

Norbert Hahn – Curriculum Vitae

Date of birth: 28th April 1966
Nationality: South African
Drivers licence: South African Code: A, C and EB
Languages: Afrikaans, English and German
Postal address: P.O. Box 510, Zeerust, 2865 South Africa
Tel: +27 (0)72 634 7930
E-mail: nhahn@soutpansberg.com

Education

2007 Philosophiae Doctor

Awarded the degree of PhD (Botany) by the University of Pretoria for the thesis Floristic diversity of the Soutpansberg, Limpopo Province, South Africa (Hahn 2006).

2003 Master of Science

Awarded the degree of MSc (Botany) *cum laude* by the University of Natal, Pietermaritzburg for the thesis Endemic Flora of the Soutpansberg (Hahn 2003).

1985 National Senior Certificate Standard 10

Accreditation

2014, accredited Professional Natural Scientist in the field of practice Botanical Science by the South African Council for Natural Scientific Professions (registration number 400241/14).

Additional Qualifications

2013, Snake Awareness and Venomous Snake Handling Course.

2013, Dedicated Hunter.

2013, Sport Shooter.

2013, First Aid Level 3 (SAQA US 376480).

2013, Facilitate learning using a variety of given methodologies (SAQA US 117871).

2013, Conduct outcomes-based assessment (SAQA US 115753).

2013, Mentor a colleague to enhance the individual's knowledge, skills, values and attitudes in a selected career path (SAQA US 114215).

2008, First Aid Level 2 (SAQA US 120496)

2006' Rifle and Handgun Proficiency

Work Experience

Scientific and Technical Adviser

August 2013 – current

Employed by the Marico Conservation Association as Scientific and Technical Adviser. Main duties are the identification of alien invasive plant species, site selection and monitoring, assisting in training and advisor on all scientific matters. In addition: compiling the nomination of the Marico River Biosphere Reserve, under the United Nations Educational Scientific and Cultural Organisation (UNESCO) Man and the Biosphere (MaB) programme.

Biodiversity Specialist

September 2010 – August 2013

Employed on a three year contract as Biodiversity Specialist: Botanist by the North West Provincial Government Department of Economic Development, Environment, Conservation and Tourism. The main aim of this project was to verify and expand on the known phytogeography of listed rare and endangered plant species including the probable endemic taxa of the North West Province. In addition the project provided baseline data to enable the refinement of the Biodiversity Conservation Assessment for the Province.

Curator: Herbarium Soutpansbergensis

January 1990 – Current

Founder and curator of Herbarium Soutpansbergensis and botanical, scientific and technical research and consultancy. Research contracts included:

- 2008, compiled the Vegetation Survey of Marius 732 MS, Portion 1, Makhado Municipality, Limpopo Province.
- 2007, guniting operation for Mananzi Civils at a new adit at the Exxaro Tshikondeni Coalmine, including installation of fixed ropes, design and implementation of techniques and safety procedures for construction work at height.
- 2006, preparation of the Vhembe Biosphere Reserve nomination to UNESCO MaB. My involvement concerned the presentation of the biodiversity section, work with Geographic Information Systems (GIS) from which maps were generated, graphics and layout of the final document.
- 2006, technical installation of cables and headgear for winching of materials used in rehabilitation work for Archae-Info Northern Province as part of the Mapungubwe Rehabilitation Project.
- 2006, acted as botanical consultant at the second phase of the stabilisation of the Mapungubwe Cultural Landscape UNESCO World Heritage archæological sites. At the time also compiled plant lists of the Mapungubwe Cultural Landscape for Archae-Info Northern Province as part of the Mapungubwe Rehabilitation Project (Hahn 2006).
- 2006, collaboration with Prof. S. Foord conducting the first Arachnid transect across the Soutpansberg. From this study the *Western Soutpansberg Arachnid Transect Tree List* was compiled (Hahn 2007). As a result of this study the Soutpansberg's known scorpion diversity was increased from 11 to 20 taxa.
- 2005–current, collaborating with Prof. Jolanda Roux (Forest Pathology Extension Officer DST/NRF Centre for Tree Health Biotechnology Tree Protection Co-operative

Programme (TPCP)) on various project and post graduate studies concerning plant diseases.

- 2005–2010, assisting Prof. S. Foord in field work for the South African National Survey of Arachnida (SANSA).
- 2005, compiled *Plant Species List, Towards a Vegetation Survey for the Utility of Spider diversity as a Surrogate Measure to General Biodiversity*, commissioned by Dr. E. Stam, University of Venda, School of Environmental Sciences (Hahn & Mvundza 2005).
- 2004, eradication of alien vegetation from wetlands in collaboration with the national Working for Water project initiated by the Department of Water Affairs and Forestry.
- 2002–2008, collecting of plant material of various species for Dr. Vanessa Steenkamp Department of Urology, University of Pretoria for ethno-botanical and bio-prospecting studies.
- 2002, conducted a detailed survey of trees and shrubs for the Molozi Trust (Hahn 2002).
- 2000–2002, submission of a project proposal in collaboration with Dr. Hans Hahn for a Greenhouse Reducing, Sustainable Development Project to the Johannesburg Climate Legacy (JCL). The project, titled "Demonstration of Environmentally Sustainable Energy by Gasification of Biomass and Waste" (Project 13), was awarded its certificate of compliance in 2002 by the JCL.
- 2000, field assessment of *Aloe vossii* to assess its International Union for Conservation of Nature (IUCN) Red List Criteria and to review its Convention on International Trade in Endangered Species (CITES) status. This work was commissioned by the National Botanical Institute with funding provided by the British Cactus and Succulent Society (Hahn 2000).
- 1997, completion of an identification guide to the Rare and Endangered Flora of the Tshikondeni Mining Concession (Hahn 1997). From this study *Pavetta tshikondeni* was discovered and subsequently named after the Tshikondeni Mine (Hahn 1999b).
- 1994, nominated Natural Heritage Sites in collaboration with the Districts Development Council Subcommittee on Environmental Affairs.
- 1994, commissioned to conduct the plant identification of the Ecological Baseline Survey for the Matotwane Dam Project, initiated by the Venetia Mining Corporation.
- 1993, undertaking of plant surveys for the Council for Scientific and Industrial Research (CSIR) Biosphere Concept for the Soutpansberg, funded by the Department of Environmental Affairs (Hahn 1993).
- 1993, ESKOM commission to conduct plant surveys along a servitude running parallel to an existing 132 kV power line extending from Louis Trichardt to Messina.

Recent student supervision and fieldwork advisor

2014– current, co-supervisor of Jabu Linden *Mainstreaming biodiversity data for the identification of priority future conservation areas in the Vhembe Biosphere Reserve, Limpopo Province, South Africa*. MSc thesis. University of Venda, South Africa.

2011– current, assisting Colin Schoeman with fieldwork and biogeographical interpretation in the study *Ant and beetle beta diversity and compositional turnover in an ancient quartzitic inselberg, the Soutpansberg, South Africa*. PhD thesis, University of Venda, South Africa.

2010, as South African expert on the family **Rubiaceae** assisted Benny Lemaire with field work for his thesis *Co-evolution in bacteriophilous Psychotria (Rubiaceae)*. PhD thesis, Plant Systematics Laboratory, Katholieke Universiteit, Belgium.

2010, as South African expert on the family **Rubiaceae** assisted Brecht Verstraete with field work for his thesis *Bacterial leaf endophytes in African Rubiaceae*. PhD thesis, Plant Systematics Laboratory, Katholieke Universiteit, Belgium.

2009, assisted Denis Kupsch with his study *Distribution of invasive prickly pear (Opuntia ficus-indica) with special regard to Chacma baboons (Papio ursinus) at the Soutpansberg, South Africa*. Diplome thesis, Anhalt University of Applied Sciences, Germany.

2008–2009, acted as botanical and ecological authority on the Soutpansberg to Sebastian Kirchhof in his study *The Reptiles of the Inselberg Soutpansberg (Limpopo Province, South Africa) with Special Consideration of Australolacerta rupicola (FITZSIMONS 1933) (Reptilia: Lacertidae)*. Diplome thesis, Anhalt University of Applied Sciences, Germany.

2007–2008, assisted Birthe Linden (néé Heikamp) as her field work advisor, mainly with plant identification, biogeographic and GIS related work for the thesis *The role of cheek pouches in seed dispersal: An analysis of dispersal methods within a free ranging group of Sykes` monkeys (Cercopithecus albogularis) in the Western Soutpansberg, South Africa*. MSc thesis, University of Würzburg, Germany.

2002–2003, acted as field assistant and botanical authority on the Soutpansberg and Blouberg to Theo Mostert, researching his thesis on the *Vegetation ecology of the Soutpansberg and Blouberg areas in the Limpopo Province*. PhD thesis, African Vegetation and Plant Diversity Research Centre, Department of Botany, University of Pretoria, South Africa.

Précis of achievements

2009, from 1994 to 2006, actively involved in having the Soutpansberg area proclaimed a Biosphere reserve. In 2006 assisted in the nomination of the Vhembe Biosphere Reserve which was officially proclaimed by UNESCO in 2009.

2001, recognition of the Soutpansberg as one of the Southern African centres of endemism (Van Wyk & Smith 2001) based on the preliminary findings of Endemic Flora of the Soutpansberg (MSc thesis, Hahn 2003).

1994, Tree List of the Soutpansberg (Hahn). Compilation of Tree List of the Soutpansberg, a comprehensive listing of the areas arborescent flora published under the auspices of the Western Soutpansberg Working Group. (Foreword by Prof. Braam van Wyk.)

1990, Herbarium Soutpansbergensis (ZPB) (Hahn). A personal herbarium established in 1990, included in the Index Herbarium: Southern African Supplement (Smith & Willis 1999) and internationally accredited in the Index Herbariorum database in 2002 (Holmgren & Holmgren 2002). The collection numbers approximately 5 000 specimens.

1992, Archæological studies. Under the guidance of Dr. John Vogel (the then Head of the ¹⁴C dating division, CSIR) the National Monuments Council awarded me a lifetime permit to collect archæological artefacts on the farms Little Leigh, Morningsun and Zwarthoek (Hahn 1992).

Professional Affiliations

2014– current, member of the North West Biodiversity Stewardship Assessment Task Team.

2013– current, member of the South African Hunters and Game Conservation Association.

2012– current, adjunct Research Professor, Department of Zoology, University of Venda.

2000, listing in Plant Taxonomic Expertise (Mössmer & Willis 2000).

1999, consultant to the Department of Water Affairs and Forestry, category: Forest and forest product research and development.

1992–2009, founder member of and scientific consultant to the Vhembe Biosphere Reserve steering committee from 1993 to its inscription by UNESCO in 2009. Instrumental in compiling the MaB nomination in 2006.

1986–2010, scientific committee member of the Soutpansberg Conservancy.

Awards

1997, the Northern Province Department of Education, Arts, Culture and Sports awarded me a certificate recognising my work in the realm of natural heritage.

Skills

Curation of herbarium and archival collections;

- Curation of the Herbarium Soutpansbergensis for 20 years, mounting specimens and compiling and updating the specimen database which is linked to a comprehensive Southern African GIS and mapping system.

Field work

- Cartography and navigation: use of a dumpy level and theodolite and the manipulation of data; competent in the use of GPS (global positioning system) including differential correction; familiarity with other navigating and mapping technologies including compass and alidade.
- Setup and maintain a Biodiversity Information System adapted for seamless integration from field data collected on a PDA (Trimble Juno) using Arc Pad 10.2 passed on to a geo-database (ArcGis 10.2 Info).

- Mountaineering, including recreational and working at height to gain access to extreme natural and man-made work environments for plant surveys, machine work and rescue operations.
- Personnel management on projects involving in excess of 20 workers.
- Organisation of and assistance in the preparation and completion of field trips up to 5 weeks long.
- Field botanist, able to do *in situ* plant identification, preparation of herbarium specimens, ecological plant surveys, phytogeography and ecological impact assessments. Have planned and overseen botanical and zoological research projects from 1990.
- Conversant with the collecting and preparation of invertebrate specimens.
- Archæology: field assessment of Archæological sites, both Stone Age and Iron Age cultures, in the Soutpansberg and Limpopo Valley.
- Field guide to local and foreign hiking and tour groups. Undertaking of off-road expeditions and vehicle recovery.
- Large group culinary skills accommodating 20 people for up to 2 weeks or single bush meals for up to 100 persons.

Software and computer skills

- Configuration of hardware and the installation of operating systems and software based on personal computer technology. Knowledge on the installation of networking systems.
- GIS: IDRISI Selva ver. 17; ARC View 3.3 and the following plugins: 3D Analyst, Spatial Analyst, Image Analyst, Hawth's Analysis Tools and ARC GIS 10.2, ArcInfo, ArcPad 10.24
- Setting up Biodiversity Inventory System under ArcInfo geo-database and integration and setting up field forms and data using ArcPad 10.2.
- Mapping: OziExplorer 3.953f GPS Mapping Software; Fugawi 3 GPS Mapping Software.
- Data bases: DBase 4 & 5 and its integration with ArcView and ARC GIS; Microsoft Access 2013.
- Word processing: Microsoft Word 2013; SunSystems Star Office.
- Web designs: Macromedia Dreamweaver CS6.
- Desktop publication: 15 years of experience with Ventura, now Corel Ventura 10, in the compilation of high end reports, manuals and scientific books; Corel Draw X6 mostly used for the generation of vector based illustrations and maps.
- Digital photo editing: Adobe Photoshop CS6 and Corel Photo Paint X7; used for photo editing and image enhancing.

- 15 years experience in the scanning of photos, slides, negatives and archival material. Other than private collections I have also copied archival material from the Hugh Exton Collection, Pietersburg Museum; Louis Trichardt Municipal Archive; McGregor Museum Kimberly Duggan Cronin photographic collection; National Archive of South Africa, Pretoria and the Merensky Library Africana section, University of Pretoria.

Machine operator

- Extended use of agricultural vehicles, backhoes (TLB), workshop and other machinery.
- Driving of off-road vehicles (4 x 4) for over 30 years. Operation of vehicles from quad-bikes to Mercedes Benz UNIMOG's.
- Experienced chainsaw operator. Actively involved in the eradication of alien vegetation over the past 30 years.

Hand-work

- Metal work: welding, cutting, bending and manufacture of various articles. Woodwork and carpentry and the operation of most workshop machinery including hand tools.
- Electrical installations including the establishment of solar powered systems and involvement with various alternative energy concepts.
- Plumbing: household systems including solar water heating; installation of borehole pumps, piping and tank stands.
- Knowledgeable in the overhaul of vehicle and generator, petrol and diesel motors. Additionally, can rebuild machine components and especially well versed in the maintenance and service of light and medium commercial and agricultural vehicles, particularly four wheel drive utility vehicles.

Photography

- 1995–1996, underwent professional courses in large format photography under Mr. B. Cnoops FPPSA (Fellow in Professional Photography Southern Africa).
- Specialisation in botanical photography *in situ*, with emphasis on macro photography; skilled in black & white and colour photography; practical knowledge of developing, printing and enlarging.

Publications

Books

- HAHN, N.** 2003. Botanical Diversity. In: BERGER, K., CRAFFORD, J. E., GAIGHER, I., GAIGHER, M. J., **HAHN, N.**, & MACDONALD, I. (Eds). *A First Synthesis of the Environmental, Biological & Cultural Assets of the Soutpansberg* p. 29–33. Soutpansberg — Limpopo Biosphere Initiative. Leach Printers.
- HAHN, N.** 2003. Endemic Flora. In: BERGER, K., CRAFFORD, J. E., GAIGHER, I., GAIGHER, M. J., **HAHN, N.**, & MACDONALD, I. (Eds). *A First Synthesis of the Environmental, Biological & Cultural Assets of the Soutpansberg* p. 29–33. Soutpansberg — Limpopo Biosphere Initiative. Leach Printers.

WEISSER, P. J., **HAHN, N.**, VAN DER WAAL, C., TSHISIKHAWA, P., & TODD, C. B. 2003. Vegetation. In: BERGER, K., CRAFFORD, J. E., GAIGHER, I., GAIGHER, M. J., **HAHN, N.**, & MACDONALD, I. (Eds). *A First Synthesis of the Environmental, Biological & Cultural Assets of the Soutpansberg* p. 29–33. Soutpansberg — Limpopo Biosphere Initiative. Leach Printers.

HAHN, N. 1994. *Tree list of the Soutpansberg*. Fantique Publishers, Pretoria.

Peer reviewed

HAHN, N. & Roux, H. (in press). *Gladiolus filiformis*, a poorly known species from the North West Province. *Bothalia*.

HANKEY, A.J., **HAHN, N.** & BUYS, M. (in press). *Ledebouria caesiomontana* A.J. Hankey & N. Hahn *sp. nov.* (Hyacinthaceae): a new species from the Blouberg centre of endemism, Limpopo Province, South Africa. *Bothalia*.

HAHN, N. 2013. *Senegalia lotterii* (**Fabaceae**) a new species endemic to the Barberton Centre of Endemism, South Africa. *Phytotaxa* 119(1): 51–54.

HAHN, N. 2012. A revision of the *Combretum vendae* complex. *South African Journal of Botany* 78:147–149.

HAHN, N. 2011. Refinement of the Soutpansberg Geomorphic Province, Limpopo, South Africa. *Transactions of the Royal Society of South Africa* 66(1): 32–40.

MOSTERT, T.H.C. BREDEKAMP, G.J., KLOPPER, H.L., VERWEY, C., MOSTERT, R.E. & **HAHN, N.** 2008. Major Vegetation Types of the Soutpansberg Conservancy and the Blouberg Nature Reserve, South Africa. *Koedoe* 50(1): 32–48.

HAHN, N. & BREDEKAMP, G.J. 2007. **Lamiaceae**. *Rabdosiella leemannii*, a new species from the Limpopo Province of South Africa. *Bothalia* 37(1): 37–40.

TSHIVHANDEKANO, P.G., FOORD, S.H., **HAHN, H.** 2007. *Arachnid diversity along a North-south transect in the Soutpansberg: a proposed long-term monitoring site*. Poster presentation: 33rd Meeting of the Zoological Society of South Africa, “The sixth extinction – conserving zoological diversity”, in Potchefstroom, South Africa, 8–13 July.

WINTER, P. & **HAHN, N.** 1999. *Khadia media*. *Aloe* 36(1): 16–19.

HAHN, N. 1999. A new species of *Pavetta* from the Soutpansberg, South Africa. *Bothalia* 29(1): 107–109.

CHESSLET, P., HARTMANN, H.E.K, **HAHN, N.**, BURGOYNE, P., SMITH, G.F. 1998. Taxonomic notes on the genus *Khadia* (**Mesembryanthemaceae** / **Aizoaceae**). *Bothalia* 28(1): 25–33.

HAHN, N. 1997. **Rubiaceae**. A new species of *Vangueria* from the Soutpansberg. *Bothalia* 27(1): 45–48.

CHESSLET, P., HARTMANN, H.E.K, **HAHN, N.**, BURGOYNE, P. & SMITH, G.F. 1996. *Revision of Khadia — a Mesembryanthemaceae genus of ethnobotanical significance*. The South African Association of Botanist Year congress.

HAHN, N. 1992. Little Leigh rock shelter. *The Digging Stick* 9(2): 5–7.

Popular Articles

- HAHN, N.** 2002. A second species of *Brachystegia* for South Africa. *SABONET News* 7(2): 110.
- HAHN, N.** 2002. Tshikondeni Botanical Hot Spot. *PlantLife* 27: 34–36.
- HAHN, N.** 1999. Herbarium Soutpansbergensis. *PlantLife* 20: 32–32.
- HAHN, N.** 1997. Plant diversity statistics of the Soutpansberg. *SABONET News* 2(3): 106–109.
- HAHN, N.** 1995. *Commiphoras* of the Soutpansberg. *Plantlife* 13: 16–18.

Technical Papers and Reports

- HAHN, N.** 2013. *Rare, Endangered and Endemic Flora of the North West Province*. Unpublished report, DEDECT Department Economic Development, Environment, Conservation and Tourism North West Provincial Government.
- HAHN, N.** 2013. *Rare, Endangered and Endemic Flora of the Dr Kenneth Kaunda District, North West Province*. Unpublished report, DEDECT Department Economic Development, Environment, Conservation and Tourism North West Provincial Government.
- HAHN, N.** 2013. *Rare, Endangered and Endemic Flora of the Ruth Segomotsi Mompati District, North West Province*. Unpublished report, DEDECT Department Economic Development, Environment, Conservation and Tourism North West Provincial Government.
- HAHN, N.** 2012. *Rare, Endangered and Endemic Flora of the Ngaka Modiri Molema District, North West Province*. Unpublished report, DEDECT Department Economic Development, Environment, Conservation and Tourism North West Provincial Government.
- HAHN, N.** 2011. *Rare, Endangered and Endemic Flora of the Bojanala Platinum District, North West Province*. Unpublished report, DEDECT Department Economic Development, Environment, Conservation and Tourism North West Provincial Government.
- HAHN, N.** 2007. *Western Soutpansberg Arachnid Transect Tree List*. Unpublished report, commissioned by the University of Venda, School of Environmental Sciences.
- HAHN, N.** 2007. *Goni Shaft (Tshikondeni) peripheral trees and shrubs*. Unpublished report, Subcontractor, Mananzi Civils, Gunniting at Height.
- DOMBO L., CRAFFORD J., FOUCHE P., GAIGHER I., **HAHN N.**, LINDEN J., ROSMARIN J. 2006. Vhembe Biosphere Reserve Nomination to the United Nations Educational Scientific and Cultural Organisation (UNESCO) Man and the Biosphere (MaB) Programme. Unpublished report.
- HAHN, N.** 2006. *Mapungubwe Cultural Landscape, Plant List*. Unpublished report.
- HAHN, N.** & Mavundza, S. 2005. *Plant Species List Towards a Vegetation Survey for the Utility of Spider diversity as a Surrogate Measure to General Biodiversity*. Unpublished report, commissioned by the University of Venda, School of Environmental Sciences.
- HAHN, N.** 2002. *Molozzi Trees & Shrubs*. In house manuscript for The Molozzi Trust.
- HAHN, N.** 2000. Field Assessment of *Aloe vossii*, for assessing its IUCN Red Listing Criteria and to review the CITES status. Commissioned by the National Botanical Institute, Kirstenbosch.

- ROSMARIN, J., GAIGER, I. & **HAHN, N.** 1998. The Western Soutpansberg Conservancy, towards a proposed policy framework and implementation strategy. Unpublished report.
- HAHN, N.** 1997. *Rare and Endangered Flora of Tshikondeni*. In-house manuscript for Tshikondeni Mining Company (Pty) Ltd.
- HAHN, N.** 1994. In C.K. Willis (ed.), *Ecological Baseline Survey, Matowane Dam*. Unpublished report.
- HAHN, N.** 1993. Plant Survey of the Louis Trichardt — Messina Power Line. *Louis Trichardt — Messina 132 Kraglyn, Omgewingsinvloedstudie*.
- HAHN, N.** 1992. Application for Permit of collected Archaeological Artefacts from Little Leigh. National Monuments Council, Cape Town, South Africa.

References & Biographies

- KLOPPER, R.R. & SMITH, G.F. 2009. *Aloe hahnii*, a new species in the section *Pictae*, in the Soutpansberg Centre of Endemism, Limpopo Province, South Africa. *Bothalia* 39(1): 98–100.
- SALZWEDE, I. 2007. Van idioot na doctor. *De Kat Mei/Junie*: 76–79.
- HOLMGREN, P.K. & HOLMGREN, N.H. 2002. Additions to Index Herbariorum (Herbaria), Edition 8: Thirteenth Series. *Taxon* 51(3): 589–592.
- VAN WYK, A.E. & SMITH, G.F. 2001. *Regions of Floristic Endemism in South Africa* p. 134–139. Undaus Press, Hatfield South Africa.
- MÖSSMER, M. & WILLIS, C.K. 2000. Plant taxonomic expertise: an inventory for Southern Africa. *Southern African Botanical Diversity Network Report* no. 10. SABONET, Pretoria.
- SMITH, G.F. & WILLIS, C.K. 1999. Index herbarium: southern African Supplement second edition. *Southern African Botanical Diversity Network Report* no. 8. SABONET, Pretoria.
- SABC TV. 1994. A 12 minute documentary for “Goeie Môre Suid Afrika”, which summarized my research.

Referees

1. Prof. George Bredenkamp, PhD, University of Pretoria Department of Plant Science, e-mail: ecoagent@mweb.co.za, tel: +27 (0)12 420 3121.
2. Tharina Boshoff, Department, Economic Development, Environment, Conservation and Tourism, North West Provincial Government, Director Environmental Coordination, e-mail: tboshoff@nwpg.gov.za, tel: +27 (0)18 389 5330
3. Hercules Petrus Nel, Department, Economic Development, Environment, Conservation and Tourism, North West Provincial Government, North West Parks and Tourism Board, e-mail: hpnel@mweb.co.za, tel: +27 (0)14 592 2394.
4. Prof Stefan Foord, University of Venda School of Environmental Sciences, e-mail: stefan.foord@univen.ac.za, tel: +27 (0)15 962 8000