

easy
identification
of

AQUATIC PLANTS

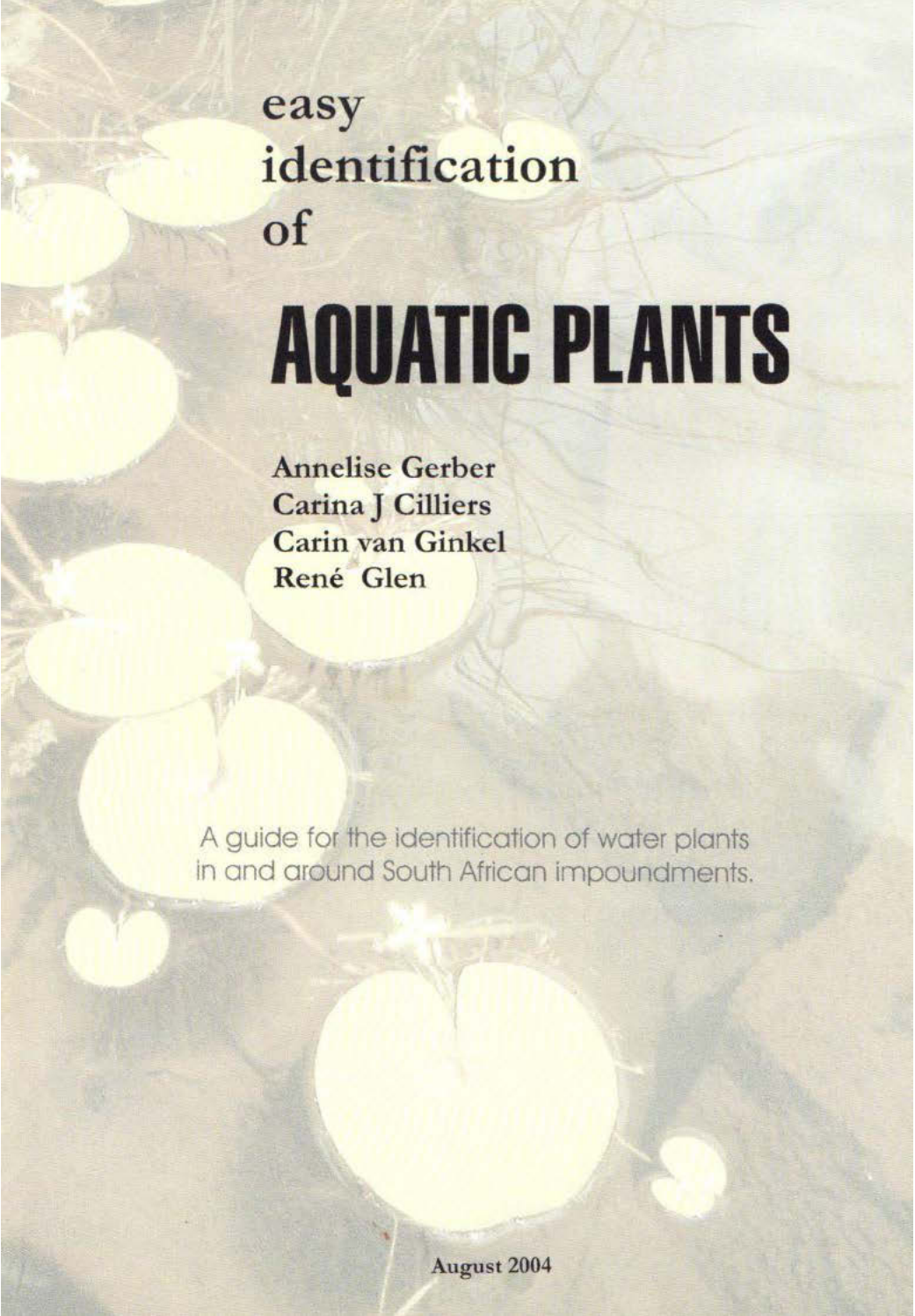
A guide for the identification of water plants
in and around South African impoundments.

August 2004

Annelise Gerber
Carina J Cilliers
Carin van Ginkel
René Glen







easy
identification
of

AQUATIC PLANTS

**Annelise Gerber
Carina J Cilliers
Carin van Ginkel
René Glen**

A guide for the identification of water plants
in and around South African impoundments.

August 2004

EASY IDENTIFICATION OF AQUATIC PLANTS

by

**Annelise Gerber, Carina J Cilliers,
Carin van Ginkel and René Glen**

Copyright © 2004 Department of Water Affairs
All rights reserved.

ISBN: 0-621-35113-X

This publication is available from:

Director; Resource Quality Services (RQS)
Department of Water Affairs and Forestry
Private Bag X 313
Pretoria
0001

Tel 012 808 9500
Fax 012 808 2702

or

Annelise Gerber
gerbera@dwaf.gov.za



Task team

Carin van Ginkel (Resource Quality Services, Pretoria)
Plant specimens, photographs, text

Dr Carina Cilliers (Envirokonsult, Pretoria)
Expert advice, plant identification

René Glen (Natal Herbarium, National Botanical Institute,
Durban)
Plant identification

Annelise Gerber (Resource Quality Services, Pretoria)
Plant specimens, photographs

Design and layout

Annelise Gerber, Resource Quality Services, Pretoria

Printing and binding

Government Printers, Pretoria

Acknowledgements

National Botanical Institute Pretoria - Distribution maps

Roddy Ward - Photographs of *Spirodella* sp and flowering
Utricularia stellaris

National Botanical Institute - Photographs of *Potamogeton*
thunbergii

Contents

	Page
Background	1
Symbols used in this book	2
Notes on preparation of plant samples for identification	3
Water plants - Free floating <i>Azolla filiculoides</i> , <i>Azolla pinnata</i> , <i>Eichhornia crassipes</i> , <i>Lemna gibba</i> , <i>Pistia stratiotes</i> , <i>Salvinia molesta</i> , <i>Spirodela</i> sp., <i>Wolffia arrhiza</i>	6
Water plants - Floating-leaved, attached <i>Alternanthera philoxeroides</i> , <i>Aponogeton distachyos</i> , <i>Hydrocleys nymphoides</i> , <i>Nymphaea mexicana</i> , <i>N. nouchalla</i> , <i>Nymphoides thunbergiana</i> , <i>Tapa natans</i>	14
Water plants - Submerged <i>Egeria densa</i> , <i>Ceratophyllum demersum</i> , <i>Isolepis fluitans</i> , <i>Lagarosiphon major</i> , <i>L. muscoides</i> , <i>Myriophyllum aquaticum</i> , <i>Najas horrida</i> , <i>Potamogeton crispus</i> , <i>P. pectinatus</i> , <i>P. schweinfurthii</i> , <i>P. thunbergii</i> , <i>Utricularia stellaris</i>	21
Water plants - Emergent, broad leaved <i>Berula erecta</i> , <i>Cyclosorus interruptus</i> , <i>Floscopa glomerata</i> , <i>Ludwigia adscendens</i> subs. <i>diffusa</i> , <i>Limosella maior</i> , <i>Marsilea</i> sp., <i>Nasturtium officinale</i> , <i>Nelumbo nucifera</i> , <i>Persicaria decipiens</i> , <i>P. lapathifolia</i> , <i>P. senegalensis</i> , <i>Plantago longissima</i> , <i>Pontederia cordata</i> , <i>Veronica anagallis-aquatica</i>	34
Water plants - Emergent, narrow leaved <i>Arundo donax</i> , <i>Carex austro-africana</i> , <i>Cladium mariscus</i> , <i>Cyperus dives</i> , <i>C. eragrostis</i> , <i>C. marginatus</i> , <i>C. sexangularis</i> , <i>Eleocharis acutangula</i> , <i>Juncus effusus</i> , <i>J. lomatophyllus</i> , <i>Phragmites australis</i> , <i>P. mauritianum</i> , <i>Prionium serratum</i> , <i>Schoenoplectus brachyceras</i> , <i>S. paludicola</i> , <i>Typha capensis</i>	48
Bibliography	64
Index of names	66
Appendix I	69
Appendix II	72

Background

Eutrophication is the process of excessive nutrient enrichment of waters that typically results in problems associated with aquatic plants, algal and cyanobacterial growth.

In natural lakes a distinction is sometimes made between 'natural' and 'cultural' (anthropogenic) eutrophication processes (e.g. Rast and Thornton (1996)). Natural eutrophication depends only on the local geology and natural features of the catchment. Cultural eutrophication is associated with human activities that accelerate the eutrophication process beyond the rate associated with the natural process (e.g. by increasing nutrient loads into aquatic ecosystems). In South Africa where impoundments are man-made, the conceptual difference between 'natural' and 'cultural' seems less appropriate. Increased nutrient enrichment can arise from both point and non-point sources external to the impoundment as well as internal sources like the impoundment's own sediments (that can release phosphate). Much eutrophication-related monitoring has been done in South Africa over the past three decades. Before the promulgation of the National Water Act No.36 of 1998 there was no legal requirement to assess the degree of eutrophication at a national level. However this act now requires monitoring, recording, assessment and dissemination of information on national water resources. The National Eutrophication Monitoring Programme (NEMP) specifically addresses the monitoring requirement in respect of eutrophication.

The need for an aquatic plant identification manual was identified during the design of the National Eutrophication Monitoring Programme, where the extent of aquatic water plant growth are one of the variables to be monitored. Excessive water plant growth, also of indigenous plants, is an indication of eutrophication and/or habitat disturbance.

The purpose of this field identification manual is to assist NEMP monitors with photographs of the plants, flowers and habitat to identify aquatic water plants for monitoring purposes.

Symbols used in this book



EXOTIC SPECIES



DECLARED WEED



PERMIT REQUIRED



NO TRADE



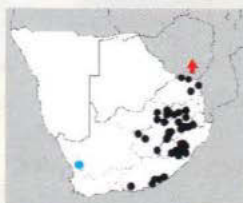
POTENTIALLY TROUBLESOME



NATURALLY BEYOND BORDERS OF AFRICA



INDIGENOUS, NATURALLY IN AFRICA



● NATURAL DISTRIBUTION

● RIVER ESCAPE (not naturally found in the area)

↑ PLANTS CAN BE FOUND IN THE REST OF AFRICA

DISTRIBUTION MAP



FREE FLOATING



FLOATING-LEAVED, ATTACHED



SUBMERGED



EMERGENT, BROAD LEAVED



EMERGENT, NARROW LEAVED

Notes on the preparation of plant samples for identification

Unidentifiable plant specimens can be forwarded to Resource Quality Services (old Institute for Water Quality Studies) for identification, to be verified before any publishing or reporting.

Dry plants between newspaper sheets, make sure to include roots, stems, flowers and seeds. The dried specimen should fit on a sheet 270 x 420 mm leaving an A5 size open in the right hand corner. This space is required to attach a label should it be necessary to forward the specimen to National Botanical Institute for identification.

Submerged waterplants can be put in a plastic jar in the fridge for no more than 2 days. Longer storage needs preservation with a solution made up of ethanol, formalin, glycerine, water and a drop of copper sulphate. (See Appendix I)

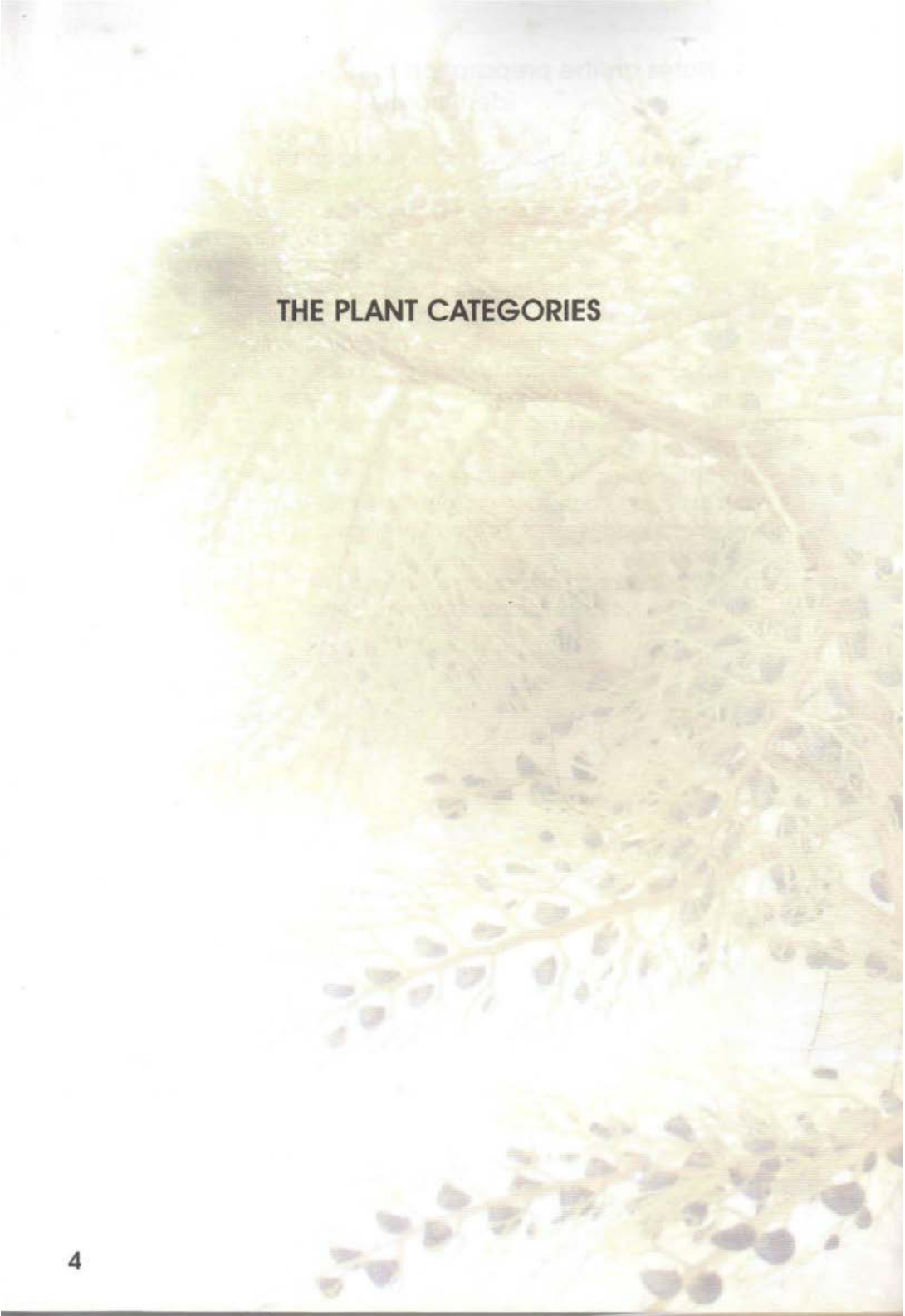
In all cases make sure to include the name of the collector, coordinates if possible or good description of locality. Make notes on where plant grows, what it looks like, height etc. (See field label, Appendix II)

Further reading:

Fish, L. 1999. *Preparing herbarium specimens*.

Available from National Botanical Institute, Pretoria.





THE PLANT CATEGORIES

FREE FLOATING

Plants unattached and float on the surface of the water. May become rooted in mud when water levels drop



FLOATING-LEAVED, ATTACHED

Plants rooted in the substrate with mature leaves floating on the surface of the water



SUBMERGED

Plants rooted in substrate. Leaves can be feathery or linear, mostly submerged. Flowers usually above the



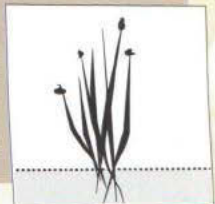
EMERGENT, BROAD LEAVED

Plants are rooted in the substrate with stems, flowers and most mature leaves projecting above or floating on the water surface



EMERGENT, NARROW LEAVED

Plants are rooted in the substrate with modified leaves, reed-like

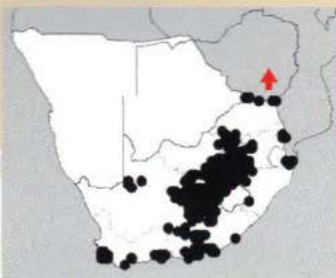




Azolla filiculoides



red water fern
rooiwatervaring

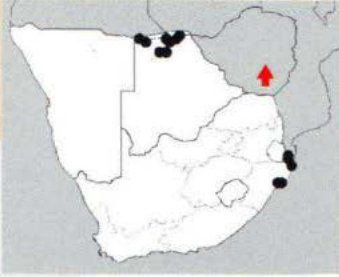




Azolla pinnata



red water fern
rooiwatervaring





Eichhornia crassipes



water hyacinth
waterhiasint

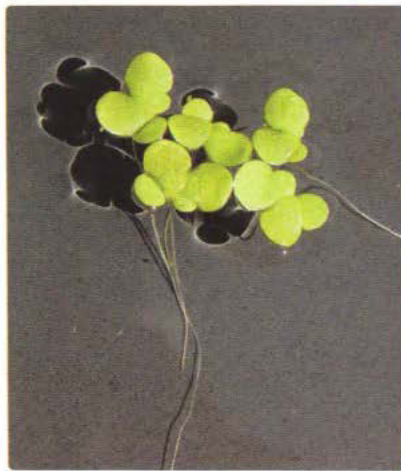




Lemna gibba



duckweed
damslyk



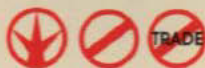
Lemna



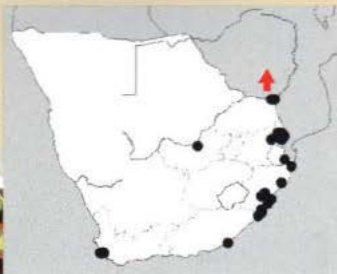
Vier Rivier Spruit, Orkney district



Pistia stratiotes



water lettuce
waterslaai

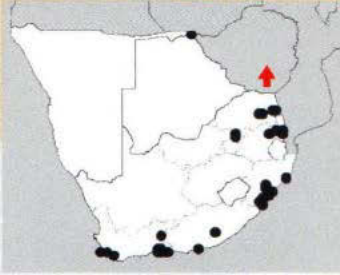




Salvinia molesta



salvinia
watervaring



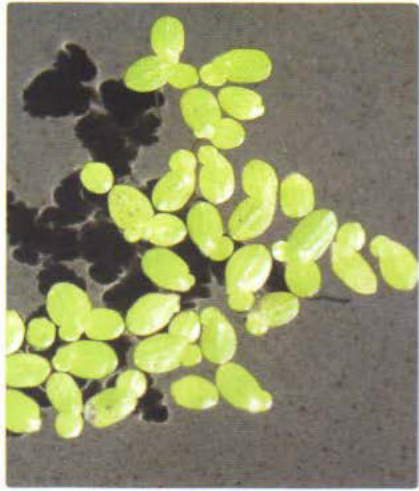
Crocodile river, Komatipoort



Spirodela spp



duckweed
damslyk

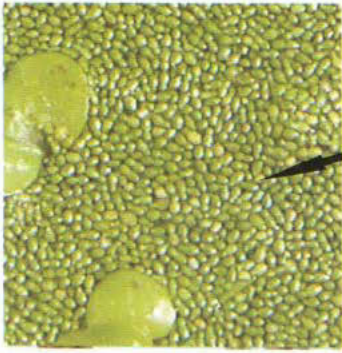
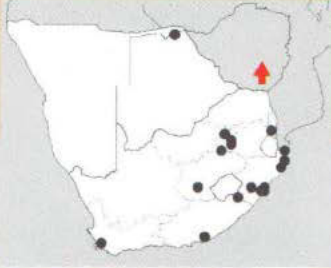


Garden pond, RQS, Roodeplaat



Wolffia arrhiza

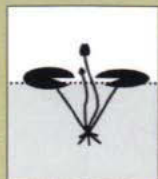
duckweed
damslyk



Wolffia



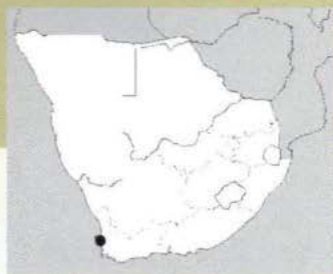
Malanseuns nursery pond, Pretoria North



Alternanthera philoxeroides



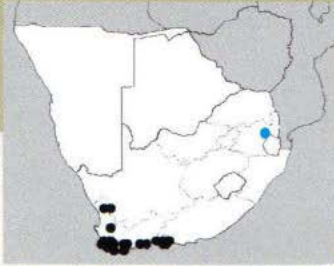
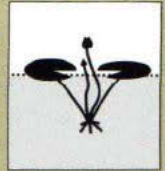
alligator weed





Aponogeton distachyos

cape pond weed
waterblommetjie



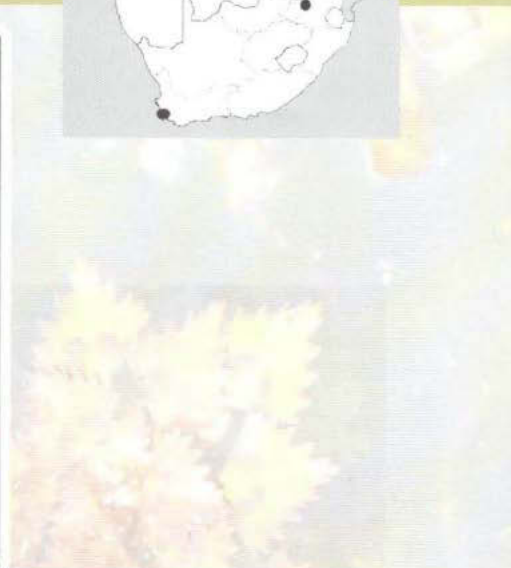
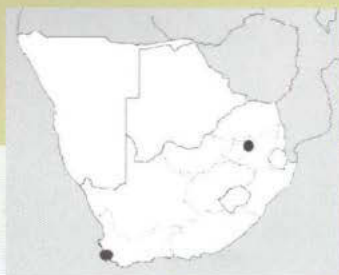
Farm dam, Western Cape



Hydrocleys nymphoides



water poppy
drywende papawer





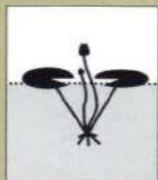
Nymphaea mexicana



yellow water lily
geel waterlelie



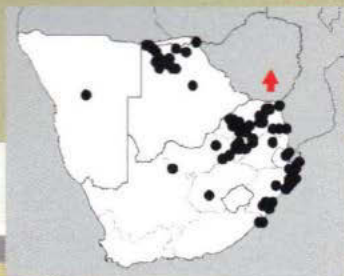
Farm dam, Maschadodorp area



Nymphaea nouchalia var. *coerulea*



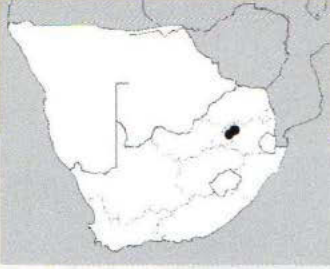
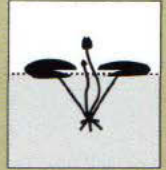
blue water lily
blouwaterlelie



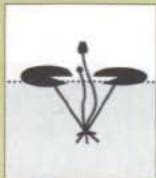


Nymphaea sp.

water lily
waterlelie



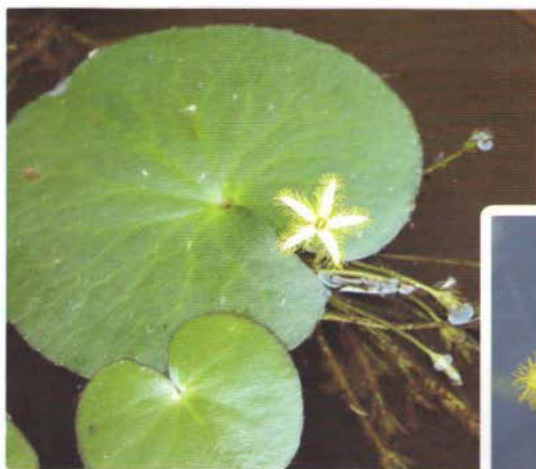
Garden pond, RQS, Roodeplaat



Nymphoides thunbergiana



floating heart
drywende hart





Trapa natans

water chestnut
water kastaiing





Egeria densa



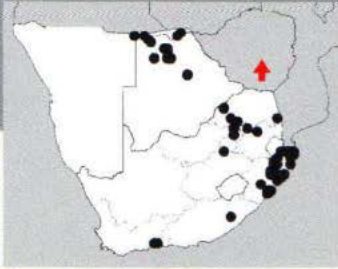
dense water weed
waterpes





Ceratophyllum demersum

water hornwort
waterhoringblaar



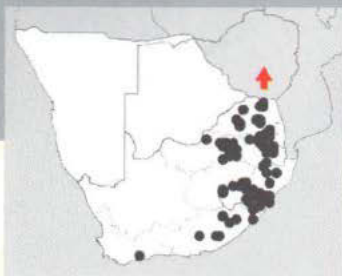
Sokunti Pan, Makatini floodplain



Isolepis fluitans

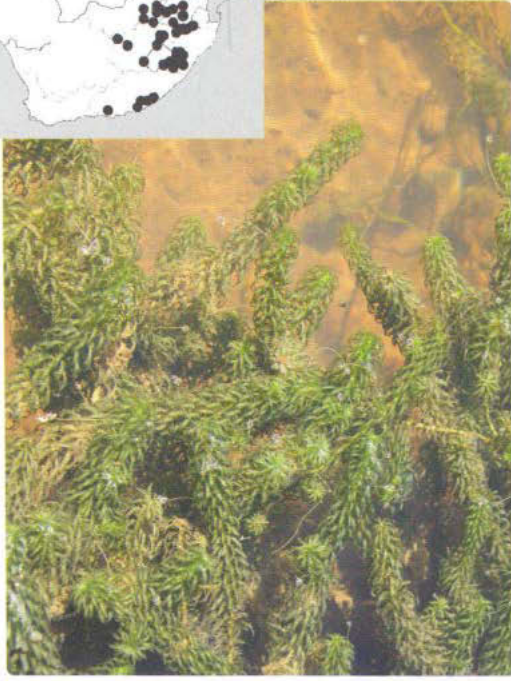


water weed
watergras



I *Lagarasiphon major*

coarse oxygen weed
growwe babergras



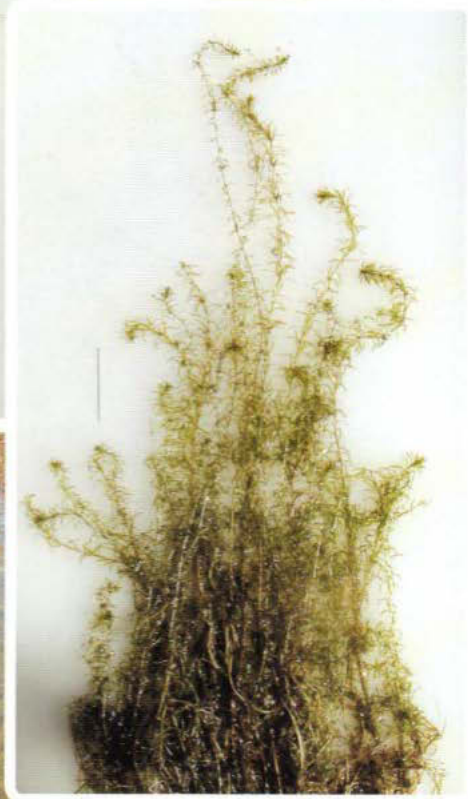
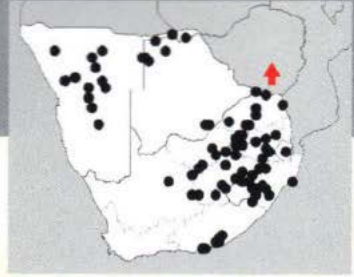
Farm Dam, Mpumalanga



Lagarasiphon muscoides



fine oxygen weed
fyn babergras





Myriophyllum aquaticum



parrot's feather
waterduisendblaar



Farm Dam, Machadodorp area



Najas horrida

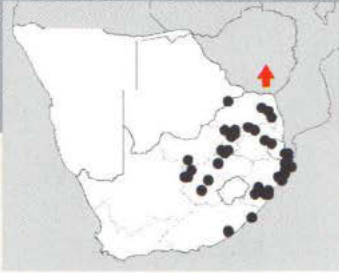


saw weed
watersaagblaar





Potamogeton crispus



curled pondweed
krulblaarfonteinkruid

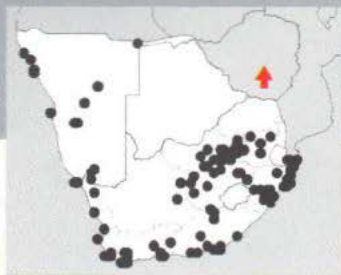




Potamogeton pectinatus



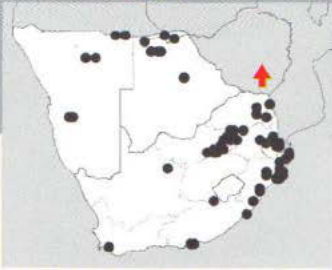
fennel-leaved pondweed
skedefonteinkruid





Potamogeton schweinfurthii

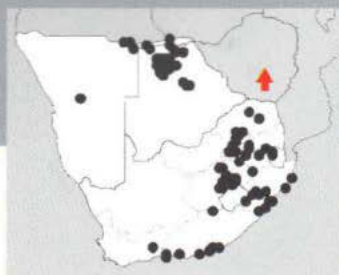
broadleaved pondweed
breëblaar fonteinkruid





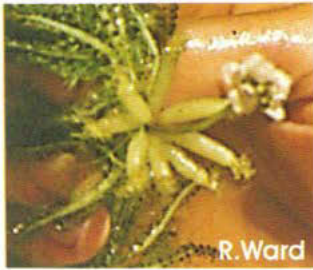
Potamogeton thunbergii

floating pondweed
drywende fonteinkruid



Utricularia stellaris

star bladderwort
sterblasiekruid





Berula erecta



toothache root
tandpynwortel



Cyclosorus interruptus

fern
varieg



Witklip Dam, Mpumalanga



Floscopa glomerata **I**



I

Ludwigia adsendens subsp. *diffusa*

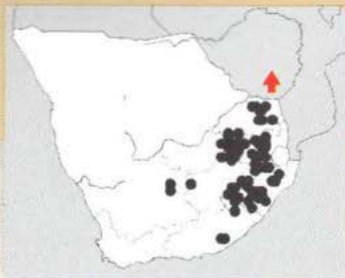
(=*L. stolonifera*)

willow-herb
wilgerkruid





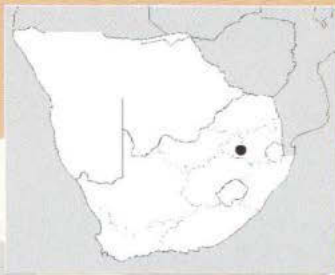
Limosella maior (I)



I *Marsilea* sp.



water clover
waterklawer



Middelburg Dam, Mpumalanga



Nasturtium officinale



watercress
bronkors



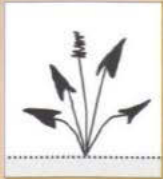


Nelumbo nucifera



lotus
lotus

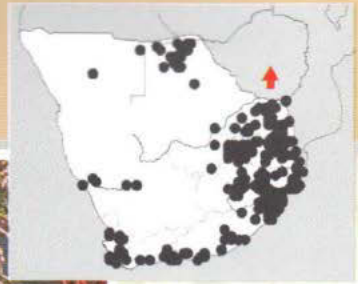




Persicaria decipiens



slender knotweed
slangwortel

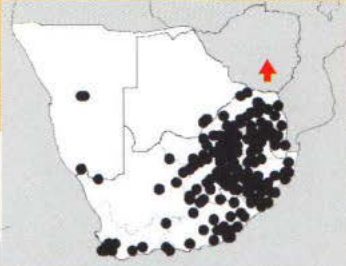




Persicaria lapathifolia



spotted knotweed
hanekam



Farm Dam, Bethal area



Persicaria senegalensis **I**

snakeroot
slangwortel





Plantago longissima

broadleaved plantago
breeblaarplantago





Pontederia cordata



pickerel weed
jongsnoekkruid





Veronica anagallis-aquatica



water speedwell



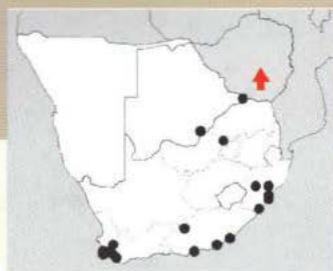
Scheerpoort River, Cradle of Humankind



Arundo donax



giant reed
spaanse riet



Carex austro-africana

rushes
biesie

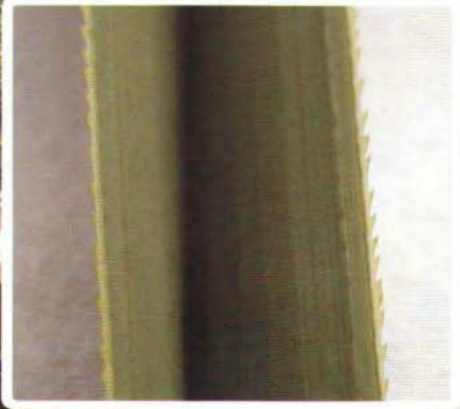
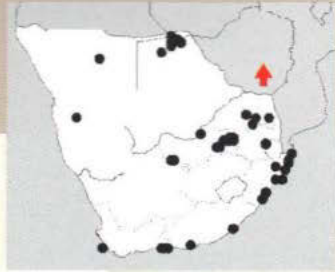


Farm dam, Broederstroom



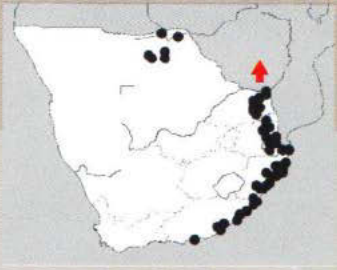
Cladium mariscus* subsp. *jamaicense

saagtandwatergras
sawgrass



Cyperus dives

giant sedge
reuse rietgras



Scheerpoort River



Cyperus eragrostis

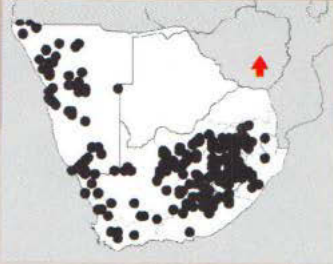


rushes
biesies



Cyperus marginatus

water reed
waterbiesie



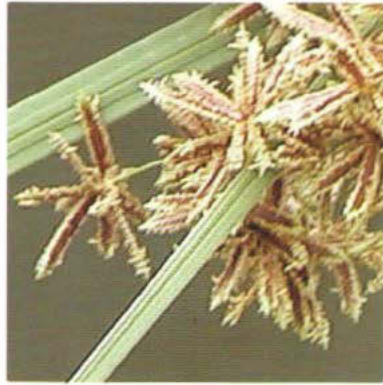
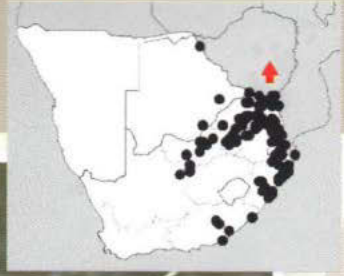
Vaal River at Kimberley



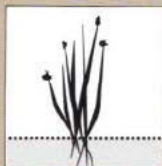
Cyperus sexangularis



matjiesgoed



Eleocharis acutangula



sedge
biesie



Witklip Dam



Juncus effusus

rushes
steekbiesie



Juncus lomatophyllus



leafy juncus
biesies

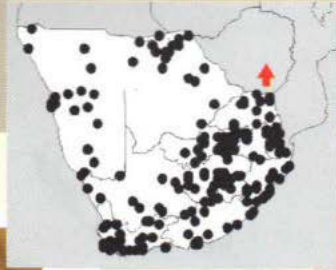




Phragmites australis



common reed
fluitjiesriet



I *Phragmites mauritianum*

thatching reed
dekriet



Sabie River, Kruger National Park.



Prionium serratum



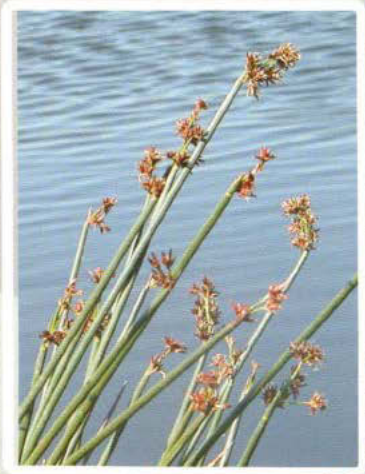
palmiet
palmiet





Schoenoplectus brachyceras

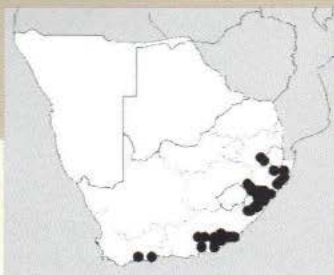
water reed
waterbiesie





Schoenoplectus paludicola **I**

sedge
biesie

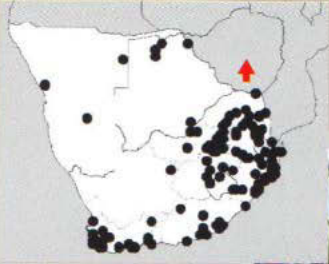




Typha capensis



bullrush
papkuil



Sabie River

BIBLIOGRAPHY

- Cook, C.D.K. 2004. *Aquatic and Wetland Plants of Southern Africa*. Barkhuys Publishers, Leiden.
- Fish, L. 1999. *Preparing herbarium specimens*. Strelitzia series no. 7. National Botanical Institute, Pretoria.
- Henderson, L. & Cilliers, C.J. 2002. *Invasive Aquatic Plants*. ARC plant protection Research Institute, Pretoria, South Africa.
- Pooley, E. 1998. *A Field Guide to Wild Flowers. Kwazulu -Natal and Eastern region*. Natal Flora Publications Trust.
- Sainty, G.R & Jacobs, S.W.L. 1994. *Waterplants in Australia*. Sainty and Associates, Darlinghurst.
- Staff of the Botanical Research Institute. 1980a-r. Farming in South Africa, Water Plants Series W.1-20:
1980a. Water fern (*Azolla filiculoides* Lam.), W.16
1980b. Water hyacinth (*Eichhornia crassipes*(Mart.) Solms), W7
1980c. Kariba weed (*Salvinia molesta* Mitchell), W.8
1980d. Parrot's feather (*Myriophyllum aquaticum* (Vell.) Verdc.), W.9
1980e. Floating pondweed (*Potamogeton thunbergii* Cham. & Schlechtd.) W.1
1980f. Fennel-leaved pondweed (*Potamogeton pectinatus* L.), W.2

- 1980g. Broad-leaved pondweed (*Potamogeton schweinfurthii* A. Benn.). W.4
1980h. Curled pondweed (*Potamogeton crispus* L.). W.15
1980i. Saw-weed (*Najas pectinata* (Parl.) Magnus). W.13
1980j. Water hornwort (*Ceratophyllum demersum* L.). W.17
1980k. Coarse oxygen weed (*Lagarasiphon major* (Ridley) Moss ex wager). W.18
1980l. Fine oxygen weed (*Lagarasiphon muscoides* Harv.). W.19
1980m. Willow-herb (*Ludwigia stolonifera*). W.16
1980n. Blue water lily (*Nymphaea caerulea* Sav.). W.12
1980o. Floating heart (*Nymphoides indica* L. subsp. *occidentalis* A. Raynal). W.14
1980p. Bulrush (*Typha capensis* (Rohrb.) N.E. Br.) W.3
1980q. Duckweed (*Lemna gibba* L.). W.20
1980r. Star bladderwort (*Utricularia stellaris* L.f.). W.10

Van Wyk, B & Malan, S. 1998. *Field Guide to the Wild Flowers of the Highveld*. Struik publishers.

INDEX OF NAMES

- Aponogeton distachyos* 15
Arundo donax 48
Azolla filiculoides 6
Azolla pinnata 7
Berula erecta 34
biesie 49, 52, 55, 57, 62
bladderwort, star 33
blouwaterlelie 18
Alternanthera philoxeroides 14
alligatorweed 14
Egeria densa 22
dense water weed 22
waterpes 22
water weed, dense 22
chestnut, water 21
kastaiing, water 21
blue water lily 18
breëblaarfonteinkruid 31
breëblaarplantago 45
broadleaved plantago 45
broad-leaved pondweed 29
brankors 40
bullrush 63
cape pond weed 15
Carex austro-africana 49
Ceratophyllum demersum 23
Cladium mariscus subsp. jamaicense 50
clover, water 39
coarse oxygen weed 25
common reed 58
curled pondweed 29
Cyclosorus interruptus 35
Cyperus dives 51
Cyperus eragrostis 52
Cyperus marginatus 53
Cyperus sexangularis 54
damslyk 9, 12, 13
dekriet 59
drywende fonteinkruid 32
drywende hart 20
drywende papawer 16
duckweed 9, 12, 13
Eichhornia crassipes 8
Eleocharis acutangula 55
fennel-leaved pondweed 30
fern 35
fine oxygen weed 26
floating heart 20
floating pondweed 32
Floscopa glomerata 36
fluitjiesriet 58
fyn babergras 26
geelwaterlelie 17
giant reed 48
giant sedge 51
growwe babergras 25
hanekam 43
heart, floating 20
hyacinth, water 8
Hydrocleys nymphoides 16
Isolepis fluitans 24
jongsnoekkruid 46
Juncus effusus 56
Juncus lomatophyllus 57

- juncus, leafy 57
 krulblaarfonteinkruid 29
Lagarasiphon major 25
Lagarasiphon muscoides 26
 leafy juncus 57
Lemna gibba 9
 lettuce, water 10
Limosella maior 38
 lotus 41
Ludwigia adsendens subsp. diffusa 37
Ludwigia stolonifera 37
Marsilea sp. 39
 matjiesgoed 54
Myriophyllum aquaticum 27
Najas horrida 28
Nasturtium officinale 40
Nelumbo nucifera 41
Nymphaea mexicana 17
Nymphaea nouchalia var coerulea 18
Nymphaea sp. 19
Nymphaoides thunbergiana 20
 oxygen weed, coarse 25
 oxygen weed, fine 26
 palmiet 60
 papkuil 63
 parrot's feather 27
Persicaria decipiens 42
Persicaria lapathifolia 43
Persicaria senegalensis 44
Phragmites australis 58
Phragmites mauritianum 59
 pickerel weed 46
Pistia stratiotes 10
Plantago longissima 45
 plantago, broadleaved 45
 pondweed, broad-leaved 31
 pondweed, curled 29
 pondweed, fennel-leaved 30
Pontederia cordata 46
 poppy, water 16
Potamogeton crispus 29
Potamogeton pectinatus 30
Potamogeton schweinfurthii 31
Potamogeton thunbergii 32
Prionium serratum 60
 red water fern 6, 7
 reed, common 58
 reed, giant 48
 pondweed, floating 32
 reed, water 61
 reed, thatching 59
 reuse rietgras 51
 riet, spaanse 48
 rietgras, reuse 51
 rooiwatervaring 6, 7
 root, snake 44
 root, toothache 34
 rush 49, 52, 56
 saagtandwatergras 50
 salvinia 11
Salvinia molesta 11
 saw weed 28
 sawgrass 50
Schoenoplectus brachyceras 61

- Schoenoplectus paludicola* 62
 sedge 55, 62
 sedge, giant 51
 skedefonteinkruid 30
 slangwortel 42, 44
 slender knotweed 42
 snake root 44
 spaanse riet 48
Spirodela spp 12
 spotted knotweed 43
 star bladderwort 33
 steekbiesie 56
 sterblasiekruid 33
 tandpynwortel 34
 thatching reed 59
 toothache root 34
Trapa natans 21
Typha capensis 63
Utricularia stellaris 33
 varing 35
Veronica anagallis-aquatica 47
 water chestnut 21
 water clover 39
 water fern, red 6, 7
 water hornwort 23
 water hyacinth 8
 water kastaiing 21
 water lettuce 10
 water lily 19
 water poppy 16
 water reed 53, 61
 water speedwell 47
 water weed 24
 waterbiesie 53, 61
 waterblommetjie 15
 watercress 40
 waterduisendblaar 27
 watergras 24
 waterhiasint 8
 waterhoringblaar 23
 waterklawer 39
 waterlelie 19
 waterlily, blue 18
 waterlily, yellow 17
 watersaagblaar 28
 waterslaai 10
 watervaring 11
 weed, cape pond 14
 weed, pickerel 46
 weed, saw 28
 weed, water 24
 wilgerkruid 37
 willow-herb 37
Wolffia arrhiza 13
 yellow water lily 17

APPENDIX 1

Solution for the preservation of aquatic plants

The following solution can be used to preserve water plant specimens. Most of the specimens will retain their original color.

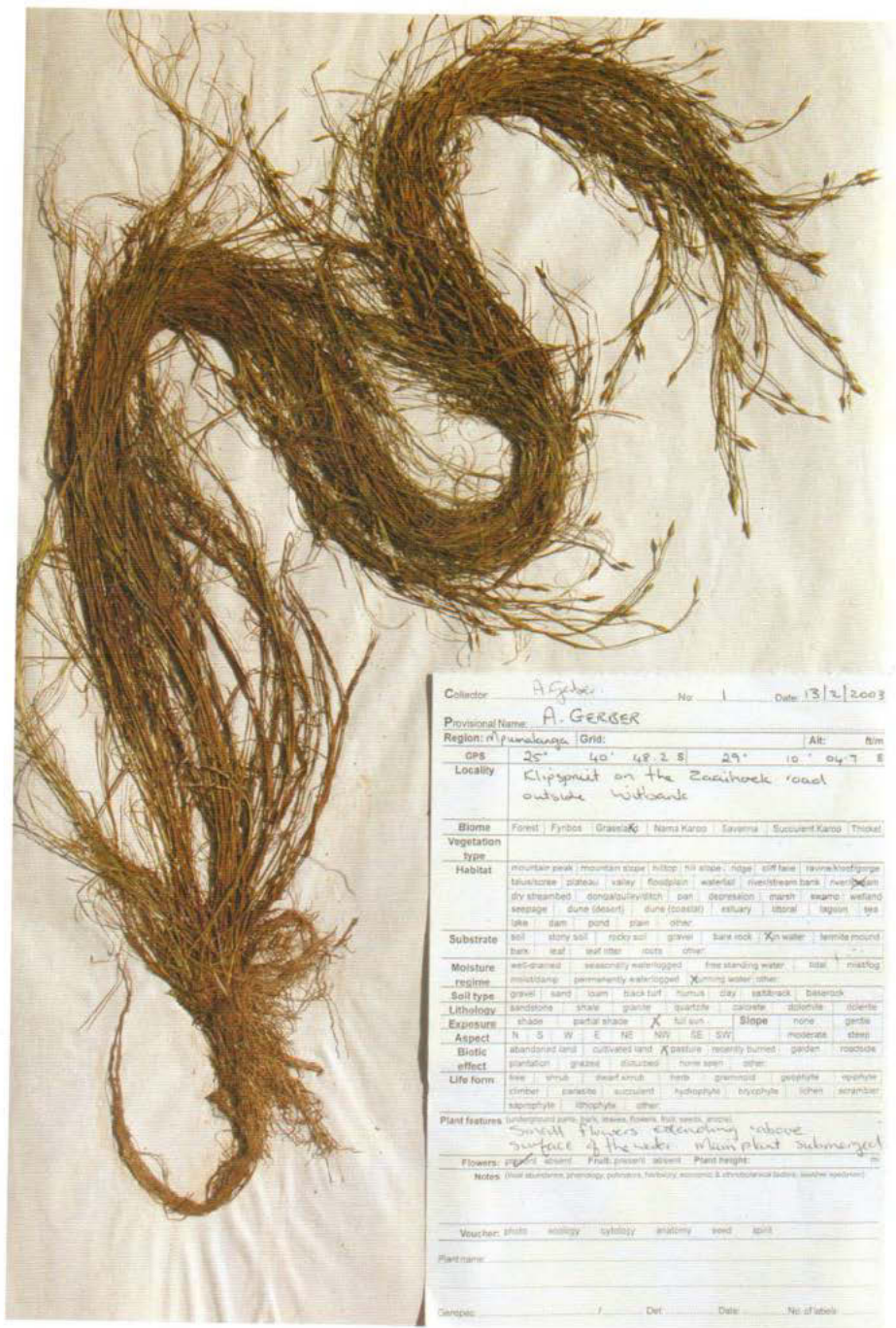
1140 ml water
580 ml ethanol
180 ml formalin
100 ml glyserine
copper sulphate

Mix all the ingredients together. Add a little bit of copper sulphate until the mixture turns pale blue.



APPENDIX 2

Factsheet required by NBI for
identification of plants



Collector: A. Gerber No. 1 Date: 13/2/2003

Provisional Name: A. GERBER

Region: n1 Fumalanga Grid: _____ Alt: Alt

GPS: 25° 40' 48.2 S 29° 10' 04.7 E

Locality: Klipfontein on the Zaaihoek road
outside Witbank

Biome: Forest Fynbos Grassland Nama Karoo Savanna Succulent Karoo Thicket

Vegetation type: _____

Habitat: mountain peak mountain slope hilltop hill slope ridge cliff face savanna/woodgrange tall forest plateau valley floodplain waterbed river/stream bank riverbed dry streambed donga/valley/sitch pan depression marsh swamp wetland seepage dune (desert) dune (coastal) estuary littoral lagoon sea lake dam pond stream other _____

Substrate: soil stony soil rocky soil gravel bare rock X₂ water terrile mound bank leaf leaf litter roots other _____

Moisture regime: well-drained seasonally waterlogged free standing water tidal mistfog moist/damp permanently waterlogged running water other _____

Soil type: gravel sand loam black turf humus clay silt/clay laterite

Lithology: sandstone shale granite quartzite concrete dolomite dolerite

Exposure: shade partial shade full sun _____ Slope: none gentle steep

Aspect: N S W E NE NW SE SW _____

Biotic effect: abandoned land cultivated land pasture recently burned garden roadside

Life form: granitic grasses dicotyledon fern fern other _____

Plant features: Underground parts: rhiz, stems, flowers, fruit, seeds, achenes
Small flowers extending above surface of the water. Main plant submerged

Flowers: present absent fruit present absent plant height: _____

Notes: (Use for abundance, phenology, pubescence, herbaceous, economic & ethno-botanical data, seedling specimen)

Voucher: photo ecology cytology anatomy seed leaf

Plant name: _____

Genetic: _____ Det. _____ Date: _____ No. of labels: _____

Collector: No: Date:

Provisional name:

Region:	Grid:						Alt:	ft/m	
GPS	S						E		
Locality									
Biome	Forest	Fynbos	Grassland	Nama Karoo	Savanna	Succulent Karoo	Thicket		
Vegetation Type									
Habitat	mountain peak	mountain slope	hilltop	hill slope	ridge	cliff face	ravine/kloof/gorge		
	talus/scree	plateau	valley	floodplain	waterfall	river/stream bank	river/stream		
	dry streambed	donga/gully/ditch	pan	depression	marsh	swamp	wetland		
	seepage	dune (desert)	dune (coastal)	estuary	littoral	lagoon	sea		
	lake	dam	pond	plain	other:				
Substrate	soil	stony soil	rocky soil	gravel	bare rock	in water	termite mound		
	bark	leaf	leaf litter	roots	other:				
Moisture regime	well-drained	seasonally waterlogged			free standing water		tidal	mist/fog	
	moist/damp	permanently waterlogged			running water		other:		
Soil type	gravel	sand	loam	black turf	humus	clay	salt/brack	baserock	
Lithology	sandstone	shale	granite	quartzite	calcrete	dolomite	dolerite		
Exposure	shade	partial shade		full sun		Slope	none	gentle	
Aspect	N	S	W	E	NE	NW	SE	SW	
							moderate	steep	
Biotic effect	abandoned land		cultivated land		pasture		recently burned	garden	roadside
	plantation		grazed	disturbed	none seen		other:		
Life form	tree	shrub	dwarf shrub	herb	graminoid	geophyte	epiphyte		
	climber	parasite	succulent	hydrophyte	bryophyte	lichen	scrambler		
	saprophyte		lithophyte	other:					

Plant features (underground parts, bark, leaves, flowers, fruit, seeds, aroma)

Flowers: present absent **Fruit:** present absent **Plant height:** m

Notes (local abundance, phenology, pollinators, herbivory, economic & ethnobotanical factors, voucher specimen)

Voucher: photo ecology cytology anatomy seed spirit

Plant name:

Genspec: / Det: Date: No. of labels:

