

# DIRECTOR'S REPORT FOR THE PERIOD

January–December 2006

**NAME OF RESEARCH ENTITY:**

Bernard Price Institute for Palaeontological Research

**NAME OF DIRECTOR:**

Professor BS Rubidge

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With devolution of the administration of research entities to Faculties rather than the Research Office, a written annual report is no longer required by the University. However for our own records it is useful to document the activities of the BPI Palaeontology on an annual basis, as otherwise there is a real risk that important details of Institutional history will be lost sight of and disappear from memory.

## 1. STAFF

### 1.1 BPI Palaeontology Staff

#### 1. 1.1 ACADEMIC STAFF in research entity on 31 December 2006

DESIGNATION	NAME	GRADE	R	G	D	DATE OF BIRTH	RETIREMENT/TERMINATION DATE	COMMENT (% APPOINTMENT, ETC)
Professor	Rubidge, B.	NS05	W	M	-	1 Jun 1956	1 Jun 2016	BPIPAL 66% URC; 33% FOC
Reader	Berger, L.	NS06	W	M	-	22 Dec 1965	22 Dec 2025	Science Faculty, 33%, URC paid 66%
Researcher	Backwell, L.	NS08	W	F		2 Sep. 1966	1 Oct 2025	Faculty 33%; URC 66 %
Researcher	Yates, A.	NS08	W	M	-	13 Mar 1972	13 Mar 2032	Replaced Alain Renault URC paid
Senior Researcher	Bamford, M.	NS07	W	F	-	25 Oct 1961	25 Oct 2021	BPIPAL 66% URC; 33% FOC

1.1.2 SUPPORT STAFF in research entity on 31 December 2006

Position	Surname		R	G	D	Date of Birth	Retirement/ Termination Date	Comment
Curator	Raath, M.	AD06	W	M	-	11 Feb-41	2006	UNIVERSITY URC-FUNDED
Snr admin secretary	Tshavhumbwe, S.C.	SE11	B	F	-	14-June-1977	2037	BPI Pal
Principal Technician	Costopoulos, W.	AD08	W	M	-	09-Feb-62	2022	BPI PAL; URC- FUNDED
Principal Technician	McRae –Samuel, G	AD 08.4	W	M	-	15-Oct-54	2014	BPI PAL; URC- FUNDED
Technician Fossil Preparator	Nemavhundi, T.	AD13	B	M	-	13-July-76	2037	BPI PAL; URC- FUNDED
Technician Fossil Preparator	Jirah, S.	AD13	B	M	-	11-Jan-77	2038	BPI PAL; URC- FUNDED
Technician fossil preparator	Dube, C.	AD12	B	M	-	25-May-65	2025	BPI PAL; URC- FUNDED
Technician fossil preparator	Mbense, D.	AD13	B	M	-	17-Feb-76	2036	BPI PAL; URC- FUNDED
Technician fossil preparator	Ntheri, N.	AD13	B	M	-	08-Jun-74	2034	BPI PAL; URC- FUNDED
Technician fossil preparator	Mukanela, P.	AD13	B	M	-	10-Nov-53	2013	BPI PAL; URC- FUNDED
Technician fossil preparator	Sithole, J.	AD13	B	M	-	28-Oct-74	2034	BPI PAL; URC- FUNDED
Technician fossil preparator	Tshabalala, S.	AD13	B	M	-	06-Apr-73	2033	BPI PAL; URC- FUNDED
Technician fossil preparator	Ndlovu, G.	AD13	B	F	-	20-12-1966	2026	BPI PAL; URC- FUNDED
Cave Custodian, Makapansgat	Maluleke, J.	AD17	B	M	-	01-Jan –52	2012	BPI PAL; URC- FUNDED

1.1.3 POST-DOCTORAL STAFF in research entity on 31December 2006

	Position	Initials	Surname	Title	G	Grouping	Country	Termination	Year
CP00	Post doc fellow	F	Abdala	Dr	M	Bpipal	Argentina	30-June	2008
CP00	Post doc fellow	R	Govender	Ms	F	Bpipal	SA	30-June	2007
CP00	Fix term contract res.	I	Mckay	Dr	M	GeoS	SA	31-March	2007
CP00	Fix term contract res	J	Hancox	Dr	M	GeoS	SA	28 Feb	2006

1.2 Changes in staff establishment in research entity during 2006

1.2.1 ACADEMIC STAFF

Name	Grade	R	G	D	New appointment (give month)	Promotion (give date)	Retirement (give date)	Resignation (give date)
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1.2.2 SUPPORT STAFF

Name	Grade	R	G	D	New appointment (give month)	Promotion (give date)	Retirement (give date)	Resignation (give date)
Michael Raath	SP02	W	M	-			December 2006	
Rhoderick McRae-Samuel	AD 08.4	W	M	-	July		2014	
Sifelani Jirah	AD13	B	M	-	September		2038	
Thilivhali Hosea Nemavhundi	AD13	B	M	-	August		2037	
Wayne Costopoulos	AD08	W	M	-				June 2005
Doctor Mbense	AD13	B	M	-				July 2006
Ntheri Nthoapa	AD13	B	M	-				February 2006

### 1.2.3 HONORARY STAFF AND ASSOCIATES

Hon Professor of Palaeo-anthropology  
Hon Research Associates

Prof P.V. Tobias  
Dr C.K. Brain  
Dr F.E. Grine  
Dr J.M. Maguire  
Mr I.R. McLachlan  
Prof C Sidor  
Dr R Damiani  
Dr A Keyser

## 2. RESEARCH UNDERTAKEN DURING 2006

### Current research projects and results achieved

#### 2.1 Dr F. Abdala

- 2.1.1 Description of the earliest theriocephalians from the *Eodicynodon* Assemblage Zone of South Africa by Abdala, Rubidge and Van den Heever. Currently the authors are working in the second draft of the manuscript and it is expected to submit it for publication early 2007.
- 2.1.2 Description of the world's oldest cynodont. A cynodont fossil was recently discovered from the *Tropidostoma* Assemblage Zone of the Karoo Basin by Roger Smith. This is the oldest cynodont yet discovered and is being described in collaboration with Jennifer Botha (National Museum), and Roger Smith (South African Museum). A paper is in press in the *Zoological Journal of the Linnean Society*.
- 2.1.3 Re-description of *Platycraniellus elegans* including a phylogeny of cynodonts. Finalisation of this project has taken a long time and a manuscript is now in press in the journal *Palaeontology*. Dr Abdala has added an integral phylogeny of Late Therapsids, including Theriocephalians, Non-mammaliaform cynodonts and basal Mammaliaformes.
- 2.1.4 Description of Allotherium-like teeth from the *Cynognathus* AZ. This important project which is being done in collaboration with H. Mocke and J. Hancox is very advanced and submission of a manuscript for publication will occur in the first half of 2007.
- 2.1.5 Assessing the palaeobiology of South American cynodonts. This study is based largely on histology of limb bones from the microscopic study of limb bones and will be undertaken in collaboration with Prof Anusuya Chinsamy-Turan (University of Cape Town). A manuscript will be submitted for publication early in 2007.
- 2.1.6 Cynodonts from the Omingonde Formation, Namibia. Several cynodonts from the Omingonde Formation are housed in the collections of the Geological Survey in Namibia.

These specimens will be described and are important as they provide the link between Anisian east and western faunas from Africa. Two papers are expected to result from this project. Dr Abdala plans to undertake a field trip to the Omingonde Formation to collect additional material with Dr. Roger Smith from the South African Museum.

- 2.1.7 Postcranial anatomy of basal cynodonts. Several complete skeletons of the cynodonts *Procynosuchus*, *Galesaurus* and *Thrinaxodon* are present in museum collections in South Africa. As the postcranium of basal cynodonts has not received much attention in recent years, Dr Abdala aims to provide a detailed morphological and functional description of the postcranial anatomy of these genera. Most of the fossil material require fro the project was prepared during 2005 an preliminary study sketches of the material have been made.

## 2.2 Dr L. Backwell

### 2.2.1 Early hominid bone tools.

In 2006, results of ongoing research made in collaboration with Dr. Francesco d'Errico (French CNRS, University of Bordeaux) on early hominid bone tools, were presented in a book chapter and at two international conferences. Current research entails developing a new methodology for the quantification of bone surface modifications, in this case the wear patterns recorded on bone tools. The method requires using a profilometer to measure surface roughness. Data acquired on a previous trip to France were transposed into analysis software in December 2006, in a laboratory dedicated to the restoration and study of artefacts in the Louvre, Paris. The data is currently undergoing satistical analysis.

### 2.2.2 Fossil hair.

Scanning electron microscope images of fossil hairs extracted from a single hyaena coprolite from Gladysvale Cave, dated to 177 - 257.5 ka, were sent to Don Brothwell (University of York) for identification in 2005. His report is expected early in 2007. In 2006 fossil hairs extracted from the coprolite were sent to Matthew Collins (University of York) for DNA analysis, and the remaining coprolite and matrix couriered to David Martell (University of Portsmouth) to study the fossilization process. The collaborative results will hopefully be submitted for publication by the end of 2007.

### 2.2.3 Taphonomy of human remains from Plovers Lake cave.

Possible cutmarks on human remains dated to between 62 k and 88 k years ago have been studied intensively this year. The modifications bear traces diagnostic of stone tool generated cutmarks. However, ongoing taphonomic analysis of the remainder of the faunal assemblage, made in collaboration with Tebogo Mothupi (MSc candidate, Palaeontology), show little, if any, involvement of humans in the modification of the fauna, thus providing no evidence for an interpretation of the modifications recorded on the human remains as the result of cannibalism. It is widely accepted that such an interpretation requires identifying the same treatment of human and non-human remains from the same deposit. Instead, the fauna records a range of unusual forms of rodent gnawing, occasionally mimicking cutmarks. This finding led to the development of two actualistic research projects, one involving experimentally created stone tool cutmarks, and the other, bone modification by different types of rodents.

Replicas of the various modifications have been made and are currently being analysed using optical and scanning electron microscopy. Data collection is ongoing.

#### 2.2.4 Wonderkrater peat mound excavation.

This research on a Holocene peat mound in Limpopo Province is being undertaken in collaboration with Dr. Zoe Henderson of the National Museum, Bloemfontein, Professor Spike McCarthy (Wits Geology), Dr. Stephan Woodborne (CSIR Pretoria), Professor Louis Scott (University of the Free State), Professor Lyn Wadley (Wits Archaeology) and Professor Raman Sukumar (Indian Institute for Science, Bangalore). In the second field season during 2006 a 4 x 4 x 2.2 m deep trench on the margin of the peat mound was opened. This revealed a spectacular stratigraphic sequence and palaeosol yielding 60 *in situ* Middle Stone Age artefacts. A 2 x 2 x 3 m deep excavation in the moist centre of the mound yielded charcoal and seeds, plus numerous well-preserved rhino foot bones found immediately above a white sand layer dated to 10 kya. Excavated material was sorted and sent for dating and isotopic analysis. Organic remains were dried and lithics photographed. Analysis of sediments, peat, archaeological and palaeontological remains is ongoing. All plans and section drawings have been digitised.

#### 2.2.5 Excavation of a large mammal mass death assemblage.

Study of this Holocene donga deposit is undertaken in collaboration with Ms. Christine Steininger (PhD candidate, Palaeoanthropology), Dr. James Brink (Florisbad Research Station), Dr. Johann Neveling (Council for Geoscience, Pretoria) and Ms. Lucy Pereira (MSc candidate, Palaeontology). Radiocarbon dating confirmed the identification of three depositional events at the site, with ages of 3 610 BP for the upper and 4 610 BP for the lower bone bed horizons. During the 2006 field season a 4 x 6 m area was opened to increase the sample size and expose the position of the fossils in the deposit. A large and well-preserved faunal sample was uncovered, plotted, and transferred to the National Museum, Bloemfontein for preparation and curation. Different scenarios to explain the mode of death and accumulation of the fossil deposit were presented at the PSSA meeting in Grahamstown in 2006. GIS data are currently being processed for enable 3-dimensional reconstruction of the site.

Associated with the fossil site is a modern long term actualistic study involving an eland carcass in an adjacent gully. Two data collection trips were made in 2006.

#### 2.2.6 Taphonomy of Plio-Pleistocene Cooper's D faunal assemblage.

Removal of manganese and iron oxide deposits from the fauna is ongoing. Chemical cleaning by Professor Ewa Cukrowska (Wits Chemistry) and Steven Pole (PhD. Candidate, Wits Chemistry) has revealed a number of unusual insect traces, which has led to the identification of various new actualistic research projects.

#### 2.2.7 Middle Stone Age bone tools from Sibudu cave.

This study is made in collaboration with Dr. Francesco d'Errico (French CNRS, University of Bordeaux) and Professor Lyn Wadley (Wit Archaeology). Newly retrieved bone implements from Middle Stone Age deposits at Sibudu cave, South Africa, confirm the existence of a bone tool industry for the Howiesonspoor (HP) techno-complex. Previously, the only evidence came from a single bone point found in the lowest HP levels at Klasies River Mouth, dated to *c.* 65-70 kya. Data are currently being collected

from a large comparative sample of Later Stone Age and Bushman bone points and Dr Backwell is preparing a manuscript on the material and its probable functions.

### 2.3 Dr M. Bamford

#### 2.3.1 Karoo Fossil Woods

No Karoo woods were collected this year.

#### 2.3.2 Karoo palaeobotany:

The project previously funded by the NSF (USA) in collaboration with Dr Conrad Labandiera of the Smithsonian Institution, Washington DC, USA, and Prof Bob Gastaldo of Colby College, Maine, USA, Dr Johann Neveling (Council for Geosciences) and Dr Rose Prevec (Rhodes University and Albany Museum) continued this year with other funding. Labandiera and Prevec have had two sessions in the herbarium morphotyping leaves and counting insect damage types. In June the entire team spent time in the field mapping and collecting plant material from just below the P-Tr boundary in the southern Karoo. The publication on the Clouston material is well on its way and should be submitted by mid 2007.

#### 2.3.3 Cretaceous and Tertiary Woods

The paper on the Vryburg and Mahura Muthla fossil woods is awaiting the input of Dr Ward who has now joined a private consulting company and has had no spare time. It will be submitted to the South African Journal of Geology later in 2007 when Dr Mike de Wit returns from the DRC.

2.3.4 Continued research at Olduvai Gorge. Wenner-Gren Foundation funding for a small team was received which enabled fieldwork in July-August 2006. More collecting of macroplants and phytoliths was done and more soil samples from modern analogous sites in the Serengeti Plains and Ngorongoro Crater were collected. Two phytolith papers have been published, two papers were presented at conferences and the grasslands paper is under revision.

2.3.5 Drs Marion Bamford and David Cantrill collected fossil woods and pollen samples from Mkhuze and Pondoland in April for the Biodiversity in Southern Africa, SIDA-NRF funded project. In September Dr Bamford visited the Swedish Natural History Museum and researched the pollen material and also began the writing up of two papers which will be submitted in 2007.

2.3.6 Two chapters on the fossil woods, seeds and leaves (Bamford) and one on the modern vegetation (Andrews, Bamford, Njau and Leliyo) have been submitted for the monograph on the Laetoli geology and palaeontology to be edited by Prof Terry Harrison. This project has been completed.

2.3.7 In March and April 2006 Prof Charles Peters and Dr Marion Bamford continued to build up a modern reference collection of plant materials (wood, leaves, seeds, pollen) for comparisons with Tertiary fossil materials as well as the study of the ecology of modern wetlands (Seekoivlei). Several papers are in an advanced stage of writing up.

- 2.3.8 In June 2006 Dr Bamford joined the Koobi Fora Field School in Kenya to teach the students plant ecology and to collect more reference material for research. Jack Harris presented a paper on the research at the African Genesis Conference in Johannesburg; David Braun presented data from the research group at the Palaeoanthropology Society Meeting in Puerto Rico and Dr Bamford presented another paper at the European Palaeobotany and Palynology Conference in Prague. A paper with detailed wood descriptions is in progress. Team: Prof Jack Harris, David Braun, Jack McCoy, Chris Dupre and students (Rutgers University, New Jersey, USA) and Marion Bamford.
- 2.3.9 For the Early Miocene Rusinga Island Flora project with funding from the Leakey Foundation, in collaboration with Prof Margaret Collinson (Royal Holloway University, UK) and Prof Peter Andrews, (Natural History Museum, London), Dr Bamford visited the collections in Nairobi in June 2006, and in London in August. A paper on the taphonomy of the sites is in progress and several more are planned on the taxonomy of the seeds but funding will have to be sought from elsewhere.
- 2.3.10 There has been no progress on the identification of the Ndongondwane charcoal from the Tugela Valley, KwaZulu Natal, with Prof Haskel Greenfield (University of Manitoba, Winnipeg, Canada) except that Dr Bamford is continuing to build a reference collection.
- 2.3.11 A new project comparing the angiosperm floras of South America and southern Africa with Dr Alba Zamuner, (University of La Plata, Argentina) and Prof Tania Dutra, (Unisinos, Brazil) using funding from the Wits University Council Overseas Fellowship, has begun with a trip to Argentina in February and to Brazil in December. Two papers are in progress from the Argentinian material. In Brazil there was very little relevant information but the trip was not wasted as two other projects will develop from this. Dr Rose Prevec (Rhodes University) accompanied Dr Bamford and they will expand their P-Tr project to include some Brazilian material and collaboration.

#### 2.4 Prof L.R. Berger

During the course of 2006, Prof. Berger concentrated on four main areas of research, a number of exploratory expeditions, the production of a popular science book and the creation of several science documentaries. The four main research areas he worked on were: Plio-Pleistocene taphonomy in relation to early African hominins with particular focus on the Taung Child and Taung site, the anatomy and comparative morphology of Plio-Pleistocene aged hominins, the fauna and archaeology of early hominin-bearing sites on the Witwatersrand and the biology and variation of a newly discovered population of hominins in the far western Pacific.

- 2.4.1 Work on the taphonomy of the Taung child is a continuation of research conducted over the last decade and resulted in the publication of a major paper in the *American Journal of Physical Anthropology* suggesting substantive evidence on the Taung child itself of predatory damage by a large bird of prey – a hypothesis Prof. Berger and Prof. Ron Clarke had posited in 1985.

- 2.4.2 The work on early hominin morphology resulted in two publications – a multi-authored work on a new basicranium from Swartkrans and a single authored publication in the *Journal of Human Evolution* on the ongoing debate concerning the limb proportions of *Australopithecus africanus*, stimulated by Professors Berger and Henry McHenry's 1996 – 1997 research proposing differential “ape-like” proportions in this species.
- 2.4.3 Continuing work on the fossil fauna and archaeology from Cradle of Humankind sites resulted in two publications and several papers will appear in 2007 on this matter.
- 2.4.4 A collaborative paper on the morphology of fossil saber-toothed cats from the Coopers site – South Africa has been submitted for publication.
- 2.4.5 Following the discovery of abundant fossil hominins in the Western Pacific, Professor Berger conducted three expeditions to a remote archipelago to study this find. Two additional expeditions are planned for early 2007 and a publication is also planned for this year.
- 2.4.6 Fossil excavations continued at two sites in the Cradle of Humankind – Gladysvale and Coopers where abundant fauna including hominins continue to be recovered.
- 2.4.7 Prof. Berger conducted an exploratory trip to Zimbabwe to explore the potential of early hominin bearing sites in that country and will continue this line of research in 2007.
- 2.4.8 Prof. Berger worked on a series of science documentaries which will air in 2007/08 and published a co-authored popular science book on Sterkfontein.
- 2.4.9 Continued research in collaboration with Dr. L. Backwell is being undertaken on fossil hairs from the Gladysvale site – South Africa.
- 2.4.10 Continued the ongoing research with Dr Backwell on cut marks human remains and possible cannibalism from sites in southern Africa.
- 2.4.11 Continued collaborative studies of the fossil *Theropithecus* fossils from the Coopers cave South Africa.
- 2.4.12 Continued exploration for Early Mammal fossils in the Cretaceous and Early Palaeogene of Northern South Africa with S. Churchill and E. Hamilton
- 2.4.13 Continued collaborative research on new stone tool material from the Gladysvale site – South Africa and a manuscript was published.
- 2.4.14 Finalized collaborative research on new stone tools from the Plovers Lake II site – South Africa and a manuscript is in preparation

2.4.15 Finalized collaborative research on new stone tools from the Coopers site – South Africa and a manuscript is in preparation.

## 2.5 Dr R. Govender

Dr Govender was awarded her PhD in May 2006 and in July she began a Postdoctoral Fellowship at the Bernard Price Institute for Palaeontological Research. In September some of the results of her PhD were presented at the 14<sup>th</sup> Biannual PSSA conference in Grahamstown.

2.5.1 Dinocephalian postcranial studies: Two papers resulting from the MSc thesis of Dr Govender are in preparation - “Vertebral features of *Tapinocaninus pamela* (Therapsida: Dinocephalia) supports its primitive status by Romala Govender, Bruce S. Rubidge, Alain J Renaut” was submitted to the Zoological Journal of the Linnean Society in September 2006.

- a first draft of a paper on the appendicular skeleton of *Tapinocaninus* has been written and is currently being finalized.

2.5.2 Postcranial studies on large Triassic dicynodonts. During her PhD studies Dr Govender recognized, in addition to *Kannemeyeria*, a second morphotype of large dicynodont in the *Cynognathus* Assemblage Zone. As part of her postdoctoral research, in October 2006 Dr Govender visited the Natural History Museum in London Tübingen University in Germany to study postcranial material of Triassic dicynodonts in their care. It was a successful visit which has raised more questions about the material collected from the *Cynognathus* Assemblage Zone (subzone B) of South Africa. In December Dr Govender visited the Geological Survey in Namibia to examine the postcranial material of Triassic dicynodonts from Namibia. The material consisted mainly of postcranial skeletons that belonged to the dicynodont *Dolichuranus primaevus* and *Kannemeyeria lophorhinus*. During November Dr Govender began to write first drafts of two papers describing the postcranial anatomy of *Kannemeyeria simocephalus* and the new morphotype from the *Cynognathus* Assemblage Zone (subzone B) of South Africa.

## 2.5 Dr P J Hancox.

Dr Hancox, who resigned from the position of Senior Lecturer in the School of Geosciences, joined the BPI Palaeontology on a postdoctoral fellowship in March 2006. Dr Hancox’s work over the past ten years has focused on the rocks and fossils of the Burgersdorp Formation and its included *Cynognathus* Assemblage Zone. To this end the following projects will be completed in 2005:

Hancox *et al.*, (2005) proposed a potential threefold subdivision of the *Cynognathus* Assemblage Zone based on the presence at different stratigraphic levels of key mastodonsaurid amphibian taxa. In the past ten years this work has been added to and refined. A paper was published in *Palaeontologia africana* in 2006.

2.5.1 Description of a new erythrosuchid archosaur from the lowermost levels of the *Cynognathus* Assemblage Zone. Collaborators include: Drs D.Gower and A.Sennikov. At this stage the manuscript is in the hands of Dr Gower.

- 2.5.2 The palaeoenvironments, taphonomy and palaeocology of the sites containing a *Cynognathus* subzone A fauna is being written up for publication in *Palaeoclimatology, Palaeogeography, Palaeoecology*.

## 2.7 Prof B.S. Rubidge

### 2.7.1 Litho- and Biostratigraphy of the Lower Beaufort around the basin:

During March 2006 a two week field excursion was undertaken to localities in the lower Beaufort in the Somerset East, Klipplaat and Prince Albert districts. A week was spent in the company of Charlton Dube, Doctor Mbense (BPI) and Billy De Klerk, Vincent?? (Albany Museum) on Brintjieshoogte where Rubidge had previously located a volcanic ash. The purpose of this trip was to find biozone defining fossils in order to determine the age of the relevant biozone. Several fossils of the *Cistecephalus* Assemblage Zone were collected and a manuscript is currently in preparation in collaboration with Sam Bowring (MIT) and Billy de Klerk.

While in the southern Karoo Rubidge accompanied Michiel De Kock (University of Johannesburg) to farms in the Klipplaat district in order to undertake palaeomagnetic work in the lower Beaufort at localities where Rubidge had previously collected volcanic ashes. The palaeomag samples have been analysed by Mr De Kock but yielded a Jurassic overprint.

The BPI team then progressed to the farm Belgie in the Prince Albert district to collect the skeleton of the pareiasaur which has been preliminarily identified as *Nochelosaurus*. This genus is known from only 4 very fragmentary specimens and the new relatively complete specimen should reveal much new information on the genus.

- 2.7.2 Palaeosurface on the Ecca-Beaufort contact in the Estcourt district. Drs. Billy de Klerk has made a cast of the trackway from the mound made in the field last year and is currently analyzing the morphology of the amphibian trackway. Rubidge has written up the first draft of a manuscript describing the geology of the occurrence, and de Klerk will contribute the section on the trackway.

- 2.7.3 Description of the postcranial skeleton of *Tapinocaninus*, a new primitive tapinocephaline dinocephalian. Bruce Rubidge has been preparing this skeleton since 1984, and Romala Govender described the specimen for her MSc which was successfully submitted at the beginning of 2002. Govender R, Rubidge B & Renault A have submitted a paper on the axial skeleton for publication, and have written the first draft of another manuscript on the appendicular skeleton.

- 2.7.4 Taxonomic revision of the Dinocephalia (with Dr J A van den Heever, University of Stellenbosch) (ongoing project). The Dinocephalia are a large and important group of synapsids known only from southern Africa, China and Russia. This revision is a long-term project which will take a lifetime to complete, as the animals are large and take a long time to prepare.

Taxonomic revision of the Anteosauridae. The paper is still in the hands of van den Heever.

- 2.7.5 Taxonomic revision of the "Biarmosuchia". The "Biarmosuchia" are considered to be the most primitive therapsid taxon. Fossils of this group have been found in the Permian rocks of only South Africa and Russia. Rubidge spent a week at the Izeko Museum in Cape Town researching the cranial morphology of *Hipposaurus* and he has written up the first draft of a manuscript which has been sent to Dr Chris Sidor who is the co-author in the project. The holotype of *H. brinki* was taken on loan and has been undergoing preparation at the BPI. During 2006 three papers describing *Herpetoscylax*, *Parapurnetia* and *Pachydectes* were published and are reported later in this report.
- 2.7.6 Description of new dicynodonts from the lower Beaufort Group. An exciting skull of a small dicynodont with postcanine teeth was collected in the lowermost Beaufort by Charlton Dube in the Prince Albert Road area. Honours student Zubair Jinnah described the skull as part of his honours project and decided that this was *Eodicynodon oosthuizeni*. As this is stratigraphically the highest occurring specimen of the genus, Jinnah and Rubidge have submitted a manuscript for publication on the biostratigraphic implications of this find.
- 2.6.7 Amphibian fossils. Together with Ashleigh Jeannot and Ross Damiani a paper on *Lydekkerina* has been published in the Journal of Vertebrate Palaeontology.
- 2.7.8 Postcranial anatomy of therocephalian therapsids. This project is an extension of the PhD project of Heidi Fourie (Transvaal Museum) who completed her thesis under the supervision of Professor Rubidge. Heidi Fourie and Bruce Rubidge have submitted a manuscript on the postcranium of *Ictidosuchops* and are currently attending to reviewers comments.
- 2.7.9 The bio- and lithostratigraphy of the Permo-Triassic boundary in the northern part of the Karoo Basin. Anthony Rutherford has taken a long time to complete this project but he is now in the final stages of completing his MSc on the bio- and lithostratigraphy of the middle Beaufort in the Thaba Nchu area. He has been doing this on a part-time basis since 2004 under the joint supervision of Dr John Hancox and Prof Bruce Rubidge.
- 2.7.10 Database of Karoo fossil localities: For her PhD thesis Ms Merrill Nicolas has embarked on the very large task of compiling a GIS database of all fossils housed in South African institutions with data on their localities. This project, under the supervision of Prof Bruce Rubidge, will have important implications for understanding and enhancing biogeography, biodiversity and biostratigraphy of continental faunas of the Permian and Triassic periods. Ms Nicolas has completed her PhD thesis which has now been submitted for examination.

## 2.8 Dr A Yates

- 2.8.1 The origin and early evolution of the dinosaurian titans: New evidence of early sauropod history from South Africa. This National Geographic Funded Project was initiated during 2004 in collaboration with Drs Matt Bonnan (University of Western Illinois), Johann Neveling (Council for Geoscience) and John Hancox. Three weeks of fieldwork was undertaken to Heebo Farms in the Rozendal district in March-April to continue with excavation of a new species of sauropod dinosaur that was discovered previously. Additionally a new bone bed on the same farm was excavated. This

field trip was wildly successful, with the following significant results: the first skull bone of the new sauropod, a new species of primitive sauropodomorph from the same quarry, a new species of large prosauropod from the new site known from moderately complete remains including a partial skull, evidence of a very large theropod (estimated mass > 1000 kg) in the new quarry, a probable stegosaur which would be the oldest known example in the world. An announcement paper describing the new dinosaur fauna, its geological context and palaeoenvironmental implications is in preparation for submission by the end of 2007. Several other papers ranging from the geology and taphonomy of the sites to the osteology and functional anatomy of the new taxa are in preparation.

- 2.8.2 The first complete skull of the Triassic dinosaur *Melanorosaurus* Haughton (Sauropodomorpha: Anchisauria). The only skull of this dinosaur is known from the Triassic of South Africa. Dr Yates has completed his description of the specimen and the paper was accepted for publication in *Special Papers in Palaeontology* in September 2006.
- 2.8.3 A new description of the forelimb of the basal sauropodomorph *Melanorosaurus*: implications for the evolution of pronation, manus shape and quadrupedalism in sauropod dinosaurs. This was a joint project with Dr. Matthew Bonnan was accepted for publication in *Special papers in Palaeontology* in September 2006.
- 2.8.4 Solving a dinosaurian puzzle: the identity of *Aliwalia rex* Galton. This project is partially based on the description of a new specimen of this rare dinosaur that was previously known from just a single fragmentary bone. It was published electronically in *Historical Biology* in November 2006.
- 2.8.5 Developmental digit identity frame shift and its timing in theropod dinosaurs including birds. A theoretical evolutionary development project jointly written with Prof. Robert Reisz to be submitted to *Evolutionary Development* in early 2007.
- 2.8.6. *Dolichuranus primaevus* (Therapsida: Anomodontia) from the Middle Triassic of Namibia and its phylogenetic relationships. Joint project with Dr. Ross Damiani, Dr. Allain Renaut, Cecilio Vasconcelos and Dr. John Hancox. Accepted for publication in *Palaeontology*.

### 3.1. Published articles

#### **CATEGORY 1 – BOOKS**

Berger, L.R. and Hilton-Barber, B. (2006) A guide to Sterkfontein – the Cradle of Humankind. Struik. Cape Town. isbn 1 7700 257 8

#### **CATEGORY 2 – CHAPTERS IN BOOKS (for the specialist)**

Sidor, C.A. and Rubidge, B.S. 2006. *Herpetoskylax hopsoni*, a new biarmosuchian (Therapsida: Biarmosuchia) from the Beaufort Group of South Africa. In: Carrano, M.T., Gaudin, T.J., Blob, R.W., and Wible, J.R. (Eds), Amniote Paleobiology. Perspectives on the Evolution of Mammals, Birds and Reptiles. University of Chicago Press, Chicago. pp. 76-112.

#### **CATEGORY 3a – ACADEMIC JOURNAL ARTICLES – non accredited**

**Raath**, M.A. and **Rubidge**, B.S. 2005. James William Kitching (1922-2003): a tribute. *Palaeontologia africana* 41, 1-6.

**Yates**, A.M., 2006. Solving a dinosaurian puzzle: the identity of *Aliwalia rex* Galton. *Historical Biology*. 2006, 1-31.

#### **CATEGORY 3b – ACADEMIC JOURNAL ARTICLES – accredited**

**Abdala**, F. and Allinson, M. 2005. The taxonomic status of *Parathrinaxodon proops* (Therapsida: Cynodontia), with comments on the morphology of the palate in basal cynodonts. *Palaeontologia africana* 41, 45-52.

**Abdala**, F., **Cisneros**, J.C. and Smith, R.M.H. 2006. Faunal aggregation in the Early Triassic Karoo Basin: earliest evidence of shelter-sharing behaviour among tetrapods? *Palaios* 21, 507-512.

**Abdala**, F., Neveling, J. and Welman, J. 2006. A new trirachodontid from the lower levels of the Burgersdorp Formation (Lower Triassic) of the Beaufort Group, South Africa and the cladistic relationships of Gondwanan gomphodonts. *Zoological Journal of the Linnean Society* 147, 383-413.

Albert, R.M., **Bamford**, M.K. and Cabanes, D. 2006. Taphonomy of phytoliths and macroplants in different soils from Olduvai Gorge (Tanzania) and application to Plio-Pleistocene palaeoanthropological samples. *Quaternary International* 148, 78-94.

**Bamford**, M.K., Albert, R.M. and Cabanes, D. 2006. Plio-Pleistocene macroplant fossil remains and phytoliths from lowermost Bed II in the eastern palaeolake margin of Olduvai Gorge, Tanzania. *Quaternary International* 148, 95-112.

Barale, G., **Bamford**, M.K., **Gomez**, B., Broderick, T.J., **Raath**, M.A. and **Cadman**, A. 2005. A fossil peat deposit from the Late Triassic (Carnian) of Zimbabwe with preserved cuticle of the Pteridospermopsida and Ginkgoales, and its geological setting. *Palaeontologia africana* 41, 89-100

Barrett, P.M. and **Yates**, A.M. 2005. New information on the palate and lower jaw of *Massospondylus* (Dinosauria: Sauropodomorpha). *Palaeontologia africana* 41, 123-130.

**Bender**, P. 2005. A new deep-bodied Late Permian actinopterygian fish from the Beaufort Group, South Africa. *Palaeontologia africana* 41, 2-22.

**Berger**, L.R. 2006. Predatory bird damage to the Taung type-skull of *Australopithecus africanus* Dart 1925. *American Journal of Physical Anthropology* 131, 166-168.

**Berger**, R.L. 2006. Comments on Dobson (2005), body proportions in early hominins, and the joint and limb proportions differences between Stw 431 (*A. africanus*) and A.L. 288-1 (*A. afarensis*). *Journal of Human Evolution* 51, 109-110.

**Damiani**, R., Sidor, C.A., Steyer, J.S., Smith, R.M.H., Larsson, H.C.E., Maga, A. & Ide, O. 2006. The vertebrate fauna of the Upper Permian of Niger. IV. The primitive temnospondyl *Saharastega moradiensis*. *Journal of Vertebrate Paleontology*, 26, 559-572.

De Ruiter, D.J., **Steininger**, C.M. and **Berger**, L.R. 2006. a cranial base of *Australopithecus robustus* from the Hanging Remnant of Swartkrans, South Africa. *American Journal of Physical Anthropology* 130, 435-444.

Flores, N.P. Giannini, N.P. and **Abdala**, F. 2006. Comparative postnatal ontogeny of the skull in the australidelphian metatherian, *Dasyurus albopunctatus* (Marsupialia: Dasyuromorpha: Dasyuridae). *Journal of Morphology* 267: 426-440.

**Gess**, R.W., **Coates**, M.I., **Rubidge**, B.S. 2006. A lamprey from the Devonian period of South Africa. *Nature* 443, 981-984.

Hall, G., **Pickering**, R., **Lacruz**, R., Hancox, P.J., **Berger**, R.L. and Schmid, P. 2006. An Acheulean hand axe from Gladysvale Cave site, Gauteng, South Africa. *South African Journal of Science* 102, 103-106.

**Jeannot**, A.M., **Damiani**, R. and **Rubidge**, B.S. 2006. Cranial anatomy of the Early Triassic Stereospondyl *Lydekkerina huxleyi* (Tetrapoda: Temnospondyli) and the taxonomy of South African lydekkerinids. *Journal of Vertebrate Paleontology* 26, 822-838.

**Lacruz**, R.S. and Bromage, T.G. 2006. Appositoinal enamel growth in molars of South African fossil hominids. *Journal of Anatomy* 209, 13-20.

- Lacruz, R., Rozzi, F.R. and Bromage, T.G.** 2006. Variation in enamel development of South African fossil hominids. *Journal of Human Evolution*. 51, 580-590.
- Lacruz, R., Turner, A. and Berger, L.R.** 2006. New *Dinofelis* (Carnivora: Machairodontinae) remains from Sterkfontein Valley sites and a taxonomic revision of the genus in southern Africa. *Annals of the Transvaal Museum* 43, 89-106.
- McCrae, C. and Potze, S.** 2006. Analysis of microfauna-bearing breccia from Kromdraai A in the Cradle of Humankind World Heritage Site. *Annals of the Transvaal Museum* 43, 107-110.
- Neveling, J., Hancox, P.J. and **Rubidge, B.S.** 2005. Biostratigraphy of the lower Burgersdorp Formation (Beaufort Group; Karoo Supergroup) of South Africa – implications for the stratigraphic ranges of early Triassic tetrapods. *Palaeontologia africana* 41, 81-88.
- Raath, M.A. and Yates, A.M.** 2005. Preliminary report of a large theropod dinosaur trackway in Clarens Formation sandstone (Early Jurassic) in the Paul Roux district, northeastern Free State, South Africa. *Palaeontologia africana* 41, 101-104.
- Renaut, R. and Bamford, M.K.** 2006. Results of preliminary palynological analysis at Sibudu Cave. *Southern African Humanities* 18, 235-240.
- Rubidge, B.S., Sidor, C.A., and Modesto, S.P.** 2006. A new burnetiamorph (Therapsida: Biarmosuchia) from the Middle Permian of South Africa. *Journal of Paleontology* 80(4), 740-749.
- Sidor, C.A. and **Hancox, P.J.** 2006. *Elliotherium kersteni*, a new trithelodontid from the Lower Elliot Formation (Upper Triassic) of South Africa. *Journal of Paleontology* 80(2), 333-342.
- Smith, R.M.H., **Rubidge, B.S., Sidor, C.A.** 2006. A new burnetiid (Therapsida: Biarmosuchia) from the Upper Permian of South Africa and its biogeographic implications. *Journal of Vertebrate Paleontology* 26, 31-343.
- Warren, A.A., Damiani, R., **Yates, A.M.** 2006 The South African stereospondyl *Lydekkerina huxleyi* (Tetrapoda, Temnospondyli) from the Lower Triassic of Australia. *Geological Magazine* 143, 877-886.
- Yates, A.M.** 2005. A new theropod dinosaur from the Early Jurassic of South Africa and its implications for the early evolution of theropods. *Palaeontologia africana* 41, 105-122.
- Zipfel, B., Kidd, R.** 2006. Hominin first metatarsals (SKX 5017 and SK 1813) from Swartkrans: a morphometric analysis. *Homo: Journal of Comparative Human Biology*. 57: 117-131.

### **CATEGORY 5 – EDITORSHIPS – not for subsidy**

*Palaeontologia africana*, Volume 41 (Kitching Memorial volume) 2005 (printed 2006).

Editor: Bamford, M.K.

Associate Editors: Backwell, L.R., Rubidge, B.S., Yates, A.M.

*Annals of the South African Museum.*

Editorial Board: Rubidge, BS

*Researches of the National Museum.*

Editorial Board: Rubidge, B.S.

### **OTHER PUBLICATIONS**

Berger, L.R. 2006. Megalodon – once were sea monsters. *Divestyle* Sept/Oct 2006, 68-70.

### **CONFERENCE ABSTRACTS**

**Abdala**, F. 2006. La filogenia de Eutheriodontia y los cambios de diversidad durante la transición a mamaliformes basales. V Simposio Brasileiro de Paleontología de vertebrados, Santa Maria, Rio Grande do Sul. *Revista Ciencia e Natura*: 65.

**Abdala**, F. and Smith, R.M.H. 2006. Gondwanan Middle Triassic cynodonts from Namibia. 14<sup>th</sup> Biennial Palaeontological Society of Southern Africa, Albany Museum and Rhodes University, Grahamstown, 7-10 September 2006; p. 1.

Albert, R.M., **Bamford**, M.K. and Cabanes, D. 2006. Reconstruction of vegetation of the eastern palaeolake margin of Olduvai Gorge, Tanzania, during Lowermost Bed II times. Abstracts, 6th International Meeting on Phytolith Research, ICREA, Barcelona, 12-15 September 2006. pp. 3-4.

**Backwell**, L.R. and d'Errico, F. 2006. Bone tools and the cultural adaptations of early hominids from South and East Africa. African Genesis Conference, University of the Witwatersrand, Medical School, 8-14 January 2006; p. 51.

**Backwell**, L.R. and d'Errico, F. 2006. Early hominid bone tool technology and utilisation in eastern and southern Africa. Abstract for the Palaeoanthropological Society Meeting, San Juan, Puerto Rico, 24-26 April 2006; p. A12.

**Backwell**, L.R., **Steininger**, C.M., Brink, J., Neveling, J., Rossouw, L., and **Pereira**, L. 2006. Large mammal mass death accumulation in the Holocene of South Africa. 14<sup>th</sup> Biennial Palaeontological Society of Southern Africa, Albany Museum and Rhodes University, Grahamstown, 7-10 September 2006; p. 4.

**Bamford**, M.K. 2006. Keynote address: Palaeozoic and Mesozoic woods from southern Africa; links with South America. Palaeontological Society of Brazil, Annual Conference, UNISINOS, Sao Leopoldo, Rio Grande do Sul, 7 December 2006.

**Bamford**, M. K., Harris, J., and Braun, D. 2006. Pliocene fossil woods from Koobi Fora, East Turkana, Kenya. Abstract Volume, 7<sup>th</sup> European Palaeobotany-Palynology Conference, Prague, September 6-11, 2006. National Museum Prague, p. 9. ISBN: 80-7036-198-0.

**Berger**, L.R. 2006. Who killed the Taung child? An eighty year palaeo-murder mystery solved. African Genesis Conference, University of the Witwatersrand, Medical School, 8-14 January 2006; p. 58, abstract.

**Blackbeard**, M. & **Yates**, A.M. Poster: The taphonomy of an Early Jurassic dinosaur bonebed in the northern Free State. 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

Blumenschine, R.J. Masao, F.M., Peters, C.R., Tacktikos, J., Albert, R.M., Andrews, P., **Bamford**, M.K., Ebert, J., Hay, R.L., Njau, J., Stanistreet, I.B., Stolhoffen, H. 2006. Effect of proximity to stone material sources on the landscape distribution of Oldowan stone artefacts in the Plio-Pleistocene Olduvai Basin. Abstracts, A13, Paleoanthropology Society Meetings, April 2006, San Juan, Puerto Rico.

Bonnan, M.F. and **Yates**, A.M.. 2006. The forelimb of the basal sauropodomorph *Melanorosaurus* and the evolution of pronation, manus shape, and quadrupedalism in sauropods. Sixty-sixth annual meeting of the Society of Vertebrate Paleontology, October 2006, Ottawa

Braun, D.R., Harris, J.W.K., McCoy, J., Quinn, R.L., **Bamford**, M., Bishop, L., Lepre, C.J. and Kibunjia, M. Pliocene hominin behavioural adaptations: new evidence from the Koobi Fora Formation. Abstracts, A14, Paleoanthropology Society Meetings, April 2006, San Juan, Puerto Rico.

Churchill, S.E., **Berger**, R.L. and **Zondo**, H. 2006. Body size and shape in southern African Middle Pleistocene Homo. African Genesis Conference, University of the Witwatersrand, Medical School, 8-14 January 2006; p. 43, abstract.

**Cisneros**, J.C.. 2006. New procolophonid parareptile from the Katberg Formation (*Lystrosaurus* Assemblage Zone, Lower Triassic) of South Africa. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Cisneros**, J.C. & Tsuji, L.A. 2006. A “nycteroleter” parareptile in the Permian of South Africa. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**de Klerk**, B. & Brink, J.S. 2006. Evolution in action: documenting hybridization in wildebeest. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Gess, R.** 2006. The Devonian, Famennian, Witpoort Formation (Witteberg group) fauna of Grahamstown. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Govender, R.** 2006. Two dicynodont postcranial morphotypes from the *Cynognathus* assemblage Zone (subzone B) of South Africa and their taxonomic implications. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Jinnah, Z.A. & Rubidge, B.S.** 2006. A double tusked dicynodont and its biostratigraphic significance. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Lacruz, R.** 2006. Enamel development in South African Hominids. African Genesis Conference, University of the Witwatersrand, Medical School, 8-14 January 2006; p. 73, abstract.

**Mason, R.M., Rubidge, B.S. & Hancox, P.J.** 2006. The Ecca-Beaufort contact in the Eastern Cape Province – reappraisal of litho- and biostratigraphy. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**McCrae, C.** Poster. Analysis of microfauna-bearing breccia from Kromdraai-A in the Cradle of Humankind World Heritage Site. 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**McCrae, C. & Potze, S.** Poster. The latest dirt on acid preparation. 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**McKay, I.J.** 2006. A new genus of the cockroach family, Umenocoleidea from Cretaceous deposits at Orapa, Botswana. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**McKay, I.J.** 2006. Palaeontology and evolutionary thought in South African schools: providing a fresh context to promote palaeontology and launch a new network of museums- the Kitching Fossil Gallery, the Wits Origins Centre and the Kitching Fossil Exploration Centre. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Mocke, H., Abdala, F. and Hancox, P.J.** 2006. *Allotherian*-like teeth in the Lower Triassic of South Africa. 14<sup>th</sup> Biennial Palaeontological Society of Southern Africa, Albany Museum and Rhodes University, Grahamstown, 7-10 September 2006; p. 34.

**Mothupi, T. and Backwell, L.R.** 2006. Taphonomy of the Late Pleistocene Plover's Lake faunal assemblage. 14<sup>th</sup> Biennial Palaeontological Society of Southern Africa, Albany Museum and Rhodes University, Grahamstown, 7-10 September 2006; p. 35.

Neveling, J., **Hancox, P.J., Yates, A.M. & Bonnan, M.F.** 2006. Sedimentological perspectives on a unique Upper Elliot fossil locality in the north-eastern Free State. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Nicolas, M.** 2006. Analysis and application of Beaufort Group data. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Pereira, L.M.** 2006. Preliminary report on restoring identity to mummified human remains from South Africa: uncovering hidden information. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Rubidge, B.S. & De Klerk, W.J.** 2006. Only Albany dinocephalian reveals new toothy information. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Steininger, C.M.** 2006. Scratches and pits: the usefulness of dental microwear for interpreting palaeodiets. 14<sup>th</sup> Biennial Palaeontological Society of Southern Africa, Albany Museum and Rhodes University, Grahamstown, 7-10 September 2006.

**Steininger, C.M., de Ruiter, D, Franklin, R. and Berger, L.** New hominids from Cooper's Cave. African Genesis Conference, University of the Witwatersrand, Medical School, 8-14 January 2006; p. 88; poster abstract.

**Tawane, M.** Poster. A non-size dependant metrical and non-metrical study of the pelvic complexes of *Australopithecus africanus* and *Australopithecus afarensis*. 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

Thackeray, J.F., Senegas, F., Gommery, D., da Braga, J., Potze, S., **McCrae, C. & Balter, V.** Poster: Excavations at Kromdraai A and B. 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Vilakazi, N.** Poster: Hybridization and osteology, the case of bontebok and blesbok. 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Yates, A., Bonnan, M., Neveling, J. & Hancox, P.J.** 2006. A new dinosaur fauna from the Early Jurassic of South Africa. Oral presentation at the 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown 7-10 September 2006.

**Zipfel, B., Kidd, R.** 2006. Morphological discrimination in the human metatarsus: The relationship between structural variability, habitual behaviours and environment (Australasian Society for Human Biology 19<sup>th</sup> Annual Scientific Meeting, University of New South Wales, Kensington, Australia, 5-8 December 2005). *Homo: Journal of Comparative Human Biology*. 57: 143-144.

**Zipfel, B., Kidd, R.S.** 2006. Evolution of the human first metatarsal basal articular facet: a marker for habitual bipedalism? African Genesis Conference, University of the Witwatersrand, Medical School, 8-14 January 2006; pp. 90-91.

### 3.2. Articles in press

#### **\* Articles which have appeared in print subsequent to submission of articles to Wits Publications**

##### **CATEGORY 1:**

##### **Submission type: Chapters in books**

**Bamford M.K.** Fossil plants from the Cradle of Humankind. In: Bonner, P., Esterhuysen, A. and Jenkins, T. (eds). Search for Origins. Wits University Press, Johannesburg

Bromage, T.G., **Lacruz, R.**, Perez-Ochoa, A. and Boyde, A. Portable confocal scanning optical microscopy of *Australopithecus africanus* enamel microstructure. In Bailey, S and Hublin, J-J. (eds). Dental Palaeoanthropology, Springer, Berlin.

d'Errico, F. & **Backwell, L.R.** From Swartkrans to Arcy-sur-Cure. The use of bone tools in the Lower and Middle Palaeolithic. In E. Baquedano (Ed.), *El Universo Neanderthal*. Spain. (In press).

Rozzi, F.R. and **Lacruz, R.** (in press). Histological study of an upper incisor and molar of a bonobo (*Pan paniscus*) individual. In: Bailey, S and Hublin, J-J. (eds). Dental Palaeoanthropology, Springer, Berlin.

##### **CATEGORY 2:**

##### **Submission type: Academic Journal articles DE Submissible**

**Abdala F.** Redescription of *Platycraniellus elegans* from the Early Triassic of the Karoo Basin, South Africa, and the cladistic relationships of Eutheriodontia. *Palaeontology*.

**Abdala, F., Damiani, R., Yates, A** and Neveling, J. A non-mammaliaform cynodont from the Upper Triassic of South Africa: a therapsid Lazarus taxon? *Palaeontologia africana*.

Andrews, P.J. and **Bamford, M.K.** Past and present ecology of Laetoli, Tanzania. *Journal of Human Evolution*.

**Bamford, M.K.**, Peters, C.R., Stanistreet, I.R., Stollhofen, H. & Albert, R.M. (submitted Sept. 2005). Late Pliocene grassland from Olduvai Gorge, Tanzania. *Palaeogeography, Palaeoclimatology, Palaeocology*.

**Berger, L.R.**, Pickering, R., Kuhn, B., **Backwell, L.**, **Boshoff, P.** and **Hancox, J.** (in press) The first recorded occurrence of a fossil brown hyaena (*Parahyaena brunnea*) latrine (middens) in a cave situation in Africa from the Gladysvale site, South Africa. *Ann. Transvaal Mus.*

Bonnan, M. F. and **A. M. Yates.** (in press). A new description of the forelimb of the basal sauropodomorph *Melanorosaurus*: implications for the evolution of pronation, manus shape and quadrupedalism in sauropod dinosaurs. In Barrett, P. M. and Batten, D. J. (eds). Evolution and palaeobiology of early sauropodomorph dinosaurs. *Special Papers in Palaeontology*, 77.

Hartstone-Rose, A., DeRuiter, D., **Berger, L.R.**, Churchill, S. (in press) .A saber-tooth felid from Coopers Cave (Gauteng, South Africa) and its implications for *Megantereon* (Felidae Machairodontinae) taxonomy. *Pal. Afr.*

Botha, J., **Abdala, F.** and Smith, R..The oldest cynodont: new clues on the origin and diversification of the Cynodontia *Zoological Journal of the Linnean Society*.

\***Lacruz, R.** 2007. Enamel microstructure of the Hominid KB 5223 from Kromdraai, South Africa. *American Journal of Physical Anthropology* 132, 175-182.

**Lacruz, R.**, Rozzi, FR. & Bromage, TG. Linear enamel hypoplasia, weaning and age at death in the Taung child. *South African Journal of Science*.

Hall, G., **Berger, L.R.** and Schmid, P. A new handaxe locality at the Gladysvale site, South Africa. *S. African Journal of Science*.

**Yates, A. M.** Solving a dinosaurian puzzle: The identity of *Aliwalia rex* Galton. *Historical Biology*.

**Yates, A. M.** The first complete skull of the Triassic dinosaur *Melanorosaurus* Haughton (Sauropodomorpha, Anchisauria). In Barrett, P. M. and Batten, D. J. (eds). Evolution and palaeobiology of early sauropodomorph dinosaurs. *Special Papers in Palaeontology*, 77.

#### 4. CONFERENCES

Staff and students of the BPI Palaeontology participated in the following conferences.

##### **Abdala, F:**

September 2005: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Abdala, F.** and Smith, R. M. H. *Gondwanan Middle Triassic cynodonts from Namibia.*

Poster: **Mocke, H., Abdala, F. and Hancox, P. J.** *Allotherian-like teeth in the Lower Triassic of South Africa.*

**August 2006:** V Simposio Brasileiro de Paleontología de Vertebrados. Santa Maria, Rio Grande do Sul. Revista Ciencia e Natura: 65, 2-4 August.

Paper: **Abdala, F.** *La filogenia de Eutheriodontia y los cambios de diversidad durante la transición a mamaliformes basales*

### **Backwell, L.R:**

January 2006: African Genesis Conference, University of the Witwatersrand Medical School, 8-14 January.

Paper: **Backwell, L.R.** & d'Errico, F. 2006. *Bone tools and the cultural adaptations of early hominids from South and East Africa.*

April 2006: *Paleoanthropology Society Meeting*, 24-26 April, San Juan, Puerto Rico, pg. A12.

Paper: **Backwell, L.R.** & d'Errico, F. 2006. *Early hominid bone tool technology and utilisation in eastern and southern Africa.*

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Backwell, L.R., Steininger, C.M,** Brink, J., Neveling, J., Rossouw, L. & **Pereira, L.** *Large mammal mass death accumulation in the Holocene of South Africa.*

**Mothupi, T. Backwell, L.** 2006. *Taphonomy of the Late Pleistocene Plover's Lake faunal assemblage.*

### **Bamford, M.K:**

January 2006: African Genesis Conference, University of the Witwatersrand, Medical School, 8-14 January 2006. Attended but no presentation.

April 2006: Paleanthropology Society Meetings, April 2006, San Juan, Puerto Rico

Papers: Blumenschine, R.J. Masao, F.M., Peters, C.R., Tacktikos, J., Albert, R.M., Andrews, P., **Bamford, M.K.**, Ebert, J., Hay, R.L., Njau, J., Stanistreet, I.B., Stolhoffen, H. 2006. *Effect of proximity to stone material sources on the landscape distribution of Oldowan stone artefacts in the Plio-Pleistocene Olduvai Basin.*

Braun, D.R., Harris, J.W.K., McCoy, J., Quinn, R.L., **Bamford, M.**, Bishop, L., Lepre, C.J. and Kibunjia, M. *Pliocene hominin behavioural adaptations: new evidence from the Koobi Fora Formation*

September 2006: 7<sup>th</sup> European Palaeobotany-Palynology Conference, Prague, September 6-11, 2006. National Museum Prague.

Paper: **Bamford, M. K.**, Harris, J., and Braun, D. 2006. *Pliocene fossil woods from Koobi Fora, East Turkana, Kenya.*

December 2006: Annual Conference of the Society of Brazilian Palaeontology, UNISINOS, Sao Leopoldo, Rio Grande do Sul, Brazil 7-8 December 2006

Paper: **Bamford, M.K.** *Palaeozoic and Mesozoic Woods from Southern Africa: links with South America.* Keynote address.

**Berger, L.R.:**

January 2006: African Genesis Conference, University of the Witwatersrand Medical School, 8-14 January.

Paper: **Berger LR.** *New insight into the taphonomy of the Taung Child.*  
Churchill, S.E., **Berger, R.L.** and **Zondo, H.** 2006. *Body size and shape in southern African Middle Pleistocene Homo.*

June 2006: Young Presidents Organization – Johannesburg.

Paper: **Berger, LR.** *The Naked Ape - the African origins of Humanity.*

**Blackbeard, M:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Poster: **Blackbeard, M. & Yates, A.M.** *The taphonomy of an Early Jurassic dinosaur bone-bed in the northern Free State.*

**McKay, I:**

June 2006: Geoforum, 2006, ISCOM, Conference Centre, 22 – 23 June 2006.

Paper: **McKay I.J.** 2006. *Geosciences of the future: what's happening at schools?*

September 2006. Sixth International Congress for University Museums of UMAC, National Autonomous University of México, Mexico City, September 25 to October 1.

Paper: **McKay I.J.** *University museums in South Africa what strategies are they adopting to cope with a changing world?*

September 2006: IVth Conference of the Geoscience Educators Organisation; Bayreuth, Germany 18-

21 September, 2006.

Paper: **McKay I.J.** *A review of Geosciences in the new South African Curriculum and its reception in the classroom.*

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Papers: **McKay I.J.** *Palaeontology and evolutionary thought in South African schools: providing a fresh context to promote palaeontology and launch a new network of museums- the Kitching Fossil Gallery, the Wits Origins Centre and the Kitching Fossil Exploration Centre.*

**McKay I.J.** *A unique umenocolid cockroach (Umenocolidea: Dictyopera) from Orapa*

**Cisneros, J.C:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Papers: **Cisneros, J.C.** *New procolophonid parareptile from the Katberg Formation (Lystrosaurus Assemblage Zone, Lower Triassic) of South Africa.*

**Cisneros, J.C.** & Tsuji, L.A. 2006. *A “nycteroleter” parareptile in the Permian of South Africa.*

**De Klerk, B:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **de Klerk, B.** & Brink, J.S. 2006. *Evolution in action: documenting hybridization in wildebeest.*

**Gess, R:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Gess, R.** 2006. *The Devonian, Famennian, Witpoort Formation (Witteberg group) fauna of Grahamstown*

**Govender, R:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Govender, R.** 2006. *Two dicynodont postcranial morphotypes from the Cynognathus assemblage Zone (subzone B) of South Africa and their taxonomic implications*

**Lacruz, R:**

January 2006: African Genesis Conference, University of the Witwatersrand Medical School, 8-14 January.

Paper: **Lacruz, R.** *Enamel development in South African Hominids.*

**McCrae, C:**

Poster: **McCrae, C.** *Analysis of microfauna-bearing breccia from Kromdraai-A in the Cradle of Humankind World Heritage Site.*

**McCrae, C.** & Potze, S. *The latest dirt on acid preparation.*

Thackeray, J.F., Senegas, F., Gommery, D., da Braga, J., Potze, S., **McCrae, C.** & Balter, V. *Excavations at Kromdraai A and B.*

**Mocke, H:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Poster: **Mocke, H., Abdala, F.** and **Hancox, P.J.** *Allotherian-like teeth in the Lower Triassic of South Africa.*

**Mothupi, T:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Mothupi, T.** and **Backwell, L.R.** 2006. *Taphonomy of the Late Pleistocene Plover's Lake faunal assemblage*

**Nicolas, M:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Nicolas, M.** *Analysis and application of Beaufort Group data.*

**Pereira, L.M:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Pereira, L.M.** *Preliminary report on restoring identity to mummified human remains from South Africa: uncovering hidden information.*

**Rubidge, B.S:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Rubidge, B.S.** & De Klerk, W.J. 2006. *Only Albany dinocephalian reveals new toothy information.*

Jinnah, Z.A. & **Rubidge, B.S.** 2006. *A double tusked dicynodont and its biostratigraphic significance.*

**Mason, R.M., Rubidge, B.S. & Hancox, P.J.** 2006. *The Ecca-Beaufort contact in the Eastern Cape Province – reappraisal of litho- and biostratigraphy.*

**Steininger, C.M:**

January 2006: African Genesis Conference, University of the Witwatersrand Medical School, 8-14 January.

Poster: **Steininger, C.M.,** de Ruiter, D, **Franklin, R.** and **Berger, L.** *New hominids from Cooper's Cave.*

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Steininger, C.M.** *Scratches and pits: the usefulness of dental microwear for interpreting palaeodiets.*

**Tawane, M:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Poster: **Tawane, M.** *A non-size dependant metrical and non-metrical study of the pelvic complexes of Australopithecus africanus and Australopithecus afarensis.*

**Vilakazi, N:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Poster: **Vilakazi, N.** *Hybridization and osteology, the case of bontebok and blesbok.*

**Yates, A.M:**

September 2006: 14<sup>th</sup> Biennial Congress of the PSSA, Albany Museum and Rhodes University, Grahamstown, 7-10 September.

Paper: **Yates, A.**, Bonnan, M., Neveling, J. & **Hancox, P.J.** *A new dinosaur fauna from the Early Jurassic of South Africa.*

Neveling, J., **Hancox, P.J.**, **Yates, A.M.** & Bonnan, M.F. *Sedimentological perspectives on a unique Upper Elliot fossil locality in the north-eastern Free State.*

Poster: **Blackbeard, M.** & **Yates, A.M.** *The taphonomy of an Early Jurassic dinosaur bone-bed in the northern Free State.*

5. VISITS TO OTHER INSTITUTIONS

The staff of the Institute have visited various institutes for the purpose of collaboration and/or loan of material:

**Dr F Abdala**

Colección Paleontología de Vertebrados Lillo, Universidad Nacional de Tucuman, Argentina.  
Museu de Ciências e Tecnologia, Pontificia Universidade Catoica do Rio Grande do Sul, Porto Alegre, Brazil.

Palaeontological Collection of the Universidade Federal de Rio Grande do Sul, Porto Alegre, Brazil.

Fundacao Zoobotanica, Rio Grande do Sul, Porto Alegre, Brazil.

Museum of Paleontology, University of California at Berkeley.

Field Museum of Natural History, Chicago.

Department of Anatomy, University of Chicago.

**Dr L Backwell**

Institut de Préhistoire et de Géologie du Quaternaire, University of Bordeaux, France.

Centre de Recherche et de Restauration des Musées de France, Palais du Louvre, Paris.

National Metrology Laboratory, CSIR, Pretoria.

Iziko Museums, Cape Town.

Transvaal Museum, Pretoria.

Quaternary Dating and Research Unit, CSIR, Pretoria.

**Dr M Bamford**

University Nacional de La Plata

Museo Naturales de la Plata

National Museum, Nairobi, Kenya

Arusha Natural History Museum, Tanzania

SANBI, Pretoria  
British Museum of Natural History, London  
Natural History Museum, Prague  
Swedish Museum of Natural History, Stockholm  
Universidade Rio de Sinos, Sao Leopoldo, Brazil (UNISINOS)  
Universidade Federal de Rio Grande do Su, Porto Alegre, Brazil (UFRGS)  
Universidade Federal de Santa Catarina, Florianópolis, Brazil (UFSC)

**Prof L Berger**

The National Museum, Belau  
Georgia Southern University  
The Transvaal Museum  
National Geographic Society, Washington D.C.

**Dr M Raath**

South African Museum  
Albany Museum

**Professor B Rubidge**

Albany Museum, Grahamstown.  
South African Museum, Cape Town  
National Museum, Bloemfontein  
Rubidge Collection, Graaff-Reinet  
Transvaal Museum, Pretoria

**Dr A Yates**

South African Museum, CapeTown  
National Museum, Bloemfontein

6. VISITING SCIENTISTS

**From Africa**

Rose Prevec	Rhodes University, Grahamstown
Johann Neveling	Council for Geoscience, Pretoria
James Brink	National Museum, Bloemfontein
Roger Smith	Izeco Museums, Cape Town
Anusuya Chinsamy-Turan	UCT, Cape Town
Dr Billy de Klerk	Albany Museum, Grahamstown
Berhane Asfaw	RURS, Addis Ababa, Ethiopia
Michael de Kock	University of Johannesburg
Dr Heidi Fourie	Transvaal Museum, Pretoria
Dr Johann Neveling	Council for Geoscience, Pretoria
Gilbert Siko	Department of Science and Technology, Pretoria
Michael Cherry	Dept Zoology, Stellenbosch University

Steve Tolan                      Chipembe Wild Life Education Centre, Zambia  
Alan Morris                      Human Biology, UCT  
Jennifer Botha                   National Museum, Bloemfontein  
Elize Butler                      National Museum, Bloemfontein

### **From the Americas**

Conrad Labandeira              Dept of PaleoBiology, Smithsonian, Washington  
Robert Gastaldo                Colby College, Dept Geology Waterville ME USA  
Sam Grey                         Colby College, Dept Geology Waterville ME USA  
Charles Peters                 University of Georgia, Athens, USA  
Jackson Njau                     Rutgers University, New Brunswick,  
Prof Jack Harris                Rutgers University, New Brunswick  
Steven Churchill                Duke University, USA  
Darryl de Ruiter                Texas A&M University, Texas, USA  
Sean Modesto                 University College of Cape Breton, Canada  
Chris Gulbert                  Stony Brook University, USA  
Robert Reisz                    University of Toronto, Canada  
Peter Unger,                    University of Arkansas, USA  
Adam Huttenlocker              California State University, USA  
Michael Zondo                 Natural History Museum, Zimbabwe  
Nina Jablonski                 Department of Anthropology, USA  
Frederick Grine                National Museum, Washington  
Jeoffrey Schwarz                University of Pittsburgh, USA  
Liu Jun                          Columbia University, Columbia

### **From Australia**

N Milne                          University of Western Australia  
Patrick Bender                 Winnaleah District High School, Tasmania, Australia  
Alan Cooper                    Earth & Environmental Sciences Adelaide University  
Patricia Rich                    Texas Technical University

### **From Europe**

Prof Martin Pickford            College de France, Paris  
Prof David Cantrill             Swedish Museum Natural History, Sweden  
Prof Brigitte Senut              Musée National de l'Histoire Naturelle, Paris  
Dr. Peter Schmid,              University of Zurich Urchil  
Laura Pono                      University of Cambridge, UK  
Ken Angielczyk                University of Bristol, UK  
Ian Stanistreet                 University of Liverpool, UK  
Kuykendall Kevin                Archaeology Department, Sheffield University, Sheffield, UK  
Stephan Lipp                    University of Hamburg, Germany

## 7. LECTURING AND STUDENTS

### 7.1 Postgraduate Students

#### PhD Students

CISNEROS, J. 0401735V. (Full-time, first registration June 2003, submitted September 2006) “*The Triassic parareptile Procolophon: Cranial anatomy, variation, biostratigraphy and biogeographic distribution*”

Supervisors: B.S Rubidge, R. Damiani

GESS, R. 0606640M (Part time, first registration January 2006) “*A taxonomic, biogeographic, biostratigraphic and palaeoecological synthesis of the Famennian Witpoort Formation of South Africa (Cape Supergroup, Witteberg Group)*”

Supervisors: B.S. Rubidge, M. Coates, P. Gensel.

GOVENDER, R. 9202936M (Full-time, first registration February 2002, awarded May 2006) “*Morphological and physiological analysis of the postcranial anatomy of the Triassic dicynodont *Kannemeyeria* (Therapsida: Dicynodontia).*”

Supervisors: P.J. Hancox, A. Yates.

LACRUZ, R.S. 0100005A (first registered January 2003, submitted August 2006) “*The analysis of growth markings in enamel tissue of Plio-Pleistocene hominids of Africa*”.

Supervisor: L.R. Berger, F Rossi, T Bromage.

NICOLAS, M. 9206454P. (Full time, first registration November 2002) “*An assessment of vertebrate biodiversity changes through the Permo-Triassic Beaufort Group (Karoo Supergroup) of South Africa and its significance in terms of biological basin development, hiatus periods and extinction events.*”

Supervisor: B.S. Rubidge

POLE, S. 9804717K (Full time, first registered January 2005 “*Development and validation of non-invasive chemical methods for cleaning of palaeontological specimens*”.

Supervisors: E. Cukrowska, L Backwell.

SANDERSEN, A. 9204455A (Full-time, first registration 1998, submitted May 2006) “*A later Cretaceous biostratigraphy based on palynomorphs derived from southern African sediments*”.

Supervisor: P.J. Hancox, L. Scott.

STEININGER, C. 9813350E (first registered 2003) “*The emergence of early Homo and the extinction of Paranthropus robustus: environmental and faunal change in the Blaauwbankspruit of South Africa*”. Supervisor: L. Berger, N van der Merwe, P Unger.

#### MSc Students

BOSHOFF, P. 0215541R. (First registered Feb 2003; full time). “*Fossil coprolites in the*

*Plio-Pleistocene aged cave deposits of South Africa*

Supervisor: L.R. Berger

DE KLERK, B. 0109596R (First registered Feb 2006; full time) “*An osteological documentation of hybrid wildebeest and its bearing on black wildebeest evolution*”.

Supervisors: J. Brink, L. Backwell.

FRANKLIN, R. 0400154Y (Full time; first registered July 2003, submitted July 2006). “*The recognition, frequency and taxonomic association of pathologies from the Plio-Pleistocene Aged sites of Coopers D, Witwatersrand, South Africa*”

Supervisors: L.R. Berger, L Backwell

MASON, R. 9813350E (Full time; first registered January 2004, part time 2006) “*A stratigraphic and biostratigraphic synthesis of the Ecca-Beaufort contact in the Eastern Cape Province, South Africa*”.

Supervisors: BS Rubidge, PJ Hancox.

MOTHUPI, T. 0201116P (First registered Feb 2006; full time) “*Taphonomy of the fauna from Plovers Lake Cave: the flowstone-bounded unit*”.

Supervisors: L. Backwell, L.R. Berger.

RENAUT, R. 9405793 (Full time, first registered Feb 1999; part time since 1996). “*The morphology and physiology of the Permian sphenophytes of South Africa and the implications to taxonomy and biostratigraphy*”.

Supervisor: M.K. Bamford.

RUTHERFORD, A.B. 86061628/X (first registered 2002, part time). “*A multi-disciplinary sedimentological, stratigraphic and palaeoenvironmental appraisal of the Permian and Triassic Karoo strata in the vicinity of Thaba Nchu, in the Free State.*”

Supervisors: P.J. Hancox, B.S. Rubidge.

VASCONCELOS, C. 9807828T (first registered Feb 2003; full time) “*Proposal of a neotype for Massospondylus carinatus Owen (Dinosauria, Sauropodomorpha): the postcranial morphology and implications for prosauropod phylogeny*”

Supervisors: M.A. Raath, A. Yates

VILAKAZI, N. 0000721N (First registered Feb 2006; full time) “*An osteological comparison between bontebok, Damaliscus pygargus pygargus, and bleskok, Damaliscus pygargus phillipsi and its bearing on the evolution of bontebok*”.

Supervisors: J. Brink, L. Backwell.

#### BSc Honours students

The following students successfully completed their BSc Honours degrees during 2006

Marc Blackbeard 0107759W

Ceri McCrae 0609296F

Helke Mocke 0615983T

Miriam Tawane 0108159W

### Undergraduate students

As in the past, the staff of the BPI Palaeontology have been involved in teaching undergraduate courses in the schools of Geosciences, APES (Animal, Plant and Environmental Sciences) and GAES (Geography, Archaeology and Environmental Sciences):

<b>COURSE</b>	<b>STUDENTS</b>	<b>LECTURERS</b>
Geology I: Geol 104	64	B S Rubidge, L.Backwell
Geology II: Geol 204	60	B S Rubidge, M Bamford
Palaeontology & Palaeoecology APES 301T	21	M.Bamford, L.Backwell, A. Yates

## 8. OUTREACH PROGRAMME

### **Outreach Programme**

#### *Learners programme*

2006 was an extremely busy year for the School of Geosciences outreach programme and has been co-ordinated through the efforts of Dr Ian Mc Kay. During the year 2785 School children and teachers passed through the doors of the Kitching Gallery. In March 2006 the Origins Centre opened at the Wedge and the first joint tours of the rock art and palaeontology museums were offered. Dr Mc Kay is in charge of the schools programme for both the origins centre and the Kitching Gallery and in the future the guides who are employed at the Origins Centre will be used to run tours in the palaeontology museum as the programmes of these two museums become more integrated. Ultimately the Origins Centre and thus even the Kitching Gallery hope to attract 10000 school children a year.

#### *Teachers programme*

In 2006 Ian McKay presented two talks evolution and the fossil record to subject advisors and teachers of the Gauteng Department of Education. As a result of these talks Gauteng Department of Education subject advisors will be attending Wits early in 2007 for a 3 day workshop on "Evolution and the Fossil Record". This will assist them to strategise on how best to implement the new Matric Life Sciences Curriculum, which for the first time in South African history, contains the topics of Evolution and Palaeontology.

In October, at the biannual conference of the South African Society of Science and Technology Educators held in Durban, Ian McKay presented papers at workshops which were organised to assist teachers to implement the new curriculum.

The new school curriculum was also described in a talk by Ian Mc Kay to the International Geoscience Educators Organisation (IGEO) Conference held in Bayreuth Germany of September 2006. A further outcome of the conference was that South Africa won the right to host the next IGEO conference in 2010.

### *Kitching Fossil Exploration centre at Nieu Bethesda.*

The river bed in the municipal area of the Eastern Cape Village of Nieu Bethesda is unique in that numerous fossils are preserved there. Because this village already attracts 13 000-16 000 tourists annually to the Owl House Museum, it is the ideal locality to set up a sustainable field based palaeotourism programme. In 2005 the BPI (in collaboration with Dr Billy De Klerk at the Albany Museum) renovated a building to house fossil displays and to serve as an orientation centre. After a lengthy interviewing session of applicants for the positions advertised, five people from the local community were appointed to work as guides in this exciting new venture. At the end of 2005 these guides received guide training both locally at Nieu Bethesda and also at the University of the Witwatersrand, and received certification (at a basic level) as registered site guides. In 2006, through the efforts of Ian McKay, money was obtained from the Tourism, Hospitality and Education Training Authority (Theta) to provide further training and accreditation to the guides at the Kitching Fossil Exploration Centre. Training commenced in July 2006 and will continue until June 2007. This has, and continues to, involve training the guides both on site at Nieu Bethesda, as well as at Wits where staff of the Institute provide training in order to provide the guides with a background of the palaeontological heritage of southern Africa, and then providing particular emphasis palaeontology relevant to the Nieu Bethesda site. In addition the guides were given experience in fossil excavation in the Cradle of Humankind and were given additional training at Maropeng together with the guides from that facility. In addition to training guides and setting up the business which operates as a Section 21 Company, much effort has also been put into advertising.

This “experiment” into palaeotourism in the Karoo region of South Africa has received much media acclaim. It was first opened to the public in December 2005, and since September 2006 the business has been able to meet its monthly expenditure on gate takings. During December more than 3000 people visited the centre. So far this is the only palaeotourism venture in South Africa which is economically sustainable based on gate takings. Apart from the five people employed at the centre, the increase in B&B and hospitality facilities in the small village of Nieu Bethesda have created more employment possibilities to this impoverished rural community. Dr McKay put together a training course for field guides from Nieu Bethesda, the Origins Centre and Sterkfontein Caves and all academic staff of the BPI were involved in training.

### *Field guide training*

On behalf of the South African government and the Field Guides Association of South Africa, Professor Berger undertook the development and implementation of the first field guides specialty course in palaeoanthropology. During 2005 Prof. Berger developed and executed a national training course for field guides in Palaeoanthropology as well as the supporting course materials and trained and certified 18 trainers in Palaeoanthropology. In December of 2005 the course graduated 43 learners as specialist guides in Palaeoanthropology. In 2006 this programme of continuing education was continued through the Field Guides Association of South Africa and the South African government.

## 9. CURATION OF COLLECTIONS

### **General**

The year 2006 was largely a year of preparation for big changes ahead – the current Curator would be retiring at year's end, and a new Curator would be appointed. The retiring Curator, Mike Raath, spent much of his time preparing briefing manuals for the new Curator-designate, Dr Bernhard Zipfel, who will take up the position in January 2007. He also spent time re-organising the curatorially important files on the Curator's computer so that the directory hierarchy and file naming were more meaningful and easier to navigate. It was unfortunately not possible to arrange an overlap period for a direct "hand-over / take-over" or for hands-on training of the new Curator, but Dr Zipfel did manage to spend several afternoons a week with Mike Raath towards the end of the year. During those sessions some direct training took place, and in-depth discussions on the collections and the issues facing them were held.

The year began with a flurry of activity in the hominid fossil collections because of an influx of palaeoanthropologists from around the world attending the African Genesis Symposium in honour of Professor Phillip Tobias in January. This time also saw an important step forward taken, when a 'portable' micro-CT scanner was shipped in from the Max Planck Institute in Leipzig to micro-CT scan all of the fossil teeth in the hominid collection. By courtesy of Professor Jean-Jacques Hublin and Mr Matthew Skinner, the opportunity was also taken to micro-CT scan the skull of the tiny Jurassic mammal, *Megazostrodon*, from the Karoo Collection – a first for Karoo fossils. The resulting scans will be studied in detail by Dr Fernando Abdala in conjunction with Matthew Skinner and others.

Apart from these visitors, there was a steady stream of other overseas visitors to the collections both at the Medical School and at the BPI throughout the year, although the numbers were significantly fewer than in the last few years.

With the completion of renovation building work at The Wedge, it was possible to begin to return to some semblance of normality in the collections store in the basement of that building. However, it was not until the very end of the year that the more significant snags had been resolved, so it will be for the new Curator to complete the re-establishment of normal services in those collections. One of the first priorities will be for a properly recorded inventory of the entire collection in the Wedge basement to be compiled, for which student assistance will be sought. Much of the work done in recording storage locations for Wedge fossils will unfortunately now have to be redone because of the way things have been moved around.

### **Karoo Vertebrate Collection**

The mammoth task of re-shelving and recording changed storage locations was completed at the beginning of 2006, and the Karoo Collection quickly returned to normal after that.

A significant addition to the collection was made by Dr Adam Yates and his team from their rich bone-bed locality on the farm 'Heelbo' in the Free State. This locality is yielding an unexpectedly unique dinosaur assemblage which is very different from other Elliot Formation localities.

Another significant addition to the collection was a further series of samples from the bone-bed on the farm 'Driefontein' in the Free State, meticulously collected over several years by Dr John Hancox. The cataloguing of this collection poses a significant challenge, and the outgoing and incoming curators had several discussions about this towards the end of the year. The problem involves how to deal with masses of very small often fragmentary bones from a single locality where individual provenance is not clear.

A significant development in the Karoo collection was the cataloguing and incorporation of a large assemblage of fossils from the Whitehill Formation collected by Mr Johan Looock of the University of the Free State and donated by him to the Institute in 2004. These attractive and often delicate fossils have been placed in the solid old wooden display / storage units in the passage of the Richard Ward basement, with some of the more visually attractive specimens on show in the glassed display sections on top of each unit.

### **Fossil Plant and Insect Collection**

Growth on the palaeobotanical side has again mainly been in terms of fossil wood collected by or submitted to Dr Bamford. More than 30 pieces of wood from various localities have been added to the collection, as well as modern plants from South Africa and Kenya.

Rose Adendorff and Conrad Labandeira continued the morpho-typing of the leaves and insect damage from the old and new collections of the *Glossopteris* flora to add to their large database. Collections from 2005 and 2006 fieldwork still need to be catalogued.

Marion Bamford employed two students on a part time basis to sort and catalogue the new additions to the modern seed and wood collections (about 100 specimens each) and to enter the palynology literature reference collection.

### **Cenozoic Fossil Mammals**

Material from several sites in the Cradle of Humankind World Heritage Site continued to enter the collection store at The Wedge as a result of ongoing excavations at those sites, in spite of the disruptions due to the Origins Centre building project.

The status of the other BPI collections remains as reported in the last annual report.

### 10.1 Dr F Abdala

10.1.1 Assessing the palaeobiology of South American cynodonts. This study is based largely on histology of limb bones from the microscopic study of limb bones and will be undertaken in collaboration with Prof Anusuya Chinsamy-Turan (University of Cape Town). After a recent meeting with Prof Chinsamy-Turan, we had a notable advance in this project and it is expected to submit the manuscript for publication early in 2007.  
Completion: 2007

10.1.2 Cynodonts from the Omingonde Formation, Namibia. Several cynodonts from the Omingonde Formations are housed in the collections of the Geological Survey in Namibia. These specimens will be described and are important as they provide the link between Anisian east and western faunas from Africa. Two papers are expected to be produced from this project. In relation with this project it is intended to do field trip to the Omingonde Formation to collect additional material with Dr. Roger Smith from the South African Museum. The feasibility of this trip will be confirmed in January of 2007.  
Completion: 2007

10.1.3 Postcranial anatomy of basal cynodonts. Several complete skeletons of the cynodonts *Procynosuchus*, *Galesaurus* and *Thrinaxodon* are present in museum collections in South Africa. As the postcranium of basal cynodonts has not received much attention in recent years, Dr Abdala aims to provide a detailed morphological and functional description of the postcranial anatomy of these genera.  
Completion: 2008

10.1.4 Alfa-taxonomy of the Therocephalia. This taxon of therapsids forms an important component of the fauna of the Beaufort Group. The taxonomy of this group is in need of revision and Dr Abdala aims to address this. After the first step, with the description of the earliest therocephalian of the world with B. Rubidge and J. Van den Heever, he will continue with early therocephalians from the Tapinocephalus AZ (with B. Rubidge, C. Kammerer and J. Van den Heever). He also is working in a second draft on the alpha taxonomy of the Bauriidae (with J. van den Heever, J. and B. Rubidge).  
Completion: ongoing, first paper 2007

10.1.5 Redescription of the cynodont *Cistecynodon parvus* from the *Cynognathus* AZ. This project is developed together with J. Hopson and it is expected a first draft in the second half of 2007.  
Completion: 2008

### 10.2 Dr L Backwell

10.2.1 Early hominid bone tool function.  
Results of the surface roughness research conducted in collaboration with Francesco d'Errico will be obtained in 2007, and should be submitted for publication in 2008.  
Completion: 2008.

- 10.2.2 Early hominid bone tools from Drimolen.  
Description of this large collection will commence in 2007. It is hoped that a first draft will be prepared in collaboration with Francesco d'Errico by the end of 2008.  
Completion 2008.
- 10.2.3 Middle Pleistocene fossil hair.  
Collaborators on the project (Don Brothwell, Matthew Collins, David Martill and Lee Berger) are expected to provide their contributions by mid-2007. A manuscript should be submitted for publication by the end of this year.  
Completion: 2007.
- 10.2.4 Taphonomy of human remains from Plovers Lake cave.  
Modifications on the human remains have been described and a first draft of the paper written. Taphonomic analysis of the fauna is being conducted by Tebogo Mothupi (MSc candidate, Wits Palaeontology), and is expected to be completed by mid-2007. A manuscript on the taphonomy of the human remains will be submitted for publication later this year. Collaborators include Tebogo Mothupi, Steve Churchill and Lee Berger.  
Completion: 2007
- 10.2.5 Rodent modification of bone.  
An additional rodent gnawing experiment is to be conducted in February, and analysis of bones from both studies started thereafter. A manuscript on the results will be written in collaboration with Francesco d'Errico, and will hopefully be submitted before the end of this year.  
Completion 2007
- 10.2.6 Stone tool modification of bone.  
Experimentally produced cutmarks on large mammal bones will be moulded and microscopically analysed following completion of the rodent study.  
Completion: 2008.
- 10.2.7 Reappraisal of the oldest evidence of cutmarks on hominid remains.  
Purported cutmarks on a hominid skull will be studied and findings published in 2007 in collaboration with Francesco d'Errico.  
Completion: 2007.
- 10.2.8 Wonderkrater peat mound excavation.  
A third field trip is planned for mid-year. Excavations will focus on two areas: the moist centre of the mound yielding bone and seeds, and a large trench at the margin recording a palaeosol with *in situ* Middle Stone Age lithics. Excavated material will be analysed and published in 2008. Collaborators include Zoë Henderson, Terence McCarthy, Stephan Woodborne, Louis Scott, Lyn Wadley and Raman Sukumar.  
Completion: ongoing.

10.2.9 Excavation of a large mammal mass death assemblage.

A third field season of excavations is planned for mid-2007. Activities will focus on the remainder of the partially excavated deposit. An announcement paper on the site is in progress and will be submitted this year. Collaborators include Christine Steininger, James Brink, Johann Neveling, Lloyd Rossouw and Lucy Pereira.

Completion: ongoing

10.2.10 Modern eland carcass taphonomy.

Taphonomic study of the eland carcass will resume during excavation of the Heelbo site later this year. A report should be published in 2008 in collaboration with Fernando Abdala, James Brink, Christine Steininger, Lucy Pereira and Johann Neveling.

Completion: ongoing.

10.2.11 Taphonomy of Plio-Pleistocene Cooper's D faunal assemblage.

Chemical cleaning of the fossils is ongoing, and should be completed this year. Taphonomic study of the material will begin in 2008, and a first draft of the results completed by the end of that year. Collaborators include Darryl de Ruiter, Ewa Cukrowska, Steven Pole and Christine Steininger.

Completion: ongoing.

10.2.12 Middle Stone Age bone tools from Sibudu cave.

A manuscript on the material is in progress and will be submitted for publication in 2007. Collaborators include Francesco d'Errico and Lyn Wadley.

Completion: 2007.

### **10.3 Dr M K Bamford**

10.3.1 Karoo Fossil Woods:

Dr Bamford will continue adding to the Karoo wood database to check for any new taxa, refine the biostratigraphy of the woods and modify as necessary.

Completion: ongoing.

10.3.2 Karoo palaeobotany:

We will continue with collecting and analysing the plant material (leaf imprints, insect damage, pollen and woods) above and below the P-Tr boundary and will write up another large site paper from this work. We will expand this project to include the Early Permian floras. Collaborators: Dr Conrad Labandiera (Department of Paleobiology, Smithsonian Institution, Washington DC, USA) Prof Bob Gastaldo (Head of school of Geology, Colby College, Maine, USA; and students), Dr Johann Neveling (Council for Geosciences) and Dr Rose Prevec (Rhodes University and Albany Museum) and Dr Marion Bamford. As a result of the visit by Prevec and Bamford to Brazil in December 2007 for a Mesozoic project we will expand our Karoo project to compare the material with that from the Paraná Basin in collaboration with Prof Roberto Iannuzzi and Dr Paulo de Souza of UFRGS.

Completion: ongoing.

### 10.3.3 Cretaceous and Tertiary Woods:

1. The paper on the Vryburg and **Mahura Muthla** fossil woods will be submitted to the South African Journal of Geology this year when Prof John Ward has time and Dr Mike de Wit returns from the DRC.

Completion: ongoing

2. Continued research at **Olduvai Gorge**. We have applied for an extension of funding from the Wenner-Gren foundation for a small team to continue with fieldwork in July-August 2007. More collecting of macroplants and phytoliths is planned to further the research already published (See Albert et al. 2006; Bamford et al. 2006, Bamford et al. under revision).

Completion: ongoing.

3. Identification of **West Coast** offshore and onshore woods, in collaboration with De Beers Marine geologists Ian Stevenson, and Lourens Myburgh and Namdeb's Jurgen Jacobs, continues and any interesting finds will be published.

Completion: ongoing.

4. This is the final year of the **Biodiversity** in Southern Africa, SIDA-NRF project with Dr David Cantrill and Dr Hervé Sauquet. Two papers are well underway and will be submitted this year and two more are planned after field work in May/June.

Completion: end 2007.

5. Continue to build up a **modern reference collection** of plant materials (wood, leaves, seeds, pollen) with Prof Charles Peters for comparisons with Tertiary fossil materials as well as study the ecology of modern wetlands (Seekoeivlei, Nylsvley, Okavango Delta, Ol'Balbal Depression, Lakes Makat, Eyasi, Masek and Ndutu. Collaboration with botanists and archaeologists. Project funded by PAST.

Completion: ongoing.

6. More field work is planned at **Koobi Fora** sites in June to extend the stratigraphic range. We have applied to the Wenner Gren Foundation and NSF for funding for field work and expand the number of sites. Team: Prof Jack Harris, David Braun, Jack McCoy, Chris Dupre (Rutgers University, New Jersey, USA) and Bamford and Lucy Pereira will begin her PhD study on phytoliths from Koobi Fora. She will be sponsored to join the field school in June and to collect material. Another project is planned (awaiting outcome of NSF funding application) for the Holocene sites with Profs Jack Harris and Gail Ashley. Field work will be combined with the June Plio-Pleistocene project.

Completion: ongoing.

7. I have visited the collections in Nairobi in June and in London in August for the Early Miocene **Rusinga Island** Flora project with funding from the Leakey Foundation, in collaboration with Prof Margaret Collinson (Royal Holloway University, UK) and Prof Peter Andrews, (Natural History, London). We will submit the paper on the taphonomy of the sites.

The Leakey funding was insufficient to complete the planned project but we are looking for alternative funds to continue with the fossil seed identifications.

Completion: early 2007

8. The identification of the **Ndondondwane** charcoal from the Tugela Valley, KwaZulu Natal, with Prof Haskel Greenfield (University of Manitoba, Winnipeg, Canada) will continue and we plan to submit one of several papers for publication this year.

Completion: ongoing.

9. The project comparing the angiosperm floras of **South America** and southern Africa with Dr Alba Zamuner, (University of La Plata, Argentina) and Prof Tania Dutra, (UNISINOS, Brazil) using funding from the Wits University Council Overseas Fellowship, will continue this year with the publication of several papers as well as the fossil database. I will expand the project include fossil collected by Tania Dutra from Antarctica and also work with Prof Marguot Guerra Sommer on Early and Late Cretaceous fossil woods from the Botucatu Formation and Bauru Group in the Paraná Basin.

Completion: 1 year funding but ongoing research.

10. The **Laetoli** project is complete and we await the review and publication of the book chapters.

#### **10.4 Prof LR Berger**

10.4.1 Continued research in the taphonomic signatures of birds of prey on bone including the recovery of additional material from the Taung site, South Africa.

Completion: collection of material in 2007/08 and ongoing research.

10.4.2 Continued collaborative work on fossil hair from hyaena coprolites: Fossil hair has been recovered from 250 000 year old hyaena coprolites from Gladysvale as noted in Dr. Backwell's report above.

Completion: 2007

10.4.3 Collaborative work on cannibalism with Dr. L. Backwell.

Completion: 2007

10.4.4 Ongoing field work at the sites of Coopers, Plovers Lake and Gladysvale continuing the recovery of micro- and macro- animal remains and archaeological remains from these important sites.

Completion: ongoing research

10.4.5 Specific research into early hominin postcranial morphology with the goal of understanding body proportions and modes and tempos of human evolution in the late Pliocene.

Completion: ongoing research

- 10.4.6 A continued programme of dating the early hominin sites of South Africa utilizing new and independent methods of radiometric dating.  
Completion: ongoing research
- 10.4.7 Completion of plans for a fossil expedition to Zimbabwe in 2007/08.  
Completion: ongoing research
- 10.4.8 Continued research on fossil humans in Micronesia. 2 expeditions planned for 2007.  
Completion: ongoing research
- 10.4.9 Studies of the whole anatomy of fossil rodents from South Africa with C. McRae.  
Completion: 2007/2008

### **10. 5Dr R Govender**

- 10.5.1 Dinocephalian postcranial studies: Dr Govender will complete, in collaboration with Renaut and Rubidge, the second of two papers resulting from the MSc thesis which is a description of the appendicular skeleton of *Tapinocaninus* with a diagnosis of the postcranial skeleton.  
Completion: 2007
- 10.5.2 Postcranial studies on large Triassic dicynodonts:  
In the period January – March 2007 the following papers will be completed:  
    a re-evaluation of the postcranial skeleton of *Kannemeyeria simocephalus*;  
    a new postcranial morphotype from the *Cynognathus* Assemblage Zone (subzone B) of South Africa  
Completion: 2007.

The postcranial skeleton of *Dolichuranus* and *K. lophorhinus* will be investigated in order better understand their taxonomic positions among Triassic dicynodonts and their functional morphology. During this time a functional analysis of the postcranial skeleton of *Aulacephalodon* will be undertaken. This functional study will be undertaken with a view to understanding the trackways that have been assigned to this genus.  
Completion: 2008

### **10.6 Prof BS Rubidge**

- 10.6.1 Litho- and Biostratigraphy of the Lower Beaufort around the Karoo basin: Eastern Cape – although much bio and lithostratigraphic field work has been undertaken to the Lower Beaufort in recent years more collecting is needed in order to understand the biostratigraphy of the Lower Beaufort in the area between Grahamstown and Jansenville. Completion: June 2007 for the area north of Grahamstown, otherwise ongoing.

KwaZulu-Natal – Fieldwork has been completed, but a cast of the footprint site must be made from the mould taken in 2005. This is the responsibility of Dr de Klerk. The final manuscript needs to be put together. Completion: December 2007.

- 10.6.2 Description of the postcranial skeleton of *Tapinocanius*, a new primitive tapinocephaline dinocephalian. A draft manuscript in collaboration with Govender, and Renault has been written up for the vertebral column, and another will provide a description of the girdles. Completion: June 2007.
- 10.6.3 Taxonomic revision of the Dinocephalia (with Dr J A van den Heever, University of Stellenbosch) (ongoing project). The Dinocephalia are a large and important group of synapsids known only from southern Africa, China and Russia. This revision is a long-term project which will take a lifetime to complete, as the animals are large and take a long time to prepare.  
Taxonomic revision of the Anteosauridae. Completion December 2007.
- 10.6.4 Taxonomic revision of the "Biarmosuchia". The "Biarmosuchia" are considered to be the most primitive therapsid taxon. Fossils of this group have been found in the Permian rocks of only South Africa and Russia. In order to understand the ancestry of the therapsids from the pelycosaurs. During 2006 a redescription of the cranial morphology of *Hipposaurus* was written by Prof Rubidge, but the final draft will be completed in collaboration with Prof Chris Sidor when he visits the BPI in April 2007.  
Completion: December 2007
- 10.5.5 Rhinesuchid amphibian taxonomy. This much neglected group represents the only temnospondyls from the Permian of South Africa and are critically important in temnospondyl phylogeny. This project is in collaboration with Dr R. Damiani and is dependent on the schedule of Dr Damiani. Completion: ongoing.
- 10.6.6 A taxonomic and cladistic re-assessment of Triassic dicynodonts. This project is in collaboration with Dr PJ Hancox (Geology) and involves studying fossils from different countries including China, Germany and the UK. Completion: Ongoing.
- 10.6.7 Postcranial anatomy of therocephalian therapsids. This project is an extension of the PhD project of Heidi Fourie (Transvaal Museum) who completed her thesis under the supervision of Professor Rubidge. Fourie and Rubidge have written a draft manuscript on the postcranium of *Glanosuchus* and are in the process of finalising this. During 2006 a manuscript on the postcranium of *Ictidosuchops* was submitted for publication.  
Completion: July 2006
- 10.6.8 The bio- and lithostratigraphy of the Permo-Triassic boundary in the northern part of the Karoo Basin. Anthony Rutherford is in the final stages of completing his MSc on the bio- and lithostratigraphy of the middle Beaufort in the Thaba Nchu area. He has been doing this on a part-time basis since 2004 under the joint supervision of Dr John Hancox and Prof Bruce Rubidge. Completion: June 2006

10.6.9 Database of Karoo fossil localities: For her PhD thesis Ms Merrill Nicolas has embarked on the very large task of compiling a GIS database of all fossils housed in South African Institutions with data on their localities. This project, under the supervision of Prof Bruce Rubidge, will have important implications for understanding and enhancing biogeography, biodiversity and biostratigraphy of continental faunas of the Permian and Triassic periods. Completion: June 2006.

## 10.7 Dr A Yates

11.7.1 Continue National Geographic project. The final National Geographic trip to Heelbo was held from 12 March to 1 April 2006. Dr Yates expects to submit the first reports on the new sauropod to a high profile journal by the end of 2007. Date of completion: ongoing

11.7.2 Revision of the phylogenetic relationships of certain Chinese sauropodomorphs. Continued collaboration with Dr Lü, and a potential return trip to China to study newly collected dinosaur remains is planned for 2006 or 2007. Completion: Ongoing

11.7.3 Measuring of stratigraphic columns at Damplaats (Northern Karoo Basin) and Barkly Pass (Southern Karoo Basin) upon which precisely located diagnostic dinosaur remains can be plotted in order to determine if dinosaurs yield any useful fine-scale stratigraphic discrimination within the lower Elliot Formation (Late Triassic). In collaboration with Dr. Neveling. Completion: Ongoing, first paper in 2007.

11.7.4 Finalisation of a rediagnosis and redescription of *Plateosauravus cullingworthi* a potentially abundant index taxon for the Late Triassic in South Africa. A paper entitled “*A redescription and revised diagnosis of the sauropodomorph dinosaur Plateosauravus cullingworthi (Haughton) from the Late Triassic of South Africa*” is in the final stages of preparation. Completion: 2007.

11.7.5 Preparation of a manuscript redescribing the forgotten South African dinosaur “*Eucnemosaurus fortis*”. This rare dinosaur is a diagnostic taxon that includes material described as *Aliwalia rex*. Nevertheless it is an important because it is geographically widespread, stratigraphically restricted. It is also the sister taxon of a South American taxon, *Riojasaurus incertus*, and thus can help with intercontinental correlation.

Completion: December 2006. Paper now published electronically and printed version in press 11.6.6 Together with RR Reisz, Dr Yates will be researching dinosaur developmental digit shift. A paper has been completed

## 10.8 Dr B Zipfel

10.8.1 The analysis of the size and shape in foot bones from Klasies River main site as a method of estimating sex in MSA skeletons. A paper has been submitted on the KRM first metatarsal in collaboration with Robert Kidd to the *Journal of Human Evolution*. Completion: 2007

- 10.8.2 Pathological variation of the human forefoot in recent and pre-pastoral Holocene people in order to determine if habitual behaviour and environment have an influence on bone modification. A manuscript is in progress and will be submitted for publication in 2007. Collaboration with Lee Berger.  
Completion: 2007
- 10.8.3 The significance of the human first metatarsal lateral basal articular facet. This may be an important marker for habitual bipedalism in non-human hominins. A manuscript is in progress and will be submitted for publication in 2007. Collaboration with Robert Kidd.  
Completion: 2007
- 10.8.4 Description of the Hominin talus (SKX 50043) from Swartkrans. This specimen will be compared to both ape and human tali utilizing multivariate morphometric techniques. Collaboration with Robert Kidd.  
Completion: Ongoing
- 10.8.5 An appraisal on the value of the Raymond Dart Collection in Physical Anthropology. In collaboration with Danial Franklin.  
Completion: Ongoing
- 10.8.6 Collaboration with Robert Kidd in collecting metrical data on the hind-tarsus of early Holocene skeletons housed at the National Museum, Bloemfontein and South African Museum, Cape Town. Dr Kidd wishes to compare this data to North American Inuit and Arikara foot bones which present with an unusual morphology that may either be associated with habitual behaviour found only in hunter gatherer societies or represent an unusual anomaly in Native Americans.  
Completion: Ongoing

## 11. CONCLUSION

The super dedicated staff of the BPI have once again had a very active year. In addition to the very active outreach programme which is co-ordinated by Dr Ian McKay, undergraduate and postgraduate teaching, the small academic staff complement of the BPI were responsible for the publication of 1 book, 1 chapters in a book and 29 category four articles (DE recognized) in 2005. This attests to the enormous dedication and passion of every member of the academic staff toward carrying out research. BPI staff have been active in both undergraduate and postgraduate teaching, and during 2005 eighteen MSc and PhD students were registered.

Many of the staff travelled to many different parts of the world to attend conferences or for research purposes. Dr Marion Bamford undertook a very profitable six-month sabbatical leave for the first semester. She was the 2006 winner of the prestigious Wits University Council Overseas

Fellowship, a welcome reward for her hard work and which came timeously to coincide with her sabbatical leave.

Dr Mike Raath, as University Collections Curator, continued to fulfil the never-ending task of seeing to all the needs of visiting scientists. This task is made even more difficult as the collections are housed in widely separated facilities in the School of Anatomical Sciences and the School of Geosciences and the Curator is required to be both at Medical School and on Main Campus at the same time. I am extremely grateful to Dr Raath for the diligent way he carries out his difficult task of maintaining and cataloguing collections, following up daily queries from scientists around the world, attending to the research requirements of scientists from Wits and other institutions, applying for loan permits from SAHRA, chasing up overdue loans and formulating policy for the collections to satisfy the requirements of the Code of Ethics of the South African Museums Association. Sadly Dr Raath retired at the end of 2006 and we bade farewell to him at a cocktail function held in the Kitching Gallery. Dr Raath has had a long association with the BPI spanning three decades and has contributed much to South African palaeontology, the BPI and the University in this time initially as director of the Institute and then later as University Collections Curator for the past decade. In this capacity he has formulated collections policy, computerised the collections and regularised the research procedure on the fossil hominid collection. He has been unselfishly dedicated to his work and has always been keen to assist researchers to gain access to any material they required for research or teaching purposes. We will greatly miss his efficient and helpful service, great breadth of knowledge and expertise, research output and his fine sense of humour.

In line with the recommendations of the review of the School of Geosciences undertaken in 2003, Bruce Rubidge and Trefor Jenkins again put in a proposal to the Department of Science and Technology (DST) to support the more than R3 000 000 required to maintain the collections and the excavation and preparation of fossil on an annual basis for both the BPI and IHE. In response to the previous application the DST generously allocated R 3 000 000 towards the maintenance of our collections as a National Facility during 2005.

The activities of the BPI were interrupted?? from mid 2005-2006 when we had to vacate the Wedge Building while the Origins Centre was being built, and the BPI section of the wedge was given a new roof. The Rock Art Research Institute and the new rock art museum in the Wedge building was opened in March 2006 by President Thabo Mbeki. The next phase of this project is to house research and museum facilities for the BPI Palaeontology and the IHE. Toward the end of 2006 the University employed Mr Francis Gerard as project manager to raise funding and to efficiate the project.

During the reporting period volume 41 of *Palaeontologia Africana*, a special festschrift to honour James Kitching was published. It was compiled under an editorial panel led by Marion Bamford (Editor) with Lucinda Backwell, Bruce Rubidge and Adam Yates as Associate Editors. Volume 42 is in progress and will be printed early in 2007. This journal continues to enjoy a good reputation and a steady number of papers relating to the palaeontology of Africa are being submitted by authors from many countries outside South Africa. I am grateful to Dr Bamford for the many hours of dedicated hours she and her editorial team unselfishly put toward the production of this journal.

This report details the varied research activities undertaken by the BPI during 2006, but by its nature such a report does not highlight the very great role that the technical staff of the Institute have played during the year. Without the dedicated work of or technicians Wayne Costopoulos, Rhod Macrae-Samuel, Charlton Dube, Joseph Sithole, Pepson Makunela, Doctor Mbense, Nthoapa Ntheri, Gladys Ndlovu, Samuel Tshabalala, Sifelani Jirah and Hosea Nemavhundi research and maintenance of the collections would not be possible. Wayne Costopoulos, Doctor Mbense and Nthoapa Ntheri resigned to take on other positions. Ms Constance Tshavhumbwe has worked hard as administrative secretary and adapting to the enormous requirements of the Oracle system. When compiling an annual report one becomes aware of how much has been achieved over the past twelve month period. This has been possible only because of the enormous dedication of all the staff of the Institute which never ceases to amaze me. I am indebted to them all for their loyal support and hard work.

Bruce Rubidge  
**DIRECTOR**