

# **Systematics of *Hypoxis* (Hypoxidaceae) in southern Africa**

by

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Submitted in partial fulfilment of the requirements for the degree

PHILOSOPHIAE DOCTOR

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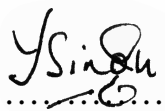
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I, YASHICA SINGH, declare that the thesis, which I hereby submit for the degree PHILOSOPHIAE DOCTOR at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

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## TABLE OF CONTENTS

<b>Abstract</b> .....	viii
<b>Index to species and infraspecific names</b> .....	ix
<b>Chapter 1 Introduction</b>	
1.1 Background .....	1
1.2 Geographical range of <i>Hypoxis</i> .....	1
1.3 Generic nomenclature .....	3
1.4 Hypoxidaceae and its classification .....	3
1.5 Economic significance.....	4
1.6 Taxonomic difficulties.....	4
1.7 Study objectives .....	5
1.8 Lay-out of thesis .....	6
<b>Chapter 2 Taxonomic History</b>	
2.1 Introduction .....	7
2.2 Taxonomic position of the Hypoxidaceae .....	7
2.3 History of <i>Hypoxis</i> .....	10
2.4 Generic affinities in Hypoxidaceae.....	15
2.5 Conclusions .....	17
<b>Chapter 3 Ethnobotany of Hypoxidaceae</b>	
3.1 Introduction .....	21
3.2 Hype around <i>Hypoxis</i> .....	22
3.3 Economically useful members in the Hypoxidaceae .....	22
3.4 Hypoxoside .....	25
3.5 Commercially available products from rhizomes of <i>Hypoxis</i> .....	36
3.6 <i>Hypoxis</i> species as a source of fibre.....	38
3.7 Other uses of <i>Hypoxis</i> .....	40
3.8 What South Africa needs? .....	41
3.9 Conclusions .....	42

## Chapter 4 Materials and methods

4.1	Introduction .....	43
4.2	Field studies .....	43
4.3	Herbarium studies .....	43
4.3.1	Morphological data .....	44
4.3.2	Distribution data.....	45
4.4	Anatomical studies	
4.4.1	Leaves .....	45
4.4.2	Pollen.....	47
4.4.3	Seeds .....	48
4.5	Phytochemical studies .....	48

## Chapter 5 Vegetative morphology

5.1	Introduction .....	50
5.2	Combination of characters used in previous studies on African <i>Hypoxis</i> .....	51
5.3	Taxonomic significance of vegetative morphology	
5.3.1	Growth form .....	52
5.3.2	Roots .....	54
5.3.3	Rhizome .....	54
5.3.3.1	Structure and terminology .....	54
5.3.3.2	Shape .....	59
5.3.3.4	Sap .....	59
5.3.4	Tunic .....	61
5.3.5	Cataphylls .....	62
5.3.6	Leaves .....	62
5.3.6.1	Maturation .....	63
5.3.6.2	Arrangement .....	64
5.3.6.3	Shape .....	68
5.3.6.4	Colour .....	72
5.3.6.5	Length and width .....	74
5.3.6.6	Venation .....	75
5.3.6.7	Texture .....	76
5.3.7	Leaf indumentum .....	78
5.3.7.1	Distribution and density of hairs .....	79

5.3.7.2	Hair type .....	81
5.3.7.3	Shape of hair arms .....	86
5.3.7.4	Position of arms relative to the leaf surface .....	87
5.3.7.5	Colour of hairs .....	87
5.3.7.6	Difficulty in using leaf hair characters in <i>Hypoxis</i> .....	87
5.3.7.7	Possible function of hairs .....	88
5.4	Conclusions .....	88

## Chapter 6 Leaf anatomy

6.1	Introduction .....	89
6.2	Literature review .....	89
6.2	Results	
6.2.1	Leaf surface details .....	97
6.2.2	Internal anatomy of leaf (as seen in transverse section) .....	102
6.2.3	Anatomical characters of taxonomic value .....	102
6.3	Conclusions .....	121

## Chapter 7 Flower and fruit morphology

7.1	Introduction .....	122
7.2	Taxonomic significance of floral characters	
7.2.1	Scape .....	123
7.2.2	“Flower bearing axis” (Inflorescence).....	123
7.2.3	Flowers .....	127
7.2.3.1	Bracts .....	129
7.2.3.2	Pedicels .....	129
7.2.3.3	Tepals .....	130
7.2.3.4	Stamens .....	131
7.2.3.5	Pollen .....	132
7.2.3.6	Gynoecium .....	134
7.4	Fruit .....	135
7.5	Seed .....	138
7.6	Conclusions .....	138

## Chapter 8 Phytochemistry

8.1	Introduction .....	139
8.2	Material and methods .....	139
8.3	Results .....	140
8.4	Discussion .....	146
8.5	Conclusions .....	148

## Chapter 9 Geographic distribution and ecology

9.1	Introduction .....	150
9.2	Global distribution of <i>Hypoxis</i> .....	151
9.3	Distribution of <i>Hypoxis</i> in Africa	
9.3.1	Continental distribution .....	153
9.3.2	Distribution of species in southern Africa .....	159
9.4	Centres of diversity .....	164
9.5	Ecology .....	167
9.6	Pollination and seed dispersal .....	173
9.7	Origin and radiation of <i>Hypoxis</i> in Africa .....	174
9.8	Conclusions .....	177

## Chapter 10 General discussion

10.1	Introduction .....	178
10.2	Synopsis of outcomes	
10.2.1	Revision of <i>Hypoxis</i> in southern Africa .....	179
10.2.2	Infrageneric groupings for southern African <i>Hypoxis</i> .....	179
10.2.3	Data from leaf anatomy, rhizome chemistry and seed micromorphology .....	180
10.2.4	<i>Hypoxis</i> species of uncertain taxonomic status.....	183
10.3	Evidence of hybridization, polyploidy and apomixis .....	183
10.3.1	Putative hybrids in southern Africa .....	184
10.3.2	High polymorphism in <i>Hypoxis</i> due to polyploidy .....	185
10.3.3	Role of apomixis in polymorphism .....	189
10.4	Further research in <i>Hypoxis</i> .....	191
10.5	Conclusions .....	192

<b>Chapter 11</b>	<b>Conclusions</b>	193
<b>Chapter 12</b>	<b>Taxonomic treatment</b>	195
	<b>References</b>	342
	<b>Summary</b>	357
	<b>Acknowledgements</b>	359
	<b>Curriculum Vitae</b>	360

## APPENDICES

Papers and manuscripts relating to the study interest

### 1. Scientific contributions

1.1	<i>Hypoxis</i> (Hypoxidaceae) in Africa: list of species and infraspecific names	361
1.2	<i>Hypoxis</i> (Hypoxidaceae) in southern Africa: taxonomic notes	372
1.3	<i>Hypoxis sobolifera</i> Jacq.	378
1.4	<i>Hypoxis nivea</i> sp. nov.	385
1.5	Seed morphology in southern African <i>Hypoxis</i> and its value to taxonomy	393

### 2. Popular contributions

2.1	<i>Hypoxis</i> : yellow stars of horticulture, folk remedies and conventional medicine	411
2.2	<i>Rhodohypoxis</i> : beauty in abundance	414
2.3	Getting to grips in <i>Hypoxis</i>	422

## ABSTRACT

Singh, Y. Systematics of *Hypoxis* L. (Hypoxidaceae) in southern Africa. Department of Plant Science, University of Pretoria. Unpublished thesis. Pages 424, tables 22, figures 117. March 2009. Promoter: Prof. Dr. A.E. van Wyk. **Keywords:** anatomy, descriptions, *Hypoxis*, key, morphology, phytochemistry, phytogeography, seed surface, taxonomy.

*Hypoxis* is a diverse group of perennial geophytic herbs characterised by hairy leaves and yellow (seldom white) star-shaped flowers. The genus comprises about 70 species with a distribution in the warmer parts of all continents except Europe. With one third of the taxa, the Flora of southern Africa region (South Africa, Swaziland, Lesotho, Namibia and Botswana) is the most species rich for the genus world-wide. A taxonomic revision of the genus in southern Africa was undertaken; 28 species are recognised, one, *H. nivea* having been newly described. Morphological data were gathered through field observations and specimens kept in cultivation as well as herbarium specimens. Habit, leaf dimensions, inflorescence type and distribution of hairs on leaves were found to provide reliable diagnostic characters for species separation. These characters in combination with geographical distribution patterns were applied in drawing up a key to species in the Flora of southern Africa region. The treatment also includes brief notes on diagnostic characters and relationships, distribution and ecology, etymology, red data status and common names for each taxon. Nine species are data deficient due to insufficient collections or type specimens still to be located, and remain unresolved. Evidence from vegetative anatomy, seed micromorphology and preliminary phytochemistry were used to test possible phylogenetic relationships among species inferred from macromorphology. A few members of the southern African *Hypoxis* are of medicinal importance as their rhizomes are a rich source of hypoxoside which in its hydrolysed form has been shown to inhibit the growth of some cancer cells. Based largely on a literature survey, a review of the ethnobotany of the Hypoxidaceae, denoting the food, medicinal and magical value of members of the family is also offered.

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## INDEX TO SPECIES AND INFRASPECIFIC TAXA

Accepted names are in **bold italics**; synonyms in *italics*  
Page numbers refer to main entry in taxonomic treatment

<b><i>H. acuminata</i></b> Baker .....	209
<b><i>H. angustifolia</i></b> Lam. ....	250
<b><i>H. angustifolia</i></b> Lam. <b>var. <i>angustifolia</i></b> .....	250
<b><i>H. angustifolia</i></b> Lam. <b>var. <i>buchananii</i></b> Baker.....	251
<b><i>H. argentea</i></b> Harv. ex Baker .....	236
<b><i>H. argentea</i></b> Harv. ex Baker <b>var. <i>argentea</i></b> .....	237
<b><i>H. argentea</i></b> Harv. ex Baker <b>var. <i>sericea</i></b> Baker .....	238
<i>H. biflora</i> Baker = <b><i>H. angustifolia</i></b> Lam. ....	249
<i>H. brevifolia</i> Baker = <b><i>H. parvula</i></b> <b>var. <i>parvula</i></b> .....	254
<i>H. arnottii</i> Baker = <b><i>H. rigidula</i></b> <b>var. <i>pilosissima</i></b> .....	208
<i>H. caespitosa</i> Baker = <b><i>H. filiformis</i></b> .....	244
<i>H. canescens</i> Fisch. = <b><i>H. sobolifera</i></b> <b>var. <i>sobolifera</i></b> .....	227
<b><i>H. colchicifolia</i></b> Baker .....	202
<i>H. cordata</i> Nel = <b><i>H. rigidula</i></b> <b>var. <i>rigidula</i></b> .....	207
<b><i>H. costata</i></b> Baker .....	223
<i>H. dinteri</i> Nel = <b><i>H. argentea</i></b> <b>var. <i>sericea</i></b> .....	238
<i>H. distachya</i> Nel = <b><i>H. colchicifolia</i></b> .....	202
<i>H. dregei</i> (Baker) Nel = <b><i>H. filiformis</i></b> .....	244
<i>H. ecklonii</i> Baker = <b><i>H. floccosa</i></b> .....	242
<i>H. elata</i> Hook.f. non Schult.f., nom illeg. = <b><i>H. hemerocallidea</i></b> .....	214
<i>H. elliptica</i> Nel = <b><i>H. rigidula</i></b> <b>var. <i>rigidula</i></b> .....	207
<b><i>H. filiformis</i></b> Baker .....	244
<b><i>H. flanaganii</i></b> Baker .....	240
<b><i>H. floccosa</i></b> Baker .....	242
<b><i>H. gerrardii</i></b> Baker .....	234
<b><i>H. galpinii</i></b> Baker .....	204
<i>H. gilgiana</i> Nel = <b><i>H. colchicifolia</i></b> .....	202
<b><i>H. hemerocallidea</i></b> Fisch., C.A. Mey. & Avé-Lall. ....	214
<b><i>H. interjecta</i></b> Nel .....	221
<i>H. iridifolia</i> Baker = <b><i>H. obtusa</i></b> .....	217
<i>H. junodii</i> Baker = <b><i>H. gerrardii</i></b> .....	234
<b><i>H. kraussiana</i></b> Buchinger .....	243
<i>H. krebsii</i> Fisch. = <b><i>H. sobolifera</i></b> <b>var. <i>sobolifera</i></b> .....	227
<i>H. lanata</i> Eckl. ex Baker = <b><i>H. stellipilis</i></b> .....	220

<i>H. lata</i> Nel = <i>H. angustifolia</i> var. <i>angustifolia</i> .....	250
<i>H. latifolia</i> Hook. = <i>H. colchicifolia</i> .....	202
<i>H. limicola</i> B.L. Burtt = <i>H. parvula</i> var. <i>parvula</i> .....	255
<b><i>H. longifolia</i></b> Baker ex Hook.f. ....	211
<i>H. longifolia</i> Baker var. <i>thunbergii</i> Baker = <i>H. longifolia</i> .....	211
<b><i>H. ludwigii</i></b> Baker .....	212
<b><i>H. membranacea</i></b> Baker .....	253
<i>H. microsperma</i> Avé-Lall. = <i>H. villosa</i> .....	229
<b><i>H. multiceps</i></b> Buchinger .....	225
<i>H. neliana</i> Schinz = <i>H. kraussiana</i> .....	243
<i>H. nitida</i> I. Verd. = <i>H. obtusa</i> .....	217
<b><i>H. nivea</i></b> Y. Singh .....	247
<i>H. obconica</i> Nel = <i>H. hemerocallidea</i> .....	214
<b><i>H. obliqua</i></b> Jacq. ....	231
<i>H. obliqua</i> Jacq. var. <i>woodii</i> (Baker) Nel = <i>H. angustifolia</i> var. <i>buchananii</i> .....	251
<i>H. oblonga</i> Nel = <i>H. rigidula</i> var. <i>rigidula</i> .....	207
<b><i>H. obtusa</i></b> Burch. ex Ker Gawl. ....	217
<i>H. obtusa</i> Burch. ex Ker Gawl. var. <i>chrysotricha</i> Nel = <i>H. obtusa</i> .....	217
<i>H. oligotricha</i> Baker = <i>H. colchicifolia</i> .....	202
<i>H. pannosa</i> Baker = <i>H. sobolifera</i> var. <i>pannosa</i> .....	228
<b><i>H. parvifolia</i></b> Baker .....	239
<b><i>H. parvula</i></b> Baker .....	255
<b><i>H. parvula</i></b> Baker var. <i>parvula</i> .....	255
<b><i>H. parvula</i></b> Baker var. <i>albiflora</i> B.L.Burtt .....	255
<i>H. patula</i> Nel = <i>H. hemerocallidea</i> .....	214
<i>H. pretoriensis</i> Goossens quoad. specimen <i>Goossens 91</i> , nom. nud. = <i>H. interjecta</i> .....	221
<b><i>H. rigidula</i></b> Baker .....	206
<i>H. rigidula</i> Baker var. <i>hemerocallidea</i> (Fisch., C.A.Mey. & Avé-Lall) Heideman nom. nud. = <i>H. rigidula</i> var. <i>rigidula</i> .....	207
<b><i>H. rigidula</i></b> Baker var. <i>pilosissima</i> Baker .....	208
<b><i>H. rigidula</i></b> Baker var. <i>rigidula</i> .....	207
<i>H. rooperi</i> T. Moore = <i>H. hemerocallidea</i> .....	214
<i>H. rooperi</i> T. Moore var. <i>forbesii</i> Baker = <i>H. hemerocallidea</i> .....	214
<i>H. scabra</i> Lodd. = <i>H. villosa</i> .....	229
<i>H. sericea</i> Baker = <i>H. argentea</i> var. <i>sericea</i> .....	238
<i>H. sericea</i> Baker var. <i>dregei</i> Baker pro parte quoad specim. <i>Drège 8525</i> = <i>H. argentea</i> var. <i>sericea</i> ...	238
<i>H. sericea</i> Baker var. <i>flaccida</i> Baker = <i>H. argentea</i> var. <i>sericea</i> .....	238
<i>H. sobolifera</i> Jacq. var. <i>accedens</i> Nel = <i>H. sobolifera</i> var. <i>sobolifera</i> .....	227

<i>H. sobolifera</i> Jacq. ....	226
<i>H. sobolifera</i> Jacq. Baker var. <i>pannosa</i> (Baker) Nel .....	228
<i>H. sobolifera</i> Jacq. Baker var. <i>sobolifera</i> .....	227
<i>H. stellipilis</i> Ker Gawl. ....	220
<i>H. stricta</i> Nel = <i>H. galpinii</i> .....	204
<i>H. tetramera</i> Hilliard & B.L.Burt .....	246
<i>H. tomentosa</i> Lam. = <i>H. villosa</i> .....	229
<i>H. villosa</i> L.f. ....	229
<i>H. villosa</i> L.f. var. <i>canescens</i> (Fisch.) Baker = <i>H. sobolifera</i> var. <i>sobolifera</i> .....	227
<i>H. villosa</i> L.f. var. <i>fimbriata</i> Nel = <i>H. villosa</i> .....	229
<i>H. villosa</i> L.f. var. <i>obliqua</i> (Jacq.) Baker = <i>H. obliqua</i> .....	231
<i>H. villosa</i> L.f. var. <i>pannosa</i> (Baker) Baker = <i>H. sobolifera</i> var. <i>pannosa</i> .....	228
<i>H. villosa</i> L.f. var. <i>scabra</i> (Lodd.) Baker = <i>H. villosa</i> .....	230
<i>H. villosa</i> L.f. var. <i>sobolifera</i> (Jacq.) Baker = <i>H. sobolifera</i> var. <i>sobolifera</i> .....	227
<i>H. volkmanniae</i> Dinter = <i>H. rigidula</i> .....	207
<i>H. woodii</i> Baker = <i>H. angustifolia</i> var. <i>buchananii</i> .....	251
<i>H. zeyheri</i> Baker .....	233
<i>H. zululandensis</i> S.E. Wood non. nud. = <i>H. longifolia</i> .....	211

### Species insufficiently known

<i>H. beyrichii</i> Nel .....	256
<i>H. exaltata</i> Nel .....	256
<i>H. jacquinii</i> Baker .....	256
<i>H. longipes</i> Baker .....	256
<i>H. mollis</i> Baker .....	257
<i>H. nigricans</i> Baker .....	257
<i>H. sagittata</i> Nel .....	257
<i>H. setosa</i> Baker .....	257
<i>H. uniflorata</i> Markötter .....	257