SANBI POLICY DOCUMENT

DIVISION: Biosystematics Research and Biodiversity Collections	POLICY NUMBER: A3
EFFECTIVE DATE: 1 June 2014	LAST AMENDED: 5 May 2014

COLLECTION AND PREPARATION OF HERBARIUM SPECIMENS

Background

Plants are collected for herbaria so that they may be preserved for future study. The scientific data contained in herbarium specimens are required for taxonomic revisions of certain groups, writing of field guides and the analysis of the flora and vegetation of a region. Therefore, the purpose of the preserved specimen and its accompanying label is to give maximum possible useful information about the plant in its living state.

Policy

Herbarium and project staff in SANBI are required to collect, prepare and submit specimens to at least one of the three herbaria: the National, Compton or KwaZulu-Natal Herbarium. These herbaria also accept specimens from non SANBI collectors like para-taxonomists and university researchers. The purpose of this policy is to provide guidelines on collecting and preparing specimens for incorporation into the SANBI Collection.

Process

Fish (1999) and Victor *et al*. (2004) describe and illustrate in detail the process of collecting and preparing plants, as well as their temporary preservation in the field. These authors also bring attention to special techniques and methods required for certain groups of plants. Please consult these books and follow the processes and procedures stipulated therein. The full references are given below:

FISH, L. 1999. Preparing herbarium specimens. *Strelitzia* 7: 4–44.

VICTOR, J., KOEKEMOER, M., FISH, L., SMITHIES, S. & MÖSSMER, M. 2004. *Herbarium Essentials: the southern African herbarium user manual*. SABONET Report No. 25. SABONET, Pretoria.

A summary of the procedures for collecting and preparing specimens is provided in ADDENDUM 1 under the following headings:

1. Collecting
2. Pressing
3. Drying
4. Mounting
5. Filing
6. Supply of collecting equipment

For further reading, you may consult:

BRIDSON, D. & FORMAN, L. (eds) 2010. *The herbarium handbook*, 3rd edition: 104, 105. Royal Botanic Gardens, Kew.

TRUSTEES OF THE BRITISH MUSEUM (NATURAL HISTORY). 1965. *Instructions for Collections. Book. 10: Plants*. Grosvenor Press, Portsmouth.

ADDENDUM 1

When collecting specimens, the collector should have in mind:

1. the procuring of the material required in as complete and as perfect a state as possible;
2. the form in which it is to be eventually preserved in a herbarium.

1. Collecting

In the field, specimens are carefully selected as representative samples of the population. Collection should never have a detrimental effect on the population viability. Normally they are in flower and/or fruit. Underground parts of herbaceous plants are often diagnostic and should be dug up with a geological pick, hand spade or hand pick.

A field label (see example on page 4) or collector's notebook is filled in to record the collector number, date, location (country, province, suburb, farm, latitude/longitude, elevation, slope, etc.), and habitat for each collection with notes where possible on associated species and on plant features like flower colour and smell, often lost in drying or otherwise not evident after pressing (e.g., habit, height, etc.). It is mandatory that adequate information is provided to ensure the specimen is of scientific value to the collection and database.

Select plant parts can be placed in spirit material or in silica gel for DNA analyses (refer to Policy A2).

2. Pressing

The plant is pressed as soon as possible for best results. If a field press is not used, the material is placed in a plastic bag and pressed as soon as possible.

Preparation of a specimen for pressing includes removal of soil from roots and judicious pruning of superfluous leaves, etc., without destroying parts necessary for identification. A herbarium specimen should fit roughly half a printed page of newspaper of large format (*The Argus*, *The Mercury*, *The Star*) or a whole page of newspapers with small format (*The Citizen*, *Isolezwe*, *The Mail and Guardian*). Newsprint paper (flimsies) of similar size, instead of newspaper may also be used for pressing. Plants that are longer should be bent accordion-style (V-, N-, or W-shaped, etc.). Some leaves are turned over so both surfaces are displayed on the dried specimen. Extra flowers and/or fruits are included where possible. The collector's number corresponding to the number in the collecting notebook is written on the sheet. A jeweller's tag with the collector's number can also be attached to the specimen. This is often used when the specimen is a voucher for another, similarly marked collection (e.g. seed collections).

After the plant(s) is positioned in the newspaper, it is placed between cardboard (450 × 280 mm), with corrugations running along the short dimension which serve as ventilators. The resulting pile of newspapers and cardboard is placed between press frames, a 450 × 280 mm lattice of wood or metal. Presses are tightly bound with two, 1.8–3.6 m long straps (webbing with D- or round rings).

3. Drying

To facilitate drying, the press is placed on an artificial heat source (e.g. plant dryer) or in the sun with cardboard corrugations parallel with the wind).

If heat is not used, the flimsies or newspapers with enclosed plants may first be placed between two felt blotters or driers and then between cardboard. The blotters must be exchanged for warm, dry ones every day until the specimen is dry. The moist blotters are placed in the sun or against heating radiators to dry. This method is not necessarily the

most efficient but sometimes the only option. A portable field dryer frame with heat source, hot plate or gas lanterns work well on field trips.

The dried specimens are stored in the numbered flimsies or newspapers until identified and mounted.

4. Mounting

When the specimens are identified, computer generated labels are prepared to include the associated data including scientific name with authority, location, habitat, associated species, notes on plant features, date of collection, and the collector's name with collection number. The label may be 100 × 60 mm or larger. Duplicate labels may be prepared on a high-quality photocopier.

White mounting boards, 420 × 270 mm, acid-free and 4–6 ply should be used for mounting. The label is neatly glued to the lower right-hand corner of the sheet.

Glue the specimen onto mounting board. Then place it on a corrugated cardboard and cover with a wax paper mounted on drying sheet. Make a stack of specimens, place a firm object on top, and then sandbag for weight and leave to dry.

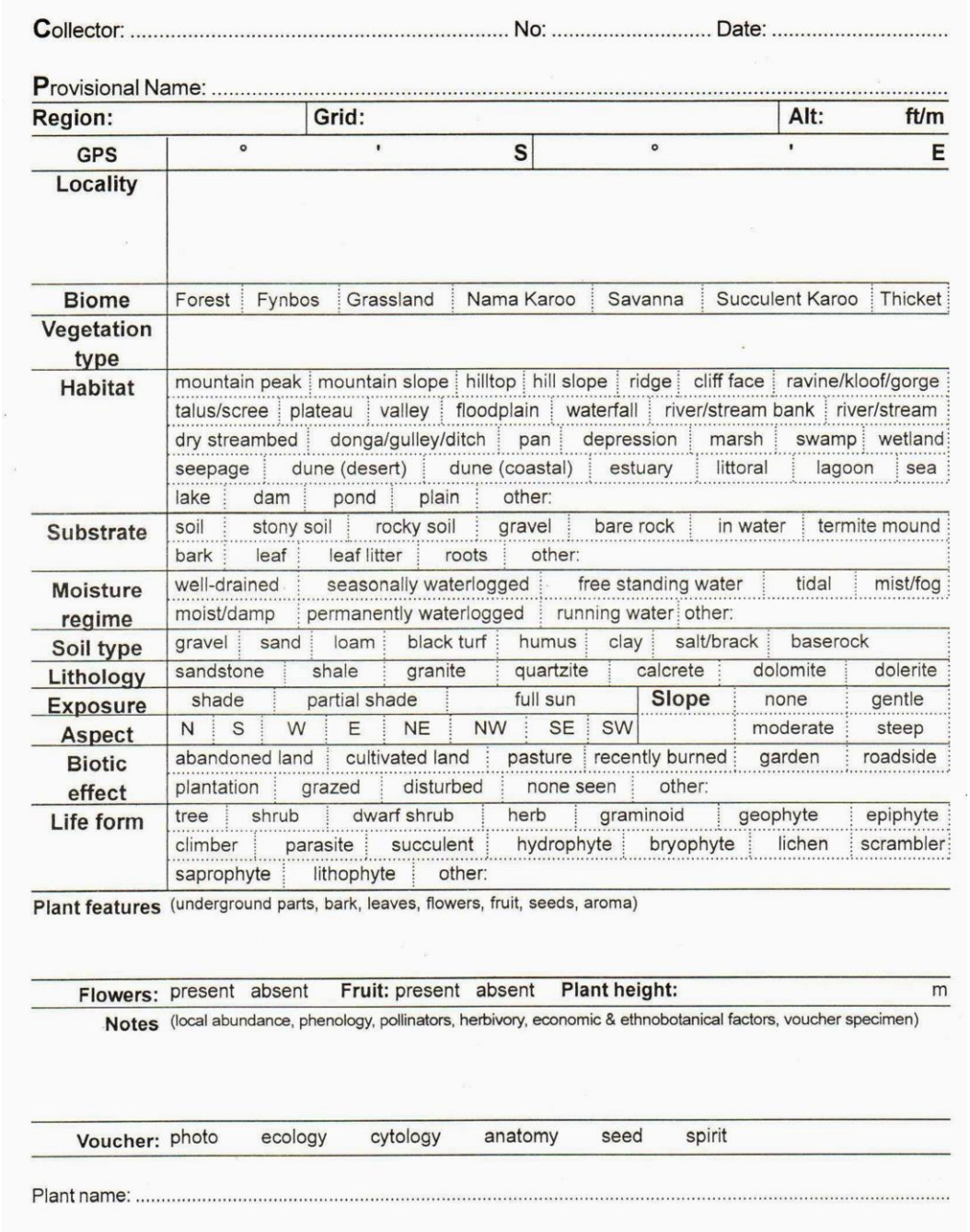
When the glue has dried, fasten all loose parts with gummed straps.

5. Filing

The mounted plant is now ready to be placed with other specimens in standard genus folders in insect- and dust-proof herbarium cabinets, housed in a dry place. The sheets should be protected from insect attack by placing them in a deep-freeze continuously for 72 hours before filing in the main collection.

6. Supply of collecting equipment

Small quantities of corrugated cardboard, flimsies and mounting boards may be purchased from the SANBI herbaria. Blotting papers are in short supply due to costs of importing. Presses are available on loan from SANBI herbaria.



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/gulley/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: .....

Example of a field label in use at SANBI herbaria