



# **DEPARTMENT OF BIOLOGICAL SCIENCES**

## **UNIVERSITY OF NAMIBIA**

### **ANNUAL REPORT 2013**

#### **Introduction**

#### **Mission & Vision**

The mission for the Department of Biological Sciences is to train and produce high quality biological scientists, both at undergraduate and postgraduate levels who will play crucial roles in the national development, especially in areas of education, health, agriculture, environment, natural resources and industries. Recognizing that learning is a lifelong endeavor, the Department of Biological Sciences admits both young and mature students. Our Vision is to become a department of high international repute and Centre for excellence in training biological scientists in the region, at both undergraduate and postgraduate levels. Specifically the department aims to:

- provide excellent, high quality education to contribute to the production of graduates that will be competent in the jobs they will perform.
- actively engage students in learning and provide sufficient support for students
- engage actively in quality research and produce quality publications
- serve the UNAM community as well as the Namibian Nation

#### **Activities**

During the academic year 2013, activities undertaken in the Department of Biological Sciences included teaching of undergraduate and postgraduate students. The first year of the revised and approved undergraduate curricula were implemented in January 2013,

while the old curriculum will gradually be phased out on a year-to-year basis. The new approved curricula were successfully registered with the National Qualifications Framework (NQF).

A new MSc in Microbiology curriculum was developed and approved by Senate. The programme will be implemented in 2015 depending on the acquiring of sufficient equipment and staff.

The department performed a self-evaluation exercise and submitted the Self-evaluation report for internal External evaluation of the Faculty. The report from the External review panel identified positive developments as well as challenges that the Department has to address.

An Advisory board has been established for the Department and consists of 8 members from outside UNAM who represent the Central Veterinary Laboratory, City of Windhoek – Scientific Services, Directorate of Research Science and Technology in the Ministry of Education, Namibia Botanical Research Institute, GENMED, Gobabeb Research and Education Center, NAMDEB and the Ministry of Environment and Tourism and one meeting occurred with them.

Members have been active in research and the production of publications.

### **Staff matters**

New staff members who joined the Department during the year include Ms. I. Mujoro who started in May 2013 and she replaced Mr. Faul whose last working day was at the end of January 2013. Ms. Mandene Morkel returned from study leave after she completed her MSc degree. She returned into her position as Technologist. Ms. Cathleen Deelie went on study leave to do a MSc. She is currently an assistant lecturer and upon completion of her studies will be promoted to Lecturer. Other staff members who are currently studying on a part-time basis include:

- Ms. J. Uzabakiriho who is in the final stage of his PhD
- Mr. H. Eiman who started his PhD in the beginning of 2013
- Ms. R. Shifa who started her MSc in the beginning of 2013 and is expected to finish at the end of 2015.

- Mr. A du Plessis who started his MSc in 2012 and is expected to complete it at the end of 2014.

Ms. Clara Mukaru attended a 6 month training course in Land Restoration, under the United Nations University in Iceland, from 12 March- 16 September 2013. The course is a capacity building initiative to train professionals in developing countries in mitigating land degradation. During her stay in Iceland she presented an abstract on behalf of the UNU-LRT fellows at an international conference on soil carbon sequestration. During her 6 months absence her classes were taught by Ms. Kangombe in the Department.

During 2013 the staff went on a very successful team building day with the aim of building team spirit and increasing closer collaboration among staff in teaching and research.

During 2013 Ms. Morkel was promoted from Technologist to Senior Technologist; Dr. Julies was promoted from Lecturer to Senior Lecturer and Assoc. Prof. Chimwamurombe was promoted from Senior Lecturer to Associate Professor.

The Department had 1 part-time technologist and 6 full-time technical staff (3 males and 4 females) employed during 2013. There was 18 full time lecturing staff (11 males and 7 females) in the Department during 2013. Assoc. Prof. Mapaure continued his duties as UNAM's Research Coordinator; Dr. Chimwamurombe as deputy director of the School of Post-graduate Studies and Ms. P. Muandingi as Manager of ZERI in addition to their responsibilities in the Department.

### **Staff names, positions and gender**

#### ***Full-time academic staff:***

	<b>NAME</b>	<b>POSITION</b>	<b>GENDER</b>
1	Dr. E. Julies	Senior Lecturer & Head of Department	Female
2	Dr E. Kwembeya	Senior Lecturer	Male
3	Dr J.K.E. Mfune	Senior Lecturer	Male
4	Assoc. Prof. I. Mapaure	Associate Professor	Male

5	Assoc. Prof. P.M. Chimwamurombe	Associate Professor	Male
6	Dr. R. Bock	Lecturer	Male
7	Mr B. Kaonjua	Lecturer	Male
8	Dr K.C. Chinsembu	Senior Lecturer	Male
9	Ms W.C. Mukaru	Lecturer	Female
10	Mr. H. Eiman	Lecturer	Male
11	Ms. C. Deelie	Assistant-Lecturer	Female
12	Mr. A. du Plessis	Assistant-Lecturer	Male
13	Ms R. Shifa	Tutor	Female
14	Mr. S. Eiseb	Lecturer	Male
15	Ms. N.P. Muandingi	Lecturer	Female
16	Ms. F. Kangombe	Lecturer	Female
17	Ms. I. Mujoro	Lecturer	Female
18	Mr. J.D. Uzabakahiro	Lecturer	Male

***Technical staff:***

	<b>NAME</b>	<b>POSITION</b>	<b>GENDER</b>	<b>STATUS</b>
1	Mrs M. Morkel	Senior Technologist	Female	
2	Mr A. Hjarunguru	Technologist	Male	
3	Ms. M. Johnson	Technologist	Female	
4	Mr A. Mbangu	Technologist	Male	
5	Ms. K. Kaitjizemine	Technologist	Female	
6	Mr. A. Katunahange	Technologist	Male	Part-time4
7	Mrs R. Shimwooshili	Assistant Laboratory Technician	Female	

### ***Detailed staff statistics***

- i. Total number of full-time staff at the end of 2012 = 24
- ii. Ratio of female to male staff = 10:14
- iii. Number of Namibians = 18; Number of Non-Namibians = 6; % Namibians = 75%
- iv. Number of Resignations: 1
- v. Number of new Appointments = 1
- vi. Number of Promotions = 3
- vii. Number on study leave = 1

### ***Research and Consultancies***

#### **Assoc. Prof. Mapaure**

- Assessment of foraging behavior of Oryx (*Oryx gazella*) and Springbok (*Antidorcas marsupialis*) populations in Ogongo Game Park, Northern Namibia. (Principal Investigator). 2013-2014. UNAM Research & Publications Office. Assoc. Prof. I. Mapaure, Ms F. Kangombe, Mr. O. Mbango, BSc Students
- Assessing the effect of herding on livestock performance in semi-arid communal rangelands in South Africa and Namibia. 2012-2014. Ministry of Education, Namibia. Assoc. Prof. I. Mapaure, Mrs W.C. Nesongano, Dr F.P. Graz; with South African collaborators from ARC and UWC.
- Understanding the dynamics of arid savanna ecosystems experiencing various disturbance regimes in highland biomes of central Namibia: Implications for local management for economics and conservation objectives. 2011-2013. UNAM Research & Publications Office. Assoc. Prof. I. Mapaure, Mrs W.C. Nesongano, Dr. N. Shiponeni, Ms M. Johnson.
- Population dynamics of *Moringa ovalifolia*: Population structure, recruitment and reproductive vigor in different habitats. 2011-2013. UNAM Research & Publications. Assoc. Prof. I. Mapaure, Dr. N. Shiponeni, Ms M. Johnson, Dr E.G. Kwembeya
- Rainfall and herbivory: characterizing the transmission route for anthrax in grazing wildlife, Etosha National Park. 2011-2014. National Science Foundation (NSF) USA.

Dr W. Turner, Assoc. Prof. I. Mapaure, Prof. Nils Chr. Stenseth, Prof. Anne-Brit Kolstø

- The combined use of groundwater, honey bees and soil in the assessment of climate change and adaptation strategies among communities of the Omusati, Ohangwena, Okavango and Caprivi Regions of Namibia. 2011-2013. Ministry of Education, Namibia, and UNAM Research & Publications Office. Dr B.S. Mapani, Dr. Jodie Ann, Dr Miller, Dr. Marta Mileusnic, Assoc. Prof. I. Mapaure, Dr P.M. Chimwamurombe; Mr I.K. Kaholongongo

**Assoc. Prof. Chimwamurombe**

- Access to and use of research results: increasing community awareness and utilization of indigenous grains to improve nutrition security and livelihoods in Botswana and Namibia. Funded by SIDA. Period: 2010-2013.
- Analysis of starch synthesis in Marama bean to identify industrial uses for it Funded by the Ministry of Education, Namibia and National Research Foundation (NRF), South Africa in collaboration with Dr Llyod James, Stellenbosch. Period 2012-2013. Funding by MOE and NRF.
- Domestication of Marama bean: Agronomy and molecular genetic characterization for its improvement. Period: 2010-2013. Funding by Kirkhouse Trust.
- Cultivation of *Tylosema esculentum* (Marama bean) Trials. Funded by Ministry of Agriculture Water and Forestry through the Indigenous Plant Task Team in collaboration with farmer Mr Obed Kamburona. Period: 2012-2013. Funding by MAWF
- Development of Marama bean cultivars with desirable agronomic traits using Mutation Breeding (DOMBATUMB). Funded by UNAM RPO in collaboration with Dr Martha Kandawa-Schulz and Prof Isaac Mapaure (all from UNAM). 2010-2013.
- “Analysis of microbial nutrient cycling, GHG production, BNF and plant growth promotion for sustainable land use management” under the project The Future Okavango (TFO) .Funded by the Ministry of Education , Germany in collaboration with Prof Dr Barbara Reinhold-Hurek, University of Bremen, Germany.Period: 2011-2015.

**Dr. E. Julies**

- Presence of endocrine disrupting chemicals in surface water of Namibia. Joint funding from Ministry of Education and NRF, South Africa. 2011-2013. In collaboration with Prof. Pool (University of Western Cape), Prof. Van Wyk (University of Stellenbosch), Mr. A. du Plessis (UNAM)
- Implementation of Biomarker assays to monitor algal toxicity in freshwater systems and evaluation of sludge bulking problems in the Gammams wastewater treatment plant. 2013-2014. UNAM RPC. Dr. E. Julies, Ms. Theopolina Thomas (Department of Chemistry and Biochemistry and undergraduate Students in collaboration with the City of Windhoek.

**Dr. E. Kwembeya**

- *Moringa ovalifolia* Population Biology project, URPC/2011/278. 2011-present. UNAM RPC. Dr N. Shiponeni, Prof I. Mapaure, Ms N. Kanime, Ms K. Nghidinwa & Ms M. Hochobes
- Flora of Namibia Project. 2006-present. Government of Namibia. Collaboration with NBRI researchers and Associates
- Identification of toxic compounds in indigenous plants responsible for livestock poisoning in southern Africa. 2013-present. Dr. Stefan Louw & Dr. Renate H. Hans Department of Chemistry and Biochemistry

**Dr. Chinsembu**

- HIV-1 biological activity and toxicity prospecting of ethnobotanicals of Namibia. Funded by South Africa NRF-Namibia Research Collaboration. Period: 2012-2014. Collaboration with Dr. Phiyani Leabea (CSIR, South Africa) , Dr. Renate Hans (Department of Chemistry-UNAM); Mr. M. Hedimbi (School of Medicine-UNAM)

**Dr. Mfunne**

- Emerging viruses in western and southern Africa: Molecular identification and characterization of rodent- and shrew-borne Hantaviruses and assessment of their public health potential. Period: from 2009. Funded through German Government under German-Africa Cooperation Projects in Infectology. In collaboration with Prof. D. Kruger, Dr L. Koivogui, Dr S. Matthee, Prof. W. Preiseir and Dr J. Meulen
- Eco-physiological responses of ungulates towards heat and drought in Namibian desert. In collaboration with Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany: Dr C. Voigt and David Lehmann. Period: 2010-2013.
- Assessment of the effects of variation in vegetation structure due to bush encroachment on the species composition and diversity of small mammals and ground-dwelling invertebrates at selected sites in Omaheke Region. 2011-2013. UNAM RPC. Ms P. N. Muandingi, Dr J.K. Mfune, Ms M. Johnson, Mr Seth Elseb
- Parasites of rodents in South Africa and Namibia with a focus on emerging infectious diseases. Collaborative research funded under the joint research grant under the Researchers. Period: May 2012- Present. Collaborators Dr J.K. Mfune (UNAM) and Dr Sonja Matthee (Stellenbosch University). South African – Namibia Research Partnership Programme Bilateral Agreement.

#### **Dr. R. Bock**

- Bio-Molecular Section, Malaria Research Group at the University of Namibia. Research interest include: Anti-malarial drug discovery (Evaluate the antimalarial activity of novel synthetic metal compounds as well as natural products; establish the mode of action). Epidemiology, Diagnostics, Pathogenesis and Vector Biology.
- Malaria prevalence and epidemiology study in the Engela District of Northern Namibia.
- The impact of nutritional status on clinical outcomes of malaria following ACT treatment in children under the age of 5.
- The evaluation of medicinal plants for potential use as herbal supplements for cancer, diabetes and hypertension
- The evaluation of medicinal plants used by traditional healers for potential use as complementary medicine for treatment malaria



- The evaluation of indigenous plant species as potential sources of antimalarial products
- The molecular surveillance for drug resistant *Plasmodium falciparum* malaria in Namibia (collaboration with the Directorate of Special Programmes, MoHSS, Namibia)

**Mr. S. Eiseb**

- Action: StopRats: Sustainable Technology to Overcome Pest Rodents in Africa through Science. 2014-2016. ACP-EU Co-operation Programme in Science and Technology. Partnership between Namibia, Madagascar, Sierra Leone, South Africa, Swaziland, Tanzania

**Ms. W.C. Mukaru**

- Assessing the effect of herding on livestock performance in semi-arid communal rangelands in South Africa and Namibia. Period: 2012-2013. Funded by National Research Foundation (NRF): Joint research grant under the South African – Namibia research partnership programme bilateral agreement.

**Ms. F. Kangombe**

- Assessing the effect of herding on livestock performance in semi-arid communal rangelands in South Africa and Namibia. Feb 2012 – April 2013. NRF (SA) & Ministry of Education, Research, Science & Technology (Namibia). Assoc. Prof. Isaac Mapaure, Dr. Anthony Palmer, Dr. Patrick. Graz, Mrs. W. C. Nesongano, Mr. M. Kaune, Mr. J. Kaoti.
- Assessment of foraging behavior of Oryx (*Oryx gazella*) and Springbok (*Antidorcas marsupialis*) populations in Ogongo Game Park, Northern Namibia. March 2013 – February 2014. RPC – UNAM. Assoc. Prof. Isaac Mapaure, Mr Oscar Mbango, Ms Hortensia Shihepo, Ms Taimi Uushona.

**Mr. A. du Plessis**

- Presence of endocrine disrupting chemicals in surface water of Namibia. Joint funding from Ministry of Education and NRF, South Africa. 2011-2013. In collaboration with Prof. Pool (University of Western Cape), Prof. Van Wyk (University of Stellenbosch), Mr. A. du Plessis (UNAM)

**Mr. H. Eiman**

- Isolation of Actinomyces from Namibian Soils and Analysis of Antimicrobial Compounds. 2013 – 2014. UNAM RPC. Mr. H. Eiman, Ass/Prof P. Chimwamurombe, Mr J.D. Uzubakiriho & Dr R. Hans.

**Ms. P. Khadila-Muandingi**

- Screening of indigenous Namibian mushrooms for their antimalarial activities against sensitive and resistant strains of the malaria parasites. 2013-2014. National Research Foundation. Mamello Patience Sekhoacha, Kazhila C. Chinsebu

**Mr. J. Uzabikariho**

- Isolation of Actinomyces from Namibian Soils and Analysis of Antimicrobial Compounds. 2013 – 2014. UNAM RPC. Mr. H. Eiman, Ass/Prof P. Chimwamurombe, Mr J.D. Uzubakiriho & Dr R. Hans.

***Papers published, submitted or presented at workshops/conferences***

**Refereed journal articles**

- DUMBACHER, J. P., RATHBUN, G. B., OSBORNE, T. O., GRIFFIN, M. & EISEB, S. J. A new species of round-eared sengi (genus *Macroscelides*) from Namibia. Accepted by: *Journal of Mammalogy*
- Faul A.K. **Julies E.M.** and Pool E.J. 2013. Oestrogen, testosterone, cytotoxin and cholinesterase inhibitor removal during reclamation of sewage to drinking water. *Water SA* 39(4): 499-506
- Gotosa, T.N., Gotosa, J., Katsvanga, C.A.T., Nyakudya, I.W., Kundhlande, A. & **Mapaure, I.** (2013). Woody vegetation diversity and regeneration in an abandoned

sugar Estate in semi-arid Zimbabwe. *The Journal of Animal & Plant Sciences* 23(5): 1370-1378.

- Jann Grönemeyer, Dirk Berkelmann, Tabo Mubyana-John, Daniel Haiyambo, **Percy Chimwamurombe**, Bruce Kasaona, Thomas Hurek & Barbara Reinhold-Hurek. 2013. In: Oldeland, J., Erb, C., Finckh, M., Jürgens, N. [Eds.]: *Environmental Assessments in the Okavango Region. – Biodiversity & Ecology* 5: 287-294
- **Julies E.M.** and Kaholong I. 2013. Relationship between Dissolved Oxygen and the Vertical and Longitudinal Distribution of Zooplankton off the Namibian coast. *Int. Sci. Technol. J. Namibia*. 1: 78-89.
- Havarua, Z., Turner, W.C. and **Mfune, J.K.** (In Press). Seasonal variation the foraging behavior of Zebra may alter contact with the anthrax bacterium (*Bacillus anthracis*) in Etosha National Park, Namibia (submitted to *Journal of Zoology*, London; NOW UNDER REVISION).
- Kazembe, L.N., Archibong, E.F., **Chimwamurombe, P.M. & Chinsebu, K.C.** (2013). Science: An all-encompassing field. *Int. Sci. Technol. J. Namibia*, 1(1): 1-3.
- Lehmann D, **Mfune J.K.E**, Gewers E, Cloete J, Brain C & Voigt C.C (2013). Dietary plasticity of generalist and specialist ungulates in the Namibian desert: A stable isotopes approach. *PLoS ONE* (8):e72190.doi:10.1371/journal.pone.0072190
- Lehmann D, **Mfune J.K.E**, Gewers E, Cloete J, Brain C & Voigt C.C (In Press 2013) Individual dietary specializations of grazing and browsing desert ungulates. (Submitted to *Journal of Animal Ecology*)
- Marta Mileusnić , Benjamin Siyowi Mapani , Akalemwa Fred Kamona , Stanko Ružičić , Isaac Mapaure , **Percy Maruwa Chimwamurombe**. 2013. Assessment of agricultural soil contamination by potentially toxic metals dispersed from improperly disposed tailings, Kombat mine, Namibia. *Journal of Geochemical Exploration*, in press.
- MDANGI, M., MULUNGU, L. S., MASSAWE, A. W., **EISEB, S. J.**, TUTJAVI, V., KIRSTEN, F., MAHLABA, T., MALEBANE, P., MALTITZ, E. VON., MONADJEM, A., DLAMINI, N., MAKUNDI, R. H., & BELMAIN, S. R. (2013): Assessment of rodent damage to stored maize (*Zea mays* L.) on smallholder farms in Tanzania. *International Journal of Pest Management*, 59(1): 55-62

- **Mapaure, I.** (2013). A preliminary simulation model of individual and synergistic impacts of elephants and fire on the structure of semi-arid miombo woodlands in north-western Zimbabwe. *Journal of Ecology and Natural Environment* 5(10): 285-302.
- **Mapaure, I.** (2013). Short-term responses of shrub layer communities to dry season fires and tree thinning in semi-arid miombo woodlands of north-western Zimbabwe. *African Journal of Plant Science* 7(9): 414-425.
- Mbango, O., **Mapaure, I.** and Mpofo, I. (2013). *Impact of livestock on vegetation and soil nutrients around water points in highland savanna rangelands, Namibia.* Lambert Academic Publishing. ISBN: 978-3659357527.
- **Mfuno, J.K.E, Kangombe, F. and Eiseb, S. (2013)** Host specificity, prevalence and intensity of infestation of fleas (Order Siphonaptera) of small mammals at selected sites in the city of Windhoek, Namibia. *International Science and Technology Journal of Namibia*, 1(1): 64-77
- Mukakalisa, C., Kandawa-Schulz, M. & **Mapaure, I.** (2013). Genetic diversity in landraces of Bambara groundnut found in Namibia using RAPD markers. *Acta Horticulturae* 979: 683-688.
- Mukakalisa, C., Kandawa-Schulz, M. & **Mapaure, I.** (2013). Effect of sowing seasons on growth and development of Bambara groundnut (*Vigna subterranea* L.) *Acta Horticulturae* 979: 689-694.
- Nasheya, S. and **Chinsembu, K.C.** (2013). Genetic diversity of Ovambo chickens in the Oshikoto region of northern Namibia. *Biotechnology Research Bulletin* 1(2): 041-047.
- Nashima F.P., **Julies E.M.** and Samakupa A. 2013. Distribution patterns of spawning stock of hake maturity stages in the Benguela ecosystem of Namibia. *J. Research in Ecology*. 2(2): 100-107
- Palmer, A.R., Samuels, I., Cupido, C., Gabriels, N., Finca, A., Swarts, M.B.V., Mukaru, C. and **Mapaure, I.** (2013). *Report on biomass production, rangeland use and herbivore distribution patterns in the semi-arid rangelands in the Leliefontein Communal Area, Northern cape, South Africa: Towards a plant-herbivore model for*

*semi-arid landscapes under communal management*. Technical Report, Agricultural Research Council, South Africa.

- L. T. Shikongo, **P. M. Chimwamurombe**, H. R. Lotfy and M. Kandawa-Schulz. 2013. Antimicrobial screening of crude extracts from the indigenous *Ganoderma lucidum* mushrooms in Namibia. *African Journal of Microbiology Research* Vol 7(40) pp 4812-4816.
- Wendy C. Turner, Peace Imologhome, Zepee Havarua, Godwin P. Kaaya, **John K. E. Mfuné**, Irvin D. T. Mpofo, and Wayne M. Getz (2013). Soil ingestion, nutrition and the seasonality of anthrax in herbivores of Etosha National Park. *Ecosphere*. 4(1):13 dx.doi.org/10.1890/ES12-00245.1
- Witkowski, P.T., Klempa, B, Ithete, N.L., Auste, B., **Mfuné, J.K.E.**, Hoveka, J., Matthee, S., Preiser, W., Kruger, D.H. (In Press 2013). Hantaviruses in Africa (Submitted to *Virus Research*).
- **Uzabakiriho J.D**, Shikongo L, **Chimwamurombe PM**. 2013. First report of *Alternaria tenuissima* and *Phoma* spp co-infecting *Tylosema esculentum* (Marama bean) seed pods in Namibia. *African Journal of Biotechnology*. Vol. 12(1), pp. 32-37

#### **Published books or chapters in books**

- **Chinsebu, K.C.** (2013). Bioprospecting for ‘green diamonds’: Collaboration with traditional healers and ethno-botanical surveys for medicinal plants used in the management of HIV/AIDS in Namibia. In *Indigenous Knowledge of Namibia* (Eds. Chinsebu K.C., Cheikyoussef, A., Kandawa-Schulz, M., Kasanda, C.D., Kazembe, L. & Mubengwegwi, D.). Windhoek: University of Namibia Press (*in press*).
- **Chinsebu, K.C.** (2013). Anti-microbial properties of ethnoveterinary plants. In *Indigenous Knowledge of Namibia* (Eds. Chinsebu K.C., Cheikyoussef, A., Kandawa-Schulz, M., Kasanda, C.D., Kazembe, L. & Mubengwegwi, D.). Windhoek: University of Namibia Press (*in press*).
- Klaassen, E.S. & **Kwembeya, E.G.** (eds.). 2013. A Checklist of Namibian Indigenous and Naturalised Plants. Occasional Contributions No. 5, National Botanical Research Institute, Windhoek, Namibia.

- Selma M. Lendelvo, Margaret N. Angula and **John Kazgeba E. Mfuno** (In Press 2013). Indigenous knowledge used in the management of human-wildlife conflict along the borders of Etosha National Park, Namibia. Book Chapter to be published in the UNAM Faculty of Science / MRC book on IKS in Namibia. Paper was reviewed and corrections made. Resubmitted to Editors.
- **Mapaure, I.** (2013). Review of Climate Change in Namibia: Projected trends, Vulnerability and effects. Chapter 13 (I): In: Ruppel, O.C. and Ruppel-Schlichting (Eds). *Environmental Law and Policy in Namibia: Towards making Africa the Tree of Life*. Fully Revised Second Edition. Hanns Siedel Foundation, Windhoek. Pages 245-264. ISBN 978-99916-849-9-4.
- **Mapaure, I.** & Mwandemele, O.D. (2013). *The need to conduct research that addresses Namibia's socio-economic development goals: A critical review of the role of Higher Education Institutions*. In: Auala, R., Likando, G., Matengu, K. and Wolhuter, C.C. (Eds). Proceedings of the regional workshop of SACHES, Southern African Comparative and History of Education Society. Education in Africa for the 21<sup>st</sup> Century, Rundu Campus, University of Namibia, 11-13 July, 2012, pp. 81-92. ISBN 978-1-86822-637-5.

#### **Published conference proceedings and Conference papers delivered**

- Auala J., Sturrock H., Kleinschmidt I., Du Preez I., **Bock R.A.**, Gosling R., Katokele S. and Mumbengegwi D.R. (2013) Risk Factors for Malaria Transmission in Engela District of the Ohangwena Region of Northern Namibia. Presented at 6<sup>th</sup> *Pan African Malaria Conference*. Durban, South Africa
- Dushimemaria F., Mumbengegwi D.R., and **Bock R.A.** (2013) Investigation Of The Antineoplastic Properties Of Namibian Indigenous Plants: *Colophospermum Mopane* And *Schinziophyton Rauntanenii*. Presented At *Aortic Cancer Conference*. Durban South Africa
- Nkunika, P.O.Y. and **Chinsebu, K.C.** (2013). Farmers' ethnobotanical knowledge of termiticidal plant uses in Zambia. Proceedings of the 1st International Conference on Pesticidal Plants, International Centre of Insect Physiology and Ecology (ICIPE), Nairobi, Kenya, 21-24 January 2013. Page 162.

- **Chinsembu, K.C.** (2013). Bioprospecting for green diamonds in Namibia. 1<sup>st</sup> Annual Research Conference, Faculty of Science, University of Namibia, Library Auditorium, Windhoek. 25-26 October, 2013.
- Harribhai H.I., A.K. Faul, **E. Julies**, D. Fisher and E.J. Pool. 2013. The effect of raw sewage, treated effluent and reclaimed water on mouse testicular cells. 16th Biennial International Symposium for Toxicity Assessment. 21-26 February 2013. Cape Town, South Africa
- Hedimbi, M., Lebea, P. Hans, R. and **Chinsembu, K.C.** (2013). Inhibitory activities of ethno-medicinal plants against HIV-1 reverse transcriptase. Poster presented at the 6<sup>th</sup> South African AIDS Conference, International Convention Centre, 18-21 June, 2013.
- **Julies E.M.** RCE in ESD – How to initiate a Regional Centre of Expertise in Education for Sustainable Development. NEEN Conference. April 2013. Waterberg, Otjiwarongo, Namibia
- **Julies E.M.**, Pool E.J., Faul A.K. and K. Amutenya 2013. Endocrine disrupting potential of three wastewater treatment plants and the Goreangab Water Reclamation Plant in Namibia. 9th IWA International Conference on Water Reclamation. 27-30 October 2013. Safari Hotel, Windhoek, Namibia.
- **Julies E.M.** E.J. Pool and A.K. Faul. Endocrine disrupting chemicals in various wastewater treatment and reclamation plants in Namibia. 14th WATERNET Conference. 30 October-1 November 2013. Dar-es-Salaam, Tanzania
- Kapenda, H. & **Mapaure, I.** (2013). Research mentorship and capacity building initiatives at the University of Namibia (UNAM). Paper presented at the Southern African Research & Innovation Management Association (SARIMA) Conference, Protea Hotel President, Bantry Bay, Cape Town, 7-10 October, 2013.
- **Kadhila-Muandingi, P. N.** (2013). Mushroom Research and Development in Namibia. Faculty of Science 1st Annual Science Research Conference Book of Abstracts pp.34-35. Windhoek, Namibia.
- **Kadhila-Muandingi, P. N.** (2013). Industrial Production and Marketing for medicinal mushrooms. Abstracts of the 7th International Medicinal Mushroom Conference. 26th-29th August 2013, Beijing, China.

- Mbango, O., **Mapaure, I.**, Kwembeya, E.G., Ulbrich, R., Munyebvu, F. & Younan, R. (2013). *Investigating Fockea multiflora Damage in Ogongo Game Park*. Paper presented at Ogongo Campus Research Day, Ogongo, 15<sup>th</sup> October, 2013.
- Mbango, O., **Mapaure, I.** and Mpofu, I. (2013). *Impacts of livestock on vegetation and soils nutrients around water points in highland savanna rangelands of central Namibia*. Paper presented at the 48<sup>th</sup> Congress of the Grassland Society of Southern Africa (GSSA), Advancing Rangeland Ecology and Pasture Management in Africa, Weesgerus Holiday Resort, Modimolle, Limpopo Province, South Africa; 16-18 July, 2013.
- Nafuka S., **Bock R.A.** and Mumbengegwi D.R. (2013) Bio assay guided fractionation of 3 Namibian ethno medicinal plants for potential anti-plasmodial new chemical entities Presented at 6<sup>th</sup> Pan African Malaria Conference. Durban, South Africa

*Undergraduate teaching, student statistics and pass rates*

<b>YEAR</b>	<b>MODULE</b>	<b>TOTAL NUMBER OF STUDENTS ENROLLED</b>	<b>PASS RATE (%) FROM NUMBER ENROLLED</b>
I	BLG3411 Introduction to Biology	601	70.7
	BLG3512 Diversity of Life	643	43.2
	<i>Mean pass rate 1<sup>st</sup> Year</i>		<i>57</i>
II	BLG3611 Animal Form & Function	231	52.8
	EBL3631 Introduction to Ecology	31	87.1
	MBL3631 Cell Molecular Biology & Genetics	121	59.5
	BLG3612 Plant Form & Function	195	68.7
	EBL3632 Ecological Field Techniques	38	76.3



	MBL3632 Introduction to Microbiology	124	62.9
	MBL3652 Human Biology	227	44.9
	<b><i>Mean pass rate 2<sup>nd</sup> Year</i></b>		<b>64.6</b>
III	EBL3731 Population Ecology	29	69
	EBL3700 Field Ecology I	29	86.2
	EBL3711 Fresh water & Marine Ecology	34	73.5
	MBL3711 Microbiology	68	91.2
	MBL3731 Recombinant DNA Technology	106	69.8
	MBL3751 Plant Physiology	85	82.4
	MBE3771 Cell Molecular Biology, Microbiology and Genetics for Educators	127	57.5
	EBL3732 Conservation Biology & Biodiversity	28	96.4
	EBL3712 Ecosystem Ecology	28	82.1
	EBE3772 Environmental Biology for Educators	114	66.7
	MBL3752 Comparative Animal Physiology	85	52.9
	BLG3702 Research Methodology	81	87.7
	MBL3712 Biotechnology	96	64.6
	MBL3732 Genetics	70	68.6
	<b><i>Mean pass rate 3<sup>rd</sup> Year</i></b>		<b>74.9</b>
IV	EBL3800 Field Ecology II	19	89.5
	BLG3810 Research Project	72	90.3
	EBL3811 Environmental Management	15	100
	EBL3831 Biosystematics	18	94.4
	EBL3851 Biogeography	24	95.8
	MBL3811 Immunology	91	71.4
	MBL3831 Applied Molecular Biology	74	75.7

MIC3811 Mycology	62	88.7
MOL3811 Bioinformatics	10	90
MIC3802 Parasitology	81	87.7
EBL3802 Disturbance and Restoration Ecology	16	93.8
EBL3832 Management of Natural Resources	16	87.5
EBL3812 Behavioural Ecology	18	100
MIC3822 Medical Microbiology	61	82
MIC3812 Environmental and Industrial Microbiology	63	77.8
MIC3832 Virology	61	78.7
MOL3812 Applied Genetics	12	83.3
MOL3832 Plant Growth and Development	105	79.1
MOL3852 Animal Growth and Development	14	78.6
<i>Mean pass rate 4<sup>th</sup> Year</i>		<b>86.5</b>
<b><i>OVERALL MEAN FOR DEPARTMENT</i></b>		<b>70.8</b>

## Postgraduate Supervision

### PhD Students

- **Catherine Amoo:** A study of the apparent immunity to malaria of the San people in the Oshikoto Region of Namibia. Assoc. Prof. Chimwamurombe : Main supervisor, Dr. Bock: Co-supervisor
- **Devota Kavishe:** An ecological study of selected *Porphyra capensis* populations from the Namibian coast. Assoc. Prof. Mapaure: Main supervisor, Dr. P. Chimwamurombe: Co-supervisor
- **Renatus Peter Shilangale:** Prevalence, Serotype And Antimicrobial Resistance Pattern Of *Salmonella* Spp. in Namibia's Abattoirs.[Dr. Chimwamurombe: Main-supervisor.
- **Emmanuel Nepolo:** Molecular characterization of *Tylosema esculentum* starch biosynthesis and related aspects. Dr. Chimwamurombe: Main-supervisor].

- **Mutsa Takundwa:** Breeding for reduction of reproductive life cycle in *Tylosema esculentum*. Dr. Chimwamurombe: Main-supervisor
- **Charline Kamburona:** Phylogenetic characterization of devil's claw (*Harpagophytum procumbens* and *Harpagophytum zeyheri*) in Namibia. Dr. Chimwamurombe: Co-supervisor.
- **Jean-Damascene Uzabakiriho:** Analysis of microbial community structures and their nifh gene expression in *Tylosema esculentum* (marama bean) endophytic diazotroph bacteria. Dr. Chimwamurombe: Main-supervisor.
- **Hedimbi M.** Evaluation of selected Namibian plants for anti-HIV properties. Dr. K. Chinsembu: Main Supervisor
- **Mrs Selma Lendelvo:** Assessment of factors that influence the establishment of selected ungulates translocated into communal conservancies: the case of the Nyae nyae and Uukwaluudhi conservancies, Namibia. Dr. Mfuno: Main supervisor
- **Ms. C. Garus-Oas:** Abundance, diversity and productivity of microalgae in freshwater eutrophic systems in Namibia. Dr. E. Julies: Main Supervisor
- **Pauline Kadhila-Muandingi:** Evaluation indigenous Namibian mushrooms for antimalarial activity. Dr. K. Chinsembu: Main Supervisor
- **Henrique Eiman:** Isolation of Actinomycetes from Namibian Soils and Analysis of Antimycobacterial Compounds. Assoc. Prof. P. Chimwamurombe: Main Supervisor
- **Sunette Walter:** Dr. R. Bock: Co- Supervisor
- **Iwanette du Preez:** Dr. R. Bock: Co- Supervisor

### MSc Students

- **Julia Hoveka:** Molecular identification and characterization of rodent- and shrew-borne hantaviruses and other viruses and the prevalence of ecto- and endo-parasites on small mammals in selected areas in Namibia. Dr. Mfuno: Main supervisor and Dr. Chimwamurombe: co-supervisor.
- **Alfeus V. Shekunyenge:** Understanding of natural soil properties and potential of mining waste materials as a habitat for plants, during rehabilitation at Sendelingsdrif mine. Dr. Mfuno: Main supervisor

- **Lineekela Nauyoma:** Habitat requirements, population structure and dynamics of *Juttadinteria albata* and assessment of its performance in post mining substrates at Namdeb's Sendelingsdrif diamond mine. Dr. Mfune: Main supervisor and Dr. E. Kwembeya: Co-supervisor
- **Josefina N. Nelongo:** Evaluation of the usefulness of the quantiferon TB gold in-tube test in the diagnosis of tuberculosis disease and as a tool for evaluating the response to tuberculosis chemotherapy in Namibian patients. Dr. Bock: Co-supervisor
- **Rauna Hamukwaya:** Investigations on type of humoral immunity against anthrax in predators and scavengers in Namibia. Dr. Chimwamurombe: Main supervisor.
- **Sylvia Nafuka:** Bioassay Guided Fractionation of Medicinal Plants in Namibia for potential Anti-plasmodial Compounds. Dr. Bock: co-supervisor Proposal stage
- **Kaatri Nambadi:** Assessment of body condition of African elephants (*Loxodonta Africana*) in Etosha National park, Namibia: How it relates to strongyle parasite counts and nutrition value. Dr. E. Julies: Main supervisor
- **Adrian du Plessis:** Effect of mining on heavy metal concentrations and potential endocrine disruption in fish and crabs in Omatako and Von Bach dams. Dr. E. Julies: Main supervisor
- **Cathleen Deelie:** Population structure and recruitment patterns of the indigenous mussel *Perna perna* and the alien mussel *Mytilus galloprovincialis* on the central and southern coast of Namibia. Dr. E. Julies: Main supervisor
- **Victoria Erasmus:** Assessment of trophic relationships of prey species *Etrumeus whitheadii*, *Mycotophidae* and *Sepia* off Namibia. Dr. E. Julies: Main supervisor
- **Maria Malakia:** Age determination and growth rate of the northern Benguela sardine (*Sardinops sagax*). Dr. E. Julies: Main supervisor
- **Martha Hausiku:** Study of the taxonomic identification and molecular diversity of indigenous edible mushrooms of the Kavango region, Namibia. Dr. K. Chinsebu: Main Supervisor
- **Ruben Ulbrich:** Utilization and distribution of selected invasive alien species in German and Namibia in comparison to the areas of origin. Dr. E. Kwembeya: Main Supervisor

- **Faith Munyebvu:** Abundance, structure and uses of *Adansonia digitata* L. populations in Omusati region. Assoc. Prof. I. Mapaure: Main Supervisor and Prof E. Kwembeya: Co-supervisor
- **Rufina I. Shifa:** Assessment of carbon stock in bush encroached thornbush savanna at farm Erichsfelde. Dr. E. Kwembeya: Co-supervisor
- **Daniel Haiyambo:** Effects Of Plant Growth-Promoting Rhizobacteria (PGPR) And Biocontrol Bacteria From Kavango On Selected Cereals *Pennisetum glaucum* and *Sorghum bicolor*. Assoc. Prof. P. Chimwamurombe: Main Supervisor
- **Isabella Uitele:** Ethnomycology and Mycochemical studies of the Hexagonia species in Northern and Eastern Namibia. Prof P. Chimwamurombe: Main Supervisor
- **Florence Dushememaria:** Dr. R. Bock: Co-Supervisor
- **Zoe Barandongo:** Dust bathing behaviors of elephants, zebras and wildebeest and the potential risk of inhalational anthrax in Etosha National Park. Dr. J. Mfuno: Main supervisor
- **Munyaradzi Tambo:** Dr. R. Bock: Co-supervisor
- **Joyce Auala:** Dr. R. Bock: Co-supervisor

## COMMUNITY SERVICE

### Assoc. Prof. I. Mapaure

#### UNAM Service

- Research Coordinator for the University of Namibia.
- Active member of the PVC Academic Forum.
- Active member of Academic Planning Committee.
- Active member of the Research & Publications Committee.
- Active member of the UNAM Senate.
- Active member of Faculty of Science Board.
- Active member of Biological Sciences Board.
- Member of a UNAM Audit Task Force mandated to audit Centres and Units at the university.

- A member of the Committee of Admission & Examinations for the MSc Biodiversity Management & Research.
- Research Coordinator for the University of Namibia.
- Member of the UNAM Book Store Task Group.
- Member of the Teaching & Learning Improvement Unit Advisory Committee.
- Chairperson of the UNAM Task Force on Research Ethics.
- Member of the UNAM Press Editorial Board
- Review Board (IRB).
- Board Member of the Multidisciplinary Research Centre (MRC).
- Active member of the Advisory Committee of the Scholarly Communication in Africa Programme (SCAP).
- Member of the Review Committee on Publications at the University of Namibia appointed by the PVC (AA&R)
- Active member the Editorial Board of the Journal for Studies in Humanities & Social Studies (UNAM).
- Active member of the UNAM Senate
- Member of the UNAM Climate Change Working Group.
- Organised SARIMA Workshop (which was held in conjunction with the UNAM Research & Publications Office) on Writing successful grant proposals: The fundamentals. Protea Hotel Furstenhof, Windhoek, 20-21 August, 2013.

#### External Service

- Representing the University on the Southern African Research & Innovation Management Association (SARIMA).
- Representing the University on the Southern African Nordic Centre (SANORD) Conference and Council Meeting.
- Chairperson of the Research & Publications Sub-Committee of the Vice Chancellors and Rectors Forum (VCRF) of Namibia.
- Representing the University on the Technical Advisory Committee of the RESSESA of the Organisation for Social Science Research in Eastern and Southern Africa (OSSREA).

- Represented the University on the Southern African Regional Universities Association (SARUA) Programme for Climate Change Capacity Development across the SADC Higher Education Sector.
- External examiner for the Department of Nature Conservation, Polytechnic of Namibia
- External examiner for the Department of Environmental Science, Bindura University of Science Education, Zimbabwe.
- Member of a number of Professional bodies including the Degradation Network, AFRIFIRENET (African Fire Research Network), Southern African Mopane Research Association (SAMRA), Biodiversity Foundation for Africa (BFA), Association for the Taxonomic Study of the Flora of Tropical Africa (AETFAT), Grassland Society of Southern Africa, Namibia Environment & Wildlife Society (NEWS) and the Botanical Society of Namibia (BOTSOC); Society for Conservation Biology; International Association of Wildland Fire; Environmental Research Web; Southern African Research & Innovation Management Association (SARIMA); Leadership for Environment and Development (LEAD); Ecological Society of America.
- Regular review articles submitted for publication in *Environmental Conservation* journal, *Dinteria*, *African Journal of Range & Forage Science*, *Africa Journal of Ecology*, *African Journal of Plant Science*, RAEIN Africa, IUCN, SARDC (Harare). Also reviewed few book chapters and Research Proposals submitted to various organizations (e.g. International Foundation for Science, Sweden).

**Assoc. Prof. Chimwamurombe**

UNAM Service

- Deputy Director: School of Postgraduate Studies
- Active member of Faculty of Science Board.
- Active member of Biological Sciences Board.

External Service

- Member of the Interim Bioprospecting Council of Namibia.
- Kirkhouse Trust Marama Bean Project coordinator.

- External examiner for PhD thesis at North West University
- Executive secretary: African Society for Edible and Medicinal Mushrooms.
- Reviewer for African Journal of Agricultural Research
- Executive secretary: African Society for Edible and Medicinal Mushrooms.
- Treasurer of the Agricultural Scientific Society of Namibia

**Dr. Mfunne**

UNAM Service

- Coordinator, MSc Biodiversity Management and Research Program, joint UNAM and Humboldt University Postgraduate training Programme.
- Member of the MSc Biodiversity management and Research Admissions and Examinations Committee
- Coordinator, Faculty of Science Mentorship Programme March, 2012 to Present
- **Member**, UNAM Library and Information Technology Committee. Representing Faculty of Science
- Drafted the Concept note for MSc Restoration Ecology, June 2013
- Organised and facilitated stakeholders consultative workshop to develop curriculum for MSc in restoration Ecology, November, 2013
- Team leader, Impact of Tourism on Natural Resources in Etosha National Park and Human Wildlife Conflict along the Boundaries of the Park research project. This is an NDP3 Implementation Project as assigned to MRC at UNAM in the NDP3.
- Active member of Faculty of Science Board.
- Active member of Biological Sciences Board.
- Faculty of Science Representative on the Faculty of Economics and Management Science Board. Since 2007 to present.
- Acted as HOD, upon request by Head of Biological Sciences

External Service

- Vice Chairperson, Namibia Wildlife and Environment Society (NEWS).



- Member, INSAKA CONSORTIUM (University of Montana, USA, UNAM (MRC), University of Kwazulu Natal, RSA, University of Copperbelt, Zambia and Monash University).
- **Member**, Human Wildlife Conflict (HWC) Grant Review Committee (GRC) MCA Namibia
- Facilitated UNAM Teaching and Learning Improvement Unit (TLIU) Induction Workshop for new staff. 14-15 February, 2013. Main Campus.
- External Examiner, **MSc Land Resource Management, Polytechnic of Namibia, November 2013**
- Vice Chairperson, Namibia Wildlife and Environment Society (NEWS).
- Member, Human Wildlife Conflict (HWC) Grant Review Committee (GRC) MCA Namibia

### **Dr. Chinsembu**

#### UNAM service

- Chairperson, UNAM/NEPAD steering committee on validation of traditional medicines for HIV/AIDS treatment
- Founding editor, International Science Journal of Namibia
- Committee member, University of Namibia Centre for Advanced Technology (UCAT), nominated on 15<sup>th</sup> August 2012 to sit on the UCAT committee by the UNAM Pro-Vice Chancellor for Academic Affairs and Research. Tasked to come up with strategic plan and terms of reference to raise N\$10 million by the end of 2013.
- Interviewed by Pamela Mate on Namibia Broadcasting Corporation TV programme 'Good Morning Namibia', Windhoek studios. Topic of discussion: UNAM Faculty of Science Innovation Day and launch of the International Science and Technology Journal of Namibia; 12<sup>th</sup> August 2013.
- Active member of Faculty committee Military Sciences
- Active member of Faculty of Science Board.
- Active member of Biological Sciences Board.

#### External service

- Team leader, Ethnoveterinary Medicines, NEPAD)/ (SANBio)/BioFISA Phase II project on Integrated Management of Livestock Diseases in Southern Africa.

- External moderator, University of Lusaka, Zambia
- External examiner of two Master's degree theses

### **Dr. Julies**

#### UNAM Service

- Head of Department: Biological Sciences
- Active member of UNAM RPC committee
- Active member of Faculty of Science Board.
- Chairperson of Biological Sciences Board
- Active member of Senate
- Chairperson of the Faculty RPC committee
- **Member** of the MSc Biodiversity management and Research Admissions and Examinations Committee
- Course organizer for RGNO Discovery School that will take place in March 2014 at SANUMARC, Hentiesbay
- Awareness of waste problems at UNAM in collaboration with the Ministry of Environment and Tourism, UNAM Natural Resources and Environmental Society (UNNRESS) and the SRC.
- Part of UNAM participants in the Namibian Delegation for UNCCD CoP11

#### External Service

- Member of the Namibian Environmental Education Network
- Secretariat of the Regional Center of Expertise: Khomas-Erongo Region
- Deputy Chair of Environmental Education Association of Southern Africa Conference 2014 Organizing Committee
- Member of the Upper Swakop river Basin Forum
- Reviewer of articles in Physics and Chemistry of the Earth and in the Journal of Agriculture and Biodiversity Research
- Judge at Science fair at the Windhoek International Schools (April 2011)

### **Dr. E. Kwembeya**

#### Internal Service

- Secretary - Faculty of Science Mentorship Committee
  - Active member of Faculty of Science Board.
  - Active member of Biological Sciences Board.
  - Faculty of Science Representative to the Faculty of Economics and Management Science
  - Member of the MSc. Biodiversity Management and Research Examination Committee.
  - Biosafety Policy of the Faculty of Science –Member of Biosafety Policy Task Force
- External Service
- Active member of Botanical Society of Namibia

**Ms. Mukaru**

UNAM Service

- Active member of Faculty of Science Board.
- Active member of Biological Sciences Board.
- Member of the MSc. Biodiversity Management and Research Examination Committee.
- Active member of the Faculty of Science award and career fair committee
- Active member of the Faculty of Science MSc Restoration Ecology committee

**Mr. A. du Plessis**

Internal Service

- Active member of Faculty of Science Board.
- Active member of Biological Sciences Board

External Service

- Active member of the RCE in ESD (Khomas-Erongo)

**Ms. F. Kangombe**

Internal Service

- Representative of Department on the Department of Geography, History and Environmental Studies Advisory Committee
- Active member of Faculty committee on Renewable Energy & Environment
- Active member of Faculty committee
- Active member of Department of Biological Sciences Board
- Active Member Faculty of Science Award and Career Fair Committee
- Participated in logistics & arrangements for research day - UNAM Research Day Committee
- Active member of Faculty committee - MSC: Restoration Ecology Committee
- Facilitated UNAM staff & students participation in the two week international conference - UNAM-COP 11 UNCCD Participant

#### External Service

- Active member of Botanical Society of Namibia
- National Youth Week Participant - Presented a talk & contributed to an article on climate change and youth involvement

#### **Mr. H. Eiman**

##### Internal Service

- Active member of Faculty committee
- Active member of Department of Biological Sciences Board
- Member of student selection committee for Faculty of Science

#### **Nailoke Pauline Kadhila-Muandingi**

##### Internal Service

- Active member of Faculty committee
- Active member of Department of Biological Sciences Board
- Conducted training on mushroom cultivation and mushroom post-harvest skills at main campus for 11 people from the Northern region of Namibia.
- Active member of Senate
- Active member of Academic Planning Committee

- Active member of Admissions and Examinations Committee
- Active member of Deans' Committee

**Mr. J. Uzabikariho**

Internal Service

- Active member of Faculty committee
- Active member of Department of Biological Sciences Board

External Service

- Interaction and vulgarization on the importance of Marama domestication as an alternative crop for communal farmers in Omaheke and Otjozondjupa Regions under Kirkhouse Trust.
- Sensitize communal farmers on the use of Plant growth Promoting bacteria in substitution to Chemical fertilizers in Okavango East under the Future Okavango project (TFO)
- NRF (SOUTH AFRICAN RESEARCH FOUNDATION) and MINISTRY OF EDUCATION: Marama starch analysis and its use by communal farmers in Omaheke and Otjozondjupa.

**Conclusions**

We experienced an increase in student numbers in most of our modules, which is a result of our increase in student numbers in first year on an annual basis. Furthermore, the number of post-graduate students also increased in the Department. Despite the challenges of resources and equipment, physical space, a very high workload on staff members and ever increasing numbers of students, the Department continued to deliver a high quality service to both our students and the community at large as well as improved on research and publications output. There was an increase in the number of publications produced by the department during 2012. The department plans to strengthen programmes offered. The lack to provide further training to our increasing number of graduates in the field of microbiology was addressed by the development of a MSc in Microbiology programme during 2013, but the lack of equipment and staff prevented the Department from implementing the programme in 2014. Hence implementation is pending and depends on the acquisition of equipment and staff. We further plan to make the current MSc Biodiversity Management and Research programme more autonomic allowing the department

eventually to run the programme independently with mostly UNAM academics involved in the teaching. Greater student support and initiatives to improve the quality of teaching in the department will be undertaken and the enforcement of the student mentorship programme will receive priority during 2014.