

# An ethnobotanical survey of medicinal plants in the southeastern Karoo, South Africa

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## Abstract

Ethnobotanical field studies in the Graaff-Reinet and Murraysburg regions (southeastern Karoo) have revealed a wealth of traditional knowledge on medicinal plants and their uses amongst elderly people of Khoi-San and Cape Dutch descent. The *materia medica* includes at least 86 species, most of which appear to be still in everyday use. The use of exotic plants (12 species) and similarities with the Xhosa healing culture show that the traditional system is dynamic and adaptive. Medicines to treat problems of the stomach, back, kidneys, bladder, as well as colds and other minor ailments have a high frequency. Mixtures of different plants are often used. An overview of the most important plants and their uses is presented, which shows several interesting records that have hitherto remained undocumented. These include new uses, new vernacular names and new medicinal plants (*Abutilon sonneriatum*, *Aloe striata*, *Eberlanzia spinosa*, *Helichrysum pumilio*, *Osteospermum herbaceum*, *Pachypodium succulentum*, *Peliostomum* cf. *origanoides*, *Pentzia punctata*, *Rhigozum obovatum* and *Stapelia olivaea*). New records of plants that are locally commonly used (e.g. *H. pumilio* and *O. herbaceum*) confirm that the medical ethnobotany of the Karoo is incompletely recorded.

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## 1. Introduction

As was pointed out by Liengme (1983), Metelerkamp and Sealy (1983) and Van Wyk (2002), very little information has been recorded on the traditional plant uses of the Khoikhoi and San cultures. Most studies have focused on plants used for food and moisture (e.g. Story, 1959; Steyn, 1981), although there have been a few papers on the Nama (Archer, 1990, 1994) and the Topnaar Khoi in Namibia (Van den Eynden et al., 1992). The almost complete lack of systematic ethnobotanical records for the Western Cape and Karoo regions of South Africa is noteworthy. Available information is scattered in the general literature (e.g. Watt and Breyer-Brandwijk, 1962; Smith, 1966; Rood, 1994; Shearing, 1994; Van Wyk and Gericke, 2000). Of historic interest is the paper by Laidler (1928), which

Table 1

List of local experts that were interviewed about traditional plant uses in the Graaff-Reinet and Murraysburg regions (southeastern Karoo, South Africa)

Name of expert	Geographical origin	Origin of knowledge
Piet Cupido (PC)	Murraysburg (originally Richmond)	Personal experience only
Willem du Toit (WdT)	Murraysburg-Sneeuberg region (farmer)	Unknown (interviewed by FRvH ca. 1997).
Sally Goliath (SG)	Graaff-Reinet (originally Cradock)	Mother
Jan Oormeyer (JO)	Graaff-Reinet	Grandfather (a healer)
Andries Salmon (AS)	Murraysburg	Mr Van Eck (a healer of Victoria West)
Kiewiet ("Hottie") Steenkamp (KS)	Murraysburg (the traditional jackal hunter)	Mother (Lena Louw, a healer)
Poppie Teo (PT)	Graaff-Reinet	Grandmother (a healer and mother (herbalist))
Abraham Wessels (AW)	Graaff-Reinet	Mother
Ernest Williams (EW)	Graaff-Reinet	Mother

Abbreviations as used in Table 2 (and elsewhere in the text) are given in brackets.

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Table 2

List of anecdotes on traditional plant uses in the Graaff-Reinet and Murraysburg regions (southeastern Karoo, South Africa)

Scientific name, family and common name(s); [voucher specimen]	Anecdote or use(s)	Notes
1. <i>Abutilon sonneriatum</i> (Cav.) Sweet (Malvaceae); <i>berg se wilde kopdagga</i> ; [HdW 72]	JO: madness (severe nervous conditions) — smoke a cigarette made from the leaves mixed with the styles (beard) of sweetcorn; “it breaks the madness”.	New species record. In Lesotho, the plant is used to stimulate bulls in the spring (Phillips, 1917; Watt and Breyer-Brandwijk, 1962; Jacot Guillardmod, 1971). Other species are used in various parts of Africa (Neuwinger, 2000).
2. <i>Agathosma ovata</i> (Thunb.) Pillans (Rutaceae); <i>boegoe</i>	AS: colds. KS: back pain, asthma and kidney failure (“nierstuipe”).	Poorly recorded (Batten and Bokelman, 1966; Courtenay-Latimer et al., 1967; Dyson, 1994). Roots are used in Zulu medicine (Cunningham, 1988; Hutchings et al., 1996).
3. <i>Aloe ferox</i> Mill. (Asphodelaceae); <i>aalwyn</i>	AS: constipation. EW: to clean the stomach (confirmed by AW, SG and JO) — dry leaves soaked in a bottle of water and a tablespoon is taken in the morning; PT: constipation — sap is mixed with lukewarm water (short or young aloe said to work best). KS: “stomach pills” ( <i>maagpille</i> ) are made from the dry sap.	This is one of the best known and most widely used medicinal plants of southern Africa and the basis of an export trade in the dried latex (known as Cape aloes) since 1761 (Kruger and Beyers, 1977; Robertson, 1979). Its use since ancient times is reflected in it being one of very few plants depicted in San rock art (Reynolds, 1950).
4. <i>Aloe striata</i> Haw. (Asphodelaceae); <i>plat aalwyn</i>	JO: leg pains (rheumatism) — heat leaves in the fire or in warm ash and apply to legs.	Unlike the well-known <i>Aloe ferox</i> , there is no published information on the topical use of <i>A. striata</i> .
5. <i>Aloe variegata</i> L. (Asphodelaceae); <i>kanniedood</i>	JO: callosities or bunions ( <i>eelte</i> ) — heat leaves in warm ash, cut open and apply (cover with an old sock and keep on for a whole day). PT: boils ( <i>bloedvinte</i> and <i>pitpuisies</i> ) — same method as described by JO. KS: inflamed burn wounds and wounds ( <i>brandsere</i> and <i>wonde</i> ).	The practice of using heated leaves of this species to treat sores on fingers was recorded and described by Smith (1966) and confirmed by Shearing (1994). Watt and Breyer-Brandwijk (1962) mentioned the use of <i>A. variegata</i> to treat haemorrhoids.
6. <i>Aptosimum procumbens</i> (Lehm.) Steud. (Scrophulariaceae); <i>brandbossie</i> ; [BvW 4093]	JO: burns — powdered ash of the whole plant applied to burn wound to dry it out. PT: sores and burn wounds — mix ash with Vaseline and apply directly. KS: wounds — dry the plant, burn on stove and apply the ash.	A wide diversity of medicinal uses (both oral and topical) has been described for <i>Aptosimum</i> species (Watt and Breyer-Brandwijk, 1962; Batten and Bokelman, 1966; Smith, 1966; Le Roux et al., 1994; Rood, 1994; Shearing, 1994; Von Koenen, 2001).
7. <i>Artemisia afra</i> Jacq. ex Willd. (Asteraceae); <i>wildeals</i> ; [HdW 84]	JO: colds — tea (leaves); chest problems in infants — place dry leaves in flannel bag and hang around baby’s neck. PT: colds (“as strengthening medicine”), also infants — fresh, bruised leaves as tea (taken in the morning and evening). AS: colds and stomach problems. KS: colds — leaves (tea), with some honey (EW, confirmed by AW and SG).	<i>Artemisia afra</i> is one of the most widely used and well-known medicinal plants of southern and eastern Africa. Together with <i>wynruit</i> ( <i>Ruta graveolens</i> ) it is also reported to be the most popular medicinal plant in the Bredasdorp/Elm region (Thring and Weitz, 2006).
8. <i>Asclepias crispa</i> P.J. Bergius (Apocynaceae); <i>bitterhout</i>	AS: toothache. EW: stomach pain — decoction with <i>without</i> (confirmed by AW and SG). JO: for stomach pain — use the roots (usually with <i>koorshout</i> ). KS: stomach (unspecified)	Important traditional diuretic, emetic and purgative, first recorded by Thunberg (1772–74) (Forbes, 1986) and later by (Watt and Breyer-Brandwijk, 1962; Batten and Bokelman, 1966; Smith, 1966; Rood, 1994; Van Wyk et al., 1997). Toxic to sheep (Steyn, 1934).
9. <i>Asparagus retrofractus</i> L. (Asparagaceae); <i>katbos</i>	JO: “thrown in the fire to make the weather clear up”; berries eaten by children.	Several species are used in traditional medicine (especially to treat tuberculosis). Various magical uses (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Shearing, 1994).
10. <i>Ballota africana</i> L. (Lamiaceae); <i>kattekruid</i> ; [HdW 63, 74]	AS: for general ailments, female ailments (unspecified) and colds. EW: colds — mixed with <i>wildeals</i> (especially for adults), steep like tea (confirmed by AW and SG). JO: infuse leaves for colds and influenza; KS: drunk for stomach pain and headache; PT: for colds, only the leaves are used; it also works well when mixed with other plants, especially <i>lewerbossie</i> .	Kattekruid is one of the most popular traditional medicines of the Cape (Githens, 1948; Watt and Breyer-Brandwijk, 1962; Smith, 1966; Palmer, 1985; Ellis, 1989; Archer, 1990; Roberts, 1992; Archer, 1994; Dyson, 1994; Rood, 1994; Shearing, 1994; Van Wyk et al., 1997; Thring and Weitz, 2006).
11. <i>Berula erecta</i> (Huds.) Coville subsp. <i>thunbergii</i> (DC.) B.L. Burt (Apiaceae); <i>watergras</i> ; [HdW 79]	EW: whole plant — bruise and apply to wound (confirmed by AW and SG).	The species is widely used as a traditional remedy (Phillips, 1917; Watt and Breyer-Brandwijk, 1962; Smith, 1966; Jacot Guillardmod, 1971; Palmer, 1985; Roberts, 1992; Palmer, 1995; Hutchings et al., 1996; Van Wyk et al., 1997; Von Koenen, 2001) but the common name appears to be a new record.
12. <i>Boophane disticha</i> (L.f.) Herb. (Amaryllidaceae); <i>gijbol</i>	JO: circumcision wounds — dry bulb scales are applied.	The topical use of <i>Boophane</i> bulb scales is well-recorded (e.g. Watt and Breyer-Brandwijk, 1962; Hutchings et al., 1996; Van Wyk et al., 1997; Grierson and Afolayan, 1999).
13. <i>Boscia oleoides</i> (Burch. ex DC.) Toelken (Capparaceae); <i>witgatboom</i> ; [HdW 55]	PT: stomach pain — root is mixed with <i>swartstorm</i> root, bruised, infused and drunk (said to be non-purgative, and can be used separately for the same purpose). Leaves are burnt on embers and the fumes inhaled to treat a cold. Evil spirits or bad dreams can be expelled from a house by smoke from burning <i>witgatboom</i> roots (or mixed with <i>swartstorm</i> ).	Only a few uses have been recorded for <i>Boscia</i> species (Watt and Breyer-Brandwijk, 1962; Pooley, 1993). Matsiliza and Barker (2001) reported the topical use of root scrapings to treat pain.
14. <i>Bulbine abyssinica</i> A.Rich. (Asphodelaceae); <i>wilde kopieva</i> ; [HdW 69]	AS: root is used by women for unspecified ailments, infertility and back pain. EW: tea (leaves) taken orally by women to treat vaginal and bladder problems and generally for back pain and cough (confirmed by AW and SG). JO: mostly women (cleaning the bladder and kidneys) — tea (fresh leaves and especially roots, small cupful every morning). KS: used by women (unspecified). PT: for healthy kidneys and to clean the alimentary tract — whole plant soaked in water in large bottle — drink until plant dies, then you will be healed (“male plants have flowers; female plants do not flower”).	<i>Bulbine</i> species are widely used in traditional medicine but the only records for this species are from Lesotho (Jacot Guillardmod, 1971) and Botswana (Hedberg and Stauggård, 1989).
15. <i>Cadaba aphylla</i> (Thunb.) Willd. (Capparaceae); <i>swartstorm</i> ; [HdW 52]	EW: to expel evil ( <i>tikoloshe</i> , bad spirits) — burn stems to make the house safe.	Several uses are known (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Coates Palgrave, 1977; Mabogo, 1990; Shearing, 1994; Hutchings et al., 1996; Von Koenen, 2001).
16. <i>Carpobrotus edulis</i> (L.) L. Bolus (Mesembryanthemaceae); <i>suurvy</i> , <i>hotnotsny</i>	AS: to treat a sore throat, stomach ulcers and painful lungs. EW: oral thrush and mouth sores — eat the sap (confirmed by AW and SG). PT: oral thrush, mouth sores or sore throat — chew the leaves.	The astringent sap of <i>Carpobrotus</i> species has a well-recorded history of use against sore throat, oral thrush, mouth ulcers and skin ailments (e.g. Watt and Breyer-Brandwijk, 1962; Wright, 1963; Courtenay-Latimer et al., 1967; Archer, 1994; Matsiliza and Barker, 2001; Thring and Weitz, 2006).
17. <i>Centella asiatica</i> (L.) Urb. (Apiaceae); <i>kleinkattekruid</i>	JO: ear pain in children — fresh leaves used as ear plugs. Fresh leaves are eaten by children (said to have a pleasant sour taste).	Internationally well known (Van Wyk and Wink, 2004) but also several records for Africa (e.g. Kokwaro, 1976; Oliver-Bever, 1986; Sussman, 1988; Abbiw, 1990) and South Africa (Roberts, 1992; Palmer, 1995; Hutchings et al., 1996).
18. <i>Cissampelos capensis</i> L.f. (Menispermaceae); <i>dawidjie</i> ; [HdW 50]	AS: general malaise — drink an infusion of the powdered roots (not very bitter); also for stomach problems (then add <i>voëlent</i> ); for diarrhoea — mix with <i>koorshout</i> . Leaves are not used. EW: high blood pressure (“ <i>hoë bloed</i> ”) — steep the root; gastroenteritis (infants) — powdered root mixture of <i>dawidjie</i> , <i>without</i> and <i>bitterhout</i> (confirmed by AW and SG). JO: to purify blood — drink infusion of one piece of root. The leaves have no use. KS: stomach pain — drink as a tea; influenza — mix <i>dawidjie</i> with <i>boegoe</i> . PC: severe stomach pain — chew the root; toothache — drink root infusion; fever — drink root infusion (one cup) with “grandpa powder”, and one teaspoon each of vinegar and sugar. PT: measles or rashes — infusion of bruised roots with half a teaspoon of Epsom salt.	This species is an important medicinal plant of the dry regions of South Africa and Namibia (Smith, 1985; Watt and Breyer-Brandwijk, 1962; Smith, 1966; Archer, 1994; Rood, 1994; Shearing, 1994; Van Wyk et al., 1997; Von Koenen, 2001). It is included in a systematic account of ethnobotanical uses of the family Menispermaceae in South Africa (De Wet and Van Wyk, 2008) but no details were given on how <i>C. capensis</i> is used in the southeastern Karoo.

(continued on next page)

Table 2 (continued)

Scientific name, family and common name(s); [voucher specimen]	Anecdote or use(s)	Notes
19. <i>Conyza scabrida</i> DC. (Asteraceae); <i>Oondbos</i> ; [HdW 56, 77]	AS: used by women (unspecified); also used for a weak heart. EW: women problems (“to draw cold from a women’s stomach”) — leaves used for steaming of genitals or drunk as a tea (pure or mixed with <i>wildeals</i> ) (confirmed by AW and SG). JO: women’s ailments, to clean the uterus — use a whole branch, boil in a pot of water, bathe in the warm infusion, cover the whole body with a blanket (to perspire) and then drink some of the infusion. KS: colds, headache — infusion with <i>ballerja</i> ; also used orally by pregnant women and to clean the uterus after birth. PT: for problems with female genitals — drink tea (with <i>ballerja</i> ). KS: to suppress hunger and thirst — eat the fruit.	<i>Conyza scabrida</i> is widely known as <i>oondbos</i> (e.g. Thring and Weitz, 2006) because the leafy branches were formerly much used to sweep the ash from ovens. Medicinal uses were apparently first recorded by Smith (1895) and more recently also, amongst others, by Shearing (1994), Rood (1994), Hutchings et al. (1996) and Thring and Weitz (2006). These sources all confirm the information presented here.
21. <i>Cucumis africanus</i> L.f. (Cucurbitaceae); <i>wilde komkommer</i>		A new record of possible thirst- and appetite-suppressant effects (see <i>Hoodia</i> ). Several other uses have been recorded (Watt and Breyer-Brandwijk, 1962; Hutchings et al., 1996).
20. <i>Dianthus micropetalus</i> Ser. (Caryophyllaceae); <i>grashoutjie</i> , <i>grashout</i> ; [HdW 70, 91]	EW: angina — boil root in water, add a burnt porcupine quill and drink. JO: asthmatic chest — the whole plant is boiled in water and the steam inhaled to open the chest.	The uses of <i>Dianthus</i> species are poorly recorded (Watt and Breyer-Brandwijk, 1962; Shearing, 1994) but they are important traditional remedies of the Karoo region.
21. <i>Dicerocarum eriocarpum</i> (Decne) Abels Pedaliaceae); <i>beesduwveljite</i> ( <i>-dubbeljite</i> )	JO: syphilis — drink a large quantity (1 l) of an infusion of the whole plant (including the thorns). PT: stomach acid — the dried, powdered whole plant is used.	Traditional uses have been recorded by Mabogo (1990) and by Van Wyk and Gericke (2000).
22. <i>Dicoma capensis</i> Less. (Asteraceae); <i>karmedik</i> , <i>vêrpis</i> , <i>vyfpondbos</i> ; [HdW 62]	AS: back pain — drink tea (whole plant) twice a day. EW: back problems and kidney problems (very bitter) (confirmed by AW and SG). JO: to clean kidneys and back. KS: back pain and kidneys, rheumatism, nausea. PC: influenza and colds, bladder and kidneys (used to be very expensive, very bitter). PT: back and kidney problems (mainly in men) — a very bitter infusion. WdT: cancer and for “all ailments”.	One of the most important of all the Karoo medicinal plants (Watt and Breyer-Brandwijk, 1962; Archer, 1994; Shearing, 1994; Van Wyk et al., 1997; Von Koenen, 2001) even though it does not feature prominently in the scientific literature. It is widely known as <i>karmedik</i> (e.g. Powrie, 2004) and the names <i>vêrpis</i> and <i>vyfpondbos</i> appear to be newly recorded here. According to Ben Dekker (pers. comm.), the name <i>vyfpondbos</i> (“five pound bush”) dates back from the time when brass plates were displayed on pavements before public buildings in the Eastern Cape, announcing a fine of five pounds for spitting or urinating in public. Both names therefore refer directly (and rather crudely) or indirectly to the diuretic use. <i>Jakkalsbos</i> is one of several vernacular names recorded by Powrie (2004). Traditional uses are listed by Githens (1948), Watt and Breyer-Brandwijk (1962) and Smith (1966).
23. <i>Diospyros austro-africana</i> De Winter (Ebenaceae); <i>jakkalsbos</i>	JO: insomnia and bad dreams — burn leaves in the fire and inhale the smoke — it calms you down; headache — smoke the dried root. KS: ringworm — boil the leaves and wash head or apply burnt and powdered leaves to the affected areas.	The leafy young twigs ( <i>ysterhouttoppe</i> ) are an important, Khoikhoi medicine that is also used in other parts of Africa (e.g. Dykman, 1891; Watt and Breyer-Brandwijk, 1962; Archer, 1990; Tadesse and Demissew, 1992; Pooley, 1993; Van Wyk and Gericke 2000; Thring and Weitz, 2006). This appears to be a new record of medicinal use.
24. <i>Dodonaea angustifolia</i> L.f. (Sapindaceae); <i>ysterhouttoppe</i>	AS: cold, influenza, back pain — infusion of leafy tips (can be used with <i>kwaaïman</i> ).	<i>Renosterbos</i> is a popular medicinal plant that is widely used throughout the relatively limited and localized distribution area in South Africa (Pappe, 1850; Watt and Breyer-Brandwijk, 1962; Smith, 1966; Palmer, 1985; Roberts, 1992; Rood, 1994; Shearing, 1994; Palmer, 1995; Van Wyk et al., 1997; Thring and Weitz, 2006).
25. <i>Eberlanzia spinosa</i> (Mesembryanthemaceae); <i>steekkaroo</i>	JO: angina — decoction of the leaves (drink like tea with some sugar).	
26. <i>Elytropappus rhinocerotis</i> (L.f.) Less. (Asteraceae); <i>renosterbos</i> , <i>anosterbos</i> , <i>anostertoppe</i>	AS: cough — drink infusion of stem tips. EW: back pain — drink infusion of young stems. JO: weak legs or cramps in legs — wash legs with a decoction of the tips. KS: severe colds, influenza, whooping cough — drink an infusion and inhale steam. PC: influenza — drink an infusion and inhale the smoke from burning plants (close the doors and windows of the house, i.e. fumigate the house); this treatment saved him and his family during the Spanish flu of 1918.	
27. <i>Eriocephalus ericoides</i> (L.f.) Druce (Asteraceae); <i>kapokbos</i>	EW: to “ripen” measles — drink an infusion of <i>kapokbos</i> , <i>karoobos</i> and the droppings of an angora goat. JO: chest ailments in children — make an infusion of the seed hairs and a few green twigs, add a few drops of “harlemensies”, place in a bag and apply to chest. PT: cold — drink an infusion of <i>kapokbos</i> with <i>bitterbos</i> .	<i>Kapokbos</i> is relatively well-known as a traditional remedy (Watt and Breyer-Brandwijk, 1962; Hobson et al., 1970; Kellerman et al., 1988; Roberts, 1992; Van Wyk et al., 1997).
28. <i>Euphorbia mauritanica</i> (Euphorbiaceae); <i>melkbos</i>	EW: warts — apply latex to the warts (confirmed by AW and SG). PT: toothache — infuse the root in boiling water — rinse mouth with the warm extract; apply latex to warts.	This appears to be a new record of medicinal use although <i>Euphorbia</i> latex is known as a treatment to remove warts (e.g. Rood, 1994).
29. <i>Fockea edulis</i> (Thunb.) K. Schum.; <i>F. camaru</i> (E.Mey.) N.E.Br. (Apocynaceae); <i>kambro</i>	JO: suppression of hunger and thirst — eat the tuber.	<i>Fockea</i> species are well-known food plants but this anecdote appears to be the first one explicitly claiming a medicinal use (thirst and appetite suppression).
30. <i>Galenia africana</i> L. (Aizoaceae); <i>kraalbos</i> , <i>kraalhoutjie</i>	JO: rheumatism — bathe in a weak infusion. KS: wounds — boil in water with a little salt and wash wounds. WdT: rough skin (“ <i>skurfte</i> ”) — steep stems in water and apply topically.	Numerous uses have been recorded by Watt and Breyer-Brandwijk (1962) and later authors. Remarkably, nothing appears to be known about the active ingredients (Van Wyk et al., 2002). Uses are poorly recorded (Archer, 1990, 1994; Shearing, 1994).
31. <i>Galium tomentosum</i> Thunb. (Rubiaceae); <i>rooihoutjie</i> ; [BvW 4084]	AS: acid in babies — infuse the root and drink like tea. EW: to “remove” acid in babies — infuse the roots (add a little sugar) (confirmed by AW and SG). JO: diabetes (“bloedsuiker”) — drink tea (roots) every morning (before breakfast). PT: for babies (better than gripe water) — tea from roots (it turns bright red).	
32. <i>Garuleum bipinnatum</i> (Thunb.) Less. (Asteraceae); <i>slanghoutjie</i>	AS: protection against witchcraft — drink root infusion. JO: general medicine — the dried and powdered root is infused in lukewarm water — drink one tot every morning. KS: root infusion used against “thin blood”. PC: influenza, fever, women’s ailments (unspecified) and for chest ailments — root infusion is taken orally (it becomes oily). WdT: fever in sheep and cattle.	<i>Slanghoutjie</i> is a relatively well-known and important Karoo medicinal plant (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Hobson et al., 1970; Palmer, 1985; Rood, 1994; Shearing, 1994).
33. <i>Geigeria filifolia</i> Mattf. (Asteraceae); <i>windbossie</i> , <i>vroumensbos</i> , <i>vermeerbos</i>	KS: infertility in women — leaf infusion. PT: “to expel wind from the female parts” — drink an infusion of a small leafy twig.	Several medicinal uses in other parts of Africa (Watt and Breyer-Brandwijk, 1962; Jacot Guillardmod, 1971; Shearing, 1994). <i>Geigeria</i> species are poisonous to small stock (Kellerman et al., 1988, 2005; Van Wyk et al., 2002).
34. <i>Gnidia polycephala</i> (C.A.Mey.) Gilg (Thymelaeaceae); <i>januariebos</i>	KS: constipation — drink a root infusion mixed with fresh milk (purgative).	Flowering <i>G. polycephala</i> is poisonous to small stock (Shearing, 1994). Medicinal uses of <i>Gnidia</i> species listed by (Githens, 1948; Watt and Breyer-Brandwijk, 1962; Batten and Bokelman, 1966; Hobson et al., 1970; Hedberg and Staugård, 1989; Le Roux et al., 1994; Shearing, 1994; Van Wyk et al., 1997; Von Koenen, 2001).
35. <i>Helichrysum pumilio</i> (O. Hoffm.) Hilliard & B.L.Burt. subsp. <i>pumilio</i> (Asteraceae); <i>lewerbossie</i> ; [BvW 4096];	AS: rheumatism — drink like tea. EW (and AW, SG): “liver problems”. AS: “liver problems”, drink like tea (own experience). JO: “liver problems” — use fresh whole herb as an infusion — drink one tot at a time (also KS, and PT).	<i>Helichrysum pumilio</i> appears to be newly recorded here even though it is a well-known and widely used remedy in the eastern parts of the Karoo. <i>H. lineare</i> is used in the same way.
36. <i>Helichrysum lineare</i> DC.; [HdW 60]		

37. *Hermannia cuneifolia* Jacq. (Sterculiaceae); *kwaaiman*  
AS: sore throat — infusion of a leafy twig (it burns the throat, hence *kwaaiman* = “angry man”). JO: to “ripen” influenza and to loosen phlegm — use an infusion of one twig of “the one with red flowers (= “male”)” and one twig of “the one with yellow flowers (= “female”)”; it burns the throat. KS: colds and asthma. PT: colds (“it burns like pepper”).  
EW (and AW, SG): sore throat — steep a single leaf (!) in boiling water.
38. *Hermannia glabrata* L.f. [= *H. linearis* (Harv.) Hochr.] (Sterculiaceae) *kwaaiman* [HdW 85]
39. *Hoodia pilifera* (L.f.) Plowes subsp. *pilifera* (Apocynaceae); *ghaap*  
KS: suppress appetite and thirst — young stems are eaten (“old ones are bitter and poisonous”).
40. *Hyraceum* (concretions of rock hyrax urine); *dassiepis, klipsvet*  
EW: flatulence in babies — infusion in boiling water. JO: post-natal medicine (purification) or chest ailments in children — break off a small piece, grind to a powder and add to water (also add a drop of “rooilaventel” before drinking. PT: “purification” of women and newborn babies — drink an infusion of a small piece. WdT: bitter medicine.  
JO: stomachache — root infusion (often used with *koorshout*). PT: stomach cramps — the potato-like tuber is cut into slices, sundried and then powdered; it is the best medicine for the stomach and is also sometimes called *bitterhout*.  
EW: acid (heartburn) — leaf infusions (used in the same way as *rooihoutjie*).
41. *Kedrostis nana* (Lam.) Cogn. var. *zeyheri* (Schrad.) A.Meeuse (Cucurbitaceae); *kalmoes, bitterhout*; [HdW 64]
42. *Lasiospermum bipinnatum* (Thunb.) Druce (Asteraceae); *ganskweek* [HdW 89]
43. *Leonotis intermedia* Lindl. (= *L. dasyphylla* Benth.) (Lamiaceae); *kopdagga* [HdW 93]
44. *Leonotis ocyimifolia* (Burm.f.) Iwarsson (Lamiaceae); *kopdagga* or *klipdagga*
45. *Limeum aethiopicum* Burm.f. (Molluginaceae) *koggelmandervoetkaroo* [HdW 66]
46. *Lessertia inflata* Harv. (Fabaceae); *lê-wildekeur*  
KS: stomachache — can be used in the same way as *Sutherlandia frutescens* (*kortbeen wildekeur*).
47. *Melianthus comosus* Vahl (Melianthaceae); *kruidjie-roer-my-niet, koffiebos* [HdW 58]
- AS: skin ailments, inflammation of the legs — the herb is applied topically (it reduces swelling).  
EW (and AW, SG): painful legs — boil the leaves and bathe legs in the water. JO: rheumatic knees — boil the leaves and apply to the knees. KS: knee pain — wash knees with a leaf infusion and apply fresh leaves as a poultice (with vinegar). PT: painful legs and rheumatism — apply warm leaves as a poultice or use the whole herb in a bucket of water for soaking the legs; steaming is also effective for treating painful legs or a painful back (it is poisonous and should never be drunk). WdT: sores (topical).
48. *Mentha longifolia* (L.) Huds. subsp. *capensis* (Lamiaceae); *balderja* [HdW 59, 80]
- AS: all ailments (“*vir alles goed*”). EW (and AW and SG): fragrant fumigant — burn to expel lice from the house; general malaise (“when you have headache and your eyes do not feel well”) — mix with *kruisement* and drink like tea. JO: effective against head lice, lice and fleas — leaf decoctions are sprinkled and sprayed on affected areas. KS: colds and headache — drink as tea. PT: postnatal medicine (“it purifies from the inside”) — drink a leaf infusion after labour.
49. *Momordica balsamina* L. (Cucurbitaceae); *without, duwana* [HdW 65]
- AS: fever — mix root with other herbs. EW: stomach problems — steep with Epsom salt and *dawidjie* roots. JO: stomach ulcers — scrape the white root to remove the bark, cut into slices, string into a piece of wire and hang to dry; use one piece at a time — powder and drink like tea. PT: stomach cramps — dried root slices used as tea (same as *kalmoes*, but the taste is astringent).
50. *Oncosiphon pilulifera* (L.f.) Källersjö (Asteraceae); *Stinkkruid*; [BvW 4086]
- JO: influenza — drink an infusion of the herb. PC: colds — drink an infusion of *stinkkruid* mixed with *wildeals*. Stinkkruid was much used during the Spanish flu of 1918. PT: colds — drink an infusion.
51. *Osteospermum herbaceum* L.f. (Asteraceae); *stinktontel* [BvW 4082, HdW 61, 76]
- EW: wounds and infections — apply pounded herb as a poultice. JO: for slow healing wounds — apply the juice or a strong infusion. KS: excessive phlegm in babies, toothache or oral thrush — mix the leaf sap with powdered tea (black tea) and apply to the mouth or gums. PT: eye ailments — place fresh leaves in a small rag and drip juice into the eyes; acid in babies, any baby ailment (especially to remove chest phlegm) and sores — press juice from leaves, add some linseed oil or cod liver oil.
- The traditional uses of *Hermannia* species are poorly known although several have been recorded as medicinal plants (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Hobson et al., 1970; Rood, 1994; Shearing, 1994). The common name seems to be published here for the first time.
- This appears to be a new, independent record of the thirst- and appetite-suppressant effects of *Hoodia* species.  
This strongly aromatic material is a well-known Khoikhoi medicine (see Van Wyk and Gericke, 2000).
- Kedrostis* species are occasionally referred to as *dawidjiewortel* and may therefore be confused with *Cissampelos capensis* (Watt and Breyer-Brandwijk, 1962; Smith, 1966). Matsiliza and Barker (2001) reported that a root decoction of *K. nana* is used to treat diabetes.  
Several uses have been recorded (Phillips, 1917; Watt and Breyer-Brandwijk, 1962; Batten and Bokelman, 1966; Jacot Guillardmod, 1971; Roberts, 1992) but it is toxic to livestock (Kellerman et al., 1988, 2005; Van Wyk et al., 2002).  
There appears to be no published record of medicinal uses for this species.
- Several *Leonotis* species are well-known as medicinal plants (Smith, 1895; Githens, 1948; Watt and Breyer-Brandwijk, 1962; Rood, 1994).
- Medicinal uses of *L. fenestratum* (Fenzl) Heimerl and *L. viscosum* (J.Gay) Fenzl have been recorded by Rodin (1985) in Namibia. The custom to twirl a stick in a pot of saponin-containing infusions (a form of potentizing) and to then drink the resultant white foam is commonly practiced by Xhosa and other Nguni-speaking people. Known as “ubulao” (“white path”), the custom is not well-recorded in the scientific literature. It may be speculated that the addition of plant saponins to a mixture increases the possibility that active compounds will be dissolved and absorbed.  
The only previous reference to this species is by Watt and Breyer-Brandwijk (1962) who stated that the plant is purgative. This is an interesting, independent confirmation of the close relationship between *Lessertia* species and the genus *Sutherlandia*. The name *seeroogbossie* has been recorded for the closely related *L. tomentosa* DC. (Smith, 1966), one of several plants traditionally used to treat sore eyes.  
The dark brown to black nectar is eaten by children and it is said to resemble black coffee in appearance and taste (hence the Afrikaans common name *koffiebos*). It is widely used in wound treatment and there are numerous published anecdotes (Smith, 1895; Steyn, 1934; Wilman, 1946; Githens, 1948; Watt and Breyer-Brandwijk, 1962; Smith, 1966; Palmer, 1985; Kellerman et al., 1988; Roberts, 1992; Rood, 1994; Shearing, 1994; Hutchings et al., 1996; Van Wyk et al., 1997; Von Koenen, 2001; Kellerman et al., 2005).
- Mentha longifolia* is an important and well-known medicinal plant in South Africa and Lesotho (Watt and Breyer-Brandwijk, 1962; Batten and Bokelman, 1966; Jacot Guillardmod, 1971; Palmer, 1985; Ellis, 1989; Archer, 1990, 1994; Dyson, 1994; Shearing, 1994; Hutchings et al., 1996; Van Wyk et al., 1997).
- Momordica* species are important traditional medicines, not only in South Africa and Africa, but also in other tropical parts of the world (e.g. Watt and Breyer-Brandwijk, 1962; Kokwaro, 1976; Tadesse and Demissew, 1992; Burkhill, 1985; Neuwinger, 1996). Pappé (1850) listed the tuber as a Khoikhoi emetic, cathartic and diuretic. Watt and Breyer-Brandwijk (1962) reported its use by black people for skin conditions, syphilis and oedema (dropsy). Gledhill (1969) gave the common name “Dawetjieswortel”. Both vernacular names — *duwana* and *without* (“white wood”) appear to be new records.  
*Oncosiphon pilulifera* and the closely related *O. suffruticosum* (L.) Källersjö are important traditional Khoikhoi remedies (Smith, 1895; Githens, 1948; Watt and Breyer-Brandwijk, 1962; Hutchings et al., 1996; Van Wyk and Gericke, 2000), yet they have remained poorly studied.  
This is an interesting new record of a medicinal plant that is well-known and widely used in the study area. It is not listed in Arnold et al. (2002) or in any other sources. The vernacular name *stinktontel* has not been recorded before — neither by Smith (1966) nor Powrie (2004). Four other species of *Osteospermum* are listed by Neuwinger (2000) as having medicinal uses in Africa but no topical uses have been recorded.

(continued on next page)

Table 2 (continued)

Scientific name, family and common name(s); [voucher specimen]	Anecdote or use(s)	Notes
52. <i>Pachypodium succulentum</i> (L.f.) Sweet (Apocynaceae); <i>skilpadbos</i> [HdW 73]	JO: stomach ulcers — soak a piece of root in lukewarm water and drink the bitter infusion.	No medicinal uses appear to have been recorded for this species (Arnold et al., 2002).
53. <i>Parmelia</i> species (Parmeliaceae); <i>klipblom</i>	EW: syphilis in men — drink infusion like tea. PT: back pain and kidney trouble.	Lichens of the genus <i>Parmelia</i> are commonly used in Cape traditional medicine (Van Wyk and Gericke, 2000). Matsiliza and Barker (2001) recorded the oral and topical use of rock lichens against gonorrhoea. Medicinal uses are listed by Watt and Breyer-Brandwijk (1962), Batten and Bokelman (1966), Smith (1966), Palmer (1985), Roberts (1992) and Rood (1994). This indigenous species does not occur naturally in the study area but is obtained from gardens.
54. <i>Pelargonium zonale</i> (L.) L'Hér. (Geraniaceae); <i>malva</i>	EW: earache — use fresh leaves as ear plugs.	<i>Pelostomum calycinum</i> N.E.Br. is the only species of the genus known to be used medicinally (Watt and Breyer-Brandwijk, 1962; Hutchings et al., 1996). The vernacular name has not been recorded before. The species is relatively well-known as a traditional medicine (Watt and Breyer-Brandwijk, 1962; Hobson et al., 1970; Palmer, 1985; Shearing, 1994; Von Koenen, 2001).
55. <i>Pelostomum</i> cf. <i>origanoides</i> E.Mey. ex Benth. (Scrophulariaceae) <i>suurbossie</i> ; [BvW 4083, HdW 53]	PT: acid in babies — make tea from a twig, add linseed oil, sweet oil or cod liver oil and give to the baby.	<i>Bergwildeals</i> is well-known locally but the vernacular name and medicinal uses are here recorded for the first time.
56. <i>Pentzia incana</i> (Thunb.) Kuntze (Asteraceae) <i>ankerkaroo</i> , <i>karooobos</i>	JO: stomachache, biliousness (“after eating fatty meat”) or diarrhoea — chew a fresh twig and swallow the juice (“an important medicine”). PC: used in the Spanish flu of 1918. PT: stomach pain and colds.	Widely known in Africa as a medicinal plant (e.g. Smith, 1895; Phillips, 1917; Githens, 1948; Watt and Breyer-Brandwijk, 1962; Kokwaro, 1976; Coates Palgrave, 1977; Lindsay, 1978; Dlamini, 1981; Pooley, 1993; Venter and Venter, 1996). The common name is derived from the Xhosa name for the plant ( <i>umkhwenkhe</i> ) and the Afrikaans word <i>bas</i> (= bark). Numerous uses have been recorded by Coates Palgrave (1977), Roberts (1992), Shearing (1994) and Venter and Venter (1996).
57. <i>Pentzia punctata</i> Harv. (Asteraceae); <i>bergwildeals</i> [BvW 4090]	AS: colds and stomach problems — drink an infusion (“better than <i>mak wildeals</i> , used in the Sneeuberg area”). KS: colds (“stronger than <i>wildeals</i> ”).	<i>Psilocaulon coriarum</i> is relatively poorly known as a medicinal plant (Wilman, 1946; Watt and Breyer-Brandwijk, 1962). There is only a single literature reference to the use of this species, namely Van Breda and Bamard (1991).
58. <i>Pittosporum viridiflorum</i> Sims (Pittosporaceae); <i>kwenkwe bas</i>	PT: stomach cramps — use bark (mix with kalmoes). AS: influenza and stomach problems — drink an infusion of the bark.	No recorded medicinal uses (Arnold et al., 2002). The bright yellow flowers and the treatment of jaundice suggest that this is an example of the ‘doctrine of signatures’. Magic uses for <i>R. brevispinosum</i> Kuntze are listed by Rodin (1985).
59. <i>Portulacaria afra</i> Jacq. (Portulacaceae); <i>spekboom</i>	PT: inflammation — bruised leaves are folded into a small rag and applied topically.	Uses are well-recorded (e.g. Watt and Breyer-Brandwijk, 1962; Batten and Bokelman, 1966; Coates Palgrave, 1977; Mabogo, 1990; Roberts, 1992; Archer, 1994).
60. <i>Psilocaulon coriarum</i> (Burch. ex N.E.Br.) N.E.Br. (Mesembryanthemaceae); <i>loogbossie</i> [BvW 4085]	PT: pimples or pustules on the scalp — wash hair with an infusion of the herb or apply to scalp as a poultice.	<i>Sansevieria</i> species are widely used to treat ear infection (e.g. Giess and Snyman, 1986; Hedberg and Staugård, 1989; Rood, 1994; Hutchings et al., 1996; Neuwinger, 1996; Von Koenen, 2001; Matsiliza and Barker, 2001).
61. <i>Pegoletia baccharidifolia</i> Less. (Asteraceae); <i>heuningbos</i> ; [HdW 54]	PT: inflammation (on parts of the body or chest), asthma or breathing problems — steep a whole twig and drink (“smells like honey”).	This species is an important traditional medicine in the Karoo (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Rood, 1994; Shearing, 1994) but it is not as well-known as <i>S. tortuosum</i> (L.) N.E. Br. (see Van Wyk and Gericke, 2000).
62. <i>Rhigozum obovatum</i> Burch. (Bignoniaceae) <i>wildegranaat</i>	JO: jaundice — steep the ground root in water and drink one desert spoon before a meal.	The Afrikaans vernacular name <i>vulsiek</i> or <i>vulsiekte</i> refers to syphilis. <i>Solanum</i> species are widely used in traditional medicine (e.g. Watt and Breyer-Brandwijk, 1962).
63. <i>Salix mucronata</i> Thunb. (Salicaceae); <i>wilgeboom bas</i>	AS: fever — drink an infusion of the bark.	A single record of (unspecified) medicinal use (Codd, 1985). <i>S. rugosa</i> Ait. and especially <i>S. linearis</i> Burch. ex Benth. ( <i>teebossie</i> or <i>boesmantee</i> ) are well-known Karoo medicinal plants (Wilman, 1946; Watt and Breyer-Brandwijk, 1962; Smith, 1966; Codd, 1985; Palmer, 1985; Rood, 1994).
64. <i>Sansevieria aethiopica</i> Thunb. (Dracaenaceae); <i>ghaiwortel</i>	JO: runny ears in children — leaves are heated in warm ash, cooled and the sap then dripped into the ear (said to be highly effective).	This is yet another independent anecdote of the appetite-suppressant effects of stapeliads. The vernacular name is here recorded for the first time. The species is not listed in Arnold et al. (2002). The medicinal uses of <i>Sutherlandia</i> are well-recorded (see <i>S. microphylla</i> ).
65. <i>Scelotium emarcidum</i> (Thunb.) L. Bolus ex H. Jacobsen (Mesembryanthemaceae); <i>kougoed</i>	KS: kidney failure (“ <i>nierstuipe</i> ”), inflammation, Congo fever and lameness “ <i>verlamming</i> ” — chew the leaves (intoxicating, “ <i>maak jou bedwelmd in die kop</i> ”).	Medicinal uses are listed in several sources (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Palmer, 1985; Archer, 1990; Roberts, 1992; Rood, 1994; Shearing, 1994; Van Wyk et al., 1997; Van Wyk & Gericke, 2000). The preference for <i>S. frutescens</i> is noteworthy.
66. <i>Solanum</i> sp. (Solanaceae); <i>gifappell</i> , <i>vulsiekbossie</i>	KS: syphilis — boil the roots and drink.	The three southern African species are widely used as general tonics (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Codd, 1985; Palmer, 1985; Ellis, 1989; Rood, 1994; Palmer, 1995; Van Wyk and Gericke, 2000). Medicinal uses of <i>Tulbaghia</i> species are well-recorded (e.g. Batten and Bokelman, 1966; Jacot Guillardmod, 1971; Lucas and Pike, 1971; Palmer, 1995; Ellis, 1989; Roberts, 1992; During his travels of 1772–1774, Thunberg noted the use of <i>Viscum</i> (probably <i>V. capense</i> ) for tea and also for the treatment of diarrhoeas (Forbes, 1986). <i>Litijestee</i> is a tea substitute, general tonic and medicine (e.g. Rood, 1994; Hutchings et al., 1996; Van Wyk et al., 1997; Von Koenen, 2001).
67. <i>Stachys cuneata</i> Banks ex Benth. (Lamiaceae); <i>vaaltee</i> , <i>veldtee</i> ; [HdW 86]	EW: painful body — drink as tea (slightly purgative).	The traditional uses of this famous medicinal plant in the Karoo seem to agree closely with those recorded in other parts of the world (Van Wyk and Wink, 2004). The main use is as a diaphoretic to treat fever.
68. <i>Stapelia olivacea</i> N.E.Br. (Apocynaceae); <i>kalong</i>	KS: appetite suppressant — eat the fresh stems (“ <i>ky raak nie honger nie</i> ”, “sweet taste in the mouth does not last as long as that of <i>ghaap</i> ” — see <i>Hoodia pilifera</i> ).	
69. <i>Sutherlandia frutescens</i> (L.) R.Br. (Fabaceae); <i>kortbeenwildekeur</i> , <i>kalkoenbel</i> , <i>kankerbos</i>	EW (and AW, SG): stomach problems — drink as tea; “the short one ( <i>S. frutescens</i> ) is female and is used for men’s problems and the long one ( <i>S. microphylla</i> ) is male and is used for women’s problems”.	
70. <i>Sutherlandia microphylla</i> Burch. ex DC. (Fabaceae); <i>wildekeur</i> , <i>kalkoenbel</i> , <i>kankerbos</i>	AS: high blood pressure — drink powdered leaf as tea (can be drunk often; <i>kortbeenwildekeur</i> is better — confirmed by JO, KS, PC.). JO: back pain and kidney pain (as general cleanser or blood purifier) — steep the leaves of three twigs in a small pot and drink after a meal (not on an empty stomach). KS: back pain or stomach pain. PC: general medicine — drink with honey. PT: cancer (for improvement, not as a cure — but no own experience) — infusion of fresh or dried leaves (two twigs per cup; not poisonous). WdT: cancer and “all ailments”.	
71. <i>Teucrium trifidum</i> Retz. (Lamiaceae); <i>kattiedrieblaar</i> [BvW 4088, HdW 83]	KS: colds, back pain, bladder problems in women — drink an infusion of the herb. PT: colds and influenza — drink an infusion. WdT: fever in sheep and cattle.	
72. <i>Tulbaghia alliacea</i> L.f. (Alliaceae); <i>wilde knoffel</i>	EW: fever in children — apply (with <i>wildeals</i> and grape vine leaves) as poultice to the chest (“it breaks the fever”). KS: ear problems.	
73. <i>Viscum capense</i> L.f. (Viscaceae); <i>voëlent</i> , <i>litijestee</i> [HdW 92]	EW: for the liver (unspecified) — drink like tea. KS: back pain — drink tea. PT: weak heart — drink like tea (with <i>wildeals</i> ).	
74. <i>Withania somnifera</i> (L.) Dunal (Solanaceae); <i>koorshout</i> [HdW 87]	AS: fever — mix with other plants. EW: to clean the stomach — used as an emetic. JO: fever — the roots are used with <i>bitterhout</i> (an important medicine — it makes you perspire). KS: kidney failure (“ <i>nierstuipe</i> ”) and inflammation — works with <i>dawidjie</i> (also used for magic — “ <i>toorgoed</i> ”); cancer — use a decoction of <i>koorshout</i> , <i>boegoe</i> , <i>dawidjie</i> and <i>wynruit</i> . PT: fever — make an infusion of the roots (mix with other “ <i>bossies</i> ”). WdT: fever — drink infusion of the root.	

Names of plants are given alphabetically by scientific name, together with family name, local name (in Afrikaans) and voucher specimen number [BvW] = B-E. van Wyk; [HdW] = Helene de Wet.

highlighted some unique features of Khoikhoi traditional medicine. A sociological study of medicinal plant use by elderly “coloureds” by Ferreira (1987) included a few botanical details. A recent study by Thring and Weitz (2006) gives a valuable description of medicinal plant use by the so-called “coloured” population group in the Bredasdorp/Elim region of the Western Cape Province of South Africa.

As a further contribution towards a more comprehensive insight into Khoi-San ethnobotany, a rapid ethnobotanical appraisal was conducted in the Graaff-Reinet and Murraysburg

districts of the southeastern Karoo. This area, which is situated near the Sneeubergen, was the traditional home of a Khoikhoi group known as the Inqua. The Dutch explorer Isaq Schrijver met with chief Heijkon, the leader of the Inqua, on 19 February 1689 (Elphick, 1985; Boonzaier et al., 1996). It is possible that the rich folklore of medicinal plants of the region is rooted in the Inqua culture, perhaps with influences from the south (the area of the Damasqua) and also from the east, the area of the Gonaqua, a mixed Khoikhoi–Xhosa group that lived in clay houses (Elphick, 1985; Boonzaier et al., 1996). A preliminary

Table 3

List of exotic plant species and their uses recorded in the Graaff-Reinet and Murraysburg regions (southeastern Karoo, South Africa)

Scientific name, family and common name(s); voucher specimen in square brackets	Anecdote or use(s)	Notes
1. <i>Artemisia absinthium</i> L. (Asteraceae); <i>groenamara</i>	AS: diarrhoea — leaves as tea (bright green colour, very bitter). An exotic plant that is grown in gardens in the Murraysburg township.	The name <i>groenamara</i> is more commonly used for <i>Vernonia oligocephala</i> (DC.) Sch.Bip. ex Walp. (Smith, 1966).
2. <i>Atriplex nummularia</i> Lindl. (Chenopodiaceae); <i>soutbos</i>	KS: diarrhoea — drink a leaf infusion.	Medicinal uses have been recorded for this species in Australia (Maiden, 1889 in Arnold et al., 2002).
3. <i>Cannabis sativa</i> L. (Cannabaceae); <i>dagga</i>	JO: chest ailments — drink tea made from the leaves.	
4. <i>Datura stramonium</i> L. (Solanaceae); <i>olieboom</i>	KS: chest ailments — dry leaves are powdered, mixed with tobacco and used to make a cigarette (said to “open the lungs”).	
5. <i>Glycyrrhiza glabra</i> L. (Fabaceae); <i>soethoutjie</i>	AS: tonic for old people.	
6. <i>Mentha spicata</i> L. (Lamiaceae); <i>kruisement</i> [HdW 78]	EW: headache and cold — drink a leaf infusion like tea. KS: kidney failure (“ <i>nierstuipe</i> ”).	
7. <i>Nicotiana glauca</i> Graham (Solanaceae); <i>wilde twak</i>	EW: headache — apply fresh leaves to the head as a poultice (“it draws out the pain”).	Wild tobacco is responsible for animal and human fatalities but is also commonly used in traditional medicine (Walsh, 1931; Steyn, 1934; Watt and Breyer-Brandwijk, 1962; Gelfand et al., 1985; Kellerman et al., 1988; Archer, 1990; Van den Eynden et al., 1992; Archer, 1994; Mavi, 1994; Rood, 1994; Shearing, 1994; Van Wyk and Gericke, 2000; Von Koenen, 2001; Van Wyk et al., 2002; Kellerman et al., 2005).
8. <i>Petroselinum crispum</i> (Mill.) A.W. Hill. (Apiaceae); <i>pieterselie</i>	EW: bladder problems and to expel the placenta — drink like tea.	
9. <i>Polygonum aviculare</i> L. (Polygonaceae); <i>litjiesgras</i>	JO: to remove a persistent umbilical cord — make an infusion of the whole plant and bathe the affected area of the baby (“works within a day”). PT: angina — stir an infusion of the thin roots to make foam — drink the foam.	<i>P. aviculare</i> (knotweed) is a popular traditional medicine from North America that is used in many parts of the world (Van Wyk and Wink, 2004). The practice of <i>ubulao</i> is independently mentioned here by PT (see notes under <i>Limeum aethiopicum</i> in Table 2).
10. <i>Rosmarinus officinalis</i> L. (Lamiaceae); <i>roosmaryn</i>	EW: chest problems, asthma and diabetes — drink like tea.	
11. <i>Ruta graveolens</i> L. (Rutaceae); <i>wynruit</i>	JO: stomachache — drink like tea (sometimes the leaves are placed in a cloth and tied to the waist as repellent and disinfectant). KS: colds — drink a leaf infusion. PT: stomachache — drink a leaf infusion.	<i>Wynruit</i> has become an important part of the South African healing tradition and is mentioned or described in numerous publications (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Roberts, 1983; Palmer, 1985; Roberts, 1985; Rood, 1994; Palmer, 1995; Van Wyk et al., 1997; Thring and Weitz, 2006). Uses of the exotic <i>S. babylonica</i> in southern Africa are listed by Watt and Breyer-Brandwijk (1962) and Shearing (1994). The drought-tolerant <i>S. molle</i> is widely grown as a shade tree in the Karoo and has become part of the local <i>materia medica</i> (Wilman, 1946; Watt and Breyer-Brandwijk, 1962; Smith, 1966).
12. <i>Salix babylonica</i> L. (Salicaceae); <i>wilgeboom</i> <i>bas</i>	AS: fever — drink an infusion of the bark.	
13. <i>Schinus molle</i> L. (Anacardiaceae); <i>peperboom</i>	EW: fever in children — place leaves in a cloth and apply to the stomach of the child. KS: headache — place fresh leaves with vinegar in a cloth and apply to the head.	The drought-tolerant <i>S. molle</i> is widely grown as a shade tree in the Karoo and has become part of the local <i>materia medica</i> (Wilman, 1946; Watt and Breyer-Brandwijk, 1962; Smith, 1966).
14. <i>Urtica urens</i> L. (Urticaceae); <i>brandnetel</i> , <i>brandneuker</i>	JO: burn wounds — apply the dried, powdered leaf. PT: chest ailments — drink an infusion of fresh leaves in the morning and evening.	This is another example of a widely used medicine plant (Van Wyk and Wink, 2004) that has become part of the South African <i>materia medica</i> (Watt and Breyer-Brandwijk, 1962; Smith, 1966; Palmer, 1985; Shearing, 1994; Hutchings et al., 1996; Von Koenen, 2001).

Names of plants are given alphabetically by scientific name, together with family name, local name (in Afrikaans) and voucher specimen number [HdW] = Helene de Wet.

survey of medicinal plants in the Grahamstown area (Matsiliza and Barker, 2001) is of interest, as it allows a comparison between this predominantly Xhosa area and the much more arid adjoining Karoo region. The aim of our study was not an exhaustive list of all medicinal plants and their uses, but rather to identify the most important plants still in everyday use within the communities. We also wished to evaluate the assumptions that there is a rich but dwindling knowledge on medicinal plants, that uses and treatments would relate mainly to those species readily available within the study area and that the traditional knowledge of the region has remained poorly recorded. A systematic documentation of medicinal plant use in an area not previously studied seemed important to us in view of the rapid pace of urbanization and acculturation that also affect the more remote Karoo regions of South Africa.

## 2. Methodology

The survey was conducted in the districts of Graaff-Reinet and Murraysburg, two small Karoo towns situated near the boundary between the Western Cape, Northern Cape and Eastern Cape Provinces of South Africa. All fieldwork was done during November 2001 and January 2002, but two of us (HdW and FRvH) grew up in Graaff-Reinet and Murraysburg respectively and were therefore familiar with the local people and some of the traditional plant uses in the region. We used the rapid appraisal approach, and interviewed several local experts as listed in Table 1. The use of a common language (Afrikaans) allowed us to capture and accurately record subtle nuances that would normally be lost during interpretation and translation.

Herbarium voucher specimens were collected of all except the most common and well-known species and are kept in the herbarium of the University of Johannesburg (JRAU). Plants were identified by a trained taxonomist (one of us, B-EvW). All identifications were verified by comparison with herbarium material in JRAU and in some cases the National Herbarium in Pretoria (PRE). The literature review and checklist of Arnold et al. (2002) is a useful source of references to the recorded medicinal uses of many of the species.

## 3. Results and discussion

Information on a total of 86 species of medicinal plants encountered during the survey is recorded and briefly discussed in Tables 2 and 3. Hyraceum (the excretion of rock rabbits), and a lichen (*Parmelia* species) are also included. Names are given alphabetically by scientific name, together with family name, local name (in Afrikaans), and voucher specimen number [BvW] = B.-E. Van Wyk; [HdW] = Helene de Wet. Non-indigenous species are listed separately in Table 3. For each species, the various uses (indications) as given by the key participants are listed. At the risk of repetition, uses are given exactly as they were recorded, in order to allow evaluation of the importance and accuracy of the information. For some plants, all participants were in exact agreement, while uncertainty about the exact use is evident in others. Each entry is usually followed by a short discussion, highlighting the novelty value of the anecdote and

possible new uses that have not been recorded before, together with a list of critical literature references.

A wide diversity of plants is still used in the eastern Karoo region to treat a relatively limited number of indications. Many of the plants are widely distributed and well-known as important medicinal plants. A total of 86 plant species, one lichen and one other remedy (*hyraceum*) were recorded. Of these, 74 are indigenous (Table 2) and 14 are exotics (Table 3), showing that the traditional medicinal system in the region is adaptive and dynamic. Dold and Cocks (1999) also found that exotic plants are commonly used in “traditional” medicine. Similarly, De Wet (1998) found that medicines from other cultures are readily incorporated into the local *materia medica*, even in urban areas. There is some evidence of a Xhosa influence from the east. Examples are the use of *Pittosporum viridiflorum* bark — known locally by the Xhosa name “*kwenkwe*”; the use of *Boophone disticha* bulb scales and the stirring up of foam (see *Limeum aethiopicum* and *Polygonum aviculare*). Many of the remedies can be considered as general health tonics, used to treat weakness and unspecified ailments. Medicines to treat problems of the stomach, back, kidneys, bladder and other minor ailments also have a high frequency. It is interesting to note that a mixture of different plants is often used.

There are some interesting new records of plants that are locally important and widely used in the study area but which have apparently never been recorded before in the scientific literature. Noteworthy example are *Abutilon sonneriatum*, *Aloe striata*, *Eberlanzia spinosa*, *Helichrysum pumilio*, *Osteospermum herbaceum*, *Pachypodium succulentum* *Peliostomum* cf. *origanoides*, *Pentzia punctata*, *Rhigozum obovatum* and *Stapelia olivaea*. There are also several interesting new uses that were recorded for well-known medicinal plants, as well as several new Afrikaans vernacular names that do not appear in standard references such as Smith (1966) and Powrie (2004). The value of independent confirmation of known uses as supporting evidence, as well as additional anecdotes for well-known medicinal plants should not be under-estimated.

The new records of commonly used medicinal plants revealed by this study (e.g. *Helichrysum pumilio* and *Osteospermum herbaceum*) show that the medical ethnobotany of the Karoo is incompletely recorded and that there is an urgent need to document traditional knowledge before it is lost forever. The information presented here, incomplete as it may be, could be helpful in future attempts to provide a more complete synthesis of Khoi-San ethnomedicine.

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