

Introduction

The Challenging and Competitive Scientific and Fiscal Environment faced by Herbaria in the New Millennium

Like all governmental instruments, whether part of a science council, parastatal or a tertiary institution, herbaria face numerous challenges in the new millennium. The National Botanical Institute (NBI)—which collectively houses over 2 000 000 preserved plant specimens in its herbaria—will in particular be challenged to increasingly deliver useful products and appropriate services of unsur-

passed quality. This can be attributed to, amongst other things, the fact that the NBI employs the largest number of taxonomists in Africa, and in terms of permanent establishment staff, one of the largest contingents of taxonomists in the Southern Hemisphere.

Two of the most important challenges facing all herbaria will be to fully demonstrate their **local,**

national and regional relevance and to **impact and compete globally** in an increasingly competitive scientific and fiscal environment. Both these challenges must be actively and enthusiastically pursued by means of the numerous and varied activities of herbaria in general, and those of the Research and Scientific Services Directorate (RSSD) of the NBI in particular, otherwise they risk be-

Box 1: Ten largest herbaria in southern Africa

Herbarium	Herbarium acronym	Number of specimens
1. National Herbarium, National Botanical Institute, Pretoria, South Africa	PRE	1 200 000
2. Compton Herbarium, National Botanical Institute, Cape Town, South Africa	NBG	500 000
3. National Herbarium and Botanic Garden, Harare, Zimbabwe	SRGH	500 000
4. Bolus Herbarium, Botany Department, University of Cape Town, South Africa	BOL	300 000
5. Selmar Schonland Herbarium, Albany Museum, Grahamstown, South Africa	GRA	200 000
6. Bews Herbarium, School of Zoology and Botany, University of Natal, South Africa	NU	120 000
7. Charles E. Moss Herbarium, Botany Department, University of the Witwatersrand, Johannesburg, South Africa	J	100 000
8. National Herbarium and Botanic Gardens of Malawi, Zomba, Malawi	MAL	100 000
9. Natal Herbarium, National Botanical Institute, Durban, South Africa	NH	100 000
10. H.G.W.J. Schweickerdt Herbarium, Department of Botany, University of Pretoria, Pretoria, South Africa	PRU	100 000

{Compiled from: Holmgren et al. 1990; and Smith & Willis 1999}

Box 2: Ten largest herbaria in the Southern Hemisphere (corrected version, August 2002)

Herbarium	Herbarium acronym	Number of specimens
1. Herbarium Bogoriense, Bogor, Indonesia	BO	1 600 000
2. National Herbarium, National Botanical Institute, Pretoria, South Africa	PRE	1 200 000
3. National Herbarium of Victoria, Melbourne, Australia	MEL	1 000 000
4. National Herbarium of New South Wales, Sydney, Australia	NSW	1 000 000
5. Herbario, Museo de Botánico, Buenos Aires, Argentina	BAF	800 000
6. State Herbarium of South Australia, Adelaide, Australia	AD	700 000
7. Herbario, Area Botánica, San Miquel de Tucumán, Argentina	LIL	700 000
8. Queensland Herbarium, Indooroopilly, Australia	BRI	523 000
9. Compton Herbarium, National Botanical Institute, Cape Town, South Africa	NBG	500 000
10. National Herbarium and Botanic Garden, Harare, Zimbabwe	SRGH	500 000

{Compiled from: Holmgren et al. 1990; and Smith & Willis 1999}

Box 3: Ten largest herbaria in the World

Herbarium	Herbarium acronym	Number of specimens
1. Muséum National d'Histoire Naturelle, Paris, France	P	8 877 300
2. Royal Botanic Gardens, Kew, England, UK	K	6 000 000
3. Komarov Botanical Institute, Leningrad, Russia	LE	5 770 000
4. Swedish Museum of Natural History, Stockholm, Sweden	S	5 600 000
5. New York Botanical Garden, Bronx, New York, USA	NY	5 300 000
6. The Natural History Museum, London, England, UK	BM	5 200 000
7. Conservatoire et Jardin botaniques, Genève, Switzerland	G	5 000 000
8. Harvard University, Cambridge, Massachusetts, USA	A	4 858 000
9. Smithsonian Institute, Washington DC, USA	US	4 368 000
10. Institut de Botanique, Montpellier, France	MPU	4 000 000

{Compiled from: Holmgren *et al.* 1990; and Smith & Willis 1999}

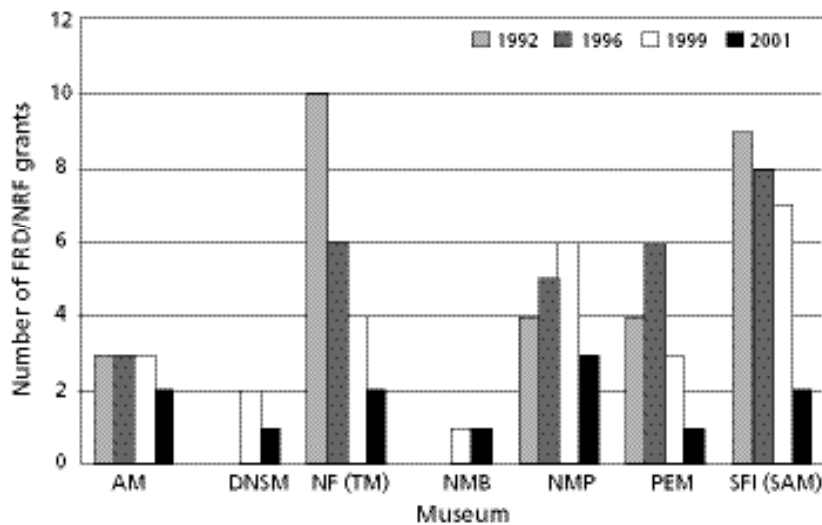


Fig 1. Numbers of museum natural science projects funded by FRD/NRF in 1992, 1996, 1999 and 2001. AM = Albany Museum, Grahamstown; DNSM = Durban Natural Science Museum; NFI (TM) = Northern Flagship Institution (Transvaal Museum); NMB = National Museum, Bloemfontein; NMP = Natal Museum, Pietermaritzburg; PEM = Port Elizabeth Museum; SFI (SAM) = Iziko-Museums of Cape Town (South African Museum). In 1992, DNSM scientists, as employees of a municipally funded museum, were not eligible to apply for FRD funding.

{from Herbert, D.G., Smith, G.F., Hamer, M.L. & Scholtz, C.H. (Unpublished Report). Taxonomy and systematic research in South Africa: vital research facing a crisis in capacity and resources.}



Fig 2. The number of publications produced by staff of the NBI over the last decade.

ing marginalised in the double-edged quest for all-round **relevance** and **excellence**.

For the past few years the herbaria of the NBI have been actively propagating renewal of objectives and their associated aims and goals to emphasise and continually increase its relevance to its numerous stakeholders. The aim of this broad process is simple: to ensure survival and growth as enabling activities primarily aimed at feeding information-hungry communities with products that impact on, support and influence the well-being of all South Africans, and also of those other individuals in the global village that are dependent on the sound environmental information required for informed decision-making.

The scientific community does not recognise grandiose schemes that never realise. In the scientific business, an institution is only as good as the quality of its most recent products and the services being offered at that time. But a scientific institution does not operate in isolation: it is intricately linked to the communities it serves, and the conditions under which it operates. In this respect the herbaria of the NBI have fared remarkably well, given the extraordinarily challenging research climate under which they operate (Figure 1).

This study has shown a decline in the financial support for research in systematic botany, and an inevitable concomitant decline in the research output. In contrast, the NBI has been actively developing

its research base and showed remarkable returns: over the past 10 years there has been a dramatic increase in the number of publications produced by staff of the NBI (Figure 2). The scientific environment is highly competitive

and research is often dependent on costly equipment and manpower. Research initiatives must therefore be critically focused and thoroughly planned from the start. In the process of delivering products and services, scientists

must be in touch with their customers and their needs, and ensure that services are provided efficiently and cost-effectively. Institutions can survive only if products delivered are indeed those that customers require and can afford.

