, December 2005.	A DAC endemic. This is a range extension of ca. 400 km. Common above 2000 m on the Sneeuweberg east of Nardousberg.	Carbutt and Edwards (2006); Fish, pers. comm.
<i>Geranium</i> cf. <i>brycei</i> N.E.Br.	Geraniaceae	Weston P, McKenzie RJ, Clark VR 144, E of Nardousberg (Asante Sana Private Game Reserve), 1887 m, March 2006. Clark VR, Ramdhani S 35, Sneeuweberg behind Pearston, 1813 m, October 2006. Clark VR, Te Water Naudé T 192, Koudeveldberge, 1800 m, November 2006. Clark VR, Coombs G 647, Sneeuweberg behind Pearston, 1950 m, December 2006. Clark VR, McKenzie RJ 212, Blinkberg, 2050 m, March 2007. Clark VR, Pienaar C 480, Toorberg, 1860 m, December 2007.	<i>G. brycei</i> is a DAC near-endemic from the KwaZulu-Natal and Cape Drakensbergs, Witteberg & Lesotho Highlands, and one record from near Cathcart. The Sneeuweberg species occurs throughout the Sneeuweberg above 1800 m and is common. Sneeuweberg specimens match well with specimens of <i>G. brycei</i> . A range extension of ca. 100–200 km.	Hilliard and Burtt (1985a); Carbutt and Edwards (2006); Dreyer, pers. comm.
<i>Haplocarpha nervosa</i> (Thunb.) Beauverd	Asteraceae	Clark VR, Te Water Naudé T 232, Toorberg, 2000 m, November 2006. Clark VR, McKenzie RJ 236, Blinkberg, 2064 m, March 2007. Clark VR, Pienaar C 468, Toorberg, 1834 m, December 2007.	Found from the Cape Peninsular along the moister eastern mountains to Zimbabwe. Not previously recorded in the Sneeuweberg. Locally common in upland seeps and wetlands.	Hilliard (1977); McKenzie, pers. comm.
<i>Haplocarpha scaposa</i> Harv.	Asteraceae	Clark VR, Coombs G 365, E of Nardousberg (Asante Sana Private Game Reserve), 2000 m, January 2006. Clark VR, Ramdhani S 272, Sneeuweberg behind Pearston, ca. 1600 m, October 2006. Clark VR, McKenzie RJ 395, Blinkberg, 1870 m, March 2007.	Known from Uitenhage and Somerset East to the moister central and eastern provinces of South Africa (and northwards). This is a range extension onto the Sneeuweberg-proper as far W as the Nardousberg. It is common in montane grassland above 1800 m.	Hilliard (1977); McKenzie, pers. comm.
<i>Isolepis angelica</i> B.L.Burtt	Cyperaceae	Clark VR, Te Water Naudé T 296, Toorberg, 1879 m, November 2006.	A DAC endemic. Recorded in seeps on the Toorberg, a range extension of ca. 400 km.	Sonnenberg (1993); Carbutt and Edwards (2006); Muasya, pers. comm.
<i>Kniphofia baurii</i> Baker	Asphodelaceae	Clark VR, McKenzie RJ 47, NW of Compassberg, 1650 m, February 2007.	A range extension of ca. 300 km from the former Transkei to near the Compassberg: one colony recorded in a wetland at the base of the Muisshoekberge.	Codd (1968); Ramdhani, pers. comm.
<i>Kniphofia caulescens</i> Baker	Asphodelaceae	Clark VR, Te Water Naudé T135, Koudeveldberge, 1900 m, November 2006. Clark VR, Crause I 269, Kamdebooberge, 1710 m, April 2008.	A range extension of ca. 200 km from the Great Winterberg onto the Toorberg and Kamdebooberge. Locally abundant on the Kamdebooberge.	Codd (1968); Ramdhani, pers. comm.

<i>Moraea spathulata</i> (L.f.) Klatt	Iridaceae	Clark VR, Coombs G 155, E of Nardsousberg (Asante Sana Private Game Reserve), 1800 m, December 2005. Clark VR, Ramdhani S 113, Sneeuberg behind Pearston, 1723 m, October 2006. Clark VR, Te Water Naudé T 25, Koudeveldberge, 1879 m, November 2006. Clark VR, McKenzie RJ 480, Blinkberg, 2009 m, March 2007.	A range extension of 100–200 km from the Great Winterberg–Amatolas to throughout the Sneeuberg. Locally abundant above 1800 m.	Goldblatt (pers. comm.); Manning (pers. comm.)
<i>Nemesia umbonata</i> (Hiern) Hilliard & B.L.Burt	Scrophulariaceae	Clark VR, Coombs G 196, 198, 207, Sneeuberg E of Nardousberg, 1800–2000 m, December 2005. Clark VR, Devos N, McKenzie RJ 34, Compassberg, 2200 m, February 2006. Clark VR, Ramdhani S 217, Sneeuberg behind Pearston, 1700 m, October 2006. Clark VR, Ramdhani S 441, Sneeuberg E of Nardousberg, 1900 m, November 2006. Clark VR, McKenzie RJ 311, 335, Blinkberg, 1883 m, March 2007.	A range extension of 100–200 km from the Great Winterberg–Amatolas to throughout the Sneeuberg. Common above 1800 m. Identifications confirmed by E. Brink.	Brink, pers. comm.
<i>Otholobium macradenium</i> (Harv.) C.H.Stirt.	Fabaceae	Clark VR, Barker NP, Devos N 30, E of Nardsousberg (Asante Sana Private Game Reserve), 1400 m, October 2005. Clark VR, Te Water Naudé T 82, Koudeveldberge, 1600 m, November 2006. Clark VR, Coombs G 645, Sneeuberg behind Pearston, 1350 m, December 2006. Clark VR, Rose M 60, Sneeuberg behind Pearston, 1472 m, November 2007. Clark VR, Pienaar C 617, Kamdebooberge, 1283 m, June 2008.	This is a range extension of 150–250 km across the Karoo Interval from the CFR (Swartberg and Kouga/Baviaanskloofberge). The species is abundant on the southern scarps both E and W of Graaff-Reinet from 1300–1600 m. The species was previously last collected in the CFR in 1986.	Stirton, pers. comm.
<i>Passerina montana</i> Thoday	Thymelaceae	Clark VR, Ramdhani S 205, Sneeuberg behind Pearston, 1805 m, October 2006. Clark VR, Ramdhani S 443, E of Nardousberg, 2120 m, November 2006.	In South Africa throughout the eastern sections of the Great Escarpment. A range extension of ca. 100–200 km onto the Sneeuberg.	Bredenkamp and Van Wyk (2003)
<i>Pelargonium laevigatum</i> (L.f.) Willd.	Geraniaceae	Clark VR, Crause I 194, Kamdebooberge, 1614 m, April 2008.	Essentially a CFR species but also known from the Boschberg. Now recorded from the Kamdebooberge, where common.	Van der Walt et al. (1981)
<i>Pimpinella caffra</i> (Eckl. & Zeyh.) D.Dietr.	Apiaceae	Clark VR, Crause I 12, E of Nardousberg (Asante Sana Private Game Reserve), 2012 m, April 2008. Clark VR, Crause I 62, Nardousberg ridge (Asante Sana Private Game Reserve), 2220 m, April 2008.	Occurs from the KwaZulu-Natal Drakensberg and Lesotho Highlands to the Amatolas. Range extension of ca. 120 km onto the Sneeuberg as far W as the Nardousberg.	Winter, pers. comm.
<i>Rhodocoma capensis</i> Steud.	Restionaceae	Clark VR, Crause I 268, Kamdebooberge, 1606 m, April 2008. Clark VR, Pienaar C 614, Kamdebooberge 1403 m, June 2008.	Occurs along the more arid inland edges of the CFR mountains. A range extension of ca. 150 km from the CFR onto the Kamdebooberge. Locally abundant.	Linder (1985)
<i>Schoenoxiphium</i> sp. aff. <i>basutorum</i> Turrill	Cyperaceae	Clark VR, Te Water Naudé T 234, Toorberg, 2200 m, November 2006.	<i>S. basutorum</i> is a DAC near-endemic (ca. Free State and Lesotho). The Sneeuberg specimens would be a range extension of ca. 400–500 km.	Carbutt and Edwards (2006); Muasya, pers. comm.
<i>Senecio arenarius</i> Thunb.	Asteraceae	Clark VR, Coombs G 414, Groot Suurkop (Asante Sana Private Game Reserve), 1900 m, January 2006. Clark VR, Ramdhani S 446, Sneeuberg E of Nardousberg (Asante Sana Private Game Reserve), 1900 m, November 2006. Clark VR, Coombs G 524, Sneeuberg behind Pearston, 1300 m, December 2007. Clark VR, Rose M 453, Blinkberg, 2014 m, December 2007. Clark VR, Crause I 159, Kamdebooberge, 1421 m, April 2008.	A West Coast/western CFR species, but Sneeuberg specimens are virtually indistinguishable except for both rays and discs being purple. Found on the Kamdebooberge and east of the Nardousberg where locally abundant. Possibly a new variety or subspecies. A range extension of ca. 300 km.	Manning (2007); E. Brink, pers. comm.
<i>Senecio dissimilans</i> Hilliard	Asteraceae	Clark VR, Rose M 481, Blinkberg, 2005 m, December 2007.	A DAC endemic. Locally common on the southern, wet slopes of the Blinkberg (E of Nardousberg). A range extension of ca. 400 km.	Pooley (2003); Carbutt and Edwards (2006)

Table 5

Drakensberg Alpine Centre near-endemics recorded in the Sneeuberg mountain complex.

Species	Location in Sneeuberg
<i>Aloe aristata</i> Haw.	Sneeuberg (also west along the Great Escarpment to the Nuweveldberge)
<i>Aloe striatula</i> Haw. var. <i>striatula</i>	Sneeuberg
<i>Anthospermum monticola</i> Puff	Sneeuberg
<i>Asparagus microraphis</i> (Kunth) Baker	Sneeuberg
<i>Athrixia angustissima</i> DC.	Sneeuberg
<i>Brachypodium bolusii</i> Stapf	Sneeuberg (also west along the Great Escarpment)
<i>Brunsvigia grandiflora</i> Lindl.	Sneeuberg
<i>Cineraria aspera</i> Thunb.	Sneeuberg (also west along the Great Escarpment to the Nuweveldberge)
<i>Cineraria geraniifolia</i> DC.	Sneeuberg
<i>Cineraria mollis</i> E.Mey. ex DC.	Sneeuberg (also west along the Great Escarpment to the Nuweveldberge)
<i>Corycium flanaganii</i> (Bolus) Kurzweil & H.P.Linder	Sneeuberg
<i>Cotula hispida</i> (DC.) Harv.	Sneeuberg
<i>Craterocapsa montana</i> (A.DC.) Hilliard & B.L.Burt	Sneeuberg
<i>Cysticapnos pruinosa</i> (Bernh.) Lidén	Sneeuberg
<i>Dierama robustum</i> N.E.Br.	Sneeuberg
<i>Empodium elongatum</i> (Nel) B.L.Burt	Sneeuberg (also west along the Great Escarpment to the Nuweveldberge)
<i>Erica alopecurus</i> Harv. var. <i>alopecurus</i>	Boschberg
<i>Erica caespitosa</i> Hilliard & B.L.Burt	Sneeuberg
<i>Erica caffrorum</i> Bolus var. <i>caffrorum</i>	Sneeuberg
<i>Euclea coriacea</i> A.DC.	Sneeuberg
<i>Euryops annae</i> E.Phillips	Sneeuberg (also west along the Great Escarpment)
<i>Euryops candollei</i> Harv.	Sneeuberg
<i>Euryops oligoglossus</i> DC. subsp. <i>oligoglossus</i>	Sneeuberg
<i>Felicia rosulata</i> Yeo	Sneeuberg
<i>Festuca longipes</i> Stapf	Boschberg
<i>Geranium</i> cf. <i>brycei</i> N.E.Br.	Sneeuberg
<i>Geranium magniflorum</i> R.Knuth	Boschberg
<i>Geranium multisectum</i> N.E.Br.	Sneeuberg
<i>Geum capense</i> Thunb.	Sneeuberg
<i>Gladiolus mortoni</i> Herb.	Boschberg
<i>Glekia krebiana</i> (Benth.) Hilliard	Sneeuberg
<i>Gnidia polyantha</i> Gilg.	Sneeuberg
<i>Guthriea capensis</i> H.Bolus	Sneeuberg
<i>Gymnopentzia bifurcata</i> Benth.	Sneeuberg
<i>Helichrysum albo-brunneum</i> S.Moore	Sneeuberg
<i>Helichrysum anomalum</i> Less.	Sneeuberg
<i>Helichrysum cooperi</i> Harv.	Sneeuberg
<i>Helichrysum grandibracteatum</i> M.D.Hend.	Boschberg
<i>Helichrysum melanacme</i> DC.	Sneeuberg
<i>Helichrysum montanum</i> DC.	Sneeuberg
<i>Helichrysum nanum</i> Klatt	Boschberg
<i>Helichrysum psilolepis</i> Harv.	Sneeuberg
<i>Helichrysum scitulum</i> Hilliard & B.L.Burt	Sneeuberg (also west along the Great Escarpment to the Nuweveldberge)
<i>Helichrysum sessile</i> DC.	Sneeuberg
<i>Helichrysum trilineatum</i> DC.	Sneeuberg (also west along the Great Escarpment)
<i>Helictotrichon longifolium</i> (Nees) Schweick.	Sneeuberg
<i>Hyobanche rubra</i> N.E.Br.	Sneeuberg
<i>Indigofera cuneifolia</i> Eckl. & Zeyh. var. <i>cuneifolia</i>	Sneeuberg
<i>Inulanthera dregeana</i> (DC.) Källersjö	Boschberg

Table 5 (continued)

Species	Location in Sneeuberg
<i>Jamesbrittenia filicaulis</i> (Benth.) Hilliard	Sneeuberg
<i>Kniphofia caulescens</i> Baker	Sneeuberg
<i>Kniphofia stricta</i> Codd	Sneeuberg
<i>Kniphofia triangularis</i> Kunth subsp. <i>triangularis</i>	Sneeuberg
<i>Lobelia preslii</i> A.DC.	Sneeuberg
<i>Lotononis</i> cf. <i>galpinii</i> Dummer	Sneeuberg
<i>Lotononis divaricata</i> (Eckl. & Zeyh.) Benth.	Boschberg
<i>Lotononis pulchella</i> (E.Mey.) B.-E.van Wyk	Boschberg
<i>Lotononis sericophylla</i> Benth.	Sneeuberg
<i>Manulea crassifolia</i> Benth. subsp. <i>crassifolia</i>	Sneeuberg
<i>Massonia echinata</i> L.f.	Sneeuberg
<i>Melolobium obcordatum</i> Harv.	Sneeuberg
<i>Merxmüllera macowanii</i> (Stapf) Conert	Sneeuberg
<i>Moraea huttonii</i> (Baker) Oberm.	Boschberg
<i>Muraltia saxicola</i> Chodat	Sneeuberg
<i>Nemesia albiflora</i> N.E.Br.	Sneeuberg
<i>Nemesia umbonata</i> (Hiern) Hilliard & B.L.Burt	Sneeuberg
<i>Nerine angustifolia</i> (Baker) Baker	Boschberg
<i>Nidorella agria</i> Hilliard	Sneeuberg
<i>Pachycarpus vexillaris</i> E.Mey.	Sneeuberg
<i>Pelargonium aridum</i> R.A.Dyer	Sneeuberg (Kikvorsberg)
<i>Pelargonium griseum</i> R.Knuth	Sneeuberg
<i>Pelargonium leucophyllum</i> Turcz.	Boschberg
<i>Pelargonium ramunculophyllum</i> (Eckl. & Zeyh.) Baker	Sneeuberg
<i>Pentaschistis airoides</i> subsp. <i>jugorum</i> (Stapf) H.P.Linder	Sneeuberg
<i>Pentaschistis setifolia</i> (Thunb.) McClean	Sneeuberg
<i>Pentzia cooperi</i> Harv.	Sneeuberg
<i>Phygelius capensis</i> E.Mey. ex Benth.	Sneeuberg
<i>Searsia bolusii</i> (Sond. ex Engl.) Moffett	Sneeuberg
<i>Searsia divaricata</i> (Eckl. & Zeyh.) Moffett	Sneeuberg
<i>Searsia dregeana</i> (Sond.) Moffett	Sneeuberg
<i>Searsia erosa</i> (Thunb.) Moffett	Sneeuberg
<i>Searsia krebiana</i> (C.Presl ex Engl.) Moffett	Sneeuberg
<i>Romulea macowanii</i> Baker var. <i>macowanii</i>	Sneeuberg
<i>Rumex woodii</i> N.E.Br.	Boschberg
<i>Ruschia putterillii</i> (L.Bolus) L.Bolus	Sneeuberg
<i>Schizoglossum bidens</i> E.Mey. subsp. <i>bidens</i>	Sneeuberg
<i>Schoenoxiphium schweickerdtii</i> Merxm. & Podlech	Sneeuberg
<i>Sebaea thomasi</i> (S.Moore) Schinz	Sneeuberg
<i>Selago saxatilis</i> E.Mey.	Sneeuberg
<i>Senecio gramineus</i> Harv.	Sneeuberg
<i>Senecio harveianus</i> MacOwan	Sneeuberg
<i>Senecio hieracioides</i> DC.	Sneeuberg
<i>Senecio hypochoerideus</i> DC.	Boschberg
<i>Senecio napifolius</i> MacOwan	Boschberg
<i>Senecio polyodon</i> var. <i>subglaber</i> (O.Hoffm. ex Kuntze) Hilliard & B.L.Burt	Sneeuberg
<i>Senecio tanacetopsis</i> Hilliard	Sneeuberg
<i>Stachys cymbalaria</i> Briq.	Sneeuberg
<i>Stachys dregeana</i> Benth.	Sneeuberg

Table 5 (continued)

Species	Location in Sneeu-berg
<i>Stachys linearis</i> Burch. ex Benth.	Sneeu-berg
<i>Troglophyton capillaceum</i> subsp. diffusum (DC.) Hilliard	Sneeu-berg
<i>Wahlenbergia krebsii</i> Cham. subsp. krebsii	Sneeu-berg
<i>Wurmbea</i> cf. <i>elatior</i> B.Nord.	Sneeu-berg
<i>Zaluzianskya glareosa</i> Hilliard & B.L.Burt	Sneeu-berg & Nuweveldberge (possibly)
<i>Zaluzianskya schmitziae</i> Hilliard & B.L.Burt	Sneeu-berg
<i>Zaluzianskya spathacea</i> (Benth.) Walp.	Boschberg

Near-endemic status as per Carbutt and Edwards (2006). “Boschberg” indicates species confined within the Sneeu-berg mountain complex to the Boschberg and the Bruintjieshoogde. Appendix A should be referred to for collection details/ references.

described as “temperate thicket” (Cowling et al., 2005) or “incipient forest” (Van der Walt, 1980). At lower altitudes (ca. 1000 m) the riparian vegetation becomes Mucina and Rutherford’s (2006) typical Southern Karoo Riviere vegetation type dominated by *A. karroo*.

3. Materials and methods

The floristic data for the Sneeu-berg have been collated from numerous sources, notably historical specimens of Harry Bolus, Peter MacOwan and William Tyson in GRA; taxonomic revisions and treatments; and specimens collected by the authors since 2005 (see below). Species listed in local checklists (Palmer, 1988, for the Karoo Nature Reserve, now Camdeboo National Park; Penzhorn, 1970, and Pond et al., 2002, for the MZNP; and Van der Walt, 1972, and the Agricultural Research Council, ARC; Westfall, pers. comm., for the Boschberg) have only been used where specimens could be verified. The resultant Sneeu-berg flora represents altitudes from 800–2500 m, covering most of the vegetation units in the Sneeu-berg mountain complex.

As published botanical information is limited or outdated, the vast majority of the floristic data is a result of fieldwork undertaken between 2005 and 2008. Eighteen fieldtrips have been undertaken (Table 1), with collecting being focussed above 1300 m (and especially above 1500 m). The highest peaks, adjacent scarps and surrounding plateaux above 2000 m received special emphasis, but collecting was also undertaken at lower altitudes (1100–1800 m) in kloofs and in Camdeboo Escarpment Thicket. Some 5000 specimens have been collected during this (ongoing) fieldwork. Further work in the Kamdebooberge, Boschberg and Groot Bruintjieshoogde may add more species to the flora, and will provide further opportunity to search for remaining “lost” species.

The identification of specimens was undertaken in the Selmar Schönland Herbarium (GRA), Albany Museum. Numerous taxonomists assisted with more difficult groups and with groups that were being revised at the time (see Acknowledgements). Several groups remain difficult however. Specimens have been lodged in GRA, with duplicates of various groups sent primarily

to BOL, S, NBG, PRE, K, MO, NU, JRAU and WITS. Specimens collected by N.P. Barker from the Nardousberg region in 1997 were included in the project and treated in the same manner. Nomenclature of the resultant flora (Appendix A) was updated from available revisions.

4. Results and discussion

4.1. Flora

As of the end of August 2008 the Sneeu-berg has a flora of 1195 species (Appendix A; updated versions of this flora will be available on the Selmar Schönland Herbarium website at <http://campus.ru.ac.za/index.php?action=category&category=2061>). The flora is composed of 29 pteridophytes (2.4% of the total flora), four gymnosperms (0.3%), 278 monocotyledons (23.2%) and 884 dicotyledons (74%). The most species-rich family is Asteraceae, followed by Poaceae and Fabaceae (Fig. 3). The overall species level diversity of the Sneeu-berg is lower than that of other sections of the south-eastern Great Escarpment in southern Africa (Fig. 4A). However, at the family level, the Sneeu-berg compares well with the other sections of the Great Escarpment (Fig. 4B).

One-hundred-and-seven (9%) species are alien, most of these being innocuous and confined to disturbed areas around home-steads, along roads, and in degraded sites. Several species present problems due to their invasive nature, most notably *Populus x canescens* (Aiton) Sm. along water courses, *Nassella trichotoma* (Nees) Hack. ex Arechav. in grassland and *Rosa rubiginosa* L. in moist grassland and valleys. Management strategies are urgently needed throughout the Sneeu-berg to control these species, especially for *Nassella* on the Boschberg and Groot Bruintjieshoogde. A potentially problematic species is *Sambucus nigra* L. – widespread and occasional at the base of moist cliffs – whilst *Schinus molle* L., *Robinia pseudoacacia* L. and *Salix babylonica* L. var. *babylonica* are potential problem plants in riparian zones.

4.2. A Sneeu-berg Centre of Endemism

Thirty-three (2.8%) endemic species occur on the Sneeu-berg (Table 2), compared to 334 (13%) in the DAC (Carbutt and Edwards, 2006) and at least 18 (1.2%) in the Great Winterberg-Amatolas (Fig. 4C). The Nuweveldberge has low endemism (0.1%), but shares several endemics with the Komsberg-Roggeveld (e.g. *Cliffortia arborea* Marloth; Oliver and Fellingham, 1994).

The Sneeu-berg can be considered a southern component of Mucina and Rutherford’s (2006) “Northern Sourveld Endemics” concept, similar to the Soutpansberg in terms of being at the end of the eastern escarpment centre-continuum but with almost double the percentage levels of endemism (2.8% versus 1.5% in the Soutpansberg; Van Wyk and Smith, 2001). The Sneeu-berg endemics cover a variety of families in both the monocots and dicots, and comprise plant groups typical of the Albany Centre, the afro-montane regions (especially the DAC), and the CFR (see below). Such a diverse array of

endemic species supports the recognition of the Sneeu-berg as a centre of endemism.

4.3. Affinities of the Sneeu-berg Centre of Endemism

4.3.1. Sneeu-berg–Albany Centre links

The thicket vegetation units of the Sneeu-berg can comfortably be assigned to the Albany Centre given that they are geographically continuous with thicket in the core of the Albany Centre, and that several endemics such as *Adromischus fallax* Tölken and *Haworthia marumiana* var. *batesiana* (Uitewaal) M.B.Bayer are confined to these vegetation units in the Sneeu-berg.

4.3.2. Sneeu-berg–Escarpment links

Thirteen (1.1%) Sneeu-berg near-endemic species (Table 3) are shared with adjacent sections of the Great Escarpment, i.e. the Nuweveldberge, Stormberg and the Great Winterberg–Amatolas. However, as the floras of these adjacent mountain ranges are poorly known the values given here may well change following further botanical exploration.

4.3.3. Sneeu-berg–DAC links

Five species considered by Carbutt and Edwards (2006) to be DAC endemics have now been recorded from the Sneeu-berg (Table 4). These are *Pentzia tortuosa* (DC.) Fenzl ex Harv. (previously collected in the Sneeu-berg by Harry Bolus), *Senecio dissimulans* Hilliard, *Ehrharta longigluma* C.E.Hubb., *Asclepias humilis* (E.Mey.) Schltr. and *Isolepis angelica* B.L.Burtt (Fish, pers. comm.; Bester, pers. comm.; Muasya, pers. comm.). Along with *Albuca* cf. *rupestris* (Manning, pers. comm.) this places DAC endemics at 0.5% of the Sneeu-berg flora.

Affinities of the Sneeu-berg with the DAC are further strengthened by the presence of *Euryops proteoides* B.Nord. & V.R.Clark, which is morphologically very similar to the DAC endemic *E. evansii* Schltr. (Nordenstam et al., 2009), and *Erica* sp. aff. *reenensis*, *E. reenensis* being endemic to the north-western face of the Drakensberg Massif (Oliver, pers. comm.). In addition, 105 of Carbutt and Edwards's (2006) DAC near-endemics (17.6% of the DAC near-endemics and 8.8% of the Sneeu-berg flora) have been recorded from the Sneeu-berg (Table 5). Only 16 of these have the Boschberg as their western limit, the rest being found throughout most of the Sneeu-berg and a few across the Nelspoort Interval to the Nuweveldberge. Several other afro-montane range extensions (not specifically DAC) into the Sneeu-berg have been recorded e.g. *Moraea spathulata* (L.f.) Klatt (Manning, pers. comm.) (Table 4).

The floristic composition indicates that the Sneeu-berg is definitely part of the afro-montane belt in southern Africa. There is an indication that the Sneeu-berg above 1800 m may be a drier, western limit of an extended DAC comparable to the Witteberg section of the DAC, to which Carbutt and Edwards (2001) consider the Sneeu-berg floristically similar. This link is supported by Nordenstam's (1969) "Sneeu-bergen Centre" (representing near-endemics shared by the Sneeu-berg with its montane neighbours) and by Mucina and Rutherford's (2006) concept of the DAC.

The similarities between the Sneeu-berg's high-altitude montane wetlands above 1800 m (consisting of headwater sponges, rainwater pools, seeps, streams and floodplains) with Mucina and Rutherford's (2006) Drakensberg Wetlands further indicates links with the DAC. This is supported by the local dominance of *Haplocarpha nervosa* and the presence of other of Mucina and Rutherford's (2006) Drakensberg Wetlands Important Taxa e.g. *Wurmbea* cf. *elatior* B.Nord., *Carex cognata* Kunth var. *cognata*, *Isolepis costata* A.Rich., *Trifolium burchellianum* Ser. subsp. *burchellianum*, *Juncus dregeanus* Kunth subsp. *dregeanus* etc., and the presence of the DAC endemic *Isolepis angelica* (considered to be endemic to Mucina and Rutherford's, 2006, Lesotho Mires unit). Woody Drakensberg Wetlands Important Taxa in the Sneeu-berg include *Buddleja salviifolia*, *Leucosidea sericea*, *Geranium* sp. and *Phygelius capensis*, although species such as *Cyathea dregei* Kunze are absent.

Biogeographical connections between the Sneeu-berg and the DAC are relatively easy to explain. There is an almost continuous montane bridge between the Sneeu-berg and the DAC via the Kikvorsberge and Suurberg onto the Stormberg and then across to the DAC (Fig. 1). The "Fish River Interval" between the Boschberg and Great Winterberg is also not that significant as many afro-montane species common in the moister areas of South Africa also occur on the Boschberg. Particular links between the DAC and Sneeu-berg are likely explained by the Sneeu-berg's overall high altitude, cold climate, massive dolerites producing turf clays analogous to those from basalt, and an amplification of altitude where the Sneeu-berg runs parallel to latitude (Steele et al., 1998). The fragmentation of the Great Escarpment west of the Witteberg has been enough however to encourage local endemism on the Sneeu-berg and Great Winterberg–Amatolas.

4.3.4. Sneeu-berg–CFR links

It can be stated fairly certainly that no CFR-endemic families occur in the Sneeu-berg. The alleged presence of two CFR-endemic families (Peneaceae and Grubbiaceae) on the Bankberg in the MZNP (Pond et al., 2002) created much interest after being mentioned in a popular article (Clark and Barker, 2006). Further investigation into their presence revealed that the data had been incorrectly grid-referenced in PRECIS from the Cradockberg behind George, Western Cape.

Nine CFR species are found in the Sneeu-berg (*Rhodocoma capensis*, *Protea lorifolia*, *Senecio arenarius* Thunb., *Disa harveiana* Lindl. subsp. *harveiana*, *Otholobium macradenium*, *Agathosma venusta*, *A.* cf. *capensis*, *Cliffortia montana* and *Pelargonium laevigatum* (L.f.) Willd.; Bellstedt, pers. comm.; Stirton, pers. comm.; Trinder-Smith, pers. comm.; Whitehouse, pers. comm.) representing 0.8% of the Sneeu-berg flora. In addition, and particularly interesting, is the range extension of the CFR-endemic genus *Acmadenia* onto the Kamdebooberge as *Acmadenia* sp. nov. (Trinder-Smith, pers. comm.). Many of these CFR connections are exclusively with the Swartberg and Baviaanskloofberge 120–150 km to the south and south-west of the Sneeu-berg (*C. montana*, *D. harveiana* subsp. *harveiana*, *O. macradenium* and *Acmadenia sheilae*, the most similar species to *A.* sp. nov.; Linder and Kurzweil, 1999; Whitehouse,

pers. comm.; Trinder-Smith, pers. comm.). The remaining species (*P. laevigatum*, *A. venusta*, *A. capensis*, *P. lorifolia* and *R. capensis*) are widespread in the CFR and extant populations occur on the Zuurberg just 60 km to the south of the Boschberg (Van Wyk et al., 1988; Rebelo, 2001). The exception is *S. arenarius*, a western CFR species with no obvious montane affinity. It is noteworthy that the majority of the Sneeu-berg CFR species occur in the western Sneeu-berg (i.e. the Kamdebooberge, Toorberg, Meelberg and Koudeveldberge) and on the Boschberg in the far east. The exceptions are *S. arenarius* and *O. macradenium* which occur on both sides of the local “Sundays River Interval”. A possible reason for this is that the western Sneeu-berg and the Boschberg may have much more available moisture than the rest of the Sneeu-berg and are therefore able to support these species whilst the remainder of the Sneeu-berg is perhaps too dry, too high, too cold or experiences too much winter aridity. All the CFR species are locally abundant (and often locally dominant) except for *P. lorifolia* which requires rediscovery in the Boschberg (Rebelo, 2001). *O. macradenium* is a typical to dominant component of the drier “Sneeu-berg Renosterveld” at medium altitudes (1300–1800 m) along the steep escarpment slopes.

Two possible and not mutually exclusive explanations for the Sneeu-berg–CFR links can be postulated: (1) this pattern is a consequence of a series of dispersal events across the Karoo Interval onto the Sneeu-berg, or along the Great Escarpment via the Komsberg and Nuweveldberge, or (2) the result of the contraction of a once much larger fynbos region with relicts now left in moister areas of the Sneeu-berg (a vicariance scenario).

A dispersal explanation (explanation (1) above) is conceivable in that strong south-westerly winds during mid-latitude cyclones can blow seed from the high Swartberg (altitude mostly over 2000 m; Linder et al., 1993) to the Sneeu-berg (Fig. 5). Perhaps this would have been even more likely during the previous glacial maxima when mesic fynbos may have covered the now arid inland CFR ranges (e.g. the Grootrivierberge, Willowmore District), thereby decreasing the

distance for effective dispersal. This is even more likely from the Zuurberg, only 60 km to the south of the Boschberg, but south-westerly winds would then blow seed onto the Great Winterberg rather than onto the Boschberg (this is also a possibility however). Random dispersal events would explain why only a few CFR species have colonised the Sneeu-berg, and why they are mostly confined to the moister western Sneeu-berg and the Boschberg. The flaw in this explanation is that none of the CFR species occurring in the Sneeu-berg are typically wind dispersed (e.g. Levyns, 1938, 1964).

It is conceivable to invoke a dispersal scenario along a series of “stepping stones” with smaller intervals between them. For example, the Zuurberg links the mountain ranges of the CFR and the Great Escarpment (thus circumventing the Great Fish River valley; (Weimarck, 1941; Stuckenberg, 1962) (Fig. 5). This scenario is suggested for species such as *Cliffortia repens* Schltr., found in the DAC and again on the Zuurberg and again on Cockscomb peak (Weimarck, 1941). Another possible series of “stepping stones” is from the Swartberg, across to the Komsberg (Sutherland District), then via the Nuweveldberge to the Sneeu-berg (Fig. 5), as suggested by *Cliffortia ramosissima* (found from the CFR, and along the Great Escarpment through to the DAC; Whitehouse, 2002). This escarpment corridor is not obviously a Cape connection today but is certainly a connection for afro-montane species in that the eastern Nuweveldberge is essentially a depauperate afro-montane grassland, and that several species e.g. *Brachypodium bolusii* are known to occur along the escarpment from the Roggeveld to the Sneeu-berg. Both scenarios may represent valid connections (Weimarck, 1941). The Zuurberg connection (Weimarck’s south-eastern connection) appears all the more plausible when Oliver et al.’s (1983) phytogeographical analysis of Cape taxa is considered, with a “flow” of species into the Great Escarpment in the Boschberg area being suggested, whilst no pure CFR taxa are currently known from the Komsberg and Nuweveldberge.

It is more difficult to find support for the alternative vicariance explanation. Weimarck (1941) speculates that the Karoo

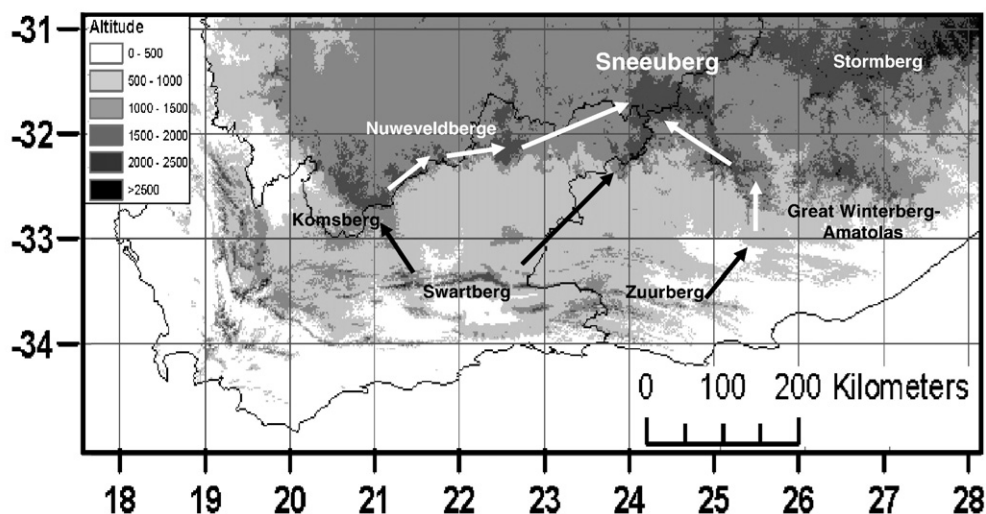


Fig. 5. Possible dispersal scenarios of otherwise endemic Cape Floristic Region elements into the Sneeu-berg.

Interval may never have been occupied by a Cape flora, and previous blanket coverage of fynbos now relegated to a fraction of the current CFR (Levyns, 1938, 1964) is more difficult to explain from the current distributions.

4.3.5. Sneeu-berg–Tropical African links

The discovery of *Faurea* sp. nov. (Rourke, pers. comm.) in the Kamdeboberge is one of the more bizarre finds in the Sneeu-berg. This genus of Proteaceae is a Tropical African element, and is an unusual link connecting the Sneeu-berg with more tropical African elements. This new species of *Faurea* has inflorescence and leaf morphologies that are most similar to *F. galpinii* E. Phillips, which is found in afro-montane forest patches along the Mpumalanga escarpment some 1000 km to the north (Rebelo, 2001).

4.3.6. Comparable faunal endemism and biogeographical connections

Where floral and faunal endemism are congruent, a strong case for a unified centre of endemism can be argued (e.g. the Cameroonian Highlands; Borrow and Demey, 2001). The little available data on faunal endemism in the Sneeu-berg indicates that several faunal species, particularly invertebrates, are endemic to the range. Four butterfly species are endemic to the Sneeu-berg (*Cassionympha camdeboo*, *Thestor compassbergae*, *T. camdeboo* and *Serradinga bowkeri bella*; Woodhall, 2005) and recently some 15 new Geometrid moth species have been collected in the Toorberg–Koudeveldberge region, including one new genus (Krüger, 2007). This number of new moth species is considered to be unusual, especially as most of them appear to be local endemics (Krüger, 2007; Krüger, pers. comm.). The adder *Bitis inornata* is endemic to the Sneeu-berg plateau (Branch, 1998), and the land-snail *Prestonella nuptialis* is endemic to the Boschberg and Elandsberg (near Cradock), being confined to mesic niches at the base of scarps (Herbert, 2006). One land-snail (*Prestonella bowkeri*) is endemic to the Sneeu-berg and the Nuweveldberge, and there are also links in the genus with the DAC (Herbert, 2006). Given that invertebrates in southern Africa are poorly known, local invertebrate endemism in the Sneeu-berg is potentially very high. These few records suggest that faunal endemism may well match or even exceed floristic endemism, lending further support for the recognition of the Sneeu-berg as an important centre of endemism.

Sneeu-berg affinities to the DAC are supported by the bird *Chaetops aurantius* (Orangebreasted Rockjumper), which occurs from the DAC west to the Sneeu-berg where it is common but restricted above 1800 m throughout the Sneeu-berg (Hockey et al., 2005; pers. obs.). Other faunal elements showing a similar distribution are montane butterflies such as *Pseudonympha trimenii ruthae* (montane areas from Graaff-Reinet to the Witteberg) and *Harpendyreus tsomo* (from the Kamdeboberge to Lesotho; Woodhall, 2005).

Faunal connections between the CFR and the afro-montane escarpment regions of southern Africa include *Bitis atropos* (Berg Adder; Branch, 1998), the genus *Pseudobarbus* (southern African minnows), numerous butterfly species and genera (e.g.

Lepidochrysops variabilis and *Aeropetes tulbaghia*; Woodhall, 2005), and the southern African endemic bird genera *Chaetops* and *Pseudochloroptila* (Hockey et al., 2005). The latter two genera each have only two species, one endemic to the CFR and the other to the DAC (Hockey et al., 2005) and represent perhaps one the strongest biogeographical links between the CFR and the Great Escarpment.

5. Conclusion

With a flora comprising 1195 plant species, 33 of which are endemics (2.8% of the flora), the Sneeu-berg compares well with other components of the Great Escarpment in terms of species diversity and endemism. Ten of the endemics represent species discovered since 2004, suggesting that more endemics may still be encountered. The Sneeu-berg has double the percentage levels of endemism compared to the widely recognised Soutpansberg Centre, and we thus propose that a Sneeu-berg Centre of Endemism – first considered by Weimarck (1941) – be formally recognised. This Centre has affinities with the Albany Centre and DAC, and links with the CFR. Affinities to east are emphasised by the near-endemics shared with the Stormberg and Great Winterberg-Amatolas (areas of which are still poorly known botanically), while affinities to the west await further exploration of the Komsberg and Nuweveldberge component of the Great Escarpment. There are also a range of faunal examples to suggest that the Sneeu-berg is also a region of high animal endemism, but this awaits careful biodiversity inventory and analysis.

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Appendix A. Flora of the Sneeuwberg mountain complex, Great Karoo, South Africa

Family	Species	Collectors/References
<i>Pteridophytes</i>		
Anemiaceae	<i>Mohria nudiuscula</i> J.P.Roux	Clark VR, Coombs G 70
Aspidiaceae	<i>Athyrium schimperii</i> Moug. ex Fée	Clark VR, Ramdhani S 358
Aspidiaceae	<i>Dryopteris dracomontana</i> Schelpe & N.C.Anthony	Clark VR, Ngcobo L, Pienaar C 143
Aspidiaceae	<i>Dryopteris</i> cf. <i>inaequalis</i> (Schldtl.) Kuntze (J. Burrows, pers. comm.)	Clark VR, Rose M 516
Aspidiaceae	<i>Polystichum monticola</i> N.C.Anthony & Schelpe	Clark VR, Coombs G 107
Aspleniaceae	<i>Asplenium adiantum-nigrum</i> L. var. <i>adiantum-nigrum</i>	Clark VR, Coombs G 198
Aspleniaceae	<i>Asplenium aethiopicum</i> (Burm.f.) Bech.	Clark VR, Crause I 89
Aspleniaceae	<i>Asplenium cordatum</i> (Thunb.) Sw.	Clark VR, Coombs G 68
Aspleniaceae	<i>Asplenium platyneuron</i> (L.) Britton, Sterns & Poggenb.	Clark VR, Barker NP, Devos N 14
Aspleniaceae	<i>Asplenium trichomanes</i> subsp. <i>quadrivalens</i> D.E.Mey.	Clark VR, Coombs G 241
Azollaceae	<i>Azolla filiculoides</i> Lam.*	Henderson (2001)
Blechnaceae	<i>Blechnum australe</i> L. subsp. <i>australe</i>	Clark VR, Coombs G 69
Dennstaedtiaceae	<i>Pteridium aquilinum</i> (L.) Kuhn subsp. <i>aquilinum</i>	Clark VR, Crause I 92
Equisetaceae	<i>Equisetum ramosissimum</i> Desf. subsp. <i>ramosissimum</i>	Clark VR, Coombs G 600
Lycopodiaceae	<i>Huperzia saururus</i> (Lam.) Trevis.	Clark VR, Pienaar C 487
Ophioglossaceae	<i>Ophioglossum polyphyllum</i> A.Braun	Clark VR, Devos N, McKenzie RJ 7
Polypodiaceae	<i>Polypodium vulgare</i> L.	Clark VR, Coombs G 203
Pteridaceae	<i>Adiantum capillus-veneris</i> L.	Clark VR, Rose M 94
Pteridaceae	<i>Adiantum poiretii</i> Wikstr.	Clark VR, Coombs G 259
Pteridaceae	<i>Cheilanthes eckloniana</i> (Kunze) Mett.	Clark VR, Barker NP, Devos N 51
Pteridaceae	<i>Cheilanthes hirta</i> Sw.	Clark VR, Barker NP, Devos N 12
Pteridaceae	<i>Cheilanthes induta</i> Kunze	Clark VR, Pienaar C, Lochner EJ 330
Pteridaceae	<i>Cheilanthes multifida</i> (Sw.) Sw.	Burrows (1990)
Pteridaceae	<i>Cheilanthes parviloba</i> (Sw.) Sw.	Burrows (1990)
Pteridaceae	<i>Cheilanthes quadripinnata</i> (Forsk.) Kuhn	Clark VR, Barker NP, Devos N 8
Pteridaceae	<i>Pellaea calomelanos</i> (Sw.) Link var. <i>calomelanos</i>	Clark VR, Coombs G 71
Pteridaceae	<i>Pteris cretica</i> L.	Clark VR, Barker NP, Devos N 11
Pteridaceae	<i>Pteris dentata</i> Forssk.	Clark VR, Barker NP, Devos N 38
Woodsiaceae	<i>Cystopteris fragilis</i> (L.) Bernh.	Clark VR, Te Water Naudé T 181
<i>Gymnosperms</i>		
Zamiaceae	<i>Encephalartos lehmannii</i> Lehm.	Giddy (1974)
Pinaceae	<i>Pinus halepensis</i> Mill.*	Henderson (2001)
Podocarpaceae	<i>Podocarpus falcatus</i> (Thunb.) R.Br. ex Mirb.	Van der Walt (1972)
Cupressaceae	<i>Cupressus glabra</i> Sudw.*	Clark VR, Pienaar C 439
<i>Monocotyledons</i>		
Agapanthaceae	<i>Agapathus praecox</i> Willd.	Clark VR, Rose M 109
Agavaceae	<i>Agave americana</i> L.*	Henderson (2001)
Alliaceae	<i>Allium dregeanum</i> Kunth	Clark VR, Rose M 111
Alliaceae	<i>Tulbaghia acutiloba</i> Harv.	Clark VR, Pienaar C 422
Alliaceae	<i>Tulbaghia galpinii</i> Schltr.	Clark VR, Rose M 411
Amaryllidaceae	<i>Ammocharis coranica</i> (Ker Gawl.) Herb.	Clark VR, Pienaar C – Field Obs.
Amaryllidaceae	<i>Apodolirion bolusii</i> Baker	Bolus H 717
Amaryllidaceae	<i>Boophone disticha</i> (L.f.) Herb.	Clark VR, Te Water Naudé T 304

(continued on next page)

Appendix A (continued)

Family	Species	Collectors/References
<i>Monocotyledons</i>		
Amaryllidaceae	<i>Brunsvigia grandiflora</i> Lindl.	McKenzie RJ, Weston P, Clark VR 4
Amaryllidaceae	<i>Brunsvigia radulosa</i> Herb.	Clark VR, Coombs G 410
Amaryllidaceae	<i>Cyrtanthus breviflorus</i> Harv.	Clark VR, Pienaar C 477
Amaryllidaceae	<i>Cyrtanthus macowanii</i> Baker	Clark VR, Coombs G 644
Amaryllidaceae	<i>Cyrtanthus smithiae</i> Watt ex Harv.	MacOwan P 1580
Amaryllidaceae	<i>Cyrtanthus tuckii</i> Baker var. <i>tuckii</i>	Reid and Dyer (1984)
Amaryllidaceae	<i>Gethyllis longistyla</i> Bolus	Craib, pers. comm.
Amaryllidaceae	<i>Gethyllis transkarrooica</i> D.Müll.-Doblies	Clark VR, Coombs G 359
Amaryllidaceae	<i>Haemanthus albiflos</i> Jacq.	Snijman (1984)
Amaryllidaceae	<i>Haemanthus carneus</i> Ker Gawl.	Snijman (1984)
Amaryllidaceae	<i>Haemanthus humilis</i> Jacq. subsp. <i>humilis</i>	Clark VR, Coombs G 407
Amaryllidaceae	<i>Nerine angustifolia</i> (Baker) Baker	MacOwan P 1889
Amaryllidaceae	<i>Strumaria gemmata</i> Ker Gawl.	(Snijman, 1994)
Asparagaceae	<i>Asparagus asparagoides</i> (L.) Druce	Clark VR, Coombs G 465
Asparagaceae	<i>Asparagus burchellii</i> Baker	Clark VR, Ngcobo L, Pienaar C 309
Asparagaceae	<i>Asparagus denudatus</i> (Kunth) Baker	Clark VR, Coombs G 114
Asparagaceae	<i>Asparagus krebsianus</i> (Kunth.) Oberm.	Clark VR, Ramdhani S 414
Asparagaceae	<i>Asparagus microraphis</i> (Kunth) Baker	Clark VR, Ngcobo L, Pienaar C 75
Asparagaceae	<i>Asparagus mucronatus</i> Jessop	Clark VR, Ngcobo L, Pienaar C 281
Asparagaceae	<i>Asparagus retrofractus</i> L.	Clark VR, Coombs G 15
Asparagaceae	<i>Asparagus</i> sp. nov. 1 'ferox' S.M.Burrows (S.M. Burrows, pers. comm.)	Barker NP 1502
Asparagaceae	<i>Asparagus striatus</i> (L.f.) Thunb.	Clark VR, Ramdhani S 421
Asparagaceae	<i>Asparagus suaveolens</i> Burch.	Clark VR, Ramdhani S 36
Asphodelaceae	<i>Aloe aristata</i> Haw.	Clark VR, Barker NP, Devos N 69
Asphodelaceae	<i>Aloe broomii</i> Schönland var. <i>broomii</i>	Van Wyk and Smith (1996)
Asphodelaceae	<i>Aloe broomii</i> var. <i>tarkaensis</i> Reynolds	McKenzie RJ, Weston P, Clark VR 9
Asphodelaceae	<i>Aloe claviflora</i> Burch.	Van Wyk and Smith (1996)
Asphodelaceae	<i>Aloe ferox</i> Mill.	Clark VR, Ramdhani S 420
Asphodelaceae	<i>Aloe humilis</i> (L.) Mill.	Van Wyk and Smith (1996)
Asphodelaceae	<i>Aloe longistyla</i> Baker	Van Wyk and Smith (1996)
Asphodelaceae	<i>Aloe microstigma</i> Salm-Dyck	Van Wyk and Smith (1996)
Asphodelaceae	<i>Aloe striata</i> Haw. subsp. <i>striata</i>	Van Wyk and Smith (1996)
Asphodelaceae	<i>Aloe striatula</i> var. <i>caesia</i> Reynolds	Van Wyk and Smith (1996)
Asphodelaceae	<i>Aloe striatula</i> Haw. var. <i>striatula</i>	Clark VR, Ramdhani S 263
Asphodelaceae	<i>Aloe variegata</i> L.	Clark VR, Ramdhani S 318
Asphodelaceae	<i>Bulbine abyssinica</i> A.Rich.	Clark VR, Coombs G 157
Asphodelaceae	<i>Bulbine frutescens</i> (L.) Willd.	Clark VR, Coombs G 246
Asphodelaceae	<i>Bulbine latifolia</i> (L.f.) Schult. & Schult.f.	Clark VR, Coombs G 552
Asphodelaceae	<i>Bulbine narcissifolia</i> Salm-Dyck	Clark VR, Coombs G 355B
Asphodelaceae	<i>Haworthia bolusii</i> (Haw.) Bak. var. <i>bolusii</i>	Bayer (1982)
Asphodelaceae	<i>Haworthia marumiana</i> var. <i>batesiana</i> (Uitewaal) M.B.Bayer	Clark VR, Crause I 275
Asphodelaceae	<i>Haworthia venosa</i> subsp. <i>tessellata</i> (Haw.) M.B.Bayer	Clark VR, Pienaar C, Lochner EJ 120
Asphodelaceae	<i>Kniphofia acraea</i> Codd	McKenzie RJ, Weston P, Clark VR 1
Asphodelaceae	<i>Kniphofia baurii</i> Baker	Clark VR, McKenzie RJ 47
Asphodelaceae	<i>Kniphofia caulescens</i> Baker	Clark VR, Crause I 269
Asphodelaceae	<i>Kniphofia linearifolia</i> Baker	Codd (1968)
Asphodelaceae	<i>Kniphofia stricta</i> Codd	Clark VR, Coombs G 377
Asphodelaceae	<i>Kniphofia triangularis</i> Kunth subsp. <i>triangularis</i>	Clark VR, Coombs G 419
Asphodelaceae	<i>Kniphofia uvaria</i> (L.) Oken	McKenzie RJ, Weston P, Clark VR 2
Asphodelaceae	<i>Trachyandra asperata</i> var. <i>macowanii</i> (Baker) Oberm.	Clark VR, Coombs G 129
Asphodelaceae	<i>Trachyandra giffenii</i> (F.M.Leight.) Oberm.	Obermeyer (1962)
Colchicaceae	<i>Androcymbium striatum</i> A.Rich.	Clark VR, Coombs G 446
Colchicaceae	<i>Wurmbea</i> cf. <i>elatior</i> B.Nord. (Manning, pers. comm.)	Clark VR, McKenzie RJ 326
Commelinaceae	<i>Commelina africana</i> L. var. <i>africana</i>	Obermeyer and Faden (1985)
Commelinaceae	<i>Commelina africana</i> var. <i>lancispatha</i> C.B.Clarke	Obermeyer and Faden (1985)
Cyperaceae	<i>Bulbostylis contexta</i> (Nees) M.Bodard	Clark VR, Coombs G 379
Cyperaceae	<i>Bulbostylis humilis</i> (Kunth) C.B.Clarke	Clark VR, Ngcobo L, Pienaar C 93b
Cyperaceae	<i>Carex aethiopica</i> Schkuhr	Clark VR, Coombs G 83
Cyperaceae	<i>Carex cognata</i> Kunth var. <i>cognata</i>	Clark VR, McKenzie RJ 3
Cyperaceae	<i>Carex glomerabilis</i> Krecz.	Clark VR, Coombs G 26
Cyperaceae	<i>Cyperus albostrigatus</i> Schrad.	MacOwan P 1690
Cyperaceae	<i>Cyperus congestus</i> Vahl	Clark VR, Coombs G 1
Cyperaceae	<i>Cyperus longus</i> L. var. <i>longus</i>	Sonnenberg (1993)

(continued on next page)

Appendix A (continued)

Family	Species	Collectors/References
<i>Monocotyledons</i>		
Cyperaceae	<i>Cyperus margaritaceus</i> Vahl var. <i>margaritaceus</i>	Clark VR, Te Water Naudé T 379
Cyperaceae	<i>Cyperus marginatus</i> Thunb.	Clark VR, Devos N, McKenzie RJ 87
Cyperaceae	<i>Cyperus rupestris</i> Kunth var. <i>rupestris</i>	Sonnenberg (1993)
Cyperaceae	<i>Cyperus semitrifidus</i> Schrad.	Sonnenberg (1993)
Cyperaceae	<i>Cyperus</i> sp. no. 1 (Muasya, pers. comm.)	Clark VR, Te Water Naudé T 48
Cyperaceae	<i>Cyperus squarrosus</i> L.	Clark VR, Ngcobo L, Pienaar C 330
Cyperaceae	<i>Cyperus usitatus</i> Burch. var. <i>usitatus</i>	Clark VR, Coombs G 470
Cyperaceae	<i>Eleocharis dregeana</i> Steud.	Sonnenberg (1993)
Cyperaceae	<i>Eleocharis limosa</i> (Schrad.) Schult.	Clark VR, Te Water Naudé T 223
Cyperaceae	<i>Ficinia compasbergensis</i> Drège	Clark VR, Barker NP, Devos N 53
Cyperaceae	<i>Ficinia fascicularis</i> Nees	Sonnenberg (1993)
Cyperaceae	<i>Ficinia ramosissima</i> Kunth	Clark VR, Ramdhani S 55
Cyperaceae	<i>Ficinia</i> sp. no. 1 (Muasya, pers. comm.)	Clark VR, Ramdhani S 223
Cyperaceae	<i>Ficinia stolonifera</i> Boeck.	Sonnenberg (1993)
Cyperaceae	<i>Fuirena coerulescens</i> Steud.	Clark VR, Devos N, McKenzie RJ 59
Cyperaceae	<i>Isolepis angelica</i> B.L.Burt	Clark VR, Te Water Naudé T 296
Cyperaceae	<i>Isolepis cernua</i> (Vahl) Roem. & Schult. var. <i>cernua</i>	Clark VR, Coombs G 51
Cyperaceae	<i>Isolepis costata</i> A.Rich.	Clark VR, Coombs G 84
Cyperaceae	<i>Isolepis diabolica</i> (Steud.) Schrad.	Clark VR, Te Water Naudé T 295
Cyperaceae	<i>Isolepis ludwigii</i> (Steud.) Kunth	Sonnenberg (1993)
Cyperaceae	<i>Isolepis marginata</i> (Thunb.) A.Dietr.	Clark VR, Te Water Naudé T 327a
Cyperaceae	<i>Isolepis natans</i> (Thunb.) A.Dietr.	Sonnenberg (1993)
Cyperaceae	<i>Isolepis setacea</i> (L.) R.Br.	Clark VR, Te Water Naudé T 327b
Cyperaceae	<i>Pseudoschoenus inanis</i> (Thunb.) Oteng-Yeb.	Clark VR, Ngcobo L, Pienaar C 238
Cyperaceae	<i>Schoenoplectus paludicola</i> (Kunth) J.Raynal	Clark VR, Ngcobo L, Pienaar C 286
Cyperaceae	<i>Schoenoxiphium</i> sp. aff. <i>basatorum</i> Turrill (Muasya, pers. comm.)	Clark VR, Te Water Naudé T 340
Cyperaceae	<i>Schoenoxiphium lanceum</i> (Thunb.) Kük.	Clark VR, Coombs G 53
Cyperaceae	<i>Schoenoxiphium lehmannii</i> (Nees) Steud.	Clark VR, Ngcobo L, Pienaar C 229
Cyperaceae	<i>Schoenoxiphium rufum</i> Nees	Clark VR, Devos N, McKenzie RJ 99
Cyperaceae	<i>Schoenoxiphium schweickerdtii</i> Merxm. & Podlech	Clark VR, Ngcobo L, Pienaar C 171
Cyperaceae	<i>Schoenoxiphium sparteum</i> (Wahlenb.) C.B.Clark	Clark VR, Coombs G 266
Cyperaceae	<i>Scirpoides dioecus</i> (Kunth) Browning	Sonnenberg (1993)
Cyperaceae	<i>Scirpus falsus</i> C.B.Clark	McKenzie RJ, Weston P, Clark VR 159
Cyperaceae	<i>Tetraria cuspidata</i> (Rottb.) C.B.Clark	MacOwan P 1954
Dracaenaceae	<i>Sansevieria aethiopica</i> Thunb.	Obermeyer et al. (1992)
Eriospermaceae	<i>Eriospermum alcicorne</i> Baker	Bolus H 838
Eriospermaceae	<i>Eriospermum corymbosum</i> Baker	Clark VR, Coombs G 409
Hyacinthaceae	<i>Albuca aurea</i> Jacq.	Clark VR, Rose M 107
Hyacinthaceae	<i>Albuca caudata</i> Jacq.	Baker (1897)
Hyacinthaceae	<i>Albuca collina</i> Baker	Clark VR, Rose M 168
Hyacinthaceae	<i>Albuca exuviata</i> Baker	Baker (1897)
Hyacinthaceae	<i>Albuca fastigiata</i> Dryand	Baker (1897)
Hyacinthaceae	<i>Albuca</i> cf. <i>humilis</i> Baker (Manning, pers. comm.)	Clark VR, Pienaar C 56
Hyacinthaceae	<i>Albuca macowanii</i> Baker	Baker (1897)
Hyacinthaceae	<i>Albuca polyphylla</i> Baker	Baker (1897)
Hyacinthaceae	<i>Albuca</i> cf. <i>rupestris</i> Hilliard & B.L.Burt (Manning, pers. comm.)	Clark VR, Pienaar C 368
Hyacinthaceae	<i>Albuca setosa</i> Jacq.	Clark VR, Devos N, McKenzie RJ 35
Hyacinthaceae	<i>Dipcadi brevifolium</i> (Thunb.) Fourc.	Clark VR, Rose M 167
Hyacinthaceae	<i>Drimia anomala</i> (Baker) Benth.	McKenzie RJ, Weston P, Clark VR 189
Hyacinthaceae	<i>Drimia calcarata</i> (Baker) Stedje	Clark VR, Rose M 503
Hyacinthaceae	<i>Drimia</i> cf. <i>elata</i> Jacq. (Manning, pers. comm.)	Clark VR, Pienaar C 164
Hyacinthaceae	<i>Eucomis autumnalis</i> (Mill.) Chitt. subsp. <i>autumnalis</i>	Clark VR, Ngcobo L, Pienaar C 10
Hyacinthaceae	<i>Lachenalia campanulata</i> Baker	Clark VR, Coombs G 171
Hyacinthaceae	<i>Ledebouria</i> sp. nov. 1 'minima' J.C.Manning & Snijman (Manning, pers. comm.)	Clark VR, Coombs G 3
Hyacinthaceae	<i>Massonia depressa</i> Houtt.	Clark VR, Ramdhani S 385
Hyacinthaceae	<i>Massonia echinata</i> L.f.	Summerfield (2005)
Hyacinthaceae	<i>Massonia jasminiflora</i> Burch. ex Baker	Clark VR, McKenzie RJ 459
Hyacinthaceae	<i>Ornithogalum constrictum</i> Leighton	Obermeyer (1978)
Hyacinthaceae	<i>Ornithogalum fimbriarginatum</i> Leighton	Obermeyer (1978)
Hyacinthaceae	<i>Ornithogalum graminifolium</i> Thunb.	Clark VR, Ramdhani S 209
Hyacinthaceae	<i>Ornithogalum juncifolium</i> Jacq.	Clark VR, Pienaar C 48
Hyacinthaceae	<i>Ornithogalum paludosum</i> Baker	Obermeyer (1978)
Hyacinthaceae	<i>Ornithogalum prasinum</i> Lindl	Obermeyer (1978)
Hyacinthaceae	<i>Ornithogalum</i> sp. nov. 1 aff. <i>flexuosum</i> (Thunb.) U. & D. Müller-Doblies (Manning, pers. comm.)	Clark VR, Pienaar C 414

Appendix A (continued)

Family	Species	Collectors/References
<i>Monocotyledons</i>		
Hyacinthaceae	<i>Empodium elongatum</i> (Nel) B.L.Burt	Clark VR, Rose M 413
Hypoxidaceae	<i>Hypoxis argentea</i> var. <i>sericea</i> (Baker) Baker	Clark VR, Coombs G 436
Iridaceae	<i>Dierama grandiflorum</i> G.J.Lewis	Hilliard and Burt (1991)
Iridaceae	<i>Dierama robustum</i> N.E.Br.	Clark VR, Coombs G 482
Iridaceae	<i>Freesia andersoniae</i> L.Bolus	Barker NP 1493
Iridaceae	<i>Gladiolus longicollis</i> Baker subsp. <i>longicollis</i>	Clark VR, Te Water Naudé T 226
Iridaceae	<i>Gladiolus mortoni</i> Herb.	Goldblatt and Manning (1998)
Iridaceae	<i>Gladiolus permeabilis</i> subsp. <i>edulis</i> (Burch. ex Ker Gawl.) Oberm.	Clark VR, Ngcobo L, Pienaar C 142
Iridaceae	<i>Hesperantha bulbifera</i> Baker	Clark VR, Te Water Naudé T 63
Iridaceae	<i>Hesperantha helmei</i> Goldblatt & J.C.Manning	Goldblatt and Manning (2007)
Iridaceae	<i>Hesperantha longituba</i> (Klatt) Baker	Goldblatt (1984)
Iridaceae	<i>Hesperantha radiata</i> (Jacq.) Ker Gawl.	Clark VR, Te Water Naudé T 65
Iridaceae	<i>Moraea bipartita</i> L.Bolus	Goldblatt (1984)
Iridaceae	<i>Moraea cookii</i> (L.Bolus) Goldblatt	Barker NP 1462
Iridaceae	<i>Moraea ciliata</i> (L.f.) Ker Gawl	Goldblatt (1984)
Iridaceae	<i>Moraea crispa</i> Thunb.	Goldblatt (1984)
Iridaceae	<i>Moraea elliotii</i> Baker	Clark VR, Ramdhani S 112
Iridaceae	<i>Moraea huttonii</i> (Baker) Oberm.	Goldblatt (1984)
Iridaceae	<i>Moraea polystachya</i> (Thunb.) Ker Gawl.	Clark VR, Ngcobo L, Pienaar C 269
Iridaceae	<i>Moraea spathulata</i> (L.f.) Klatt	Clark VR, Coombs G 155
Iridaceae	<i>Moraea stricta</i> Baker	Clark VR, Te Water Naudé T 62
Iridaceae	<i>Moraea unguiculata</i> Ker Gawl.	Goldblatt and Anderson, 1986
Iridaceae	<i>Romulea atrandra</i> G.J. Lewis	Barker NP 1488
Iridaceae	<i>Romulea macowanii</i> Baker var. <i>macowanii</i>	De Vos (1972)
Iridaceae	<i>Syringodea pulchella</i> Hook.f.	De Vos (1983)
Iridaceae	<i>Tritonia disticha</i> subsp. <i>rubrolucens</i> (R.C.Foster) M.P.de Vos	Clark VR, Ramdhani S 134
Iridaceae	<i>Tritonia laxifolia</i> (Klatt) Benth. & Hook.f.	De Vos and Goldblatt (1999)
Iridaceae	<i>Tritonia securigera</i> (Aiton) Ker Gawl.	De Vos and Goldblatt (1999)
Iridaceae	<i>Watsonia pillansii</i> L.Bolus	Goldblatt (1989)
Juncaceae	<i>Juncus dregeanus</i> Kunth subsp. <i>dregeanus</i>	Clark VR, Coombs G 260
Juncaceae	<i>Juncus exsertus</i> Buchenau subsp. <i>exsertus</i>	Clark VR, Coombs G 342
Juncaceae	<i>Juncus inflexus</i> L.	Clark VR, Coombs G 87
Juncaceae	<i>Juncus oxycarpus</i> E.Mey. ex Kunth	Clark VR, Coombs G 521
Juncaceae	<i>Juncus punctorius</i> L.f.	Clark VR, Ramdhani S 233
Juncaceae	<i>Luzula africana</i> Drège ex Steud.	Clark VR, Coombs G 173
Orchidaceae	<i>Corycium flanaganii</i> (Bolus) Kurzweil & H.P.Linder	Clark VR, Ramdhani S 206
Orchidaceae	<i>Disa harveiana</i> Lindl. subsp. <i>harveiana</i>	Clark VR, Te Water Naudé T 305
Orchidaceae	<i>Disperis macowanii</i> H.Bolus	McKenzie RJ, Weston P, Clark VR 110
Orchidaceae	<i>Holothrix</i> cf. <i>villosa</i> Lindl. (Bellstedt, pers. comm.)	Clark VR, Ramdhani S 383
Poaceae	<i>Agrostis lachnantha</i> Nees var. <i>lachnantha</i>	Clark VR, Te Water Naudé T 222
Poaceae	<i>Aira cupaniana</i> Guss.*	Clark VR, Ramdhani S 379
Poaceae	<i>Andropogon appendiculatus</i> Nees	MacOwan P 166
Poaceae	<i>Aristida adscensionis</i> L.	Bolus H 678
Poaceae	<i>Aristida congesta</i> subsp. <i>barbicollis</i> (Trin. & Rupr.) De Winter	Bolus H 677
Poaceae	<i>Aristida congesta</i> Roem. & Schult. subsp. <i>congesta</i>	Clark VR, Ngcobo L, Pienaar C 71
Poaceae	<i>Aristida diffusa</i> subsp. <i>burkei</i> (Stapf) Melderis	Clark VR, Devos N, McKenzie RJ 92
Poaceae	<i>Arundo donax</i> L.*	Henderson (2001)
Poaceae	<i>Brachiaria serrata</i> (Thunb.) Stapf	MacOwan P 1307
Poaceae	<i>Brachypodium bolusii</i> Stapf	Clark VR, Devos N, McKenzie RJ 38
Poaceae	<i>Brachypodium flexum</i> Nees	MacOwan P 1495
Poaceae	<i>Bromus catharticus</i> Vahl*	Clark VR, Coombs G 162
Poaceae	<i>Bromus commutatus</i> Schrad.*	Clark VR, Ramdhani S 123
Poaceae	<i>Bromus leptocladus</i> Nees	Clark VR, Coombs G 102
Poaceae	<i>Bromus pectinatus</i> Thunb.	Gibbs Russell et al. (1990)
Poaceae	<i>Cenchrus ciliaris</i> L.	Gibbs Russell et al. (1990)
Poaceae	<i>Chloris virgata</i> Swartz	Gibbs Russell et al. (1990)
Poaceae	<i>Cymbopogon prolixus</i> (Stapf) Phill.	Clark VR, Te Water Naudé T 333
Poaceae	<i>Cymbopogon pospischilii</i> (K.Schum.) C.E.Hubb.	Clark VR, Ngcobo L, Pienaar C 306
Poaceae	<i>Cynodon incompletus</i> Nees	Clark VR, Devos N, McKenzie RJ 98
Poaceae	<i>Digitaria eriantha</i> Steud.	Clark VR, Devos N, McKenzie RJ 60
Poaceae	<i>Ehrharta calycina</i> J.E.Sm. var. <i>calycina</i>	Barker NP 1492
Poaceae	<i>Ehrharta erecta</i> Lam. var. <i>erecta</i>	Clark VR, Coombs G 533
Poaceae	<i>Ehrharta longigluma</i> C.E.Hubb.	Clark VR, Coombs G 189

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Appendix A (continued)

Family	Species	Collectors/References
<i>Monocotyledons</i>		
Poaceae	<i>Elionurus muticus</i> (Spreng.) Kunth	McKenzie RJ, Weston P, Clark VR 95
Poaceae	<i>Enneapogon desvauxii</i> Beauverd	Tyson W s.n.
Poaceae	<i>Enneapogon scaber</i> Lehm	Bolus H s.n.
Poaceae	<i>Enneapogon scoparius</i> Stapf	Clark VR, Ngcobo L, Pienaar C 288
Poaceae	<i>Eragrostis procumbens</i> Nees	Clark VR, Ngcobo L, Pienaar C 198
Poaceae	<i>Eragrostis bergiana</i> (Kunth) Trin.	Bolus H 552
Poaceae	<i>Eragrostis caesia</i> Stapf	Clark VR, McKenzie RJ 308
Poaceae	<i>Eragrostis capensis</i> (Thunb.) Trin.	Clark VR, Coombs G 427
Poaceae	<i>Eragrostis chloromelas</i> Steud.	Clark VR, Ngcobo L, Pienaar C 303
Poaceae	<i>Eragrostis curvula</i> (Schrud.) Nees	Clark VR, Coombs G 450
Poaceae	<i>Eragrostis homomalla</i> Nees	Clark VR, Coombs G 42
Poaceae	<i>Eragrostis lehmanniana</i> Nees var. <i>lehmanniana</i>	Clark VR, Ngcobo L, Pienaar C 301
Poaceae	<i>Eragrostis obtusa</i> Munro ex Fical. & Hiern	Clark VR, Ngcobo L, Pienaar C 249
Poaceae	<i>Eustachys paspaloides</i> (Vahl) Lanza & Mattei subsp. <i>paspaloides</i>	Clark VR, Ngcobo L, Pienaar C 349
Poaceae	<i>Festuca arundinacea</i> Schreb.*	Clark VR, McKenzie RJ 404
Poaceae	<i>Festuca caprina</i> Nees	Clark VR, Coombs G 610
Poaceae	<i>Festuca scabra</i> Vahl	Clark VR, Ramdhani S 221
Poaceae	<i>Fingerhuthia africana</i> Lehm.	Gibbs Russell et al. (1990)
Poaceae	<i>Fingerhuthia sesleriiformis</i> Nees	Clark VR, Coombs G 670
Poaceae	<i>Harpochloa falx</i> (L.f.) Kuntze	Clark VR, Coombs G 264
Poaceae	<i>Helictotrichon hirtulum</i> (Steud.) Schweick.	Clark VR, Devos N, McKenzie RJ 96
Poaceae	<i>Helictotrichon longifolium</i> (Nees) Schweick.	Clark VR, Coombs G 191
Poaceae	<i>Helictotrichon natalense</i> (Stapf) Schweick.	Clark VR, Ngcobo L, Pienaar C 53
Poaceae	<i>Helictotrichon turgidulum</i> (Stapf) Schweick.	Clark VR, Coombs G 412
Poaceae	<i>Heteropogon contortus</i> (L.) Beauverd ex Roem. & Schult.	Clark VR, Ramdhani S 131
Poaceae	<i>Hordeum capense</i> Thunb.	Clark VR, Te Water Naudé T 217
Poaceae	<i>Hordeum murinum</i> subsp. <i>glaucum</i> (Steud.) Tzvelev*	Clark VR, Ramdhani S 215
Poaceae	<i>Hordeum stenostachys</i> Godr.*	Gibbs Russell et al. (1990)
Poaceae	<i>Hyparrhenia hirta</i> (L.) Stapf.	Clark VR, Coombs G 13
Poaceae	<i>Imperata cylindrica</i> (L.) Raeusch.	Clark VR, Ramdhani S 294
Poaceae	<i>Karoochloa curva</i> (Nees) Conert & Tuerpe	Clark VR, Ramdhani S 121
Poaceae	<i>Karoochloa purpurea</i> (L.f.) Conert & Tuerpe	Clark VR, Coombs G 211
Poaceae	<i>Koeleria capensis</i> (Steud.) Nees	Clark VR, Coombs G 146
Poaceae	<i>Lolium perenne</i> L.*	Clark VR, Te Water Naudé T 215
Poaceae	<i>Melica decumbens</i> Thunb.	Clark VR, Te Water Naudé T 142
Poaceae	<i>Melica racemosa</i> Thunb.	Clark VR, Te Water Naudé T 263
Poaceae	<i>Melinis nervigulumis</i> (Franch.) Zizka	Clark VR, Ngcobo L, Pienaar C 291
Poaceae	<i>Merxmüllera disticha</i> (Nees) Conert	Clark VR, Coombs G 201
Poaceae	<i>Merxmüllera macowanii</i> (Stapf) Conert	Clark VR, Coombs G 185
Poaceae	<i>Merxmüllera stricta</i> (Schrud.) Conert	Clark VR, Barker NP, Devos N 56
Poaceae	<i>Microchloa caffra</i> Nees	Clark VR, Pienaar C 412
Poaceae	<i>Miscanthus capensis</i> (Nees) Anderss.	Clark VR, Coombs G 55
Poaceae	<i>Nassella neesiana</i> (Trin. & Rupr.) Barkworth*	Clark VR, Coombs G 543
Poaceae	<i>Nassella trichotoma</i> (Nees) Hack. ex Arechav.*	Clark VR, Coombs G 307
Poaceae	<i>Panicum coloratum</i> L. var. <i>coloratum</i>	Clark VR, Coombs G 506
Poaceae	<i>Panicum deustum</i> Thunb.	Pond et al. (2002)
Poaceae	<i>Paspalum dilatatum</i> Poir.*	McKenzie RJ, Weston P, Clark VR 164
Poaceae	<i>Pennisetum clandestinum</i> Hochst. ex Chiov.*	Field Observation
Poaceae	<i>Pennisetum macrourum</i> Trin.	Clark VR, Coombs G 504
Poaceae	<i>Pennisetum setaceum</i> (Forssk.) Chiov.*	Henderson (2001)
Poaceae	<i>Pennisetum sphacelatum</i> (Nees) Dur. & Schinz	Clark VR, McKenzie RJ 304
Poaceae	<i>Pennisetum thunbergii</i> Kunth	Clark VR, Coombs G 80
Poaceae	<i>Pentaschistis airoides</i> (Nees) Stapf subsp. <i>airoides</i>	MacOwan P 1291
Poaceae	<i>Pentaschistis airoides</i> subsp. <i>jugorum</i> (Stapf) H.P.Linder	Clark VR, Coombs G 130
Poaceae	<i>Pentaschistis glandulosa</i> (Schrud.) H.P.Linder	Clark VR, Coombs G 305
Poaceae	<i>Pentaschistis setifolia</i> (Thunb.) McClean	Clark VR, Te Water Naudé T 236
Poaceae	<i>Phragmites australis</i> subsp. <i>altissimus</i> (Benth.) Clayton	Clark VR, Ngcobo L, Pienaar C 234
Poaceae	<i>Poa binata</i> Nees	Clark VR, Coombs G 656f
Poaceae	<i>Poa pratensis</i> L.*	Clark VR, Te Water Naudé T 165
Poaceae	<i>Polypogon viridis</i> (Gouan) Breistr.*	Clark VR, Coombs G 665
Poaceae	<i>Schismus barbatus</i> (Loefl. ex L.) Thell.	Gibbs Russell et al. (1990)
Poaceae	<i>Schismus inermis</i> (Stapf) C.E.Hubb.	Gibbs Russell et al. (1990)
Poaceae	<i>Setaria sphacelata</i> (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss var. <i>sphacelata</i>	Bolus H 675
Poaceae	<i>Setaria verticillata</i> (L.) Beauverd	Pond et al. (2002)

Appendix A (continued)

Family	Species	Collectors/References
<i>Monocotyledons</i>		
Poaceae	<i>Sporobolus africanus</i> (Poir.) Robyns & Tournay	Clark VR, Coombs G 551
Poaceae	<i>Sporobolus discoporus</i> Nees	Clark VR, Pienaar C 419
Poaceae	<i>Sporobolus fimbriatus</i> (Trin.) Nees	Clark VR, Coombs G 540
Poaceae	<i>Sporobolus ioclados</i> (Trin.) Nees	Clark VR, Ngcobo L, Pienaar C 290
Poaceae	<i>Stipa dregeana</i> Steud. var. <i>dregeana</i>	Clark VR, Ramdhani S 480
Poaceae	<i>Stipa dregeana</i> var. <i>elongata</i> (Nees) Stapf	MacOwan P 1520
Poaceae	<i>Stipagrostis ciliata</i> var. <i>capensis</i> (Trin. & Rupr.) De Winter	Gibbs Russell et al. (1990)
Poaceae	<i>Stipagrostis obtusa</i> (Del.) Nees	Gibbs Russell et al. (1990)
Poaceae	<i>Tetrachne dregei</i> Nees	Clark VR, Devos N, McKenzie RJ 97
Poaceae	<i>Themeda triandra</i> Forssk.	Clark VR, Coombs G 187
Poaceae	<i>Tragus berteronianus</i> Schult.	Gibbs Russell et al. (1990)
Poaceae	<i>Tragus koelerioides</i> Aschers.	Gibbs Russell et al. (1990)
Poaceae	<i>Tragus racemosus</i> (L.) All.	Clark VR, Ngcobo L, Pienaar C 36
Poaceae	<i>Tribolium hispidum</i> (Thunb.) Desv.	McKenzie RJ, Weston P, Clark VR 118
Poaceae	<i>Tristachya leucothrix</i> Trin. ex Nees	MacOwan P 789
Poaceae	<i>Urochloa panicoides</i> Beauverd	Pond et al. (2002)
Poaceae	<i>Vulpia bromoides</i> (L.) S.F.Gray*	Clark VR, Coombs G 218
Poaceae	<i>Vulpia myuros</i> (L.) C.Gmel.*	Gibbs Russell et al. (1990)
Restionaceae	<i>Ischyrolepis distracta</i> (Mast.) H.P.Linder	Clark VR, Barker NP, Devos N 54
Restionaceae	<i>Rhodocoma capensis</i> Steud.	Clark VR, Crause I 268
Tecophilaeaceae	<i>Cyanella lutea</i> L.f.	Clark VR, Ramdhani S 234
Typhaceae	<i>Typha capensis</i> (Rohrb.) N.E.Br.	Clark VR, Ramdhani S 116
<i>Dicotyledons</i>		
Acanthaceae	<i>Barleria irritans</i> Nees	Bolus H 363
Acanthaceae	<i>Blepharis capensis</i> (L.f.) Pers.	Clark VR, Ngcobo L, Pienaar C 296
Acanthaceae	<i>Hypoestes forskoolii</i> (Vahl) R.Br.	Balkwill and Norris (1985)
Acanthaceae	<i>Justicia orchiioides</i> L.f.	Barker NP 1454
Acanthaceae	<i>Monechma divaricatum</i> (Nees) C.B.Clarke	Bolus H 748
Achariaceae	<i>Guthriea capensis</i> H.Bolus	Clark VR, Barker NP, Devos N 24
Adoxaceae	<i>Sambucus nigra</i> L.*	Clark VR, Pienaar C 397
Aizoaceae	<i>Aizoon glinoides</i> L.f.	Barker NP 1514
Aizoaceae	<i>Aizoon rigidum</i> L.f.	Rogers FA 147
Aizoaceae	<i>Galenia procumbens</i> L.f.	Bolus H 182
Aizoaceae	<i>Galenia prostrata</i> Schellenb.	Adamson (1956)
Aizoaceae	<i>Galenia sarcophylla</i> Fenzl.	Adamson (1956)
Aizoaceae	<i>Galenia secunda</i> (L.f.) Sond.	Adamson (1956)
Aizoaceae	<i>Tetragonia acanthocarpa</i> Adamson	Adamson (1955a)
Aizoaceae	<i>Tetragonia arbuscula</i> Fenzl	Adamson (1955a)
Aizoaceae	<i>Tetragonia echinata</i> Aiton	Adamson (1955a)
Aizoaceae	<i>Tetragonia fruticosa</i> L.	Adamson (1955a)
Aizoaceae	<i>Tetragonia microptera</i> Fenzl	Bolus H s.n.
Aizoaceae	<i>Tetragonia portulacoides</i> Fenzl	Adamson (1955a)
Aizoaceae	<i>Tetragonia sarcophylla</i> Fenzl	Adamson (1955a)
Aizoaceae	<i>Tetragonia spicata</i> L.f.	Bolus H 107
Amaranthaceae	<i>Achyranthes aspera</i> L.*	Clark VR, Crause I 107
Amaranthaceae	<i>Alternanthera pungens</i> Kunth*	Francis M 25
Amaranthaceae	<i>Amaranthus capensis</i> Thell. subsp. <i>capensis</i>	Brenan (1981)
Amaranthaceae	<i>Amaranthus deflexus</i> L.*	Brenan (1981)
Amaranthaceae	<i>Amaranthus dinteri</i> Schinz.	Brenan (1981)
Amaranthaceae	<i>Amaranthus hybridus</i> L. subsp. <i>hybridus</i> *	Clark VR, Ngcobo L, Pienaar C 193
Amaranthaceae	<i>Amaranthus praetermissus</i> Brenan	Brenan (1981)
Amaranthaceae	<i>Amaranthus retroflexus</i> L. var. <i>retroflexus</i> *	Brenan (1981)
Amaranthaceae	<i>Amaranthus thunbergii</i> Moq.	Brenan (1981)
Amaranthaceae	<i>Cyathula uncinulata</i> (Schrad.) Schinz	Clark VR, Coombs G 391
Amaranthaceae	<i>Gomphrena celosioides</i> Mart.*	Clark VR, Ngcobo L, Pienaar C 256
Amaranthaceae	<i>Guilleminea densa</i> (Willd. ex Roem. & Schult.) Moq.*	Clark, VR, Rose M 221
Anacardiaceae	<i>Schinus molle</i> L.*	Clark VR, Te Water Naudé T 210
Anacardiaceae	<i>Searsia bolusii</i> (Sond. ex Engl.) Moffett	Moffett (1993)
Anacardiaceae	<i>Searsia burchellii</i> (Sond. ex Engl.) Moffett	Clark VR, Ngcobo L, Pienaar C 340
Anacardiaceae	<i>Searsia dentata</i> (Thunb.) F.A.Barkley	Clark VR, Te Water Naudé T 72
Anacardiaceae	<i>Searsia divaricata</i> (Eckl. & Zeyh.) Moffett	Clark VR, Coombs G 239
Anacardiaceae	<i>Searsia dregeana</i> (Sond.) Moffett	Clark VR, Barker NP, Devos N 21

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Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Anacardiaceae	<i>Searsia erosa</i> (Thunb.) Moffett	Clark VR, Ngcobo L, Pienaar C 218
Anacardiaceae	<i>Searsia incisa</i> var. <i>effusa</i> (C.Presl) Moffett	Moffett (1993)
Anacardiaceae	<i>Searsia krebsiana</i> (C.Presl ex Engl.) Moffett	Clark VR, Ramdhani S 183
Anacardiaceae	<i>Searsia lancea</i> (L.f.) F.A.Barkley	Clark VR, Te Water Naudé T 4
Anacardiaceae	<i>Searsia longispina</i> (Eckl. & Zeyh.) Moffett	Clark VR, Pienaar C 600
Anacardiaceae	<i>Searsia lucida</i> (L.) F.A.Barkley forma <i>lucida</i>	Moffett (1993)
Anacardiaceae	<i>Searsia pallens</i> (Eckl. & Zeyh.) Moffett	Barker NP 1505
Anacardiaceae	<i>Searsia pyroides</i> var. <i>gracilis</i> (Engl.) Moffett	Moffett (1993)
Anacardiaceae	<i>Searsia pyroides</i> (Burch.) Moffett var. <i>pyroides</i>	Clark VR, Coombs G 61
Anacardiaceae	<i>Searsia refracta</i> (Eckl. & Zeyh.) Moffett	Moffett (1993)
Anacardiaceae	<i>Searsia rehmanniana</i> var. <i>glabrata</i> (Sond.) Moffett	Clark VR, Rose M 33
Apiaceae	<i>Alepidea</i> cf. <i>acutidens</i> Weim. (possibly sp. nov.; Winter, pers. comm.)	Clark VR, Crause I 5
Apiaceae	<i>Alepidea delicatula</i> Weim.	Clark VR, Coombs G 237
Apiaceae	<i>Alepidea macowanii</i> Dummer	Winter, pers. comm.
Apiaceae	<i>Berula erecta</i> subsp. <i>thunbergii</i> (DC.) B.L.Burt	Clark VR, Coombs G 47
Apiaceae	<i>Bupleurum mundii</i> Cham. & Schldl.	Clark VR, Coombs G 167
Apiaceae	<i>Chamarea longipedicellata</i> B.L.Burt	Clark VR, Pienaar C 173
Apiaceae	<i>Conium chaerophylloides</i> (Thunb.) Sond.	Clark VR, Pienaar C, Lochner EJ 87
Apiaceae	<i>Conium</i> sp. no. 3 (Hilliard and Burt, 1985b)	Clark VR, Crause I 69
Apiaceae	<i>Conium</i> sp. no. 4 (Hilliard and Burt, 1985b)	Clark VR, Crause I 25
Apiaceae	<i>Cyclospermum leptophyllum</i> (Pers.) Sprague*	Clark VR, Te Water Naudé T 57
Apiaceae	<i>Deverra burchellii</i> (DC.) Eckl. & Zeyh.	Clark VR, Pienaar C, Lochner EJ 17
Apiaceae	<i>Heteromorpha arborescens</i> (Spreng.) Cham. & Schldl. var. <i>arborescens</i> (interior form)	Clark VR, Te Water Naudé T 49
Apiaceae	<i>Notobubon laevigatum</i> (Aiton) A.R.Magee	McKenzie RJ, Weston P, Clark VR 138
Apiaceae	<i>Pimpinella caffra</i> (Eckl. & Zeyh.) D.Dietr.	Clark VR, Crause I 12
Apiaceae	<i>Polemanna grossulariifolia</i> Eckl. & Zeyh.	Clark VR, Coombs G 337
Apiaceae	<i>Sanicula elata</i> Buch.-Ham. ex D.Don	MacOwan P 1499
Apocynaceae	<i>Asclepias gibba</i> (E.Mey.) Schltr.	MacOwan P 2028
Apocynaceae	<i>Asclepias humilis</i> (E.Mey.) Schltr.	Clark VR, Coombs G 205
Apocynaceae	<i>Carissa bispinosa</i> (L.) Desf. ex Brenan	Clark VR, Ramdhani S 416
Apocynaceae	<i>Cordylogyne globosa</i> E.Mey.	Bruyns (2005)
Apocynaceae	<i>Cynanchum capense</i> Thunb.	Burchell W 2879
Apocynaceae	<i>Duvalia corderoyi</i> (Hook.f.) N.E.Br.	Bruyns (2005)
Apocynaceae	<i>Duvalia caespitosa</i> (Masson) Haw. subsp. <i>caespitosa</i>	Bruyns (2005)
Apocynaceae	<i>Duvalia modesta</i> N.E.Br.	Bruyns (2005)
Apocynaceae	<i>Gomphocarpus fruticosus</i> (L.) W.T.Aiton subsp. <i>fruticosus</i>	Clark VR, Coombs G 54
Apocynaceae	<i>Huernia barbata</i> (Masson) Haw.	Bruyns (2005)
Apocynaceae	<i>Huernia humilis</i> (Masson) Haw.	Bruyns (2005)
Apocynaceae	<i>Huernia kennedyana</i> Lavranos	Bruyns (2005)
Apocynaceae	<i>Huernia piersii</i> N.E.Br.	Bruyns (2005)
Apocynaceae	<i>Huernia thurettii</i> F.Cels	Bruyns (2005)
Apocynaceae	<i>Microlooma armatum</i> (Thunb.) Schltr. ex Gilg var. <i>armatum</i>	Bolus H 365
Apocynaceae	<i>Orbea verrucosa</i> (Masson) L.C.Leach	Bruyns (2005)
Apocynaceae	<i>Pachycarpus vexillaris</i> E.Mey.	Clark VR, Devos N, McKenzie RJ 28
Apocynaceae	<i>Sarcostemma viminale</i> (L.) R.Br. subsp. <i>viminale</i>	MacOwan P s.n.
Apocynaceae	<i>Schizoglossum bidens</i> E.Mey. subsp. <i>bidens</i>	Clark VR, Te Water Naudé T 180
Apocynaceae	<i>Schizoglossum hamatum</i> E.Mey.	MacOwan P 1637
Apocynaceae	<i>Stapelia grandiflora</i> Masson var. <i>grandiflora</i>	Clark VR, Pienaar C 524
Apocynaceae	<i>Stapelia olivacea</i> N.E.Br.	Bruyns (2005)
Apocynaceae	<i>Xysmalobium gomphocarpoides</i> (E.Mey.) D.Dietr. var. <i>gomphocarpoides</i>	Clark VR, Devos N, McKenzie RJ 154
Araliaceae	<i>Cussonia paniculata</i> Eckl. & Zeyh. subsp. <i>paniculata</i>	Clark VR, Barker NP, Devos N 42
Araliaceae	<i>Cussonia spicata</i> Thunb.	Clark VR, Ramdhani S 11
Asteraceae	<i>Amellus strigosus</i> (Thunb.) Less.	Clark VR, Coombs G 251
Asteraceae	<i>Amellus tridactylis</i> DC.	Clark VR, Crause I 59
Asteraceae	<i>Arctotheca calendula</i> (L.) Levyns	Francis M 11
Asteraceae	<i>Arctotis arctotooides</i> (L.f.) O.Hoffm.	Clark VR, Coombs G 171
Asteraceae	<i>Arctotis dregei</i> Turcz.	Clark VR, Ngcobo L, Pienaar C 20
Asteraceae	<i>Artemisia afra</i> Jacq. ex Willd. var. <i>afra</i>	Clark VR, Ngcobo L, Pienaar C 248
Asteraceae	<i>Aster bakerianus</i> Burt Davy ex C.A.Sm.	Clark VR, Te Water Naudé T 264
Asteraceae	<i>Athrixia angustissima</i> DC.	Clark VR, Ramdhani S 373
Asteraceae	<i>Berkheya buphthalmoides</i> (DC.) Schltr.	Clark VR, Coombs G 142
Asteraceae	<i>Berkheya cardopatifolia</i> (DC.) Roessler	Clark VR, Te Water Naudé T 365
Asteraceae	<i>Berkheya decurrens</i> (Thunb.) Willd.	Clark VR, Crause I 129
Asteraceae	<i>Berkheya heterophylla</i> (Thunb.) O.Hoffm. var. <i>heterophylla</i>	Clark VR, Ngcobo L, Pienaar C 76

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Asteraceae	<i>Chrysocoma ciliata</i> L.	Barker NP 1513
Asteraceae	<i>Chrysocoma microphylla</i> Thunb.	Clark VR, Ngcobo L, Pienaar C 111
Asteraceae	<i>Cichorium intybus</i> L. subsp. <i>intybus</i>	Clark VR, Pienaar C 346
Asteraceae	<i>Cineraria aspera</i> Thunb.	Clark VR, Devos N, McKenzie RJ 48
Asteraceae	<i>Cineraria erodioides</i> DC. var. <i>erodioides</i>	Clark VR, Ramdhani S 336
Asteraceae	<i>Cineraria geraniifolia</i> DC.	Clark VR, Coombs G 6
Asteraceae	<i>Cineraria lobata</i> L'Hér.	Clark VR, Te Water Naudé T 116
Asteraceae	<i>Cineraria mollis</i> E.Mey. ex DC.	Clark VR, Coombs G 248
Asteraceae	<i>Cineraria platycarpa</i> DC.	Bolus H 98
Asteraceae	<i>Cirsium vulgare</i> (Savi) Ten.*	Clark VR, McKenzie RJ 398
Asteraceae	<i>Conyza canadensis</i> (L.) Cronquist*	Clark VR, McKenzie RJ 342
Asteraceae	<i>Conyza pinnata</i> (L.f.) Kuntze	Clark VR, McKenzie RJ 206
Asteraceae	<i>Conyza podocephala</i> DC.	Clark VR, Ngcobo L, Pienaar C 103
Asteraceae	<i>Conyza scabrida</i> DC.	Clark VR, McKenzie RJ 58
Asteraceae	<i>Cotula coronopifolia</i> L.	Clark VR, Pienaar C 311
Asteraceae	<i>Cotula hispida</i> (DC.) Harv.	Clark VR, Coombs G 141
Asteraceae	<i>Cotula microglossa</i> (DC.) O.Hoffm. & Kuntze ex Kuntze complex sp. no. 1 (Mucina, pers. comm.)	Clark VR, McKenzie RJ 145
Asteraceae	<i>Cotula microglossa</i> (DC.) O.Hoffm. & Kuntze ex Kuntze complex sp. no. 2 (Mucina, pers. comm.)	Barker NP 1471
Asteraceae	<i>Cotula</i> sp. no. 1 (Mucina, pers. comm.)	Clark VR, Ngcobo L, Pienaar C 326
Asteraceae	<i>Cuspidia cernua</i> subsp. <i>annua</i> (Less.) Roessler	Bolus H 540
Asteraceae	<i>Dicrothamnus rhinocerotis</i> (L.f.) Koekemoer	Clark VR, Barker NP, Devos N 29
Asteraceae	<i>Dicoma capensis</i> Less.	Bolus H 447
Asteraceae	<i>Dicoma spinosa</i> (L.) Druce	Weale JM 145
Asteraceae	<i>Dimorphotheca cuneata</i> (Thunb.) Less.	Clark VR, Devos N, McKenzie RJ 111
Asteraceae	<i>Eriocephalus aromaticus</i> C.A.Sm.	Clark VR, Barker NP, Devos N 26
Asteraceae	<i>Eriocephalus ericoides</i> (L.f.) Druce subsp. <i>ericoides</i>	Clark VR, Ngcobo L, Pienaar C 315
Asteraceae	<i>Eriocephalus eximius</i> DC.	Müller et al. (2001)
Asteraceae	<i>Eriocephalus tenuifolius</i> DC.	Müller et al. (2001)
Asteraceae	<i>Eumorphia dregeana</i> DC.	McKenzie RJ, Weston P, Clark VR 156
Asteraceae	<i>Euryops annae</i> E.Phillips	Clark VR, Coombs G 81
Asteraceae	<i>Euryops candollei</i> Harv.	McKenzie RJ, Weston P, Clark VR 120
Asteraceae	<i>Euryops</i> cf. <i>abrotanifolius</i> (L.) DC. (Devos, pers. comm.)	McKenzie RJ, Weston P, Clark VR 134
Asteraceae	<i>Euryops dentatus</i> B.Nord.	Clark VR, Pienaar C 381
Asteraceae	<i>Euryops empetrifolius</i> DC.	Clark VR, Pienaar C 396
Asteraceae	<i>Euryops floribundus</i> N.E.Br.	Clark VR, Te Water Naudé T 143
Asteraceae	<i>Euryops galpinii</i> Bolus	McKenzie RJ, Weston P, Clark VR 176
Asteraceae	<i>Euryops lateriflorus</i> (L.f.) DC.	Clark VR, Ngcobo L, Pienaar C 295
Asteraceae	<i>Euryops munitus</i> (L.f.) B.Nord.	Clark VR, Ngcobo L, Pienaar C 38A
Asteraceae	<i>Euryops oligoglossus</i> DC. subsp. <i>oligoglossus</i>	Bolus H 1793
Asteraceae	<i>Euryops petraeus</i> B.Nord.	Clark VR, Devos N, McKenzie RJ 2
Asteraceae	<i>Euryops exsudans</i> B.Nord. & V.R.Clark	Clark VR, Coombs G 110
Asteraceae	<i>Euryops proteoides</i> B.Nord. & V.R.Clark	Clark VR, Coombs G 105
Asteraceae	<i>Euryops subcarnosus</i> subsp. <i>vulgaris</i> B.Nord.	Nordenstam (1969)
Asteraceae	<i>Euryops trilobus</i> Harv.	Clark VR, Coombs G 256
Asteraceae	<i>Felicia burkei</i> (Harv.) L.Bolus	MacOwan P 1629
Asteraceae	<i>Felicia fascicularis</i> DC.	Clark VR, Coombs G 574
Asteraceae	<i>Felicia filifolia</i> subsp. <i>bodkinii</i> (Compton) Grau	Clark VR, Te Water Naudé T 351
Asteraceae	<i>Felicia hirsuta</i> DC.	Clark VR, Rose M 455
Asteraceae	<i>Felicia ovata</i> (Thunb.) Compton	Bolus H s.n.
Asteraceae	<i>Felicia rosulata</i> Yeo	Clark VR, Coombs G 174
Asteraceae	<i>Foveolina</i> sp. no. 1 (Mucina, pers. comm.)	Clark VR, Rose M 365
Asteraceae	<i>Garuleum bipinnatum</i> (Thunb.) Less	Bolus H 2060
Asteraceae	<i>Garuleum pinnatifidum</i> (Thunb.) DC.	Clark VR, Te Water Naudé T 248
Asteraceae	<i>Gazania caespitosa</i> Bolus	Clark VR, Ramdhani S 448
Asteraceae	<i>Gazania heterochaeta</i> DC.	Clark VR, Devos N, McKenzie RJ 159
Asteraceae	<i>Gazania krebsiana</i> Less. subsp. <i>krebsiana</i>	Clark VR, Coombs G 350
Asteraceae	<i>Gazania linearis</i> (Thunb.) Druce var. <i>linearis</i>	McKenzie RJ, Weston P, Clark VR 42
Asteraceae	<i>Geigeria filifolia</i> Mattf.	Clark VR, Pienaar C, Lochner EJ 271
Asteraceae	<i>Geigeria ornativa</i> O.Hoffm. subsp. <i>ornativa</i>	Bolus H 369
Asteraceae	<i>Gerbera piloselloides</i> (L.) Cass.	Clark VR, Coombs G 99
Asteraceae	<i>Gnaphalium capense</i> Hilliard	Hilliard (1983)

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Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Asteraceae	<i>Gnaphalium confine</i> Harv.	Clark VR, Coombs G 324
Asteraceae	<i>Gnaphalium vestitum</i> Thunb.	Hilliard (1983)
Asteraceae	<i>Gymnopentzia bifurcata</i> Benth.	Clark VR, McKenzie RJ 297
Asteraceae	<i>Haplocarpha nervosa</i> (Thunb.) Beauverd	Clark VR, Te Water Naudé T 232
Asteraceae	<i>Haplocarpha scaposa</i> Harv.	Clark VR, Coombs G 365
Asteraceae	<i>Helichrysum albo-brunneum</i> S.Moore	Clark VR, Coombs G 138
Asteraceae	<i>Helichrysum anomalum</i> Less.	Clark VR, Barker NP, Devos N 37
Asteraceae	<i>Helichrysum asperum</i> var. <i>appressifolium</i> (Moeser) Hilliard	Clark VR, Coombs G 128
Asteraceae	<i>Helichrysum aureum</i> (Houtt.) Merr. var. <i>aureum</i>	Clark VR, Coombs G 132
Asteraceae	<i>Helichrysum cerastioides</i> DC. var. <i>cerastioides</i>	Barker NP 1518
Asteraceae	<i>Helichrysum cooperi</i> Harv.	Clark VR, Crause I 191
Asteraceae	<i>Helichrysum dregeanum</i> Sond. & Harv.	Clark VR, Ngcobo L, Pienaar C 358
Asteraceae	<i>Helichrysum grandibracteatum</i> M.D.Hend.	Hilliard (1983)
Asteraceae	<i>Helichrysum hamulosum</i> E.Mey. ex DC.	Clark VR, Coombs G 394
Asteraceae	<i>Helichrysum melanacme</i> DC.	Hilliard (1983)
Asteraceae	<i>Helichrysum miconiifolium</i> DC.	Clark VR, Coombs G 117
Asteraceae	<i>Helichrysum montanum</i> DC.	Clark VR, Coombs G 135
Asteraceae	<i>Helichrysum mundtii</i> Harv.	Clark VR, Crause I 83
Asteraceae	<i>Helichrysum nanum</i> Klatt	MacOwan P 1472
Asteraceae	<i>Helichrysum nudifolium</i> (L.) Less. var. <i>nudifolium</i>	Clark VR, Coombs G 326
Asteraceae	<i>Helichrysum nudifolium</i> var. <i>oxyphyllum</i> (DC.) Beentje	MacOwan P s.n.
Asteraceae	<i>Helichrysum nudifolium</i> var. <i>pilosellum</i> (L.f.) Beentje	Clark VR, Ramdhani S 271
Asteraceae	<i>Helichrysum odoratissimum</i> (L.) Sweet	McKenzie RJ, Weston P, Clark VR 362
Asteraceae	<i>Helichrysum pallidum</i> DC.	Hilliard (1983)
Asteraceae	<i>Helichrysum pedunculatum</i> Hilliard & B.L.Burt	Hilliard (1983)
Asteraceae	<i>Helichrysum psilolepis</i> Harv.	Hilliard (1983)
Asteraceae	<i>Helichrysum pumilio</i> (O.Hoffm.) Hilliard & B.L.Burt subsp. <i>pumilio</i>	Hilliard (1983)
Asteraceae	<i>Helichrysum rosum</i> var. <i>arcuatum</i> Hilliard	Barker NP 1525
Asteraceae	<i>Helichrysum rosum</i> (P.J.Bergius) Less. var. <i>rosum</i>	McKenzie RJ, Weston P, Clark VR 106A
Asteraceae	<i>Helichrysum rugulosum</i> Less.	Clark VR, Coombs G 480
Asteraceae	<i>Helichrysum rutilans</i> (L.) D.Don.	Clark VR, Ngcobo L, Pienaar C 202
Asteraceae	<i>Helichrysum scitulum</i> Hilliard & B.L.Burt	Clark VR, Barker NP, Devos N 25
Asteraceae	<i>Helichrysum sessile</i> DC.	Clark VR, Barker NP, Devos N 19
Asteraceae	<i>Helichrysum</i> sp. no. 1	Clark VR, Crause I 60
Asteraceae	<i>Helichrysum splendidum</i> (Thunb.) Less.	Clark VR, Coombs G 57
Asteraceae	<i>Helichrysum stoloniferum</i> (L.f.) Willd.	Hilliard (1983)
Asteraceae	<i>Helichrysum subglomeratum</i> Less.	Clark VR, Coombs G 338
Asteraceae	<i>Helichrysum tenuiculum</i> DC.	Clark VR, Barker NP, Devos N 49
Asteraceae	<i>Helichrysum tinctum</i> (Thunb.) Hilliard & B.L.Burt	Hilliard (1983)
Asteraceae	<i>Helichrysum trilineatum</i> DC.	Clark VR, Barker NP, Devos N 25
Asteraceae	<i>Helichrysum tysonii</i> Hilliard	Hilliard (1983)
Asteraceae	<i>Helichrysum umbraculigerum</i> Less.	Clark VR, Coombs G 143
Asteraceae	<i>Helichrysum xerochrysum</i> DC.	MacOwan P 568
Asteraceae	<i>Helichrysum zeyheri</i> Less.	Clark VR, Coombs G 660
Asteraceae	<i>Ifloga decumbens</i> (Thunb.) Schltr.	Hilliard (1981)
Asteraceae	<i>Ifloga glomerata</i> (Harv.) Schltr.	Clark VR, Pienaar C 427
Asteraceae	<i>Kleinia longiflora</i> DC.	Bolus H 99
Asteraceae	<i>Lactuca inermis</i> Forssk.	Clark VR, Coombs G 202
Asteraceae	<i>Lactuca serriola</i> L.*	Field Observation
Asteraceae	<i>Lasiospermum bipinnatum</i> (Thunb.) Druce	Clark VR, Coombs G 88
Asteraceae	<i>Leysera gnaphalodes</i> (L.) L.	Clark VR, Barker NP, Devos N 4
Asteraceae	<i>Microglossa mespilifolia</i> (Less.) B.L.Rob.	Bolus H 308
Asteraceae	<i>Nidorella agria</i> Hilliard	Clark VR, Coombs G 378
Asteraceae	<i>Oligocarpus calendulaceus</i> (L.f.) Less.	Tyson W 40
Asteraceae	<i>Oncosiphon piluliferum</i> (L.f.) Källersjö	Leistner OA 489
Asteraceae	<i>Osteospermum grandidentatum</i> DC.	Clark VR, Devos N, McKenzie RJ 134
Asteraceae	<i>Osteospermum herbaceum</i> L.f.	Bolus H 1750
Asteraceae	<i>Othonna auriculifolia</i> Licht. ex Less.	Bolus H 602
Asteraceae	<i>Othonna carnosa</i> Less. var. <i>carnosa</i>	Clark VR, Coombs G 634
Asteraceae	<i>Othonna patula</i> Schltr.	Clark VR, Devos N, McKenzie RJ 5
Asteraceae	<i>Othonna pavonia</i> E.Mey. ex DC.	Clark VR, Pienaar C, Lochner EJ 346
Asteraceae	<i>Pegolettia baccharidifolia</i> Less.	Clark VR, Ramdhani S 396
Asteraceae	<i>Pegolettia retrofracta</i> (Thunb.) Kies	Clark VR, McKenzie RJ 85
Asteraceae	<i>Pentzia cooperi</i> Harv.	Clark VR, Coombs G 124

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Asteraceae	<i>Pentzia globosa</i> Less.	Clark VR, Ngcobo L, Pienaar C 81
Asteraceae	<i>Pentzia incana</i> (Thunb.) Kuntze	Clark VR, Ngcobo L, Pienaar C 298
Asteraceae	<i>Pentzia punctata</i> Harv.	Clark VR, Ngcobo L, Pienaar C 316
Asteraceae	<i>Pentzia quinquefida</i> (Thunb.) Less.	Clark VR, Ngcobo L, Pienaar C 308
Asteraceae	<i>Pentzia tortuosa</i> (DC.) Fenzl ex Harv.	Clark VR, Te Water Naudé T 255
Asteraceae	<i>Phymaspermum aciculare</i> (E.Mey. ex Harv.) Benth. & Hook. ex B.D.Jacks	Clark VR, McKenzie RJ 69
Asteraceae	<i>Phymaspermum parvifolium</i> (DC.) Benth. & Hook. ex B.D.Jacks.	Clark VR, Ngcobo L, Pienaar C 26
Asteraceae	<i>Picris echioides</i> L.*	Clark VR, Pienaar C 341
Asteraceae	<i>Pseudognaphalium luteo-album</i> (L.) Hilliard & B.L.Burt subsp. <i>luteo-album</i>	Clark VR, Coombs G 28
Asteraceae	<i>Pseudognaphalium undulatum</i> (L.) Hilliard & B.L.Burt	Clark VR, Coombs G 457
Asteraceae	<i>Pteronia adenocarpa</i> Harv.	Acocks JPH 17707
Asteraceae	<i>Pteronia bolusii</i> E.Phillips	Bolus H 745
Asteraceae	<i>Pteronia erythrochaeta</i> DC.	Dyer RA 1001
Asteraceae	<i>Pteronia glauca</i> Thunb.	Tyson W 204
Asteraceae	<i>Pteronia glaucescens</i> DC.	Bolus H 1822
Asteraceae	<i>Pteronia glomerata</i> L.f.	Tyson W 221
Asteraceae	<i>Pteronia incana</i> (Burm.) DC.	Clark VR, Ramdhani S 399
Asteraceae	<i>Pteronia mucronata</i> DC.	Bolus H 600
Asteraceae	<i>Pteronia punctata</i> Phillips	Bolus H 630
Asteraceae	<i>Pteronia sordida</i> N.E.Br.	Bolus H 614
Asteraceae	<i>Pteronia tricephala</i> DC.	Bolus H 2038
Asteraceae	<i>Pteronia viscosa</i> Thunb.	Bolus H 503
Asteraceae	<i>Rosenia humilis</i> (Less.) K.Bremer	Clark VR, Pienaar C 352
Asteraceae	<i>Rosenia oppositifolia</i> (DC.) K.Bremer	Clark VR, McKenzie RJ 112
Asteraceae	<i>Schkuhria pinnata</i> (Lam.) Cabr.*	Clark VR, Ngcobo L, Pienaar C 14
Asteraceae	<i>Senecio achilleifolius</i> DC.	Clark VR, Ngcobo L, Pienaar C 314
Asteraceae	<i>Senecio acutifolius</i> DC.	Bolus H 451
Asteraceae	<i>Senecio arenarius</i> Thunb.	Clark VR, Coombs G 253
Asteraceae	<i>Senecio asperulus</i> DC.	Clark VR, Coombs G 97
Asteraceae	<i>Senecio chrysocoma</i> Meerb.	Clark VR, McKenzie RJ 268
Asteraceae	<i>Senecio coronatus</i> (Thunb.) Harv.	Clark VR, Te Water Naudé T 372
Asteraceae	<i>Senecio cotyledonis</i> DC.	Bolus H 601
Asteraceae	<i>Senecio deltoideus</i> Less.	Clark VR, Ramdhani S 347
Asteraceae	<i>Senecio digitalifolius</i> DC.	MacOwan P 628
Asteraceae	<i>Senecio dissimulans</i> Hilliard	Clark VR, Rose M 481
Asteraceae	<i>Senecio erubescens</i> var. <i>crepidifolius</i> DC.	Clark VR, Coombs G 115
Asteraceae	<i>Senecio glanduloso-pilosus</i> Volkens & Muschl.	Clark VR, McKenzie RJ 68
Asteraceae	<i>Senecio glutinosus</i> Thunb.	Clark VR, Ramdhani S 288
Asteraceae	<i>Senecio gramineus</i> Harv.	Clark VR, Coombs G 422
Asteraceae	<i>Senecio harveianus</i> MacOwan	Clark VR, Coombs G 353
Asteraceae	<i>Senecio hastatus</i> L.	Clark VR, Devos N, McKenzie RJ 136
Asteraceae	<i>Senecio hypchoerideus</i> DC.	MacOwan P 1711
Asteraceae	<i>Senecio inaequidens</i> DC.	Clark VR, Coombs G 120
Asteraceae	<i>Senecio inornatus</i> DC.	Clark VR, Coombs G 106
Asteraceae	<i>Senecio junceus</i> (DC.) Harv.	Tyson W 163
Asteraceae	<i>Senecio juniperinus</i> L.f. var. <i>juniperinus</i>	Clark VR, Coombs G 287
Asteraceae	<i>Senecio leptophyllus</i> DC.	Clark VR, Devos N, McKenzie RJ 69
Asteraceae	<i>Senecio macrocephalus</i> DC.	McKenzie RJ, Weston P, Clark VR 140
Asteraceae	<i>Senecio napifolius</i> MacOwan	Hilliard (1977)
Asteraceae	<i>Senecio othonniflorus</i> DC.	McKenzie RJ, Weston P, Clark VR 151
Asteraceae	<i>Senecio oxyodontus</i> DC.	Rogers FA 27751
Asteraceae	<i>Senecio parvifolius</i> DC.	Clark VR, Ramdhani S 198
Asteraceae	<i>Senecio polyodon</i> DC. var. <i>polyodon</i>	Clark VR, Coombs G 364
Asteraceae	<i>Senecio polyodon</i> var. <i>subglaber</i> (O.Hoffm. ex Kuntze) Hilliard & B.L.Burt	Clark VR, Ngcobo L, Pienaar C 192
Asteraceae	<i>Senecio radicans</i> (L.f.) Sch.Bip.	Clark VR, Devos N, McKenzie RJ 51
Asteraceae	<i>Senecio reptans</i> Turcz.	Bolus H 8585
Asteraceae	<i>Senecio retrorsus</i> DC.	MacOwan P 655
Asteraceae	<i>Senecio ruwenzoriensis</i> S.Moore	Clark VR, Pienaar C, Lochner EJ 118
Asteraceae	<i>Senecio</i> sp. aff. <i>albanensis</i> DC. (Brink, pers. comm.)	McKenzie RJ, Weston P, Clark VR 152
Asteraceae	<i>Senecio striatifolius</i> DC.	Clark VR, Coombs G 373
Asteraceae	<i>Senecio tanacetopsis</i> Hilliard	Clark VR, Devos N, McKenzie RJ 24
Asteraceae	<i>Seryphium plumosum</i> L.	Clark VR, Crause I 221
Asteraceae	<i>Silybum marianum</i> (L.) Gaertn.*	Clark VR, Ramdhani S 236

(continued on next page)

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Asteraceae	<i>Sonchus asper</i> (L.) Hill*	Clark VR, Rose M 128
Asteraceae	<i>Sonchus dregeanus</i> DC.	Clark VR, Coombs G 202
Asteraceae	<i>Sonchus oleraceus</i> L.*	Clark VR, Pienaar C s.n.
Asteraceae	<i>Tagetes minuta</i> L.*	Field Observation
Asteraceae	<i>Taraxacum officinale</i> Weber (sens. lat.)*	Clark VR, Ramdhani S 220
Asteraceae	<i>Tarhonanthus minor</i> Less.	Clark VR, Te Water Naudé T 358
Asteraceae	<i>Tolpis capensis</i> (L.) Sch.Bip.	Clark VR, Coombs G 108
Asteraceae	<i>Troglophyton capillaceum</i> subsp. <i>diffusum</i> (DC.) Hilliard	Clark VR, Barker NP, Devos N 44
Asteraceae	<i>Ursinia montana</i> subsp. <i>apiculata</i> (DC.) Prassler	Clark VR, Devos N, McKenzie RJ 165
Asteraceae	<i>Verbesina encelioides</i> (Cav.) Benth. & Hook.f. ex A.Gray var. <i>encelioides</i> *	Pond et al. (2002)
Asteraceae	<i>Vernonia capensis</i> (Houtt.) Druce	Clark VR, Te Water Naudé T 144
Asteraceae	<i>Xanthium spinosum</i> L.*	Clark VR, Pienaar C 392
Bignoniaceae	<i>Rhigozum obovatum</i> Burch.	Barker NP 1455
Boraginaceae	<i>Anchusa capensis</i> Thunb.	Clark VR, Coombs G 188
Boraginaceae	<i>Anchusa riparia</i> DC.	Wright (1904)
Boraginaceae	<i>Cynoglossum geometricum</i> Baker & C.H.Wright	Wright (1904)
Boraginaceae	<i>Cynoglossum hispidum</i> Thunb.	Clark VR, McKenzie RJ 131
Boraginaceae	<i>Cynoglossum lanceolatum</i> Forssk.	Wright (1904)
Boraginaceae	<i>Echium vulgare</i> L.*	Barker NP 1467
Boraginaceae	<i>Ehretia rigida</i> (Thunb.) Druce subsp. <i>rigida</i>	Clark VR, Ramdhani S 422
Boraginaceae	<i>Lappula capensis</i> (A.DC.) Gürke	Barker NP 1521
Boraginaceae	<i>Lappula squarrosa</i> (Retz.) Dumort.*	Wright (1904)
Boraginaceae	<i>Lithospermum affine</i> A.DC.	McKenzie RJ, Weston P, Clark VR 131
Boraginaceae	<i>Lithospermum cinereum</i> A.DC.	Wright (1904)
Boraginaceae	<i>Lithospermum scabrum</i> Thunb.	Wright (1904)
Boraginaceae	<i>Lobostemon argenteus</i> (P.J.Bergius) H.Buek	Wright (1904)
Boraginaceae	<i>Lobostemon echioides</i> Lehm.	Weimarck (1941)
Boraginaceae	<i>Myosotis arvensis</i> (L.) Hill*	Wright (1904)
Boraginaceae	<i>Myosotis sylvatica</i> Hoffm.*	Wright (1904)
Brassicaceae	<i>Arabidopsis thaliana</i> (L.) Heynh.	Marais (1970)
Brassicaceae	<i>Capsella bursa-pastoris</i> (L.) Medik.*	Pond et al. (2002)
Brassicaceae	<i>Cardamine africana</i> L.	MacOwan P 210
Brassicaceae	<i>Cardaria draba</i> (L.) Desv.*	Pond et al. (2002)
Brassicaceae	<i>Cleome angustifolia</i> subsp. <i>diandra</i> (Burch.) Kers.	Bolus H 773
Brassicaceae	<i>Descurainia sophia</i> (L.) Webb ex Prantl*	Bolus H s.n.
Brassicaceae	<i>Erucastrum arabicum</i> Fisch. & C.A.Mey.	Clark VR, Coombs G 63
Brassicaceae	<i>Erucastrum strigosum</i> (Thunb.) O.E.Schulz	Bolus H 204
Brassicaceae	<i>Heliophila carmosa</i> (Thunb.) Steud.	Marais (1970)
Brassicaceae	<i>Heliophila rigidiuscula</i> Sond.	McKenzie RJ, Weston P, Clark VR 150
Brassicaceae	<i>Heliophila suavissima</i> Burch. ex DC.	Barker NP 1441
Brassicaceae	<i>Heliophila subulata</i> Burch. ex DC.	McKenzie RJ, Weston P, Clark VR 77
Brassicaceae	<i>Lepidium transvaalense</i> Marais	Clark VR, Devos N, McKenzie RJ 21
Brassicaceae	<i>Matthiola torulosa</i> DC.	Bolus H 647
Brassicaceae	<i>Nasturtium officinale</i> R.Br.	Clark VR, McKenzie RJ 403
Brassicaceae	<i>Rorippa fluviatilis</i> (E. Mey. ex Sond.) Thell.	MacOwan P 1429
Brassicaceae	<i>Rorippa nudiuscula</i> Thell.	MacOwan P 1592
Brassicaceae	<i>Sisymbrium capense</i> Thunb.	Clark VR, Coombs G 286
Brassicaceae	<i>Sisymbrium thellungii</i> O.E.Schulz	MacOwan P 955
Brassicaceae	<i>Sisymbrium turezaninowii</i> Sond.	Clark VR, Coombs G 113
Brassicaceae	<i>Turritis glabra</i> L.*	Clark VR, Rose M 520
Buddlejaceae	<i>Buddleja auriculata</i> Benth.	Verdoorn (1963)
Buddlejaceae	<i>Buddleja glomerata</i> H.L.Wendl.	Clark VR, Coombs G 11
Buddlejaceae	<i>Buddleja salviifolia</i> (L.) Lam.	Clark VR, Coombs G 60
Buddlejaceae	<i>Gomphostigma virgatum</i> (L.f.) Baill.	Clark VR, Te Water Naudé T 369
Cactaceae	<i>Opuntia ficus-indica</i> (L.) Mill.*	Henderson (2001)
Cactaceae	<i>Opuntia imbricata</i> (Haw.) DC.*	Henderson (2001)
Cactaceae	<i>Echinopsis spachiana</i> (Lem.) Friedrich & G.D.Rowley*	Henderson (2001)
Campanulaceae	<i>Craterocapsa montana</i> (A.DC.) Hilliard & B.L.Burt	Clark VR, Ramdhani S 168
Campanulaceae	<i>Wahlenbergia albens</i> (Spreng. ex A.DC.) Lammers	Clark VR, Coombs G 424
Campanulaceae	<i>Wahlenbergia</i> cf. <i>androsacea</i> A.DC. (Cupido, pers. comm.)	Clark VR, Devos N, McKenzie RJ 161
Campanulaceae	<i>Wahlenbergia denticulata</i> (Burch.) A.DC.	Adamson (1955b)
Campanulaceae	<i>Wahlenbergia grandiflora</i> Brehmer*	Clark VR, Coombs G 193
Campanulaceae	<i>Wahlenbergia juncea</i> (H.Buek) Lammers	McKenzie RJ, Weston P, Clark VR 191
Campanulaceae	<i>Wahlenbergia krebsii</i> Cham. subsp. <i>krebsii</i>	Clark VR, Coombs G 180

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Campanulaceae	<i>Wahlenbergia laxiflora</i> (Sond.) Lammers	Adamson (1955b)
Campanulaceae	<i>Wahlenbergia nodosa</i> (H.Buek) Lammers	Clark VR, Devos N, McKenzie RJ 15
Campanulaceae	<i>Wahlenbergia tenella</i> (L.f.) Lammers var. <i>tenella</i>	Adamson (1955b)
Campanulaceae	<i>Wahlenbergia thunbergiana</i> (H.Buek.) Lammers	Adamson (1955b)
Campanulaceae	<i>Wahlenbergia undulata</i> (L.f.) A.DC.	Clark VR, Coombs G 489
Capparaceae	<i>Boscia oleoides</i> (Burch. ex DC.) Tölken	Clark VR, Ramdhani S 415
Caryophyllaceae	<i>Cerastium capense</i> Sond.	Clark VR, Coombs G 190
Caryophyllaceae	<i>Cerastium glomeratum</i> Thuill.	Clark VR, Coombs G 583
Caryophyllaceae	<i>Dianthus caespitosus</i> Thunb.	Tyson W 17
Caryophyllaceae	<i>Dianthus micropetalus</i> Ser.	Clark VR, Barker NP, Devos N 35
Caryophyllaceae	<i>Dianthus namaensis</i> Schinz var. <i>namaensis</i>	Hooper (1959)
Caryophyllaceae	<i>Scleranthus annuus</i> L.*	Clark VR, Pienaar C 428
Caryophyllaceae	<i>Silene burchellii</i> var. <i>angustifolia</i> Sond.	Clark VR, Coombs G 228
Caryophyllaceae	<i>Silene undulata</i> Aiton	Clark VR, Coombs G 161
Caryophyllaceae	<i>Stellaria media</i> (L.) Vill.*	Clark VR, Pienaar C 53
Celastraceae	<i>Gymnosporia buxifolia</i> (L.) Szyszyl.	Clark VR, Coombs G 17
Celastraceae	<i>Gymnosporia linearis</i> (L.f.) Loes. subsp. <i>linearis</i>	Clark VR, Ramdhani S 406
Celastraceae	<i>Gymnosporia polyacanthus</i> (Sond.) Szyszyl. subsp. <i>polyacanthus</i>	Rogers FA 2762
Celastraceae	<i>Maytenus acuminata</i> (L.f.) Loes. var. <i>acuminata</i>	Clark VR, Te Water Naudé T 15
Celastraceae	<i>Maytenus undata</i> (Thunb.) Blakelock	Clark VR, Te Water Naudé T 371
Celastraceae	<i>Mystroxydon aethiopicum</i> (Thunb.) Loes. subsp. <i>aethiopicum</i>	Clark VR, Rose M 32
Chenopodiaceae	<i>Atriplex erosa</i> Brueckner & Verdoorn	Bolus H 656
Chenopodiaceae	<i>Atriplex lindleyi</i> subsp. <i>inflata</i> (F.Muell.) P.G.Wilson*	Henderson (2001)
Chenopodiaceae	<i>Atriplex nummularia</i> Lindl. subsp. <i>nummularia</i> *	Henderson (2001)
Chenopodiaceae	<i>Atriplex vestita</i> (Thunb.) Aellen	Bolus H 661
Chenopodiaceae	<i>Chenopodium ambrosioides</i> L.*	Bolus H 67
Chenopodiaceae	<i>Chenopodium album</i> L.*	Clark VR, Coombs G 360
Chenopodiaceae	<i>Chenopodium carinatum</i> R.Br. *	Clark VR, Ngcobo L, Pienaar C 285
Chenopodiaceae	<i>Chenopodium foliosum</i> Asch.	Clark VR, Ngcobo L, Pienaar C 137
Chenopodiaceae	<i>Chenopodium murale</i> L. var. <i>murale</i> *	MacOwan P s.n.
Chenopodiaceae	<i>Chenopodium schraderianum</i> Roem. & Schult.*	Clark VR, Ngcobo L, Pienaar C 97
Chenopodiaceae	<i>Salsola aphylla</i> L.f.	Henderson (2001)
Chenopodiaceae	<i>Salsola kali</i> L.*	Henderson (2001)
Chenopodiaceae	<i>Suaeda fruticosa</i> (L.) Forssk.	Dyer RA 1029
Convolvulaceae	<i>Convolvulus galpinii</i> C.H.Wright	Clark VR, Ngcobo L, Pienaar C 108
Convolvulaceae	<i>Convolvulus sagittatus</i> Thunb.	Clark VR, Coombs G 471
Convolvulaceae	<i>Cuscuta campestris</i> Yunck.*	Clark VR, Pienaar C, Lochner EJ 286
Convolvulaceae	<i>Dichondra micrantha</i> Urb.*	Clark VR, Pienaar C 624
Convolvulaceae	<i>Falckia oblonga</i> Bernh. ex Kraus	Meeuse and Welman (2000)
Convolvulaceae	<i>Ipomoea oenotheroides</i> (L.f.) Raf. ex Hallier f.	Clark VR, Pienaar C, Lochner EJ 172
Crassulaceae	<i>Adromischus bicolor</i> P.C.Hutch.	Tölken (1985)
Crassulaceae	<i>Adromischus cooperi</i> (Baker) A.Berger	Tölken (1985)
Crassulaceae	<i>Adromischus cristatus</i> (Harv.) Lem. subsp. <i>cristatus</i>	Tölken (1985)
Crassulaceae	<i>Adromischus fallax</i> Tölken	Tölken (1978, 1985)
Crassulaceae	<i>Adromischus sphenophyllus</i> C.A.Sm.	Tölken (1985)
Crassulaceae	<i>Adromischus trigynus</i> (Burch.) V.Poelln.	Bolus H 187
Crassulaceae	<i>Cotyledon campanulata</i> Marloth	Clark VR, Te Water Naudé T 366
Crassulaceae	<i>Cotyledon orbiculata</i> var. <i>oblonga</i> (Haw.) DC.	Van Jaarsveld and Koutnik (2004)
Crassulaceae	<i>Cotyledon orbiculata</i> L. var. <i>orbiculata</i>	Van Jaarsveld and Koutnik (2004)
Crassulaceae	<i>Cotyledon papillaris</i> L.f.	Clark VR, Pienaar C 197
Crassulaceae	<i>Cotyledon velutina</i> Hook.f.	Van Jaarsveld and Koutnik (2004)
Crassulaceae	<i>Crassula capitella</i> Thunb. subsp. <i>capitella</i>	Tölken (1977)
Crassulaceae	<i>Crassula capitella</i> subsp. <i>thyrsiflora</i> (Thunb.) Tölken	Tölken (1977)
Crassulaceae	<i>Crassula corallina</i> Thunb. subsp. <i>corallina</i>	Clark VR, Te Water Naudé T 221
Crassulaceae	<i>Crassula cultrata</i> L.	Clark VR, Coombs G 52
Crassulaceae	<i>Crassula dependens</i> Bolus	Clark VR, Coombs G 36
Crassulaceae	<i>Crassula exilis</i> subsp. <i>cooperi</i> (Regel) Tölken	Clark VR, Crause I 27
Crassulaceae	<i>Crassula expansa</i> Dryand. subsp. <i>expansa</i>	Tölken (1977)
Crassulaceae	<i>Crassula lanceolata</i> (Eckl. & Zeyh.) Endl. ex Walp. subsp. <i>lanceolata</i>	Clark VR, Coombs G 39
Crassulaceae	<i>Crassula lanceolata</i> subsp. <i>transvaalensis</i> (Kuntze) Tölken	Clark VR, Ngcobo L, Pienaar C 214
Crassulaceae	<i>Crassula lanuginosa</i> Harv. var. <i>lanuginosa</i>	Clark VR, Ramdhani S 84
Crassulaceae	<i>Crassula lanuginosa</i> var. <i>pachystemon</i> (Schönland & Baker f.) Tölken	Clark VR, Devos N, McKenzie RJ 43
Crassulaceae	<i>Crassula montana</i> subsp. <i>triangularis</i> (Schönland.) Tölken	Clark VR, Ramdhani S 382

(continued on next page)

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Crassulaceae	<i>Crassula muscosa</i> L. var. <i>muscosa</i>	Tölken (1977)
Crassulaceae	<i>Crassula muscosa</i> var. <i>parvula</i> (Eckl. & Zeyh.) Tölken	Tölken (1977)
Crassulaceae	<i>Crassula muscosa</i> var. <i>polpodacea</i> (Eckl. & Zeyh.) G.D.Rowley	Clark VR, Ramdhani S 372
Crassulaceae	<i>Crassula natans</i> Thunb. var. <i>natans</i>	Clark VR, Te Water Naudé T 318
Crassulaceae	<i>Crassula nemorosa</i> (Eckl. & Zeyh.) Endl. ex Walp.	Clark VR, Ramdhani S 171
Crassulaceae	<i>Crassula nudicaulis</i> var. <i>nudicaulis</i>	Tölken (1977)
Crassulaceae	<i>Crassula obovata</i> Haw. var. <i>obovata</i>	Clark VR, Coombs G 417
Crassulaceae	<i>Crassula orbicularis</i> L.	Tölken (1977)
Crassulaceae	<i>Crassula ovata</i> (Mill.) Druce	Tölken (1977)
Crassulaceae	<i>Crassula pellucida</i> subsp. <i>brachypetala</i> (Drège ex Harv.) Tölken	Clark VR, Barker NP, Devos N 2
Crassulaceae	<i>Crassula perforata</i> Thunb.	Clark VR, Coombs G 547
Crassulaceae	<i>Crassula pubescens</i> subsp. <i>ratrayi</i> (Schönland & Baker f.) Tölken	Tölken (1977)
Crassulaceae	<i>Crassula rupestris</i> Thunb. subsp. <i>rupestris</i>	Tölken (1977)
Crassulaceae	<i>Crassula sarcocaulis</i> Eckl. & Zeyh. subsp. <i>sarcocaulis</i>	Clark VR, Coombs G 232
Crassulaceae	<i>Crassula saxifraga</i> Harv.	Tölken (1977)
Crassulaceae	<i>Crassula setulosa</i> Harv. var. <i>setulosa</i>	Clark VR, Barker NP, Devos N 1
Crassulaceae	<i>Crassula spathulata</i> Thunb.	Tölken (1977)
Crassulaceae	<i>Crassula subaphylla</i> (Eckl. & Zeyh.) Harv.	Clark VR, Pienaar C, Lochner EJ 335
Crassulaceae	<i>Crassula tetragona</i> subsp. <i>acutifolia</i> (Lam.) Tölken	Tölken (1977)
Crassulaceae	<i>Crassula vaillantii</i> (Willd.) Roth	Clark VR, Ngcobo L, Pienaar C 127
Crassulaceae	<i>Tylecodon reticulatus</i> (L.f.) Tölken subsp. <i>reticulatus</i>	Van Jaarsveld and Koutnik (2004)
Crassulaceae	<i>Tylecodon ventricosus</i> (Burm.f.) Tölken	Van Jaarsveld and Koutnik (2004)
Cucurbitaceae	<i>Coccinea sessilifolia</i> (Sond.) Cogn.	Clark VR, Pienaar C, Lochner EJ 224
Cucurbitaceae	<i>Cucumis</i> cf. <i>myriocarpus</i> Naud.	Clark VR, Ngcobo L, Pienaar C 107
Cucurbitaceae	<i>Kedrostis africana</i> (L.) Cogn.	Clark VR, Ngcobo L, Pienaar C 339
Dipsacaceae	<i>Scabiosa columbaria</i> L.	Clark VR, Coombs G 172
Ebenaceae	<i>Diospyros austro-africana</i> var. <i>microphylla</i> (Burch.) De Winter	Clark VR, Barker NP, Devos N 36
Ebenaceae	<i>Diospyros lycioides</i> Desf. subsp. <i>lycioides</i>	Clark VR, Barker NP, Devos N 9
Ebenaceae	<i>Diospyros scabrida</i> var. <i>cordata</i> (E.Mey. ex A.DC.) De Winter	Clark VR, Coombs G 562
Ebenaceae	<i>Euclea coriacea</i> A.DC.	Clark VR, Coombs G 93
Ebenaceae	<i>Euclea crispa</i> (Thunb.) Gürke subsp. <i>crispa</i>	Clark VR, Coombs G 16
Ebenaceae	<i>Euclea crispa</i> subsp. <i>ovata</i> (Burch.) F.White	Clark VR, Ngcobo L, Pienaar C 67
Ericaceae	<i>Erica alopecurus</i> Harv. var. <i>alopecurus</i>	Baker and Oliver (1967)
Ericaceae	<i>Erica amatolensis</i> E.G.H.Oliv.	Weimarck (1941)
Ericaceae	<i>Erica brownleeae</i> Bolus	Baker and Oliver (1967)
Ericaceae	<i>Erica caespitosa</i> Hilliard & B.L.Burt	Clark VR, Ramdhani S 445
Ericaceae	<i>Erica caffrorum</i> Bolus var. <i>caffrorum</i>	Clark VR, Ramdhani S 447
Ericaceae	<i>Erica leucopelta</i> Tausch	Clark VR, Ramdhani S 289
Ericaceae	<i>Erica passerinoides</i> (Bolus) E.G.H.Oliv.	Oliver, pers. comm.
Ericaceae	<i>Erica</i> sp. aff. <i>reenensis</i> Zahlbr. (Oliver, pers. comm.)	Clark VR, Coombs G 164
Ericaceae	<i>Erica woodii</i> Bolus var. <i>woodii</i>	Clark VR, Coombs G 386
Euphorbiaceae	<i>Adenocline pauciflora</i> Turcz.	Clark VR, Te Water Naudé T 70
Euphorbiaceae	<i>Clutia alaternoides</i> L.	Clark VR, Crause I 10
Euphorbiaceae	<i>Clutia hirsuta</i> (Sond.) Müll.Arg. var. <i>hirsuta</i>	Brown et al. (1925)
Euphorbiaceae	<i>Clutia impedita</i> Prain	Clark VR, Coombs G 319
Euphorbiaceae	<i>Clutia monticola</i> S.Moore var. <i>monticola</i>	Clark VR, Coombs G 569
Euphorbiaceae	<i>Clutia pulchella</i> L. var. <i>pulchella</i>	Clark VR, Coombs G 46
Euphorbiaceae	<i>Euphorbia aggregata</i> A.Berger var. <i>aggregata</i>	Pond et al. (2002)
Euphorbiaceae	<i>Euphorbia aequoris</i> N.E.Br.	White et al. (1941)
Euphorbiaceae	<i>Euphorbia caterviflora</i> N.E.Br.	Pond et al. (2002)
Euphorbiaceae	<i>Euphorbia clavarioides</i> Boiss. var. <i>clavarioides</i>	Clark VR, Ngcobo L, Pienaar C 263
Euphorbiaceae	<i>Euphorbia epicyparissias</i> E.Mey. ex Boiss.	Clark VR, Barker NP, Devos N 22
Euphorbiaceae	<i>Euphorbia mauritanica</i> L. var. <i>mauritanica</i>	Clark VR, Ramdhani S 249
Euphorbiaceae	<i>Euphorbia micracantha</i> Boiss.	Pond et al. (2002)
Euphorbiaceae	<i>Euphorbia rhombifolia</i> N.E.Br.	White et al. (1941)
Fabaceae	<i>Acacia karroo</i> Hayne	Clark VR, Te Water Naudé T 209
Fabaceae	<i>Argyrolobium argenteum</i> (Jacq.) Eckl. & Zeyh.	Clark VR, Ngcobo L, Pienaar C 182
Fabaceae	<i>Argyrolobium candicans</i> Eckl. & Zeyh.	Clark VR, Coombs G 335
Fabaceae	<i>Argyrolobium rarum</i> Dummer	Clark VR, Coombs G 150
Fabaceae	<i>Argyrolobium tomentosum</i> (Andrews) Druce	Clark VR, Coombs G 2
Fabaceae	<i>Aspalathus acicularis</i> E.Mey. subsp. <i>acicularis</i>	Clark VR, Coombs G 439
Fabaceae	<i>Dichilus gracilis</i> Eckl. & Zeyh.	Bolus H 445
Fabaceae	<i>Dolichos angustifolius</i> Eckl. & Zeyh.	Clark VR, Coombs G 452
Fabaceae	<i>Dolichos linearis</i> E.Mey.	Clark VR, Ramdhani S 188

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Fabaceae	<i>Gleditsia triacanthos</i> L.*	Henderson (2001)
Fabaceae	<i>Indigastrum argyraeum</i> (Eckl. & Zeyh.) Schrire	Clark VR, Ramdhani S 391
Fabaceae	<i>Indigofera alpina</i> Eckl. & Zeyh.	Clark VR, Barker NP, Devos N 10
Fabaceae	<i>Indigofera alternans</i> DC. var. <i>alternans</i>	Clark VR, McKenzie RJ 55
Fabaceae	<i>Indigofera alternans</i> var. <i>effusa</i> (E.Mey.) Schrire ined. (Schrire, pers. comm.)	Clark VR, Pienaar C, Lochner EJ 125
Fabaceae	<i>Indigofera burchellii</i> DC.	Clark VR, Coombs G 14
Fabaceae	<i>Indigofera cuneifolia</i> Eckl. & Zeyh. var. <i>cuneifolia</i>	Clark VR, Coombs G 330
Fabaceae	<i>Indigofera disticha</i> Eckl. & Zeyh. (possibly a new variety; Schrire, pers. comm.)	Clark VR, Coombs G 433
Fabaceae	<i>Indigofera heterophylla</i> Thunb.	Clark VR, Te Water Naudé T 375
Fabaceae	<i>Indigofera leptocarpa</i> Eckl. & Zeyh.	Clark VR, Ramdhani S 401
Fabaceae	<i>Indigofera meyeriana</i> Eckl. & Zeyh.	Clark VR, Te Water Naudé T 360
Fabaceae	<i>Indigofera mollis</i> Eckl. & Zeyh.	Clark VR, Coombs G 395
Fabaceae	<i>Indigofera sessilifolia</i> DC.	Clark VR, Ngcobo L, Pienaar C 324
Fabaceae	<i>Indigofera</i> sp. nov. 1 (Schrire, pers. comm.)	Clark VR, Te Water Naudé T 335
Fabaceae	<i>Indigofera</i> sp. nov. 2 (Schrire, pers. comm.)	Clark VR, Coombs G 208
Fabaceae	<i>Indigofera zeyheri</i> Spreng. ex Eckl. & Zeyh.	Clark VR, Te Water Naudé T 80
Fabaceae	<i>Lessertia annularis</i> Burch.	Bolus H s.n.
Fabaceae	<i>Lessertia depressa</i> Harv.	MacOwan P 1362
Fabaceae	<i>Lessertia perennans</i> var. <i>sericea</i> L.Bol.	Clark VR, Rose M 59
Fabaceae	<i>Lessertia sneeuwbergensis</i> Germish.	Germishuizen (1992)
Fabaceae	<i>Lotononis caerulea</i> (E.Mey.) B.-E. Van Wyk	Clark VR, Coombs G 15
Fabaceae	<i>Lotononis</i> cf. <i>galpinii</i> Dummer	McKenzie RJ, Weston P, Clark VR 112
Fabaceae	<i>Lotononis decumbens</i> (Thunb.) B.-E. Van Wyk subsp. <i>decumbens</i>	Clark VR, Te Water Naudé T 178
Fabaceae	<i>Lotononis fruticosoides</i> B.-E. Van Wyk	Van Wyk (1991)
Fabaceae	<i>Lotononis laxa</i> Eckl. & Zeyh.	Clark VR, Coombs G 50
Fabaceae	<i>Lotononis lenticula</i> (E.Mey.) Benth.	Van Wyk (1991)
Fabaceae	<i>Lotononis pulchella</i> (E.Mey.) B.-E. Van Wyk	Van Wyk (1991)
Fabaceae	<i>Lotononis pungens</i> Eckl. & Zeyh.	McKenzie RJ, Weston P, Clark VR 35
Fabaceae	<i>Lotononis pusilla</i> Dummer	Van Wyk (1991)
Fabaceae	<i>Lotononis sericophylla</i> Benth.	Clark VR, Devos N, McKenzie RJ 128
Fabaceae	<i>Medicago laciniata</i> (L.) Mill. var. <i>laciniata</i> *	MacOwan P 1650
Fabaceae	<i>Medicago polymorpha</i> L.*	Clark VR, Ramdhani S 126
Fabaceae	<i>Melolobium adenodes</i> Eckl. & Zeyh.	Clark VR, Barker NP, Devos N 45
Fabaceae	<i>Melolobium calycinum</i> Benth.	Moteeteete and Van Wyk (2006)
Fabaceae	<i>Melolobium candicans</i> (E.Mey.) Eckl. & Zeyh.	Clark VR, Barker NP, Devos N 32
Fabaceae	<i>Melolobium microphyllum</i> (L.f.) Eckl. & Zeyh.	Barker NP 1457
Fabaceae	<i>Melolobium obcordatum</i> Harv.	Clark VR, Te Water Naudé T 35
Fabaceae	<i>Otholobium candicans</i> (Eckl. & Zeyh.) C.H. Stirt.	Forbes (1930)
Fabaceae	<i>Otholobium macradenium</i> (Harv.) C.H. Stirt.	Clark VR, Barker NP, Devos N 30
Fabaceae	<i>Prosopis glandulosa</i> var. <i>torreyana</i> (Benson) Johnston.*	Henderson (2001)
Fabaceae	<i>Psoralea glabra</i> E.Mey.	Clark VR, Coombs G 101
Fabaceae	<i>Rhynchosia minima</i> var. <i>prostrata</i> (Harv.) Meikle	Clark VR, Ramdhani S 3
Fabaceae	<i>Rhynchosia totta</i> (Thunb.) DC. var. <i>totta</i>	Clark VR, Te Water Naudé T 81
Fabaceae	<i>Robinia pseudacacia</i> L.*	Clark VR, Coombs G 575
Fabaceae	<i>Sutherlandia frutescens</i> (L.) R.Br.	Clark VR, Barker NP, Devos N 23
Fabaceae	<i>Trifolium africanum</i> Ser. var. <i>africanum</i>	Clark VR, Ngcobo L, Pienaar C 124
Fabaceae	<i>Trifolium burchellianum</i> Ser. subsp. <i>burchellianum</i>	Clark VR, Coombs G 244
Fabaceae	<i>Trifolium repens</i> L.*	Clark VR, Rose M 131
Fabaceae	<i>Vicia sativa</i> L. subsp. <i>sativa</i> *	Clark VR, Coombs G 501
Flacourtiaceae	<i>Dovyalis zeyheri</i> (Sond.) Warb.	MacOwan P 1324
Flacourtiaceae	<i>Kiggelaria africana</i> L.	McKenzie RJ, Weston P, Clark VR 104
Flacourtiaceae	<i>Scolopia zeyheri</i> (Nees) Harv.	MacOwan P 1324
Fumariaceae	<i>Cysticapnos pruinosa</i> (Bernh.) Lidén	Clark VR, Coombs G 351
Gentianaceae	<i>Chironia krebsii</i> Griseb.	Marais and Verdoorn (1963)
Gentianaceae	<i>Sebaea macrophylla</i> Gilg	Clark VR, Coombs G 293
Gentianaceae	<i>Sebaea pentandra</i> E.Mey. var. <i>pentandra</i>	Marais and Verdoorn (1963)
Gentianaceae	<i>Sebaea thomasi</i> (S.Moore) Schinz	Clark VR, Te Water Naudé T 228
Geraniaceae	<i>Erodium cicutarium</i> (L.) L'Hér.	Clark VR, Coombs G 431
Geraniaceae	<i>Geranium baurianum</i> R.Knuth	Hilliard and Burt (1985a)
Geraniaceae	<i>Geranium caffrum</i> Eckl. & Zeyh.	Clark VR, Coombs G 43
Geraniaceae	<i>Geranium</i> cf. <i>brycei</i> N.E.Br. (Dreyer, pers. comm.)	McKenzie RJ, Weston P, Clark VR 144
Geraniaceae	<i>Geranium dregei</i> Hilliard & B.L. Burt	Hilliard and Burt (1985a)
Geraniaceae	<i>Geranium harveyi</i> Briq.	Clark VR, Coombs G 163

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Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Geraniaceae	<i>Geranium incanum</i> var. <i>multifidum</i> (Sweet) Hilliard & B.L.Burt	Clark VR, Te Water Naudé T 194
Geraniaceae	<i>Geranium magniflorum</i> R.Knuth	Hilliard and Burt (1985a)
Geraniaceae	<i>Geranium multisectum</i> N.E.Br.	Clark VR, McKenzie RJ 327
Geraniaceae	<i>Monsonia angustifolia</i> E.Mey. ex A.Rich.	Venter (1979)
Geraniaceae	<i>Monsonia emarginata</i> (L.f.) L'Hér.	Venter (1979)
Geraniaceae	<i>Pelargonium abrotanifolium</i> (L.f.) Jacq.	Barker NP 1438
Geraniaceae	<i>Pelargonium alchemilloides</i> (L.) L'Hér.	Clark VR, Barker NP, Devos N 15
Geraniaceae	<i>Pelargonium aridum</i> R.A.Dyer	Clark VR, Pienaar C, Lochner EJ 14
Geraniaceae	<i>Pelargonium carnosum</i> (L.) L'Hér.	Palmer AR 1453
Geraniaceae	<i>Pelargonium dichondrifolium</i> DC.	Van der Walt et al. (1988)
Geraniaceae	<i>Pelargonium exhibens</i> Vorster	Van der Walt et al. (1988)
Geraniaceae	<i>Pelargonium glutinosum</i> (Jacq.) L'Hér.	Clark VR, Barker NP, Devos N 9
Geraniaceae	<i>Pelargonium griseum</i> R.Knuth	Van der Walt et al. (1981)
Geraniaceae	<i>Pelargonium grossularioides</i> (L.) L'Hér. ex Aiton	Clark VR, Coombs G 238
Geraniaceae	<i>Pelargonium ionodiflorum</i> (Eckl. & Zeyh.) Steud.	Van der Walt et al. (1981)
Geraniaceae	<i>Pelargonium laevigatum</i> (L.f.) Willd.	Clark VR, Crause I 194
Geraniaceae	<i>Pelargonium laxum</i> (Sweet) G.Don	Van der Walt et al. (1988)
Geraniaceae	<i>Pelargonium leucophyllum</i> Turcz.	Van der Walt et al. (1981)
Geraniaceae	<i>Pelargonium luridum</i> (Andrews) Sweet	Clark VR, Te Water Naudé T 336
Geraniaceae	<i>Pelargonium minimum</i> (Cav.) Willd.	Van der Walt et al. (1988)
Geraniaceae	<i>Pelargonium multicaule</i> Jacq. subsp. <i>multicaule</i>	Clark VR, Coombs G 209
Geraniaceae	<i>Pelargonium odoratissimum</i> (L.) L'Hér.	Van der Walt and Ward-Hilhorst (1977)
Geraniaceae	<i>Pelargonium peltatum</i> (L.) L'Hér.	Barker NP 1447
Geraniaceae	<i>Pelargonium ranunculophyllum</i> (Eckl. & Zeyh.) Baker	Clark VR, Devos N, McKenzie RJ 57
Geraniaceae	<i>Pelargonium reniforme</i> Curtis subsp. <i>reniforme</i>	Van der Walt and Ward-Hilhorst (1977)
Geraniaceae	<i>Pelargonium sidoides</i> DC.	Clark VR, Coombs G 371
Geraniaceae	<i>Pelargonium tetragonum</i> (L.f.) L'Hér.	Van der Walt and Ward-Hilhorst (1977)
Geraniaceae	<i>Pelargonium tragacanthoides</i> Burch.	Clark VR, Devos N, McKenzie RJ 17
Geraniaceae	<i>Pelargonium zonale</i> (L.) L'Hér.	Clark VR, Coombs G 299
Geraniaceae	<i>Sarcocaulon camdeboense</i> Moffett	Barker NP 1451
Gesneriaceae	<i>Streptocarpus meyeri</i> B.L.Burt	Clark VR, Ramdhani S 344
Haloragaceae	<i>Gunnera perpensa</i> L.	Clark VR, Coombs G 29
Hypericaceae	<i>Hypericum aethiopicum</i> Thunb. subsp. <i>aethiopicum</i>	Clark VR, Coombs G 159
Illecebraceae	<i>Pollichia campestris</i> Aiton	McKenzie RJ, Weston P, Clark VR 80
Lamiaceae	<i>Ajuga ophrydis</i> Burch. ex Benth.	Clark VR, Coombs G 289
Lamiaceae	<i>Ballota africana</i> (L.) Benth.	Clark VR, Pienaar C, Lochner EJ 190
Lamiaceae	<i>Leonotis ocymifolia</i> (Burm.f.) Iwarsson var. <i>ocymifolia</i>	Clark VR, Coombs G 258
Lamiaceae	<i>Leucas capensis</i> (Benth.) Engl.	Barker NP 1433
Lamiaceae	<i>Mentha longifolia</i> subsp. <i>capensis</i> (Thunb.) Briq.	Clark VR, Coombs G 20
Lamiaceae	<i>Ocimum burchellianum</i> Benth.	Clark VR, Te Water Naudé T 364
Lamiaceae	<i>Salvia repens</i> Burch. ex Benth. var. <i>repens</i>	Clark VR, Coombs G 317
Lamiaceae	<i>Salvia stenophylla</i> Burch. ex Benth.	Archibald EEA 3017
Lamiaceae	<i>Salvia verbenaca</i> L.	Archibald EEA 2903
Lamiaceae	<i>Stachys aethiopica</i> L.	Clark VR, Coombs G 318
Lamiaceae	<i>Stachys cymbalaria</i> Briq.	Codd (1985)
Lamiaceae	<i>Stachys dregeana</i> Benth.	Clark VR, Coombs G 151
Lamiaceae	<i>Stachys grandifolia</i> E.Mey. ex Benth.	MacOwan P 1494
Lamiaceae	<i>Stachys linearis</i> Burch. ex Benth.	Clark VR, Ngcobo L, Pienaar C 279
Lamiaceae	<i>Stachys rugosa</i> Aiton	Drège JF 3584
Lamiaceae	<i>Teucrium africanum</i> Thunb.	Clark VR, Ngcobo L, Pienaar C 277
Lamiaceae	<i>Teucrium trifidum</i> Retz.	MacOwan P s.n.
Lentibulariaceae	<i>Utricularia capensis</i> Streng.	Clark VR, Pienaar C 294
Lentibulariaceae	<i>Utricularia livida</i> E.Mey.	Clark VR, Pienaar C 93
Linaceae	<i>Linum thunbergii</i> Eckl. & Zeyh.	Clark VR, Coombs G 49
Lobeliaceae	<i>Cyphia assimilis</i> Sond.	Phillipson P 5624
Lobeliaceae	<i>Lobelia dregeana</i> (C.Presl) A.DC.	Clark VR, Te Water Naudé T 248
Lobeliaceae	<i>Lobelia flaccida</i> (C.Presl) A.DC. subsp. <i>flaccida</i>	Clark VR, Coombs G 149
Lobeliaceae	<i>Lobelia preslii</i> A.DC.	Clark VR, Coombs G 169
Lobeliaceae	<i>Lobelia quadrisejala</i> (R.Good.) E.Wimm.	Clark VR, Pienaar C 297
Lobeliaceae	<i>Lobelia thermalis</i> Thunb.	Clark VR, Coombs G 558
Loranthaceae	<i>Moquiniella rubra</i> (A.Spreng.) Balle	Clark VR, Ngcobo L, Pienaar C 337
Malvaceae	<i>Abutilon sonneratianum</i> (Cav.) Sweet	Clark VR, Rose M 42
Malvaceae	<i>Anisodontea malvastroides</i> (Baker f.) Bates	Bolus H 390
Malvaceae	<i>Anisodontea procumbens</i> (Harv.) Bates	Clark VR, Devos N, McKenzie RJ 126

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Malvaceae	<i>Hibiscus pusillus</i> Thunb.	Clark VR, Coombs G 423
Malvaceae	<i>Hibiscus trionum</i> L.*	Clark VR, Ngcobo L, Pienaar C 85
Malvaceae	<i>Malva parviflora</i> L. var. <i>parviflora</i> *	Tyson W 369
Malvaceae	<i>Radyera urens</i> (L.f.) Bullock	Bolus H 603
Malvaceae	<i>Sida ternata</i> L.f.	Clark VR, Rose M 97
Meliaceae	<i>Nymania capensis</i> (Thunb.) Lindb.	Clark VR, Ramdhani S 324
Melanthaceae	<i>Melianthus comosus</i> Vahl	Barker NP 1500
Melanthaceae	<i>Melianthus major</i> L.	Clark VR, Ramdhani S 59
Menispermaceae	<i>Cissampelos capensis</i> L.f.	Barker NP 1522
Mesembryanthemaceae	<i>Aloinopsis rubrolineata</i> (N.E.Br.) Schwantes	Brown et al. (1931)
Mesembryanthemaceae	<i>Aptenia cordifolia</i> (L.f.) Schwantes	Rogers FA 170
Mesembryanthemaceae	<i>Aridaria noctiflora</i> subsp. <i>straminea</i> (Haw.) Gerbaulet	Bolus H 546
Mesembryanthemaceae	<i>Bergeranthus nanus</i> A.P.Dold & S.A.Hammer	Clark VR, Rose M 390
Mesembryanthemaceae	<i>Bergeranthus vespertinus</i> (A.Berger) Schwantes	MacOwan P 1587
Mesembryanthemaceae	<i>Chasmatophyllum musculinum</i> (Haw.) Dinter & Schwantes	McKenzie RJ, Weston P, Clark VR 132
Mesembryanthemaceae	<i>Delosperma brevisepalum</i> L.Bolus var. <i>brevisepalum</i>	Clark VR, Rose M 284
Mesembryanthemaceae	<i>Delosperma concavum</i> L.Bolus	Clark VR, Coombs G 442
Mesembryanthemaceae	<i>Delosperma frutescens</i> L.Bolus	Pond et al. (2002)
Mesembryanthemaceae	<i>Delosperma incomptum</i> (Haw.) L.Bolus	Bolus H 547
Mesembryanthemaceae	<i>Delosperma karrooicum</i> L.Bolus	Clark VR, Coombs G 183
Mesembryanthemaceae	<i>Delosperma lootsbergense</i> Lavis	Clark VR, Coombs G 226
Mesembryanthemaceae	<i>Delosperma luckhoffii</i> L.Bolus	Clark VR, Rose M 242
Mesembryanthemaceae	<i>Delosperma</i> sp. nov. 1 aff. <i>dyeri</i> L.Bolus (Burgoyne, pers. comm.)	Burgoyne, pers. comm.
Mesembryanthemaceae	<i>Drosantheum hispidum</i> (L.) Schwantes	Barker NP 1435
Mesembryanthemaceae	<i>Drosantheum lique</i> (N.E.Br.) Schwantes	MacOwan P 2040
Mesembryanthemaceae	<i>Faucaria bosscheana</i> (A.Berger) Schwantes	Ratray G 72
Mesembryanthemaceae	<i>Mestoklema copiosum</i> N.E.Br. ex Glen	Clark VR, Pienaar C, Lochner EJ 299
Mesembryanthemaceae	<i>Pleiospilos bolusii</i> (Hook.f.) N.E.Br.	Brown et al. (1931)
Mesembryanthemaceae	<i>Prenia radicans</i> (L.Bolus) Gerbaulet	Gerbaulet (1996)
Mesembryanthemaceae	<i>Psilocalon articulatum</i> (Thunb.) N.E.Br.	Klak and Linder (1998)
Mesembryanthemaceae	<i>Psilocalon coriarium</i> (Burch. ex N.E.Br.) N.E.Br.	Klak and Linder (1998)
Mesembryanthemaceae	<i>Psilocalon junceum</i> (Haw.) Schwantes	Klak and Linder (1998)
Mesembryanthemaceae	<i>Rabiea albipuncta</i> (Haw.) N.E.Br.	Clark VR, Pienaar C, Lochner EJ 341
Mesembryanthemaceae	<i>Rhombophyllum dolabriforme</i> (L.) Schwantes	Bolus H 2044
Mesembryanthemaceae	<i>Ruschia complanata</i> L.Bolus	Clark VR, Te Water Naudé T 279
Mesembryanthemaceae	<i>Ruschia cradockensis</i> (Kuntze) H.E.K.Hartmann & Stüber subsp. <i>cradockensis</i>	Clark VR, Pienaar C 321
Mesembryanthemaceae	<i>Ruschia hamata</i> (L.Bolus) Schwantes	Clark VR, Ngcobo L, Pienaar C 357
Mesembryanthemaceae	<i>Ruschia intricata</i> (N.E.Br.) H.E.K.Hartmann & Stüber	Clark VR, Coombs G 214
Mesembryanthemaceae	<i>Ruschia putterillii</i> (L.Bolus) L.Bolus	Clark VR, Te Water Naudé T 251
Mesembryanthemaceae	<i>Sceletium emarcidum</i> (Thunb.) L.Bolus ex H.J.J.Jacobssen	Tyson W 376
Mesembryanthemaceae	<i>Stomatium duthiae</i> L.Bolus	Clark VR, Coombs G 454
Mesembryanthemaceae	<i>Trichodiadema olivaceum</i> L.Bolus	Mucina and Rutherford (2006)
Mesembryanthemaceae	<i>Trichodiadema pomeridianum</i> L.Bolus	Clark VR, McKenzie RJ 66B
Molluginaceae	<i>Corbichonia decumbens</i> (Forssk.) Exell	Adamson (1958)
Molluginaceae	<i>Hypertelis bowkeriana</i> Sond.	Adamson (1958)
Molluginaceae	<i>Hypertelis salsoloides</i> (Burch.) Adamson var. <i>salsoloides</i>	Adamson (1958)
Molluginaceae	<i>Limeum argute-carinatum</i> Wawra ex Wawra & Peyr. var. <i>argute-carinatum</i>	Clark VR, McKenzie RJ 448
Molluginaceae	<i>Limeum humifusum</i> Friedrich	Clark VR, Te Water Naudé T 357
Molluginaceae	<i>Mollugo cerviana</i> (L.) Ser.	Adamson (1958)
Molluginaceae	<i>Pharnaceum detonsum</i> Fenzl	Clark VR, Coombs G 315
Molluginaceae	<i>Pharnaceum dichotomum</i> L.f.	Adamson (1958)
Molluginaceae	<i>Pharnaceum trigonum</i> Eckl. & Zeyh.	Adamson (1958)
Molluginaceae	<i>Psammotropha mucronata</i> (Thunb.) Fenzl var. <i>mucronata</i>	Clark VR, Pienaar C 483
Moraceae	<i>Ficus burtt-davyi</i> Hutch.	Burrows and Burrows (2003)
Myricaceae	<i>Morella serrata</i> (Lam.) Killick	Clark VR, Pienaar C 496
Myrsinaceae	<i>Myrsine africana</i> L.	Clark VR, Barker NP, Devos N 60
Myrtaceae	<i>Eucalyptus camaldulensis</i> Dehnh.*	Henderson (2001)
Oleaceae	<i>Olea europaea</i> subsp. <i>africana</i> (Mill.) P.S.Green	Clark VR, Barker NP, Devos N 57
Oliniaceae	<i>Olinia emarginata</i> Burtt Davy	Clark VR, Crause I 78
Onagraceae	<i>Epilobium capense</i> Buch. ex Hochst	Tyson W 175
Onagraceae	<i>Epilobium tetragonum</i> L. subsp. <i>tetragonum</i> *	Tyson W 419
Onagraceae	<i>Oenothera indecora</i> Cambess. subsp. <i>indecora</i> *	Clark VR, Coombs G 456
Onagraceae	<i>Oenothera rosea</i> L.Hér. ex Aiton*	Clark VR, Rose M 428

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Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Orobanchaceae	<i>Alectra capensis</i> Thunb.	Clark VR, Coombs G 295
Orobanchaceae	<i>Alectra orobanchoides</i> Benth.	Bolus H 406
Orobanchaceae	<i>Harveya huttonii</i> Hiem.	Clark VR, Devos N, McKenzie RJ 52
Oxalidaceae	<i>Oxalis bifurca</i> var. <i>angustiloba</i> Sond.	Clark VR, Coombs G 357
Oxalidaceae	<i>Oxalis bifurca</i> Lodd. var. <i>bifurca</i>	MacOwan P 1869
Oxalidaceae	<i>Oxalis depressa</i> Eckl. & Zeyh.	Clark VR, Coombs G 448
Oxalidaceae	<i>Oxalis imbricata</i> var. <i>violacea</i> R.Knuth	Clark VR, Te Water Naudé T 186
Oxalidaceae	<i>Oxalis pes-caprae</i> L. var. <i>pes-caprae</i>	Francis M 26
Oxalidaceae	<i>Oxalis smithiana</i> Eckl. & Zeyh.	Clark VR, Coombs G 230
Papaveraceae	<i>Argemone ochroleuca</i> Sweet subsp. <i>ochroleuca</i> *	Clark VR, Pienaar C 281
Papaveraceae	<i>Papaver aculeatum</i> Thunb.	Clark VR, Coombs G 420
Pedaliaceae	<i>Pterodiscus luridus</i> Hook.f.	Pond et al. (2002)
Pedaliaceae	<i>Sesamum capense</i> Burm.f.	Bolus H s.n.
Piperaceae	<i>Peperomia retusa</i> var. <i>bachmannii</i> (C.DC.) Düll	Rogers FA 165
Pittosporaceae	<i>Pittosporum viridiflorum</i> Sims	Clark VR, Coombs G 74
Plantaginaceae	<i>Plantago lanceolata</i> L.*	Clark VR, Coombs G 89
Polygalaceae	<i>Muraltia alopecuroides</i> (L.) DC.	Levyns (1954)
Polygalaceae	<i>Muraltia alticola</i> Schltr.	Clark VR, Barker NP, Devos N 18
Polygalaceae	<i>Muraltia macrocarpa</i> Eckl. & Zeyh.	Levyns (1954)
Polygalaceae	<i>Muraltia saxicola</i> Chodat	Levyns (1954)
Polygalaceae	<i>Polygala asbestina</i> Burch.	Bolus H 494
Polygalaceae	<i>Polygala ephedroides</i> Burch.	Clark VR, Pienaar C 336
Polygalaceae	<i>Polygala gracilentia</i> Burt Davy	Clark VR, Pienaar C 417
Polygalaceae	<i>Polygala hottentotta</i> C.Presl	Clark VR, Pienaar C 13
Polygalaceae	<i>Polygala microlopha</i> DC.	Clark VR, Pienaar C 390
Polygalaceae	<i>Polygala sphenoptera</i> Fresen.	Clark VR, Pienaar C 413
Polygalaceae	<i>Polygala virgata</i> Thunb. var. <i>virgata</i>	Clark VR, Ngcobo L, Pienaar C 239
Polygonaceae	<i>Rumex acetosella</i> subsp. <i>angiocarpus</i> (Murb.) Murb.*	Clark VR, Coombs G 152
Polygonaceae	<i>Rumex cordatus</i> Poir.	Clark VR, Ramdhani S 332
Polygonaceae	<i>Rumex crispus</i> L.*	Clark VR, McKenzie RJ 334
Polygonaceae	<i>Rumex lanceolatus</i> Thunb.	Clark VR, Coombs G 405
Polygonaceae	<i>Rumex sagittatus</i> Thunb.	Clark VR, Te Water Naudé T 240
Polygonaceae	<i>Rumex steudelii</i> Hochst. ex A.Rich.	Clark VR, Coombs G 554
Polygonaceae	<i>Rumex woodii</i> N.E.Br.	Rechinger (1954)
Portulacaceae	<i>Anacampseros</i> cf. <i>rufescens</i> (Haw.) Sweet	Clark VR, Pienaar C, Lochner EJ 106
Portulacaceae	<i>Avonia ustulata</i> (E.Mey. ex Fenzl) G.D.Rowley	Gerbaulet (1992)
Portulacaceae	<i>Portulaca oleracea</i> L. subsp. <i>oleracea</i> *	Clark VR, Pienaar C, Lochner EJ 44
Portulacaceae	<i>Portulacaria afra</i> Jacq.	Clark VR, Coombs G 563
Potamogetonaceae	<i>Potamogeton pusillus</i> L.	Clark VR, Coombs G 273
Primulaceae	<i>Anagallis huttonii</i> Harv.	Clark VR, Pienaar C 491
Proteaceae	<i>Faurea</i> sp. nov. 1 (Rourke, pers. comm.)	Clark VR, Crause I 106
Proteaceae	<i>Protea lorifolia</i> (Salisb. ex Knight) Fourc.	Rebello (2001)
Ranunculaceae	<i>Clematis brachiata</i> Thunb.	Clark VR, Coombs G 393
Ranunculaceae	<i>Ranunculus aquatilis</i> L.	Barker NP 1495
Ranunculaceae	<i>Ranunculus meyeri</i> Harv.	Clark VR, Te Water Naudé T 321
Ranunculaceae	<i>Ranunculus multifidus</i> Forssk.	Clark VR, Coombs G 42
Ranunculaceae	<i>Thalictrum minus</i> L.	Bolus H 1808
Resedaceae	<i>Oligomeris dregeana</i> (Müll.Arg.) Müll.Arg.	Leistner (1970)
Rhamnaceae	<i>Phyllica paniculata</i> Willd.	Clark VR, Te Water Naudé T 261
Rhamnaceae	<i>Rhamnus prinoides</i> L'Hér.	Clark VR, Barker NP, Devos N 63
Rhamnaceae	<i>Scutia myrtina</i> (Burm.f.) Kurz	MacOwan P 278
Rhamnaceae	<i>Ziziphus mucronata</i> Willd. subsp. <i>mucronata</i>	MacOwan P 477
Rosaceae	<i>Alchemilla capensis</i> Thunb.	Clark VR, Te Water Naudé T 355
Rosaceae	<i>Alchemilla elongata</i> Eckl. & Zeyh. var. <i>elongata</i>	Clark VR, Te Water Naudé T 354
Rosaceae	<i>Cliffortia bolusii</i> Diels ex C.Whitehouse	Whitehouse and Fellingham (2007)
Rosaceae	<i>Cliffortia eriocephalina</i> Cham.	Clark VR, Coombs G 278
Rosaceae	<i>Cliffortia montana</i> Weim.	Clark VR, Pienaar C 475
Rosaceae	<i>Cliffortia ramosissima</i> Schltr.	Clark VR, Coombs G 354
Rosaceae	<i>Cotoneaster hupehensis</i> Rehd.Wils.*	Clark VR, Ngcobo L, Pienaar C 236
Rosaceae	<i>Crataegus monogyne</i> Jacq.*	Clark VR, McKenzie RJ 185
Rosaceae	<i>Cydonia oblonga</i> Mill.*	Clark VR, Te Water Naudé T 207
Rosaceae	<i>Geum capense</i> Thunb.	Clark VR, Te Water Naudé T 67
Rosaceae	<i>Leucosidea sericea</i> Eckl. & Zeyh.	Clark VR, Barker NP, Devos N 64
Rosaceae	<i>Pyracantha angustifolia</i> (Franch.) C.K.Schneid.*	Henderson (2001)

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Rosaceae	<i>Rosa rubiginosa</i> L.*	Clark VR, McKenzie RJ 190
Rosaceae	<i>Rubus ludwigii</i> Eckl. & Zeyh. subsp. <i>ludwigii</i>	Clark VR, Coombs G 225
Rosaceae	<i>Rubus pinnatus</i> Willd	MacOwan P 1903
Rosaceae	<i>Rubus rigidus</i> Sm.	Clark VR, Ramdhani S 259
Rubiaceae	<i>Anthospermum herbaceum</i> L.f.	Clark VR, Ramdhani S 360
Rubiaceae	<i>Anthospermum monticola</i> Puff	Clark VR, Coombs G 437
Rubiaceae	<i>Anthospermum paniculatum</i> Cruse	Clark VR, Coombs G 310
Rubiaceae	<i>Anthospermum pumilum</i> subsp. <i>rigidum</i> (Eckl. & Zeyh.) Puff	Clark VR, Pienaar C, Lochner EJ 308
Rubiaceae	<i>Anthospermum rigidum</i> Eckl. & Zeyh. subsp. <i>rigidum</i>	Clark VR, Pienaar C, Lochner EJ 10
Rubiaceae	<i>Galium capense</i> subsp. <i>garipense</i> (Sond.) Puff	Clark VR, McKenzie RJ 133
Rubiaceae	<i>Galium capense</i> Thunb. subsp. <i>capense</i>	Clark VR, Coombs G 140
Rubiaceae	<i>Galium spurium</i> subsp. <i>africanum</i> Verdc.	Clark VR, Coombs G 45
Rubiaceae	<i>Galium thunbergianum</i> var. <i>hirsutum</i> (Sond.) Verdc.	McKenzie RJ, Weston P, Clark VR 139
Rubiaceae	<i>Galium tomentosum</i> Thunb.	Bolus H 144
Rubiaceae	<i>Nenax microphylla</i> (Sond.) T.M.Salter	McKenzie RJ, Weston P, Clark VR 66
Rubiaceae	<i>Rubia petiolaris</i> DC.	Clark VR, Coombs G 22
Rubiaceae	<i>Sherardia arvensis</i> L.*	Clark VR, Coombs G 571
Rutaceae	<i>Acamadenia</i> sp. nov. 1 aff. <i>sheilae</i> I. Williams (Trinder-Smith, pers. comm.)	Clark VR, Crause I 130
Rutaceae	<i>Agathosma</i> cf. <i>capensis</i> (L.) Dummer (Trinder-Smith, pers. comm.)	Clark VR, Crause I 229
Rutaceae	<i>Agathosma venusta</i> (Eckl. & Zeyh.) Pillans	Clark VR, Te Water Naudé T 280
Rutaceae	<i>Vepris lanceolata</i> (Lam.) G.Don	MacOwan P 410
Salicaceae	<i>Populus alba</i> L.*	Pond et al. (2002)
Salicaceae	<i>Populus deltooides</i> Marshall subsp. <i>deltoides</i> *	Jordaan (2005)
Salicaceae	<i>Populus nigra</i> var. <i>italica</i> (Moench) Koehne*	Jordaan (2005)
Salicaceae	<i>Populus x canescens</i> (Aiton) Sm.*	Henderson (2001)
Salicaceae	<i>Salix babylonica</i> L. var. <i>babylonica</i> *	Henderson (2001)
Salicaceae	<i>Salix fragilis</i> L. var. <i>fragilis</i> *	Jordaan (2005)
Salicaceae	<i>Salix mucronata</i> Thunb. subsp. <i>mucronata</i>	Clark VR, Pienaar C 331
Santalaceae	<i>Osyris lanceolata</i> Hochst. & Steud.	Clark VR, Barker NP, Devos N 61
Santalaceae	<i>Thesium acutissimum</i> A.DC.	MacOwan P 2218
Santalaceae	<i>Thesium disciflorum</i> A.W.Hill	Clark VR, Te Water Naudé T 153
Santalaceae	<i>Thesium gnidiaceum</i> A.DC.	Clark VR, Coombs G 109
Santalaceae	<i>Thesium hirsutum</i> A.W.Hill	MacOwan P 1618
Santalaceae	<i>Thesium imbricatum</i> Thunb.	Hill (1925)
Santalaceae	<i>Thesium impeditum</i> A.W.Hill	Clark VR, Barker NP, Devos N 34
Santalaceae	<i>Thesium orientale</i> A.W.Hill	Hill (1925)
Santalaceae	<i>Thesium paniculatum</i> L.	Hill (1925)
Santalaceae	<i>Thesium triflorum</i> Thunb. ex L.f.	Hill (1925)
Sapindaceae	<i>Dodonaea viscosa</i> var. <i>angustifolia</i> (L.f.) Benth.	Barker NP 1506
Sapindaceae	<i>Pappea capensis</i> Eckl. & Zeyh.	Clark VR, Ramdhani S 423
Scrophulariaceae	<i>Aptosimum procumbens</i> (Lehm.) Steud.	Barker NP 1432
Scrophulariaceae	<i>Bartsia trixago</i> L.	Clark VR, Coombs G 603
Scrophulariaceae	<i>Cromidon austerum</i> Hilliard	Clark VR, Te Water Naudé T 231A
Scrophulariaceae	<i>Cromidon corrigioloides</i> (Rolfe) Compton	Hilliard (1990)
Scrophulariaceae	<i>Cromidon decumbens</i> (Thunb.) Hilliard	Clark VR, Te Water Naudé T 184
Scrophulariaceae	<i>Diascia alsinoides</i> Benth.	Drège JF 2322
Scrophulariaceae	<i>Diascia capsularis</i> Benth.	Clark VR, Coombs G 204
Scrophulariaceae	<i>Diascia ramosa</i> Scott-Elliott	Hilliard and Burt (1984)
Scrophulariaceae	<i>Glekia krebsiana</i> (Benth.) Hilliard	Clark VR, Coombs G 341
Scrophulariaceae	<i>Halleria lucida</i> L.	Clark VR, Ramdhani S 329
Scrophulariaceae	<i>Hebenstretia dura</i> Choisy	Clark VR, Coombs G 170
Scrophulariaceae	<i>Hyobanche rubra</i> N.E.Br.	Clark VR, Barker NP, Devos N 41
Scrophulariaceae	<i>Jamesbrittenia atropurpurea</i> (Benth.) Hilliard subsp. <i>atropurpurea</i>	Hilliard (1994)
Scrophulariaceae	<i>Jamesbrittenia crassicaulis</i> (Benth.) Hilliard	Clark VR, Coombs G 281
Scrophulariaceae	<i>Jamesbrittenia filicaulis</i> (Benth.) Hilliard	Barker NP 1497
Scrophulariaceae	<i>Jamesbrittenia foliolosa</i> (Benth.) Hilliard	Clark VR, Coombs G 573
Scrophulariaceae	<i>Jamesbrittenia tysonii</i> (Hiern) Hilliard	Hilliard (1994)
Scrophulariaceae	<i>Limosella</i> sp. (possibly several spp.)	Clark VR, Coombs G 302
Scrophulariaceae	<i>Lindernia conferta</i> (Hiern) Philcox	Clark VR, Ngcobo L, Pienaar C 261
Scrophulariaceae	<i>Manulea crassifolia</i> Benth. subsp. <i>crassifolia</i>	Clark VR, Coombs G 375
Scrophulariaceae	<i>Nemesia albiflora</i> N.E.Br.	Clark VR, Ramdhani S 62
Scrophulariaceae	<i>Nemesia cynanchifolia</i> Benth.	Drège JF 7880a
Scrophulariaceae	<i>Nemesia floribunda</i> Lehm.	Clark VR, Devos N, McKenzie RJ 149

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Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Scrophulariaceae	<i>Nemesia fruticans</i> (Thunb.) Benth.	Clark VR, Coombs G 479
Scrophulariaceae	<i>Nemesia melissifolia</i> Benth.	MacOwan P 330
Scrophulariaceae	<i>Nemesia umbonata</i> (Hiern) Hilliard & B.L.Burt	Clark VR, Coombs G 196
Scrophulariaceae	<i>Peliostomum origanoides</i> E.Mey. ex Benth.	Bolus H 356
Scrophulariaceae	<i>Phygelius capensis</i> E.Mey. ex Benth.	Clark VR, Coombs G 280
Scrophulariaceae	<i>Phyllopodium rustii</i> (Rolfe) Hilliard	Hilliard (1994)
Scrophulariaceae	<i>Selago albida</i> Choisy	Clark VR, McKenzie RJ 423
Scrophulariaceae	<i>Selago bolusii</i> Rolfe	Hilliard (1999)
Scrophulariaceae	<i>Selago centralis</i> Hilliard	Hilliard (1999)
Scrophulariaceae	<i>Selago crassifolia</i> (Rolfe) Hilliard	Hilliard (1999)
Scrophulariaceae	<i>Selago divaricata</i> L.f.	Clark VR, Coombs G 283
Scrophulariaceae	<i>Selago dolosa</i> Hilliard	Clark VR, Coombs G 300
Scrophulariaceae	<i>Selago geniculata</i> L.f.	Clark VR, Coombs G 469
Scrophulariaceae	<i>Selago magnakarooica</i> Hilliard	Clark VR, Pienaar C, Lochner EJ 143
Scrophulariaceae	<i>Selago paniculata</i> Thunb.	Bolus H 293
Scrophulariaceae	<i>Selago retropilosa</i> Hilliard	Clark VR, Te Water Naudé T 100
Scrophulariaceae	<i>Selago rotundifolia</i> L.f.	Bolus H 446
Scrophulariaceae	<i>Selago saxatilis</i> E.Mey.	Clark VR, Coombs G 134
Scrophulariaceae	<i>Sutera halimifolia</i> (Benth.) Kuntze	Clark VR, Coombs G 194
Scrophulariaceae	<i>Sutera macrosiphon</i> (Schltr.) Hiern	Clark VR, Devos N, McKenzie RJ 56
Scrophulariaceae	<i>Sutera rotundifolia</i> (Benth.) Kuntze	McKenzie RJ, Weston P, Clark VR 143
Scrophulariaceae	<i>Veronica anagallis-aquatica</i> L.	Clark VR, Coombs G 27
Scrophulariaceae	<i>Zaluzianskya angustifolia</i> Hilliard & B.L.Burt	Hilliard (1994)
Scrophulariaceae	<i>Zaluzianskya capensis</i> (L.) Welp.	Clark VR, Coombs G 236
Scrophulariaceae	<i>Zaluzianskya glareosa</i> Hilliard & B.L.Burt	Hilliard (1994)
Scrophulariaceae	<i>Zaluzianskya karooica</i> Hilliard	Drège JF 584
Scrophulariaceae	<i>Zaluzianskya ovata</i> (Benth.) Walp.	Barker NP 1475
Scrophulariaceae	<i>Zaluzianskya peduncularis</i> (Benth.) Walp.	Clark VR, Te Water Naudé T 189
Scrophulariaceae	<i>Zaluzianskya schmitziae</i> Hilliard & B.L.Burt	Hilliard (1994)
Scrophulariaceae	<i>Zaluzianskya spathacea</i> (Benth.) Walp.	MacOwan P 1632
Scrophulariaceae	<i>Zaluzianskya synaptica</i> Hilliard	Hilliard (1994)
Simaroubaceae	<i>Ailanthus altissima</i> Swingle*	Henderson (2001)
Solanaceae	<i>Datura ferox</i> L.*	Henderson (2001)
Solanaceae	<i>Datura stramonium</i> L. var. <i>stramonium</i> *	McKenzie RJ, Weston P, Clark VR 168
Solanaceae	<i>Lycium arenicolum</i> Miers	Bolus H 282
Solanaceae	<i>Lycium cinereum</i> Thunb.	Clark VR, Ramdhani S 198
Solanaceae	<i>Lycium horridum</i> Thunb.	Clark VR, Coombs G 671a
Solanaceae	<i>Lycium oxycarpum</i> Dunal	Bolus H 45
Solanaceae	<i>Lycium schizocalyx</i> C.H.Wright	Clark VR, Coombs G 432
Solanaceae	<i>Nicotiana glauca</i> Graham*	Henderson (2001)
Solanaceae	<i>Physalis peruviana</i> L.*	MacOwan P s.n.
Solanaceae	<i>Solanum pseudocapsicum</i> L.*	Clark VR, Te Water Naudé T 374
Solanaceae	<i>Solanum retroflexum</i> Dunal	Clark VR, Coombs G 397
Solanaceae	<i>Solanum supinum</i> Dunal	MacOwan P 1606
Solanaceae	<i>Solanum tomentosum</i> var. <i>coccineum</i> (Jacq.) Willd.	Clark VR, Coombs G 85
Solanaceae	<i>Withania somnifera</i> (L.) Dunal	Clark VR, Coombs G 277
Sterculiaceae	<i>Hermannia althaeifolia</i> L.	Clark VR, McKenzie RJ 40
Sterculiaceae	<i>Hermannia althaeoides</i> Link	Clark VR, Devos N, McKenzie RJ 70
Sterculiaceae	<i>Hermannia coccocarpa</i> (Eckl. & Zeyh.) Kuntze	Barker NP 1436
Sterculiaceae	<i>Hermannia cuneifolia</i> var. <i>glabrescens</i> (Harv.) I.Verd.	Clark VR, Ramdhani S 166
Sterculiaceae	<i>Hermannia erodioides</i> (Burch. ex DC.) Kuntze	Barker NP 1516
Sterculiaceae	<i>Hermannia filifolia</i> L.f. var. <i>filifolia</i>	Tyson W 32
Sterculiaceae	<i>Hermannia filifolia</i> var. <i>robusta</i> I.Verd.	Clark VR, Coombs G 408
Sterculiaceae	<i>Hermannia flammea</i> Jacq.	MacOwan P 246
Sterculiaceae	<i>Hermannia glabrata</i> L.f.	Barker NP 1458
Sterculiaceae	<i>Hermannia gracilis</i> Eckl. & Zeyh.	MacOwan P 935
Sterculiaceae	<i>Hermannia holosericea</i> Jacq.	Clark VR, Ramdhani S 351
Sterculiaceae	<i>Hermannia lacera</i> (E.Mey. ex Harv.) Fourc.	Bolus H 500
Sterculiaceae	<i>Hermannia linearis</i> (Harv.) Hochr.	Barker NP 1458
Sterculiaceae	<i>Hermannia pulverata</i> Andrews	Barker NP 1524
Sterculiaceae	<i>Hermannia</i> sp. nov. 1 (Gwynne-Evans, pers. comm.)	Clark VR, Barker NP, Devos N 7
Sterculiaceae	<i>Hermannia</i> sp. nov. 2 (Gwynne-Evans, pers. comm.)	Gwynne-Evans, pers. comm.
Sterculiaceae	<i>Hermannia vestita</i> Thunb.	Barker NP 1503
Sterculiaceae	<i>Hermannia violacea</i> (Burch. ex DC.) K.Schum.	Gwynne-Evans, pers. comm.

Appendix A (continued)

Family	Species	Collectors/References
<i>Dicotyledons</i>		
Thymelaeaceae	<i>Gnidia burchellii</i> (Meisn.) Gilg.	Clark VR, Te Water Naudé T 256
Thymelaeaceae	<i>Gnidia microphylla</i> Meisn.	Tyson W 168
Thymelaeaceae	<i>Gnidia polyantha</i> Gilg.	Clark VR, Te Water Naudé T 256
Thymelaeaceae	<i>Gnidia polycephala</i> (C.A.Mey.) Gilg ex Engl.	Barker NP 1456
Thymelaeaceae	<i>Gnidia wikstroemiana</i> (Thunb.) Meisn.	Clark VR, Ramdhani S 432
Thymelaeaceae	<i>Passerina corymbosa</i> Eckl. ex C.H.Wright	Bredenkamp and Van Wyk (2003)
Thymelaeaceae	<i>Passerina falcifolia</i> (Meisn.) C.H.Wright	Bredenkamp and Van Wyk (2003)
Thymelaeaceae	<i>Passerina montana</i> Thoday	Clark VR, Coombs G 231
Thymelaeaceae	<i>Passerina obtusifolia</i> Thoday	Bredenkamp and Van Wyk (2003)
Tiliaceae	<i>Grewia occidentalis</i> L. var. <i>occidentalis</i>	Clark VR, Crause I 110
Tiliaceae	<i>Grewia robusta</i> Burch.	Clark VR, Coombs G 7
Ulmaceae	<i>Celtis africana</i> Burm.f.	Clark VR, Te Water Naudé T 206
Urticaceae	<i>Didymodoxa caffra</i> (Thunb.) Friis & Wilmot-Dear	Clark VR, Rose M 73
Urticaceae	<i>Forsskaolea candida</i> L.f.	Bolus H 474
Urticaceae	<i>Laportea grossa</i> (Wedd.) Chew	Bolus H 1809
Urticaceae	<i>Laportea peduncularis</i> (Wedd.) Chew subsp. <i>peduncularis</i>	MacOwan P s.n.
Urticaceae	<i>Urtica dioica</i> L.*	Clark VR, Coombs G 464
Urticaceae	<i>Urtica lobulata</i> Blume	Clark VR, Coombs G 158
Urticaceae	<i>Urtica urens</i> L.*	Clark VR, Ramdhani S 237
Valerianaceae	<i>Valeriana capensis</i> Thunb. var. <i>capensis</i>	Clark VR, Pienaar C 478
Verbenaceae	<i>Chascanum pinnatifidum</i> (L.f.) E.Mey. var. <i>pinnatifidum</i>	Bolus H 193
Verbenaceae	<i>Lantana rugosa</i> Thunb.	Clark VR, Coombs G 41
Verbenaceae	<i>Verbena bonariensis</i> L.*	Clark VR, Pienaar C 364
Verbenaceae	<i>Verbena brasiliensis</i> Vell.*	Clark VR, Ramdhani S 98
Violaceae	<i>Viola tricolor</i> L.*	Clark VR, Rose M 494
Viscaceae	<i>Viscum continuum</i> E.Mey. ex Sprague	Polhill and Wiens (1998)
Viscaceae	<i>Viscum crassulae</i> Eckl. & Zeyh.	Polhill and Wiens (1998)
Viscaceae	<i>Viscum hoolei</i> (Wiens) Polhill & Wiens	Clark VR, Coombs G 78
Viscaceae	<i>Viscum obscurum</i> Thunb.	Polhill and Wiens (1998)
Viscaceae	<i>Viscum rotundifolium</i> L.f.	Clark VR, Ramdhani S 409
Vitaceae	<i>Rhoicissus tridentata</i> subsp. <i>cuneifolia</i> (Eckl. & Zeyh.) Urton	Clark VR, Rose M 28
Vitaceae	<i>Rhoicissus tridentata</i> (L.f.) Wild & R.B.Drumm. subsp. <i>tridentata</i>	Bolus H 291
Zygophyllaceae	<i>Roepera foetida</i> (Schrad. & J.C.Wendl.) Beier & Thulin	Clark VR, Ramdhani S 325
Zygophyllaceae	<i>Roepera incrustata</i> (E.Mey. ex Sond.) Beier & Thulin	MacOwan P 362
Zygophyllaceae	<i>Roepera lichtensteiniana</i> (Cham. & Schltdl.) Beier & Thulin	Bolus H 279
Zygophyllaceae	<i>Tetraena microcarpa</i> (Licht. ex Cham.) Beier & Thulin	Bolus H 212
Zygophyllaceae	<i>Tribulus zeyheri</i> Sond.	Bolus H 83b

* Denotes alien species.

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