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New plant records: updating Namibia's botanical checklist

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Abstract

Several plant species have been recorded from Namibia for the first time, and 39 new species have been described to science since the publication of 'A checklist of Namibian Indigenous and Naturalised Plants' (Klaassen & Kwembeya 2013). A list of these first records and newly described species for Namibia is provided and will be incorporated into the revised Namibian checklist which will be both published in the series 'Occasional Contributions of the National Botanical Research Institute' and made available on-line once complete.

Keywords: checklist, flora, Namibia, new records

Introduction

Namibia, a predominantly arid country, has a flora of 4 483 indigenous and naturalised plant taxa, consisting of 195 families and 1 127 genera of which 18% are categorised endemic or near endemic to the country (Klaassen & Kwembeya 2013). The occurrence of plant species in Namibia is highly influenced by rainfall, with the lowest rainfall in the south and west of Namibia (Namib Desert) and the highest rainfall in the north-east (Zambezi Region). However, low rainfall in the north-west and south-west of the country is not an indication of either low plant diversity or low endemism, in fact it is the opposite. The Tsau‖Khaeb National Park (Sperrgebiet) in the south-west of Namibia, falls within the Gariep Centre of Endemism, an area presumed to hold the richest variety of succulents on earth (van Wyk & Smith 2001); whilst the north-west of Namibia falls within the Kaokoveld Centre of Endemism, an area known for its high numbers of endemics (Maggs *et al*. 1994, 1998, van Wyk & Smith 2001, Craven & Vorster 2006, Craven 2009).

New plant species described and recorded from Namibia

Since the publication of 'A checklist of Namibian Indigenous and Naturalised Plants' (Klaassen & Kwembeya 2013), one new family, four new genera and 39 species, subspecies or varieties have been newly described and 29 previously described species have been recorded for the first time in Namibia. These discoveries have been made through field collection and/or re-determination of existing herbarium specimens housed at the National Herbarium of Namibia (WIND) by national and international plant specialists through plant family revisions as part of the Flora of Namibia project.

A list of these new plant records and newly described species for Namibia were extracted from the Botanical Research and Herbarium Management System (BRAHMS) (WIND 2020), WIND's in-house database, which holds over 95 000 records of Namibia's indigenous and naturalised flora and is presented in Table 1 and 2.

Potential new plant records and undescribed species for Namibia

WIND's collections have been amassed over four decades through botanical expeditions and are presented in Namibia's 2017 botanical collecting intensity map (Figure 1), which indicates the number of plant vouchers collected per Quarter Degree Square (QDS). In addition, this map shows areas of focused plant collection; these focal areas are indicative of being botanically interesting, easily accessible and usually well-populated.

'Focused' plant collecting in Namibia has resulted in a skewed representation of Namibia's species distribution, leaving large areas of Namibia under collected, indicated in Figure 1 by white and yellow squares (0-20 vouchers per QDS). Many of these under collected areas were labelled as 'less interesting' as they hold few endemics. However, additional botanical collection in these 'less interesting' areas will provide a more accurate representation of Namibia's plant species distribution with the possibility of finding new plant records for Namibia; while continued collection in the areas of botanical interest could result in the discovery of new undescribed species to science.

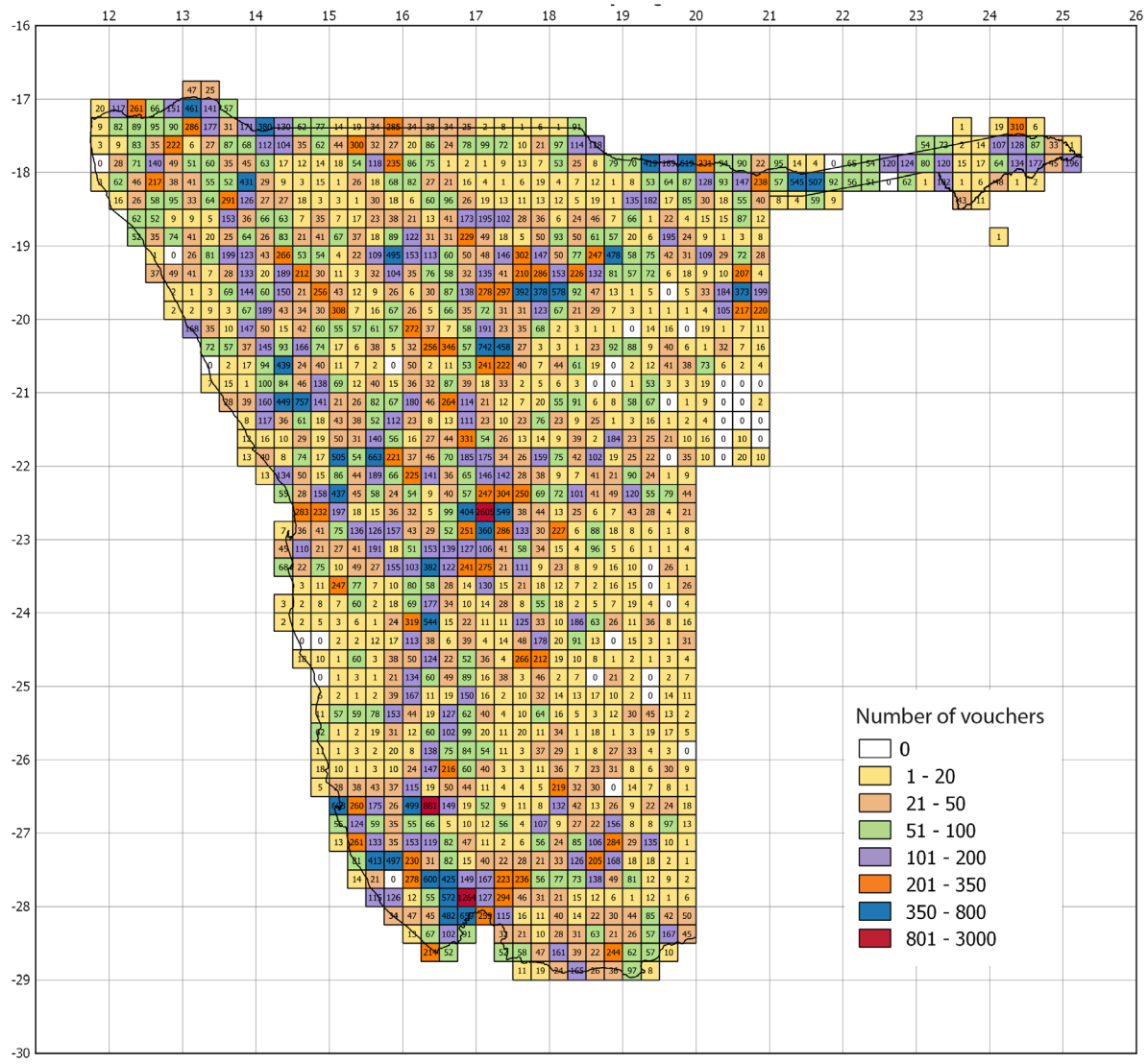

Figure 1: *Botanical collecting intensity map for Namibia, indicating number of plant vouchers collected per quarter degree square up to August 2017. (Source: WIND 2020).*

Table 1. New plant taxa records for Namibia since Klaassen & Kwembeya (2013).

Family	Genus species	Region	Source
Acanthaceae	*Petalidium huillense* C.B.Clarke	Kunene	WIND (2020)
Aizoaceae	*Cleretum papulosum* (L. f.) L.	Karas	WIND (2020)
Apocynaceae	*Periglossum mackenii* Harv.	Okavango	Bruyns (2014)
Araliaceae	*Cussonia angolensis* (Seem.) Hiern	Kunene	WIND (2020)
Asteraceae	**Acanthospermum australe* (Loefl.) Kuntze	Omaheke	WIND (2020)
	Gymnanthemum coloratum (Willd.) H.Rob. & B.Khan	Kunene	Swanepoel & van Jaarsveld (2015)
	Pteronia anisata B.Nord.	Karas	Kolberg & van Slageren (2014)
	Linzia rosenii (R.E.Fr.) H. Rob., Skvarla & V. A. Funk	Zambezi	Robinson *et al.* (2016)
	Gloriosa sessiliflora Nordal & Bingham	Zambezi	Nodal & Bingham (1998)
Convolvulaceae	*Cuscuta australis* R. Br.	Khomas	WIND (2020)
	Paralepistemon shirensis (Oliv.) Lejoly & Lisowski	Kunene	WIND (2020)
Fabaceae	*Aeschynomene cristata* Vatke	Zambezi	WIND (2020)
	Indigofera benguellensis Baker	Kunene	WIND (2020)
	Indigofera brachynema Gillett	Okavango	WIND (2020)
	Indigofera tinctoria L.	Zambezi	WIND (2020)

Geraniaceae	*Pelargonium albersii* M.Becker	Karas	Becker (2008)
	Pelargonium anauris M.Becker & F.Albers	Karas	Becker & Albers (2008)
Hyacinthaceae	*Ornithogalum decus-montium* G.Will.	Karas	WIND (2020)
Menispermaceae	*Tinospora caffra* (Miers) Troupin	Okavango, Zambezi	WIND (2020)
Moraceae	*Ficus sur* Forssk.	Kunene	Swanepoel & van Jaarsveld (2015)
Orchidaceae	*Habenaria kilimanjari* Rchb.f.	Zambezi	Bytebier & Mannheimer (2016)
Orobanchaceae	*Hyobanche glabrata* Hiern	Karas	WIND (2020)
Oxalidaceae	*Oxalis canaliculata* Dreyer, Roets & Oberl.	Karas	WIND (2020)
	Oxalis petricola Dreyer, Roets & Oberl.	Karas	WIND (2020)
Poaceae	*Eragrostis leptotricha* Cope	Otjozondjupa	Fish *et al.* (2015)
Sapindaceae	*Zanha africana* (Radlk.) Exell	Kunene	Swanepoel (2012a)
Scrophulariaceae	*Anticharis angolensis* B.Nord.	Kunene	Nordenstam (2013)
	Aptosimum molle Skan	Kunene	Kolberg & van Slageren (2016)
	Aptosimum pumilum (Hochst.) Benth.	Okavango, Oshikoto	Kolberg & van Slageren (2016)

* introduced

Table 2. New plant taxa described for Namibia since Klaassen & Kwembeya (2013).

Family	Genus species	Region	Source
Acanthaceae	*Acanthopsis adamanticola* H.M.Steyn	Karas	Steyn & van Wyk (2015)
Aizoaceae	*Lithops pseudotruncatella* (A.Berger) N.E.Br. subsp. *schoemanii* A.R. Earle & Uijs	Hardap	Earl & Uijs (2019)
Anthericaceae	*Chlorophytum boomense* Kativu	Karas	Kativu & Bjora (2016)
Asphodelaceae	*Aloe huntleyana* van Jaarsv. & Swanepoel	Kunene	van Jaarsveld & Swanepoel (2012)
Asteraceae	*Crassothonna agaatbergensis* Swanepoel	Kunene	Swanepoel & de Cauwer (2019)
	Dauresia flava B.Nord.	Karas	Nordenstam (2011)
	Gorteria warmbadica Stangb. & Anderb.	Karas	Stångberg & Anderberg (2014)
	Namibithamnus dentatus (O. Hoffm.) H. Rob., Skvarla & V.A. Funk	Kunene	Robinson *et al.* (2016)
	Namibithamnus obionifolius (Merxm.) H. Rob., Skvarla & V.A. Funk	Erongo, Otjozondjupa	Robinson *et al.* (2016)
	Nolletia annemarieae P.P.J.Herman	Kunene	Hermann (2013)
	Nolletia annetjieae P.P.J.Herman	Hardap	Hermann (2013)
	Nolletia vanhoepeniae P.P.J.Herman	Hardap, Omaheke	Hermann (2013)
	Nolletia welmaniae P.P.J.Herman	Kunene	Hermann (2013)
Brassicaceae	*Lepidium seydelii* Al-Shehbaz	Khomas	Al-Shehbaz (2016)
Capparaceae	*Maerua sebrabergensis* Swanepoel	Kunene	Swanepoel (2015)
Colchicaceae	*Androcymbium etesionamibense* U.Müll.-Doblies & D.Müll.-Doblies	Karas	Müller-Dobblies & Müller-Dobblies (2002)
Euphorbiaceae	*Erythrococca kaokoensis* Swanepoel	Kunene	Swanepoel (2019)
	Euphorbia corneliae Bruyns	Karas	Bruyns (2018)
	Euphorbia melanohydrata Nel subsp. *conica* Swanepoel	Karas	Swanepoel (2012b)
	Euphorbia otjipembana Leach subsp. *okakoraensis* Swanepoel	Kunene	Swanepoel (2013)
	Euphorbia otavibergensis Bruyns	Otjozondjupa	Bruyns (2018)
	Euphorbia rimireptans Swanepoel, R.W.Becker & Alma Möller	Kunene	Swanepoel *et al.* (2019)
	Euphorbia subsalsa Bruyns subsp. *otenzii*	Kunene	Bruyns (2018)
Fabaceae	*Crotalaria giessii* M.M.le Roux & B-E.Van Wyk	Karas	le Roux & van Wyk (2013)
	Crotalaria kolbergii M.M.le Roux & B-E.Van Wyk	Karas	le Roux & van Wyk (2013)
	Indigofera kavangoensis Schrire	Okavango, Zambezi	Schrire (2012)
	Oberholzeria etendekaensis Swanepoel, M.M.le Roux, M.F.Wojc. & A.E.van Wyk	Kunene	Swanepoel *et al.* (2015)
Hyacinthaceae	*Desertia luteovirens* Mart.-Azorín, M.Pinter & Wetschnig	Karas	Martínez-Azorín *et al.* (2015)
Iridaceae	*Moraea thermarum* Goldblatt & J.C.Manning	Karas	Goldblatt & Manning (2013)
Lamiaceae	*Ocimum sebrabergensis* Swanepoel & van Jaarsv.	Kunene	Swanepoel & van Jaarsveld (2019)
Menispermaceae	*Tinospora fragosa* (I.Verd.) I.Verd. & Troupin subsp. *kaokoensis* van Jaarsv.	Kunene	van Jaarsveld (2016)
Nyctaginaceae	*Boerhavia orbicularifolia* Struwig	Hardap, Karas, Kunene	Struwig *et al.* (2015)

Pedaliaceae	*Dewinteria petrophila* (De Winter) van Jaarsv. & A.E.van Wyk	Kunene	van Jaarsveld & Swanepoel (2007)
	Rogeria adenophylla J.Gay ex Delile subsp. *rosea* Bedigian	Kunene	Bedigian (2013)
	Rogeria armeniaca Bedigian	Kunene	Bedigian (2013)
Scrophulariaceae	*Anticharis namibensis* B.Nord.	Karas	Nordenstam (2013)
	Anticharis kaokoensis B.Nord.	Kunene	Nordenstam (2013)
	Aptosimum radiatum Kolberg & Van Slageren	Kunene	Kolberg & van Slageren (2016)
Tiganophytaceae	*Tiganophyton karasense* Swanepoel, F.Forest & A.E.van Wyk	Karas	Swanepoel *et al.* (2020)

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References

Al-Shehbaz IA (2016) *Lepidium seydelii* (Brassicaceae), a new species from Namibia. *Harvard Papers in Botany* 21: 133–135.

Becker M (2008) *Pelargonium albersii*, a new species of Pelargonium sect. Otidia (Geraniaceae). *Schumannia* 5: 163.

Becker M, Albers F (2008) Revision of the '*P. crithmifolium* group' of *Pelargonium* section Otidia (Geraniaceae) including the description of the new species *P. anauris*. *Schumannia* 5: 178.

Bedigian D (2013) Ecogeography and taxonomy of *Rogeria* J. Gay ex Delile (Pedaliaceae). *Webbia* 68: 103–126.

Bruyns PV (2014) The Apocynaceae of Namibia. *Strelitzia* 34 South African National Biodiversity Institute, Pretoria, South Africa.

Bruyns PV (2018) New taxa in *Euphorbia* (Euphorbiaceae) in southern Africa. *Haseltonia* 25: 30–56.

Bytebier B, Mannheimer C (2016) *Habenaria kilimanjari* newly recorded for Namibia. *Bothalia* 46.

Craven P (2009) Phytogeographic study of the Kaokoveld Centre of Endemism. Unpublished PhD thesis, University of Stellenbosch, Stellenbosch.

Craven P, Vorster PV (2006) Patterns of plant diversity and endemism in Namibia. *Bothalia* 36: 175–189.

Earl RA, Uijs RRJ (2019) A new subspecies of *Lithops* from Namibia. *Cactus World* 37: 197–199.

Fish L, Mashau, AC, Moeaha, MJ, Nembudani MT (2015) Identification guide to southern African grasses. An identification manual with keys, descriptions and distributions. *Strelitzia* 36, South African National Biodiversity Institute Pretoria.

Goldblatt P, Manning JC (2013) Eight new species of *Moraea* (Iridaceae) from southern Africa with range extensions and morphological notes in the genus. *Bothalia* 43: 153–165.

Hermann PPJ (2013) Cypsela morphology in the genus *Nolletia* (Asteraceae, Astereae) and a revision of the genus. *Phytotaxa* 122: 1–44.

van Jaarsveld EJ (2016) *Tinospora fragosa* subsp. *kaokoensis* (Menispermaceae), a new subspecies from northern Kaokoveld (Namibia). *Aloe* 52: 28–31.

van Jaarsveld EJ, Swanepoel W (2007) Pedaliaceae. *Dewinteria*, a new semi-succulent, cliff-dwelling genus endemic to the Kaokoveld, Namibia. *Bothalia* 32: 198–201.

van Jaarsveld EJ, Swanepoel W (2012) *Aloe huntleyana*, a new species from the Baynes Mountains, Namibia. *Bradleya* 30: 3–8.

Kativu S, Bjora CS (2016) A new species of *Chlorophytum* (Asparagaceae) from the succulent Karoo biome, Namibia – with an updated key for *Chlorophytum* of Namibia. *Plant Ecology and Evolution* 149: 339–346.

Klaassen ES, Kwembeya EG (eds) (2013) A Checklist of Namibian Indigenous and Naturalised Plants. *Occasional Contributions* No. 5 National Botanical Research Institute, Windhoek, Namibia.

Kolberg H, van Slageren MA (2014) A synopsis of the genus *Pteronia* (Compositae: Astereae) in Namibia including the resurrection of *Pteronia quadrifaria*. *Kew Bulletin* 69.

Kolberg H, van Slageren MA (2016) Synopsis of *Aptosimum* and *Peliostomum* (Scrophulariaceae) in Namibia, including the description of a new species, *Aptosimum radiatum*, and keys to all accepted species. *Kew Bulletin* 71.

Maggs GL, Craven P, Kolberg HH (1998) Plant species richness, endemism and genetic resources in Namibia. *Biodiversity and Conservation* 7: 435–446.

Maggs GL, Kolberg HH, Hines CJH (1994) Botanical diversity in Namibia - an overview (BJ Huntley, Ed). *Strelitzia* 1, Botanical Diversity in Southern Africa.

Martínez-Azorín M, Pinter M, Wetschnig W (2015) *Desertia*, a new genus in Massonieae (Asparagaceae, Scilloideae), including the description of *Desertia luteovirens* and the taxonomic revisions of *Whiteheadia* and *Namophila*. *Phytotaxa* 221: 201–225.

Müller-Dobblies D, Müller-Dobblies U (2002) De decuria altera specierum novarum generis *Androcymbium* (Colchicaceae) in Africa Australi s.l. *Feddes Repertorium* 113: 549–599.

Nodal I, Bingham MG (1998) Description of a new species, *Gloriosa sessiliflora* (Colchicaceae), with notes on the relationship between *Gloriosa* and *Littonia*. *Kew Bulletin* 53: 479.

Nordenstam B (2011) A second species of the Namibian genus *Dauresia* (Asteraceae-Senecioneae). *Plant Diversity and Evolution* 129: 1–5.

Nordenstam B (2013) Contributions to the taxonomy of the genus *Anticharis* (Scrophulariaceae) especially in Namibia and Angola. *Rostaniha* 14: 6–13.

Robinson H, Skvarla JJ, Funk VA (2016) Vernonieae (Asteraceae) of southern Africa: A generic disposition of the species and a study of their pollen. *PhytoKeys* 60: 49–126.

le Roux MM, van Wyk B-E (2013) A Taxonomic Revision of Amphitrichae, a New Section of *Crotalaria* (Fabaceae). *Systematic Botany* 38: 638–652.

Schrire BD (2012) Papilionoideae-Indigofereae. In: Timberlake JR (ed) *Flora Zambesiaca* 3, Royal Botanic Gardens, Kew.

Stångberg F, Anderberg AA (2014) Morphology and taxonomic reclassification of *Gorteria* (Asteraceae). *Willdenowia* 44: 97–120.

Steyn HM, van Wyk AE (2015) Taxonomic notes on the *Acanthopsis disperma-hoffmannseggiana* complex (Acanthaceae, tribe Acantheae), with an interim key to members of the genus. *Phytotaxa* 219: 1–26.

Struwig M, Klaassen ES, Kwembeya EG (2015) Nyctaginaceae: A taxonomic treatment for the Flora of Namibia. *Phytotaxa* 238: 101.

Swanepoel W (2012a) *Zanha africana*, a distribution record for Namibia. *Bothalia* 43: 89–90.

Swanepoel W (2012b) *Euphorbia melanohydrata* subsp. *conica* (Euphorbiaceae), a new subspecies from Namibia, with notes on the identification of similar medusoid euphorbias. *Phytotaxa* 62: 33–38.

Swanepoel W (2013) *Euphorbia otjipembana* subsp. *okakoraensis* (Euphorbiaceae), a new subspecies from the Kaokoveld, Namibia, with an amplified description of *Euphorbia otjipembana*. *Phytotaxa* 117: 51–57.

Swanepoel W (2015) *Maerua sebrabergensis* (Capparaceae), a new species from Namibia. *Phytotaxa* 207: 123–128.

Swanepoel W (2019) *Erythrococca kaokoensis* (Euphorbiaceae), a new species from Namibia and Angola. *Phytotaxa* 392: 54–60.

Swanepoel W, Becker RW, Möller A, de Cauwer V (2019) *Euphorbia rimireptans* (Euphorbiaceae, Articulofruticosae), a new species from the Skeleton Coast, Namibia. *Phytotaxa* 414: 165–173.

Swanepoel W, de Cauwer V (2019) *Crassothonna agaatbergensis* (Asteraceae), a new species from the Skeleton Coast, Namibia. *Phytotaxa* 427: 209–215.

Swanepoel W, Chase MW, Christenhusz MJM, Maurin O, Forest F, van Wyk AE (2020) From the frying pan: an unusual dwarf shrub from Namibia turns out to be a new brassicalean family. *Phytotaxa* 439: 171–185.

Swanepoel W, van Jaarsveld EJ (2015) *Ficus sur* (Moraceae) and *Gymnanthemum coloratum* (Asteraceae: Vernonieae) – first distribution records for Namibia. *Bothalia* 45: 1–5.

Swanepoel W, van Jaarsveld EJ (2019) *Ocimum sebrabergensis* (Lamiaceae), a new species from Namibia. *Phytotaxa* 405: 203–209.

Swanepoel W, le Roux MM, Wojciechowski MF, van Wyk AE (2015) *Oberholzeria* (Fabaceae subfam. Faboideae), a New Monotypic Legume Genus from Namibia. *PLoS ONE* 10.

WIND (2020) National Herbarium of Namibia (WIND) BRAHMS Database. National Botanical Research Institute (NBRI), MEFT, Windhoek.

van Wyk AE, Smith GF (2001) *Regions of Floristic Endemism in Southern Africa: A Review with Emphasis on Succulents*. UMDAUS PRESS, South Africa.