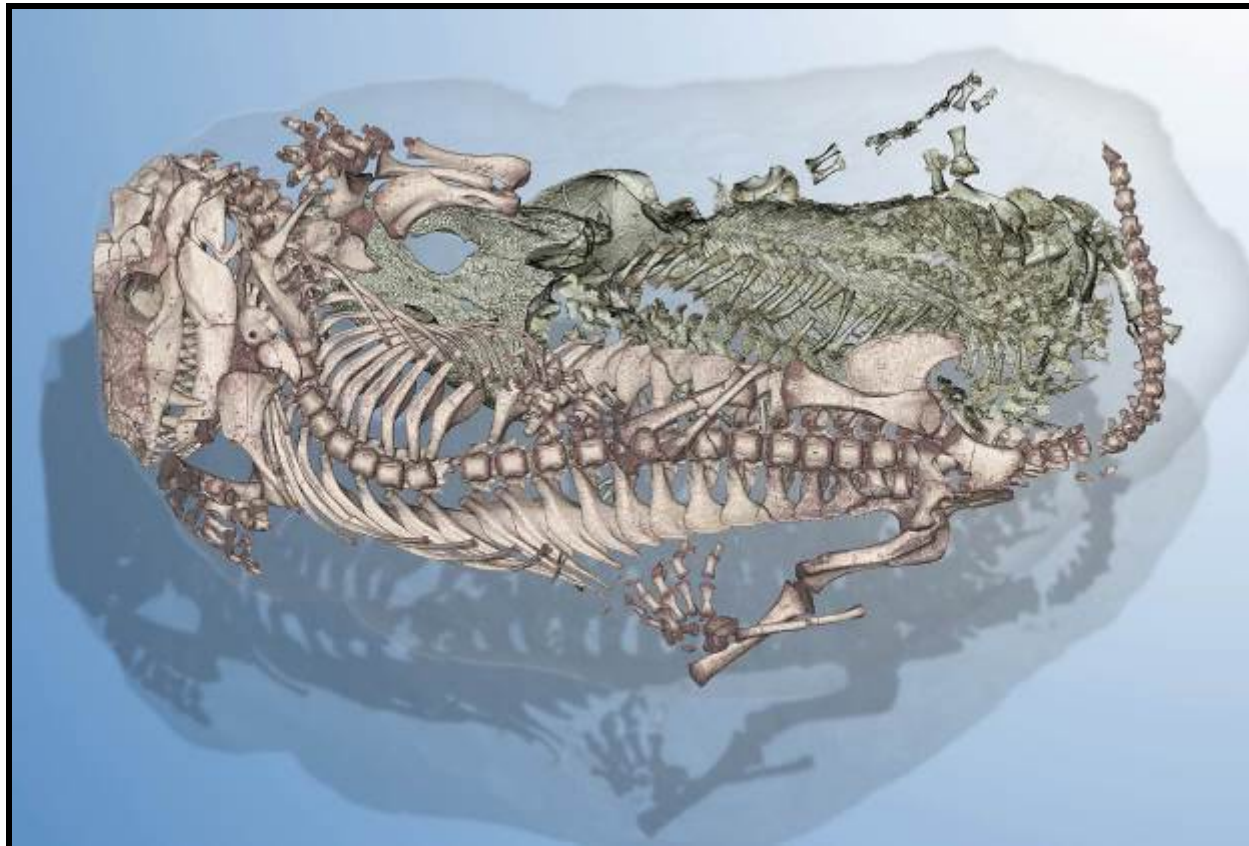


# BIANNUAL NEWSLETTER OF THE PALAEOONTOLOGICAL SOCIETY OF SOUTHERN AFRICA

(HALFJAARLIKSE NUUSBRIEF VAN DIE PALEONTOLOGIESE VERENIGING VAN SUIDER AFRIKA)

Vol/Band 19 No. 2

July 2013



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**PalNews/PalNuus** is published by the *Palaeontological Society of Southern Africa* for its members. The views expressed are not necessarily those of the Society or its Officers.

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**Front cover:** The cynodont *Thrinaxodon* and the amphibian *Broomistega* associated in the same burrow. The “preparation” of the specimen was only digital, using synchrotron scanning. (Image by **Vincent Fernandez**). See also <http://www.esrf.eu/news/general/Triassicbedfellows>

## EDITORIAL

It's only been five months since the last issue of PalNews was released and judging by the sheer size of this volume a lot has happened in the world of palaeontology. My thanks to all the contributors and collators of the contributions in this issue. I would also like to extend my thanks to Steve Tolan (p.45) for his bumper contribution on what has been happening on the palaeontology front in Zambia since 2009.

*Billy*

## PRESIDENT'S CORNER - *Bernhard Zipfel*



## Report on a PSSA meeting regarding the sharing of micro-focus CT data.

High resolution computerised tomography (CT) has become a multi-faceted and arguably essential tool for studying fossils. Until recently, this modality was not readily available to researchers in South Africa, and temporary export was typically arranged to perform the requisite work abroad. Recently, the Evolutionary Studies Institute at the University of the Witwatersrand acquired a microfocus CT unit dedicated to palaeosciences. Due to the high resolution nature of the images, it has been argued that these contain information far exceeding that of the fossil on its own. Detailed internal morphology of fossils can be studied with far fewer limitations than exist when using physical means. The issue of whether South African researchers and institutions should be permitted to export digital datasets to researchers out of the country has become a controversial topic, and may be viewed as imparting national intellectual property, scientifically at least as valuable as the fossils themselves. As a result, the University of the Witwatersrand has placed a moratorium on the export of original high resolution image data, requiring scientists instead to process these data in the virtual lab available to visiting

researchers on site. A long term solution satisfying the need for protecting our fossil heritage and the advancement of science is being sought.

At the 2012 PSSA conference in Cape Town, a meeting was held with members and SAHRA to discuss this issue. Consensus was not reached at that time and the PSSA was given the mandate to arrange a workshop with curators, collections managers and other stake-holders. This meeting was held at the University of the Witwatersrand on the 7<sup>th</sup> June 2013. Representatives from the SAM, NMB, Ditsong Museum of Natural History, Albany Museum, Wits, SAHRA and NECSA were present. Discussions revolved around the policies that the various institutions had regarding the handling of high resolution CT data. As things stand, the University of the Witwatersrand has placed a moratorium on the export of micro-focus CT data, the Ditsong Museum permits the export of such data pending agreement on the use of such data and the remaining institutions have no formal policy regarding micro-focus CT data. Clearly, the general consensus was that either extreme of allowing data to be freely exported or 'given away' or strict restrictions on the export or sharing of data was not sustainable and would

compromise the advancement of the science on the long term.

This is not just an issue facing South African palaeontologists, but is something that faces museums around the world. Because of the uniqueness of the fossils in South Africa, including early hominins that garner substantial international attention, and because there now exist several South African microfocus CT facilities available to palaeontologists, it has become a critical, timely question facing the palaeontological community. It was resolved that a 'happy medium' should be sought lying somewhere between the policies of the Ditsong Museum of Natural History and the University of the Witwatersrand. A long term solution satisfying the need for protecting our fossil heritage and the advancement of science is therefore within reach.

***Bernhard***

## PSSA'14 - Johannesburg

SAVE THE DATE!

**"Palaeontological Society of South Africa 2014  
Biennial Meeting in Johannesburg"**

"The PSSA 2014 meeting will be held at the University of the Witwatersrand and hosted by the newly formed Evolutionary Studies Institute. The meeting will be held from July 11th-13th, 2014 (Friday-Sunday), with field trip options on July 14 and 15th. The dates were selected to accommodate mid-semester breaks and to avoid conflict with other meetings. Hope to see you all there!"

Reminder!

***Palaeontologia africana is going electronic!***

Starting with Volume 48, Palaeontologia Africana will be freely available online via the University of Witwatersrand's website. The archive of back issues is currently being scanned, and will also be made freely available as issues are processed, with the goal of having the entire journal digitized by 2015. Meanwhile, Dr. Jonah years of excellent leadership by Professor Marion Bamford. Marion will stay on as an Associate Editor, along with Professor Bruce Rubidge and Dr. Lucinda Backwell. Finally, the Editorial Panel has made it their objective to obtain an ISI listing for Palaeontologia Africana by 2015. Keep those submissions in mind!

For the rest of 2013, please submit your manuscripts via email to Jonah at: [jonah.choiniere@wits.ac.za](mailto:jonah.choiniere@wits.ac.za) or to Marion at [marion.bamford@wits.ac.za](mailto:marion.bamford@wits.ac.za).

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## NEWS FROM:

### Lucind Backwell for the EIS (BPI)



CENTRE OF  XCELLENCE  
PALAEOSCIENCES

Much has happened in the palaeosciences at Wits over the past six months. More than a decade ago the University took the decision to synergise its palaeontological research programmes and to accommodate the palaeontological and palaeoanthropological researchers in a single building. In order to achieve this, the Archaeology Department had to move from the van Riet Lowe Building and be offered alternative accommodation. The palaeontology building then had to be renovated and the Institute for Human Evolution (IHE) had to move to the

renovated Palaeosciences Centre. This required a massive fundraising drive to upgrade the palaeontological research and curatorial facilities of the University. The extremely disruptive building modification and upgrade continued for 12 months during 2009 and 2010. The final result works very well and Wits now boasts world-class facilities.

While the advances in the palaeosciences were being accomplished, the University (to boost research productivity and to foster cross-disciplinary research) decided to develop six 21st century institutes, one of which was to be the Evolutionary Studies Institute (ESI), an amalgamation of the Bernard Price Institute for Palaeontology (BPI) and the IHE to fall directly under the Deputy Vice-Chancellor (Research). The establishment of the ESI is in line with the vision of a combined Palaeoscience research institute. Dr **Merrill van der Walt** was appointed the project manager of the ESI in September 2012 and was charged with the responsibility to make it happen.

The establishment of six 21<sup>st</sup> Century Institutes is part of Wits' Part 2022 strategic vision to be ranked among the top 100 universities in the world. The essence of these



institutes will be to escalate research output and to create an environment that encourages global high-end collaboration. The institutes are representative of areas where Wits has a geographical advantage and are of strategic national/international significance. At much the same time that Merrill arrived at the University the NRF issued a call for proposals to host a NRF funded Centre of Excellence (CoE) in Palaeosciences. In a baptism of fire Merrill took on the responsibility of writing this proposal. The result was that proposal from Wits, together with its five partners (UCT, Iziko Museum, Rhodes University and Albany Museum, National Museum and Ditsong Museum) was the successful one, and the Honourable Minister of Science and Technology Mr **Derek Hanekom**, officially opened the Centre of Excellence in Palaeosciences at Wits on the 11<sup>th</sup> of April this year.



Top left: Dr. **Andrew Kaniki** delivering his talk at the launch of the CoE in Palaeosciences. Top right: *Australopithecus sediba* next to a modern human skeleton. Bottom: Minister **Derek Hanekom** standing in front of the cast of *Australopithecus sediba* at the launch of the CoE in Palaeosciences.



Francis Thackeray presenting Minister Hanekom at the CoE launch.

The enabling research environment which the CoE will create, will build on opportunities provided by the temporally diverse southern African record, and will develop new research linkages and collaborations enabling us to attain far higher levels of research accomplishment. The interdisciplinary research that will result from this ambitious programme has the capacity to help instill in the minds of South Africans a sense of curiosity and enthusiasm for science, helping us in the long run alleviate the current scarce skills shortage in the sciences.

The research direction for the CoE comprises 5 themes which will address research questions relating to the South African palaeosciences heritage record. The themes are conceptually linked to serve the ambitions of 4 overarching key research questions, which will inform the approach:

1. How does the South African palaeosciences record improve our understanding of the origins of species?
2. What are the key behavioural transitions in hominid prehistory, including the origins of modern human behaviour?
1. What are the Earth systems that drive evolution?
2. What are the roles of extinctions and radiations in the evolutionary process?

The design of the research strategy with its four overarching questions and five themes will exploit the competitive advantage vested in the multi-disciplinary researchers of host and partner institutions, thus raising the bar on existing excellence. In this area of research the CoE will arguably offer the best facilities in the southern Hemisphere if not the World. The synergistic benefits of the collaborations will in future raise the international competitiveness and visibility of South



African research and simultaneously retain, sustain and improve scientific excellence.

Placement of the CoE in Palaeosciences as a dynamic structure within the Evolutionary Studies Institute (ESI) is a perfect union of parallel philosophies, making it an ideal home for the DST/NRF CoE in Palaeosciences. The vision and objectives of the DST/NRF CoE in Palaeosciences mirror those of the ESI. Placing the CoE as a self-contained unit within the ESI will serve to reinforce and actualise the ambitions and ideals of both entities. This was the first step, but the ESI still had to be administratively set up. This Institute was officially opened by the outgoing Vice Chancellor of the University, Professor **Loyiso Nongxa**, as his last official function at Wits on the 29<sup>th</sup> of May, and the ESI now replaces the old BPI and IHE. This is an exciting time for palaeosciences at Wits, and indeed for South Africa as well and Professor **Bruce Rubidge**, as the interim director of the ESI and director of the CoE for Palaeosciences, has his work cut out for him for the rest of the year.



**Bruce Rubidge**, apart from the administration of setting up the ESI and CoE, has also had to write up the documentation for the final Quinquennial Review of the BPI Palaeontology, a task he has undertaken with a great deal of nostalgia as he has had an association with the BPI since childhood years. During March Bruce undertook his usual Lower Beaufort field trip (this time to the contact area between the Abrahamskraal and Teekloof Formations in the Nieuveveld mountains west of Beaufort West), and was accompanied by **Mike Day**, **Fernando Abdala**, **Charlton Dube**, **Sifelani Jirah**, **Pia Viglietti**, **Ashley Kruger**, **Tyler Lyson** and **Gabe Bever**. Despite the weather being unbearably hot and mechanical problems with the vehicles, the trip delivered many fossils which have solved several uncertainties relating to the stratigraphic ranges of various lower Beaufort tetrapod taxa. Soon after this trip **Mike Day** successfully submitted his PhD. This thick tome, apart from addressing both the litho- and bio-stratigraphy of the Lower Beaufort, sets out (for the first time) accurate

stratigraphic ranges of all the tetrapod genera known from the *Tapinocephalus* and *Pristerognathus* Assemblage Zones. **Sifelani Jirah** submitted his MSc dissertation on the bio- and lithostratigraphy of the lower Beaufort south of Merweville. **Cameron Penn-Clarke** is about to submit his MSc dissertation on the Bio and Lithostratigraphy of the Ceres Subgroup of the Bokkeveld Group, and **Natasha Barbolini** is putting the finishing touches on her PhD, which addresses the palynology of the entire sedimentary succession of the Main Karoo basin. Earlier this year our synthesis of the radiometric dating of the Permian Beaufort biozones was published: Rubidge, B.S., Erwin, D.H., Ramezani, J., Bowring, S.A., & de Klerk, W.J. 2013. High-precision temporal calibration of late Permian vertebrate biostratigraphy: U-Pb constraints from the Karoo Supergroup, South Africa. *Geology*. doi: 10.1130/G33622.1.

**Francis Thackeray** travelled to Ghana in May as part of a Wits University delegation (including Vice Chancellor Loyiso Nongxa and VC Designate Prof Adam Habib), for the signing of a Memorandum of Understanding with the University of Ghana. Subsequently Francis attended meetings with palaeo-scientists from the University of

Ghana. Attention is being given to the potential of exploring dolomitic limestone exposures in Ghana (including Akosombo) where mining for limestone is being undertaken. Caves are known to occur in Ghana and these have been explored by archaeologists interested in Late Holocene deposits. However, the potential for finding fossiliferous Plio-Pleistocene (or earlier) sediments in Ghana is as yet not known. An exploratory palaeontological project is one of the objectives of the MOU signed by the Vice Chancellors of the two universities. **Devon Botham** is a visiting student from New York University who is currently working with Francis at the Evolutionary Studies Institute at Wits. She is assisting with measurements relating to the ontogeny and sexual dimorphism of *Australopithecus africanus*. She is also assisting Francis with a project associated with the relationship between manganese dioxide and the growth of lichen. Recognizing that this kind of bio-geological process occurs only for a short period until such time that bone is covered by sediment in a cave context, Francis is exploring the potential for the dating of fossils coated by manganese dioxide, using an isotope of manganese (Mn-53) which decays to stable Cr-53 with a half life of 3.74 million years. Francis Thackeray welcomes **Romain Tetley** at the

ESI where he is exploring DNA data in the context of primate evolution. Romain is a South African who has been based in France for many years. With regard to Kromdraai in the Cradle of Humankind, Francis continues to collaborate with **Jose Braga** (University of Toulouse) and **Laurent Bruxelles** (INRAP, France). Francis is also working with **Dominique Gommery** (CNRS, France), **Stephany Potze** and **Lazarus Kgasi** (Ditsong National Museum of Natural History), on projects related to Bolt's Farm where the Way Point 160 dates to the time interval between 4 and 4.5 million years in the Cradle of Humankind.

**Marion Bamford** and **Frank Neumann**, with funding from the German DFG-South African NRF agreement, organised a palynology workshop at BPI at the end of February. It was entitled "Quaternary climate and vegetation of southern Africa, East-West-North-South" and brought together researchers from South Africa and Germany to discuss established research projects and collaborations and to form new ones. Post graduate students from UCT, UKZN and Wits attended. At the end of March Marion organised another workshop, this time with sponsorships from INQUA and it was the first African Phytolith Working Group workshop. The aim of this small group is to

exchange ideas and projects and create an awareness of phytoliths and their usefulness in Africa. Participants came from Wits, Bloemfontein, Uganda, Kenya and Spain. In June Marion and **Rose Prevec** re-visited plant fossil sites in the Kirkwood Formation. Some sites had been washed away, others were too overgrown to access but they managed to collect ferns, fossil wood and charcoal. Along the Sundays River the oranges were in season and being picked so it was quite tempting to help themselves. **Joseph Chikumbirike** submitted his PhD on charcoal from Great Zimbabwe, **Eddie Odes** submitted his MSc on phytoliths from hominid teeth and has now registered to do a PhD. **Natasha Barbolini** is about to submit her PhD on Karoo pollen. **Sandy Lennox** is making good progress with her PhD on charcoal from Sibudu hearths. **Moshood Olayiwola** should submit his PhD on pollen from the Niger offshore delta at the end of this year.



**Rose Prevec** collecting fossils from the Kirkwood Formation.



Some members of the African Phytolith Working Group. L-R: **May Murungi, Julius Lejju, Rahab Kinyanjui, Marion Bamford, Irene Esteban, Caroline Phillips.**

**Bernhard Zipfel** visited the Badlands National Park, South Dakota with the Society of the Preservation of Natural History Collections, to learn about the natural history and fossil collections of the region. The White River Badlands contain the largest assemblage of known late Eocene and Oligocene mammal fossils. Fossil research from the area contributed significantly to the science of vertebrate paleontology in North America, beginning with the description of a titanothere mandible in 1846 by Dr. Hiram Prout. Since then numerous important finds from the area have informed scientists about ancient animals, climates, and ecosystems from different geological time periods. Oligocene fossil remains include camels, three-toed horses, oreodonts, antelope-like animals, rhinoceroses, deer-like mammals, rabbits, beavers, creodonts, land turtles, rodents and birds. Marine fossils are found in deposits of an ancient sea that existed in the region some 75 to 67 million years ago during the Cretaceous period. For this reason, the area contains no dinosaurs. Fossils found in the Pierre Shale and Fox Hills Formations include ammonites, nautiloids, fish, marine reptiles, and turtles. The spectacular vertebrate fossils preserved within the White River Badlands have

been studied extensively since 1846 and are included in museum collections throughout the world.



**Bernhard Zipfel** in the South Dakota Badlands

Bernhard attended an *in-situ* preservation workshop at the Mammoth Site in Hot Springs, South Dakota. The Mammoth Site is the world's largest mammoth research facility and offers tours of an active palaeontological dig site and view of Ice Age fossils exhibited as they are found. For centuries the bones lay buried, until discovered by chance in 1974 while excavating for a housing

development, earth moving equipment exposed South Dakota's greatest fossil treasure.

Fortunately, through work of local citizens, the Mammoth Site was preserved. Today it is the world's largest Columbian mammoth exhibit, and world-renown centre for Pleistocene studies. The Mammoth Site, a nonprofit corporation, provides the following to the worldwide scientific community: a comparative collection of mammoth remains, Ice Age vertebrates and invertebrates, geology, and 26,000 year old environmental data. This information is the basis for investigations, exhibits, and educational programs at the Mammoth Site. In fact, the Site's methods of research, interpretation, and exhibits are studied for implementation around the world.

More information on the Mammoth Site can be found at:

<http://www.mammothsite.com>





The Mammoth Site, Hot Springs, South Dakota.



Bernhard Zipfel learning to use the ancient hunting weapon, the atlatl, at the Hot Springs Mammoth Site, South Dakota.

**Fernando Abdala**, demonstrating that no manuscript lasts forever, managed to advance and end the revision of therocephalian lycosuchids from the *Tapinocephalus* and *Pristerognathus* Assemblage Zones, along with his co-authors **Christian Kammerer**, **Mike Day**, **Sifelani Jirah** and **Bruce Rubidge**. This ultra-delayed manuscript will be submitted in the near future (this weekend!!). The work on the evolution of the manus of synapsids, in collaboration with **Susana Kümmell**, **Virginia Abdala** and **Marissa Fabrezi** is starting to look like a manuscript. Fernando will be presenting results of this research at the Congreso Latinoamericano de Paleontología in Guanajuato, Mexico (hopefully home of good tequila), and in the Congreso Brasileiro de Paleontologia in Gramado, southern Brazil (hopefully the home of good caipirinhas). The description of the postcranium of *Galesaurus* together with **Elize Butler** and **Jennifer Botha-Brink** is finished, now they have to sit and discuss the discussion section of the manuscript. Fernando is currently working with **Sandra Jasinowski**, who came from Canada to advance their second contribution on the ontogeny of *Thrinaxodon*. They dedicate this time to study the cranio-mandibular changes during ontogeny in a project that also includes **Vincent Fernandez** (fan of Barcelona Futbol Club) from Grenoble.

And speaking of Vincent, he is the artist behind the cover of this issue of PalaeoNews, and lead author of the research on the shared burrow between an estivating *Thrinaxodon* and an injured *Broomistega* published recently in Plos One. Vincent had the collaboration of Fernando, **Kristian Carlson**, **Bruce Rubidge**, **Della Collins Cook**, **Adam Yates** and **Paul Tafforeau**. This work was a lot of fun. Hopefully more will come.

**Jonah Choiniere** has been very busy settling in, exploring, publishing, making the headlines and teaching. He is currently on well-deserved leave, and will update us in the next issue.

**Lucinda Backwell** and **Francesco d'Errico** travelled to Tsumkwe, northern Namibia, to accompany four San elders (including **Tsamkxao #Oma**, United Nations San representative) and a translator to Johannesburg. The aim of the project was to document the elders describing in their own words, and demonstrating the use of traditional artefacts collected by Dr. Louis Fourie in the Kalahari between 1916 and 1928, and now housed at Museum Africa in Johannesburg. Even though each object is catalogued and named, the function, meaning, and manufacturing

techniques of many items are unknown. In addition, many organic items parallel those made 40,000 years ago at Border Cave. The discussions were documented on video, to be sub-titled, as part of an archive of the collection. The project was an enormous success; they all learned a lot and had the time of their lives. Many museum items were re-classified, e.g. a bone 'needle' that is actually a "fork" used in female rites of passage; a highly symbolic item passed from one generation to the next, and worn for safekeeping by a grandmother until such time as the next young woman requires it. Whoever would have thought? Or the cow horn that was not San, but that they nonetheless discussed and held to their lips to blow, only to find in the catalogue that it is listed as a 'medicinal enema horn' (see image centre left reaction). **Kathleen Dollman** (prospective Honours candidate) volunteered to be scribe, and was a huge help. Then ten days later back to Nyae Nyae to document how specific items are made, and the gestures used to produce and use them. With the assistance of a traditional hunter, they also conducted a bow and bone arrow experiment as part of ongoing research on ancient bone tools. The aims of this project are to study, using high-resolution microtomography, the internal fractures, if any, in the 60,000 year old bone point from Sibudu Cave,

and compare the results with those caused, if any, through impact with a medium-sized mammal, a chipboard target, and the floor. The latter two created experimentally in the laboratory using modern archery equipment and weights from a given height. This study is made in collaboration with **Lyn Wadley, Francesco d'Errico, Kris Carlson** and **Tea Jashashvili**.



**Lucinda Backwell** and **Francesco d'Errico** in Tsumkwe, northern Namibia (top). **Cgunta Bo**, a traditional healer interpreting divining dice ahead of his journey. Discussing

artefacts at Museum Africa with **Tsamkxao #Oma, Cgunta Bo, Lena Gwaxan Cgunta, Joa Cwi** and **#Oma Tsamkgao** (centre), and documenting how they are made and used on their return to the village (bottom). Bone arrow head replicas of the 60,000 year old Sibudu bone point, shaped through grinding with sandpaper, were used by a traditional bow hunter as part of an experiment. The remainder of her time has been spent collecting microscopic data on modern invertebrate modification of bone in an attempt to match the traces recorded on *Australopithecus sediba* and associated faunal remains from Malapa. This research is made in collaboration with **James Harrison, Aurore Val, Alexander Parkinson, Francesco d'Errico** and **Lee Berger**.

A paper and a book chapter were published with two former students, **Phillip Taru**, now a postdoc at the University of the Free State, and **Matthew Caruana**, currently completing his PhD in archaeology at Wits. Taru, P., Backwell, L. 2013. Identification of fossil hairs in *Parahyaena brunnea* coprolites from Middle Pleistocene deposits at Gladysvale cave, South Africa, *Journal of Archaeological Science*. 40: 3674-3685.

Caruana, M., d'Errico, F. & Backwell, L.R. 2013. Early hominin social learning strategies underlying the use and production of bone and stone tools. In: C. Sanz, C. Boesch, J. Call (Eds.). *Tool Use in Animals: Cognition and Ecology*. Cambridge University Press, pp. 242-285.

**Bonita de Klerk** (Operations Manager - Malapa Project), has been part of a project named *Marapo Stones and Bones*, a joint initiative of the Gauteng Provincial Government and Wits to establish a casting programme in the Cradle of Humankind. Since February 2013 the Malapa casting technicians have been running workshops within the Cradle of Humankind World Heritage Site (COHWHS). These workshops have successfully trained people from the local communities in moulding, casting and painting techniques. The end result of this joint initiative is job creation and heritage awareness through the production of fossil and other heritage casts. The programme will be based at Sterkfontein and will service the tourist market around the Cradle area.

In the COHWHS there are large impoverished communities, with a limited skills base. The Marapo project has set up a dedicated casting lab that offers employment and learning for members of the community. Members of

the community are trained as casting technicians and also receive skills in fossil and bone identification, art classes, business and sales training. This not only empowers individuals, but also increases community understanding of the heritage of the area, which remains an important obligation for the COH WHS Management Authority and the University of Witwatersrand. The Marapo project exposes the communities to science and the world of heritage objects that exist right on their doorsteps. Our aim is to engage as many individuals from the community as possible, establishing useful skills, heritage awareness and self-esteem through job creation. The production of casts forms an important part of the joint goal towards developing the economy and people of this region and other heritage-rich areas of South Africa, as well as developing the science of palaeoanthropology in Africa, and the continued promotion of the COHWHS as one of the world's foremost fossil hominid-bearing sites.







**Boy Louw** demonstrating casting techniques.



Local participants in the Marapo casting programme.

**Michael Day** began his postdoc this month, working on quantifying and elucidating the end- *Tapinocephalus* AZ extinction. Mike's capers over the last 3 months include going on a sunny field trip in March to the Beaufort West area to collect in the *Tapinocephalus* and *Pristerognathus*

assemblage zones in order to investigate the end- *Tapinocephalus* AZ extinction. This formed the annual BPI trip run by **Bruce Rubidge** and included **Pia Viglietti**, **Sifelani Jirah**, **Charlton Dube**, **Fernando Abdala**, **Luke Norton**, **Ashley Kruger** (BPI), **Gabe Bever** (AMNH) and **Tyler Lyson** (Smithsonian). They tried, and failed, to find some further specimens of *Eunotosaurus* but overall found 134 specimens, which forms the subject of Mike's postdoctoral research. He submitted his PhD thesis soon after his return from fieldwork and has now completed his corrections. In April, he attended a conference on the Carboniferous-Permian transition in Albuquerque, New Mexico, USA, at which he presented a paper and got to know a few people who may prove useful collaborators in the future.





**Mike Day** (far left) looking sheepish on the Karoo field trip, and the rest of the team, including from left to right: **Luke Norton**, **Tyler Lyson**, **Pia Viglietti**, **Bruce Rubidge**, **Charlton Dube**, **Ashley Kruger**, **Sifelani Jirah**, **Gabe Bever** and **Fernando Abdala**.



**Tyler Lyson** (Smithsonian) and **Gabe Bever** (AMNH) pondering the meaning of life in the Karoo.

**Natasha Barbolini** (PhD candidate) is preparing to submit her thesis this month on the palynology of the Karoo Supergroup. Afterwards she will begin work on a paper comparing Upper Palaeozoic Argentinian and South African palynofloras, which was initiated after a trip to Argentina last year to collaborate with palynologists Silvia Cesari and Valeria Perez Loinaze (pictured in the middle, with Ezequiel Vera, palaeobotanist, on right).



**Pia Viglietti** (PhD candidate) is six months into her research, which involves tackling the Beaufort Group's Balfour Formation (*Dicynodon* Assemblage Zone). Of particular interest to her study will be a sandy unit in the Upper Balfour Formation named the Barberskrans Member. This is the last sandy unit before the greatest

extinction Earth has experienced — the end-Permian mass extinction event. Thus fieldwork will entail measuring sections through the entire Balfour Formation, to the base of the Triassic Katberg Formation. Faunal and floral changes before, during, and after the Barberskrans Member will be noted, along with the extent of the Barberskrans Member in the Karoo Basin. This will all be helpful in reconstructing environments and basin evolution at this time in the Late Permian. Pia has already completed fieldwork in the Nieu Bethesda area during May of this year and is planning future trips to the Free-state, and also the Craddock area, where the type locality for the Barberskrans Member exists. Pia is also organising an art competition in the Institute under the theme: any medium and your research.



The Owl House at Nieu Bethesda (photograph Pia Viglietti).



Top left: Doornplaats farm, Platberg and *Dicynodon* Assemblage Zone type locality in the distance.

Top right: Stem impressions of *Equisetum* sp. on sandstone base in the Barberskrans Member (upper Balfour Formation). Scale: 5 cm. Bottom left: The Kitching Fossil Centre in Nieu Bethesda received an upgrade on its displays. Two therapsids (a Gorgonopsid and a Dicynodon)

now stand on the lawns beside the centre. Bottom right: Possible theracephalian found during fieldwork in May. Scale: Skull approximately 35 cm long. Photos taken by Pia Viglietti in Nieu Bethesda and on farms nearby.

**Rachelle Keeling** (PhD candidate) visited the United States in April to present at two conferences. Her research investigates the preservation of soft tissue at the Malapa site, in the Cradle of Humankind. With two palaeoanthropology conferences happening within days of one another she was able to present at the 22nd Annual Meeting of the Paleanthropology Society in Honolulu, Hawaii, and the 82nd Annual Meeting of the American Association of Physical Anthropologists in Knoxville, Tennessee (where the recently completed *Australopithecus sediba* reconstruction was also on auction to raise money for students travelling to AAPA meetings). In between conferences she was fortunate enough to do some sightseeing and visited the inspiring Pearl Harbour, tried her hand at surfing in Waikiki and snorkelled alongside colourful fish in beautiful Hananama Bay. Keeling R. and Berger, L.R. 2013. Potential soft organic tissue preserved in association with the *Australopithecus sediba* fossils from the Malapa cave site, South Africa.

82nd Annual Meeting of the *American Association of Physical Anthropologists*, Knoxville, Tennessee, United States of America. *American Journal of Physical Anthropology*. Wiley Blackwell. Supplement 56: 163.



*Australopithecus sediba* on auction at the AAPA, and Hananama Bay, Honolulu.

**Eddie Odes** (PhD candidate) is working on an osteohistology project on the limb bones of *Massospondylus carinatus*. He is being supervised by **Jonah Choiniere** (Wits) and **Jennifer Botha-Brink** (National Museum). His research focuses on osteohistology, growth patterns and growth rates of multiple bone elements of *Massospondylus carinatus* Owen, a prosauropod dinosaur



from the early Jurassic Period of South Africa (approximately 200 - 183 Mya). He will also examine whether the variation in forelimb and hind limb bone histology can be used to identify postural change (i.e. from quadrupedal to bipedal) in an ontogenetic series of *Massospondylus carinatus* specimens ranging from near hatchlings to adults. The forelimbs and hind limbs from dinosaur embryos found by Kitching (1977) have been suggested as most probably belonging to *Massospondylus*, and have subsequently been found to be of equal size, indicating that *Massospondylus* hatchlings were quadrupedal, and different from adults (Reisz *et al.*, 2005). Eddie's study will also look at vascularisation densities of *Massospondylus* bone, and review existing histology methods of vascular identification to determine which method would be best suited for the analysis and interpretation of *Massospondylus* bone.



**Eddie Odes** ready for some serious osteo lab work.

**Alexander Parkinson** (PhD candidate). From Legislative Auditing to Multi-focus Microscope: The Memoirs of a Journey. Yesterday (3<sup>rd</sup> July 2013) represented the penultimate formality of what has been an eleven year long journey that started at the base of the Acropolis in Athens, Greece in 2002. The moment my name was called and I walked onto the stage of the Great Hall at the University of the Witwatersrand, my mind was flooded by hundreds of memories of this life changing journey.

However, my mind soon sprung back to reality and I realised that I was walking towards the Deputy Chief Justice of the constitutional court of South Africa. In front of my father, my fiancé and a few hundred other people I was about to be awarded the Degree of Master of Science in Palaeontology. After my graduation I had flash backs of sitting in my Grade 9 physical science class and thinking to myself "if this is what science is all about then this is the last thing I want to do!". If I am to be completely honest, during my schooling years I was a terrible student, I rarely ever studied and certainly never applied my mind to any subject. I was perhaps one of the lucky ones, as despite my sheer avoidance of studying I somehow managed never to fail a single subject. Perhaps, it was the significance of being amongst the last matriculates of our previous millennium which made me feel an obligation to do something significant with my life. Hence I subsequently registered at a college in Johannesburg to study information technology and system programming, development and design, which seemed to be a good idea at the time. However, after two years at college I soon realised that I had had enough of this and decided to go spend some time with my extended family in Newcastle-Upon-Tyne, England.

I lived and worked in England for roughly a year before I realised that my body, mind and soul was experiencing an extreme case of Vitamin D deficiency. Though prior to my return to South Africa I decided to get onto a train for Paris and fleet around Europe for a few weeks. My entire life I was always fascinated by everything ancient from dinosaurs to the pyramids of Giza but it was only during my weeks in Europe that I really began to consider a life of studying and researching such wonderful things. However, my mind always reverted back to the realities of life and always ended up asking myself the question "How much work is there really left to do in such fields?". I was four weeks into my European adventure when I arrived in Athens, and the day after my arrival I decided to walk to the Acropolis and have a good look around. It was a wonderfully sunny winter morning when I arrived at the base of the mound. I soon proceeded to walk along one of the many foot paths leading up to the mound and eventually stumbled across something which absolutely blew my mind. I came across a gentleman sitting very comfortably on the ground next to piece of ancient Greek wall which was only about half a meter in height but ran around the foot of mound for at least 800 meters. He had a paint brush in one hand and was ever so slowly brushing



away at this piece of wall with a look of absolute joy on his face. I estimated at the current speed at which he was working, he most likely covers about 1 - 2 running meters of wall a day. This meant that it would probably take him the next two years to finish this particularly uninteresting section of wall and would then spend the entirety of his life cleaning the other hundreds and hundreds of meters of walls which occur throughout the Acropolis compound. It soon dawned on me that if this is the international standard then surely there must be hundreds of jobs in the field of archaeology and millions of hours of much needed man power. It was at this very moment that I made a mental decision to pursue a career in Archaeology. Upon my return to South Africa in 2002 I registered for a BA Degree majoring in Archaeology and History via correspondence at the University of South Africa in Pretoria. It took me seven years of blood, sweat and tears to complete my part-time degree. During which time I worked full time as a Subject Matter Expert in the credit card division of a major financial institution, and in the last four years was appointed as the regional manager and legislative auditor for Eastern Johannesburg and KwaZulu-Natal working for one of the world's most renowned manufacturers of automotive vehicles. Despite absolute

financial stability and being in a job that most average people would only dream about, I was categorically miserable and hated waking up in the morning. It was upon completion of my undergraduate degree in 2009 that I made a truly life changing decision. I decided to resign from my job and register at the University of the Witwatersrand for a full time BSc Honours Degree in Palaeontology. Three extremely stressful but absolutely fantastic years later I was walking onto the stage to receive my Master of Science Degree in Palaeontology. Currently, I am now two months into my Degree of Doctor of Philosophy and spend most my days looking through the lenses of a multifocus microscope at funny little markings on bones caused by insects. I am a million times happier and wake up every morning with a sense of absolute gratitude and feeling truly blessed to be fortunate enough to be living my dreams, dreams which wouldn't be possible without the aid of great people and institutions. It is at this time that I would like to thank the Palaeontological Scientific Trust (PAST), The University of the Witwatersrand, as well as the National Research Foundation for providing me bursary funding to enable me to pursue my dreams. All students and staff of the Bernard Price Institute of Palaeontology / Institute of

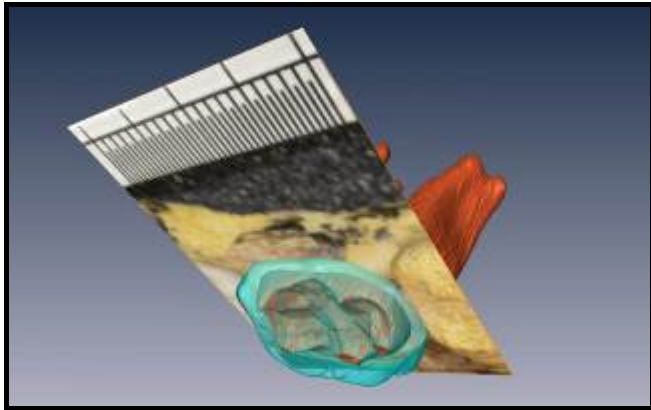
Human Evolution (the now Evolutionary Studies Institute) for their friendship, guidance and support through my years at this world class Institution. To all the members and participants of the Palaeontological Society of Southern Africa conferences since 2010, all of whom I have extremely fond memories. Most importantly I would like to thank my parents and my fiancés for all their love and support as well as Dr Lucinda Backwell for her continued support, encouragement, direction and expertise she has afforded me as my supervisor during my BSc Honours and MSc. I am greatly looking forward to the next eleven years of this journey.

**Sifelani Jirah** (MSc candidate) claims that he has no news to contribute to this issue, except that he submitted his dissertation at the end of June 2013. That's news! Congratulations!

**Ashley Kruger** (MSc candidate) accompanied his supervisors **Bruce Rubidge** and **Fernando Abdala**, along with other researchers to the field in March, working mainly in the *Tapinocephalus* Assemblage Zone near Beaufort West. He is currently working on *Anteosaurus* for his MSc and has started CT scanning a specimen for

3D reconstruction. Ashley is also working on a paper with his supervisors, which entails the description and phylogeny of a Burnetiamorph from Malawi, and this will be submitted very shortly.

**Sue Dykes** (MSc candidate) spent a fruitful week in Tervuren, Belgium, collecting data from extant primate species for her hominin dentition project. This was followed by a week in Toulouse, where she was warmly welcomed by **José Braga** and his team, who provided some very useful 3D imaging software training, as well as 3D images of enamel-dentine junctions and enamel overlays. Combining 2D and 3D images has proven to be useful on a number of counts - from quantifying potential parallax error bars to assessing landmark placements on teeth at various stages of wear.



Lower right M1 of TM1517 (*Paranthropus robustus*), superimposing 2D and 3D imagery for combined data analysis to be conducted by **Sue Dykes** (courtesy of **José Braga**).



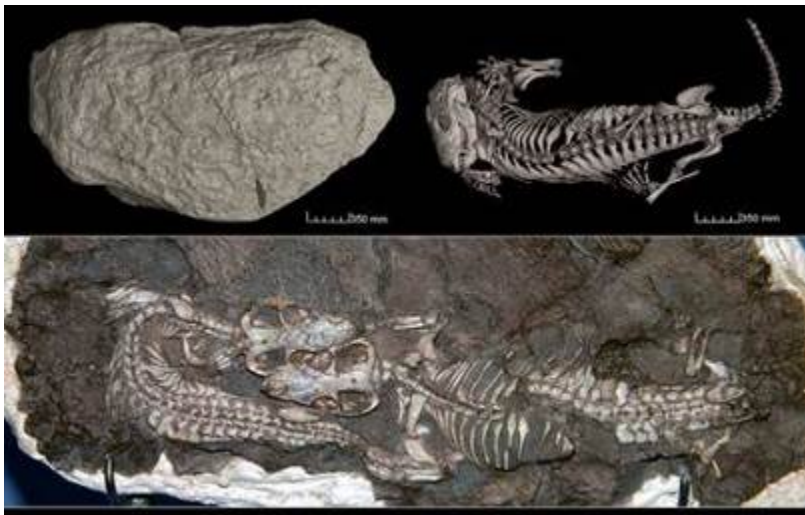
**Marc Van den Brandt** (Honours candidate) is busy producing an updated cranial description of the Permian

cynodont *Cynosaurus suppostus*, second most abundant South African Late Permian cynodont. The work includes the seven known specimens and Marc will explore also ontogenetic variation of the species. Marc has been working hectically and has almost finished the first draft of the description. He has been having early morning meetings with his advisor **Fernando Abdala** to discuss the intricacies of the cranial anatomy of these beasts.

**Safiyyah Iqbal** (Honours candidate) is using a comparative approach to study the forelimb of the Early Triassic cynodont *Thrinaxodon liorhinus*. Her aims are to study and describe the forelimb of *Thrinaxodon* and conduct a morphometric analysis that includes the forelimbs of *Thrinaxodon*, lizards (*Varanus*), wombats (*Vombatus* and *Lasiurhinus*, marsupial, diggers), Tasmanian wolves (*Thylacinus cynocephalus*, marsupial cursor) and the domestic cat (*Felis domesticus*, placental, cursorial).

*Thrinaxodon* does not display clear osteological features in the limb structure that would indicate it is a digger, but finding of the species in burrows lead to the hypothesis that *Thrinaxodon* is a digger (Vleck 1981; Damiani *et al.* 2003). Besides exhibiting potential burrowing adaptations, the limbs of *Thrinaxodon* have been described as

exhibiting a transitional phase between classic sprawled limbs of reptiles and mammalian parasagittal postures (Kemp 2005). By comparing the forelimb of the *Thrinaxodon liorhinus* to that of modern species, including a burrowing mammal, a cursorial mammal and a cursorial reptile will help in better understanding the behaviour of the fossil species. Safiyyah's research is supervised by **Kristian Carlson** and **Fernando Abdala**.



Above: burrow cast and specimen of *Thrinaxodon liorhinus* studied using Synchrotron technology (see cover; images courtesy **Vincent Fernandez**). Below: two juvenile specimens of

*Thrinaxodon liorhinus* collected by **Roger Smith** from the Iziko-South African Museum (photo **Fernando Abdala**).

**Michelle Clack** (Honours candidate) is busy setting up a GIS database of the dinosaur fossil collections from the Stormberg Group. This entails geo-referencing the database in a standardised form to plot on ArcGIS in order to create maps for interpretation. She will be looking at the distribution through the Triassic-Jurassic boundary to describe the changes that occurred.



**Michelle Clack** with a Mona Lisa smile. One small click for woman, one big step for palaeontological research.

	Taxon Superorder	Taxon Order	Taxon Suborder	Taxon Infraorder	Taxon Family	Taxon Genus	Taxon Species	Body Size	Trophic group
6163 MA-Rg	Dinosauria								
617 MA-Rg									
618 MA-Rg									
619 MA-Rg									
620 MA-Rg									
621 MA-Rg									
622 MA-Rg									
623 MA-Rg									
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626 MA-Rg									
627 MA-Rg									
628 MA-Rg									
629 MA-Rg									
630 MA-Rg									

Part of **Michelle Clack's** database of dinosaurs from the Stormberg Group.

**Helke Mocke** - National Earth Science Museum, Geological Survey of Namibia - Windhoek.

This year started out with a bang of activities for the museum. The curator participated in two career fair events, where a career in the Geosciences profession was promoted. During these events rocks, minerals and fossils from Namibia were promoted and the importance of Geoscience explained. On the 13<sup>th</sup> and 14<sup>th</sup> of March the 18<sup>th</sup> Polytechnic Career Fair was attended in Windhoek and on the 7<sup>th</sup> of June the Katutura Career Fair took place at the Habitat Centre in Katutura. Both events were attended by more than a thousand students and pupils.

On the 26-28 April eighteen participants took part in the John Moore Memorial Course on "Alluvial Diamond Deposits: An African Perspective", which was organised by the Geological Society of Namibia and held in Hentiesbaai, Namibia, in conjunction with a very interested field trip. The course and excursion leader was Dr. John Ward.





Once again the curator, Helke Mocke, was able to join the French Namibia Palaeontology Expedition, thanks to Drs Martin Pickford and Brigitte Senut to the Sperrgebiet from the 27<sup>th</sup> to 29<sup>th</sup> of May. Various sites were visited including the Langental mammal, mollusc and shark sites, the Elisabethfeld, Grillental, and Buntfeldschuh sites. The expedition members also showed some fossil sites to a group of environmentalists and geologists from Namdeb. Some revealing sedimentological observations and work

was done by Dr Francois Guillocheau from the University of Rennes, France. Many fossils were collected and are stored at the National Earth Science Museum. The highlight of this year's trip was the discovery of a new fossil site, with a rich deposit of well-preserved micromammals, as well as bird, tortoise and the bone of a baboon-sized animal.



Another fantastic field excursion, organised by the Geological Society of Namibia took place on the 30<sup>th</sup> May

to 02<sup>nd</sup> June. Dr Martin Pickford was the excursion leader to the Etosha National Park, where Martin Hipondoka discovered beautiful Plio-Pleistocene fossils several years ago, while working on his PhD. The fossils discovered were confirmed by Drs Pickford and Senut and indicated a body of standing water at Etosha 4-6 million years ago.



This year the excursion participants discovered a wealth of fossils at the Ekuma site, including large leg bones of elephant, an elephant tusk still halfway buried in sediment, a broken elephant tooth, almost fully articulated catfishes, crocodile teeth, bovid limb bones, a horn core

and rhino. The crocodile teeth were a first discovery for this particular locality and indicate the presence of abundant water of a depth of several metres.

Other places visited in Etosha, were the Poacher's Point, where many stromatolite balls (oncolites) are found, and Pelican Island, which took me slightly more than an hour to walk one way.



Elephant long bone form Ekuma, Etosha.

Upcoming events for the museum this year include, a scientific research trip to the dinosaur track sites in

Namibia in July, collaboration work with the Wits Geology Department during August in the Karasburg Basin and the "Heritage Week" in September.

**More notable news:** Dr Martin Pickford and Dr Brigitte Senut, from the Muséum National d'Histoire Naturelle, have received the Henno Martin Medal from the Geological Society of Namibia, an award, which they received for their 20 years of contribution to Palaeontology in Namibia!!!!

**Congratulations to Brigitte & Martin !! (ed.)**

**UCT - Palaeobiology lab - Ragna Redelstorff**  
(Department of Biological Sciences)

First of all we would like to thank everyone for a highly successful PSSA meeting 2012 here in Cape Town! It was fabulous to meet all of you and share our love of palaeontology! Besides several international visitors, we had a large contingent of South African researchers who presented their exciting research findings and made the conference a great success!

Over the past two years there have been quite a few comings and goings in our palaeo lab on the gentle slopes of Devil's Peak.

Postdoctoral researchers **Daniel Thomas**, **Sandra Jasinowski** and **Yasmin Tulu** completed their terms in 2011 and all three are now across the Atlantic in Vancouver, Washington, and Michigan respectively. Postdoc **Romala Govender** also completed her term and is now curator of the Cenozoic collections at the Iziko Museum in Cape Town. **Nic Fordyce** and **Tobias Nasterlack**, who did their Honours with us in 2011-2012, successfully published their research on "Mamafura" in SAJS and on the small dicynodont *Cistecephalus* in JVP, respectively. **Aurore Canoville** recently finished her two and half years of postdoctoral research on the bone microstructure of Permo-Triassic tetrapods from the Karoo Basin and Russia.

**Ragna Redelstorff** is still holding the postdoctoral fort here at UCT where she is working on the Stegosauria, in particular, their bone histology and physiology. She became quite intrigued by this group of ornithischian dinosaurs after discovering during her Masters research that *Stegosaurus* are the tortoises among the dinosaurs, not only in terms of armour but also in terms of their rather slow growth.

**Matthew Scarborough** is well into his second year of a PhD on dwarf elephants from the Mediterranean islands focussing on adaptations to insular environments in the appendicular skeleton. He is currently spending a large amount of time travelling and visiting dwarf elephant collections on Mediterranean islands, Italy and other museums in Europe, which we are all very jealous of.

**Emil Krupandan** is already into his second year of Master's research on the description of the remains of a basal sauropodomorph dinosaur from Lesotho. From October to December 2012, Alejandro Montero, from the Museo de La Plata in Argentina visited our palaeo lab as part of a RSA-Argentina collaboration agreement. He and Emil visited the prosauropod and sauropod collections in Cape Town, Wits and Bloomfontein.

In January 2013, another Masters student, **Germán Montoya**, arrived from Chile. He is working on the morphological adaptations and bone histology of the Cape dune mole rats. Honours student **Vidushi Dabee** and visiting graduate student Lavinia Capauna from Italy have both been working on the bone histology of various modern birds. .

**Anusuya Chinsamy-Turan** was thrilled in January 2013 to have her 5<sup>th</sup>(!) Nature paper - this time in Nature

Communications with colleagues from USA, Spain and China! Because of their finding of medullary bone we now know that the Mesozoic *Confuciusornis* birds showing off long tail feathers are males, while the ones without these rectrices are females. A recent addition to Anusuya's wall of fame has been the 'NRF Transformation of the Science Cohort Award' for her work in palaeobiology. Since January 2013, Anusuya has been appointed as the Head of our Biological Sciences Department, which was formed as a merger between the Zoology and Botany Departments. To celebrate this merger, in December 2013 our department will be hosting a Biodiversity Southern Africa conference (<http://www.biodiversitysa.uct.ac.za>). We have had an overwhelming response to our "expression of interest" notice and we hope that we will see some of you again in in Cape Town later this year!

Cheers and best wishes,  
**Ragna**





Participants of the PSSA Biennial Meeting in Cape Town in September 2012.



Postdocs Daniel Thomas, Sandra Jasinowski, Yasmin Tulu, Romala Govender (back) and Aurore Canoville (from left to right) and PI Anusuya Chinsamy-Turan (center) in front of the Zoology Department, UCT.





Postdocs Aurore Canoville and Ragna Redelstorff and visiting Honours student Meelyn Pandit from the U.S. during a visit at the Le Bonheur crocodile farm near Cape Town.



Masters student Emil Krupandan, visiting Honours student Meelyn Pandit, postdoc Aurore Canoville, PI Anusuya Chinsamy-Turan, Ph.D. student Matthew Scarborough and postdoc Ragna Redelstorff after a nice lab lunch at Rhodes Memorial.



Postdoc Ragna Redelstorff, Masters student Emil Krupandan, visiting graduate student Lavinia Capauna from Italy and PI Anusuya Chinsamy-Turan in front of the Department of Biological Sciences, UCT.

**Rose Prevec, Billy de Klerk & Robert Gess  
Albany Museum, Grahamstown.**

**Rose Prevec** - The past six months have been quite a roller-coaster ride, but I am overjoyed that I have been appointed on a permanent basis at the Albany Museum! It is wonderful news that DSRAC is investing in the Museum, with the appointment of three permanent positions (one each in Palaeontology, Entomology and History), as well as an increase in our budgets for maintenance and running costs. Many thanks are owed to **Billy** and the research and administrative staff at the Museum for their sustained efforts in motivating for these new research posts, and for their dedication in keeping the departments running under challenging circumstances. We also completed renovations to the former Fresh Water Ichthyology Department, which has been absorbed into Earth Sciences, affording us much more office and laboratory space.

Research has continued this year on the Permian-Triassic Boundary interval near Nieu Bethesda, with several fieldtrips to the Old Lootsberg Pass area in search of plant fossils, and culminating in the assembly of our NSF-funded research team including visitors **Bob Gastaldo** (who

has been at Rhodes University for the past 6 months on a Fullbright Fellowship), **John Geissman** (U. Texas, USA), **Sandra Kamo** (U. Toronto, Canada) and **Johann Neveling**. We have found additional plant fossil localities in the area, and are trying to decipher the implications to current interpretations of the PTB.



The team at Ganora, near Nieu Bethesda - Elvira Gastaldo, John Geissman, Johan Neveling, Rose Prevec, Annette Gotz, Bob Gastaldo and Sandra Kamo.

Exciting inroads were made into ongoing investigations of the Middle Permian floras near Sutherland, with a brief collecting and reconnaissance trip to inspect some new localities found by expert fossil hunter **Jaco Groenewald**. Many thanks to **Jaco** for his enthusiasm and his excellent eye! We now have a decent flora from the *Tapinocephalus* Zone, and not the usual fare of isolated *Glossopteris* leaves or sphenophytes.



Khokela Camagu assisting with the wrapping of fossil plants on the Ouberg Pass; Rose Prevec and Jaco Groenewald inspecting the outcrop.



In another new project, **Marion Bamford** and I spent some time in the Kirkwood area in search of plants, charcoal and amber. We found a few new charcoal sites, and some *in situ* amber, which was really exciting.



Marion Bamford seeking out charcoal at one of the Dunbrody outcrops near Kirkwood.

A highlight this year was the launch of the NRF Centre of Excellence in Palaeosciences. As participants in this venture, **Billy** and I look forward to increased funding and collaborative opportunities in the future. Many thanks to the team at the ESI, and especially to **Bruce Rubidge**, for driving this initiative!

**Billy de Klerk** – A highlight during these past months has been the first phase excavation of a large sauropodomorph dinosaur from the basal Clarens Formation (lower Jurassic) in the Barkley Pass area, near the town of Elliot. Mr Selby Vorster, a prominent farmer in the area reported a large fossils bone that was protruding from a road cutting on the road to the village of Rhodes in 2011.



Jonah Choiniere (left) of the ESI at Wits and Mr Selby Vorster, who reported the find, at the R393 road cutting dinosaur fossil site. The large femur can be see protruding just below Jonah's foot and it was this section that was stolen on 15<sup>th</sup> May 2013.

**Jonah Choiniere** and **Billy de Klerk** put a joint Wits (ESI) / Albany Museum team together to start the excavation in mid-May'13 (see team photo below). A follow-up excavation, to complete the job, will hopefully take place in early summer. This road-side excavation, in full view of the occasional passing traffic, clearly attracted attention and on the morning of the third day we arrived to find that a large part of the exposed femur (c.40cm), including the greater trochanter, had been lifted by a thief in the night. This was a first for me as I had never had a fossil stolen before. We were outraged to say the least and all effort has been made to recover the fossil. The local police are still trying to track it down as we believe that a local person was the culprit - somebody not aware that fossils are protect as heritage objects in SA. The press was alerted and we remain hopeful that we will see the bone again. If not, all is not lost as the other femur is still to be excavated.



(l-r) Brigitte Cohen (ESI), Armstrong Khoso (AM), Jonah Choiniere (ESI), Kelsey Glennon (Wits), Leo Goosen (AM), Zubair Jinnah (Wits) and Billy de Klerk (AM).





Jonah showing of his macho side by welding "the blade". Clarens sandstone is like concrete!

**Article written for press release (below).** Story taken up by local papers and by "The Star" in Johannesburg. **Billy** was also interviewed on "Talk Radio 702" as well.

### **Dinosaur Fossil Bone Stolen!**

Last week (13<sup>th</sup> - 17<sup>th</sup> May), a team of palaeontologists from the University of the Witwatersrand, Johannesburg, and the Albany Museum/Rhodes University, Grahamstown, began to excavate a large dinosaur that had been discovered in a road cutting on

the R393 between the Mountain Shadows Hotel and Moshesh's Ford. The dinosaur fossil was first reported to **Dr Billy de Klerk** of the Albany Museum by Mr Selby Vorster, of Elliot, in 2011. During the first visit to evaluate the fossil Dr de Klerk realised that this dinosaur was very significant because it represented the first occurrence of its type from the Clarence Formation sandstone and, in all likelihood was a new species of Jurassic dinosaur, estimated to be 200 million years old. At this stage, he tentatively identified it as a sauropodomorph - a long-neck, long-tail form of primitive dinosaur that would have been about six metres long. Dr de Klerk set up a collaborative project with **Dr Jonah Choiniere**, of Wits University to excavate and study this new and exciting dinosaur.

After two days of exhausting digging, they had managed to expose the tail, some parts of the leg bones and ribs. On returning to the excavation site on Wednesday morning (15<sup>th</sup> May), they were horrified to discover that a part of the thigh bone (femur), about 35cm long and 10cm in diameter had been removed. Reports suggest that the bone had been taken between 7am and 8:30am that morning. The total length of the femur is estimated to be 100cm and this stolen part has anatomical detail which is vital for identification purposes. Fossils, archaeological material and meteorites are protected by the South African National Heritage Act 25 of 1999, and they are all regarded as part of the "National Estate". No fossils may be excavated, collected, sold or traded in South Africa without a valid permit and therefore no fossil has any monetary value at

all. Whoever removed this important fossil may not have been aware of the seriousness of their actions. Dr de Klerk has appealed to this person to return this vital part of our fossil heritage without prejudice. The matter has been reported to Warrant Officer Gustav Spann of the SAPS (Elliot). Should the fossil not reappear within the month, a theft docket will be opened and formal investigation will follow.

# The Star

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## JURASSIC CSI PUZZLE

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The Star FRIDAY MAY 31 2013

## Vital fossil pilfered from site next to road

Please return our dinosaur femur, scientists urge thief

SHAUN SMILLIE  
shaun.smillie@inf.co.za

**T**WO SCIENTISTS are hoping that a thief will return a dinosaur fossil so that they will be able to determine whether they have discovered a new species.

The theft happened near Elliot in the Eastern Cape close to a remote dirt road.

Palaeontologists involved in excavating the dinosaur have given the thief or thieves until the end of the month to return the bone, or else they will open a case at a police station. The police have already been informed. It is believed that the crime took place in the early morning of May 17.

Dr Billy de Klerk, of the Albany Museum in Grahamstown, and Dr Jonah Choiniere, of Wits University, had been excavating the dinosaur close to a road cutting on the R393 between the Mountain Shadows Hotel and Moshesh's Ford.

"We believe this could be a significant find; it might even be a new species," said Choiniere.

From what they've seen of the fossil, the scientists believe the dinosaur might be a 200 million-year-old sauropodomorph, which had a long neck and long tail and was probably about 6m long.



**STOLEN:** The large thigh bone (femur) protruding from the ground next to the R393 near the Barkly Pass which was stolen on May 15.

Choiniere and De Klerk had spent two days excavating the site. They had glued part of the femur together and had been close to recovering it from the ground.

On the afternoon of May 16, they decided that they would leave the site and return in the morning.

The femur was exposed, but Choiniere felt there was little chance of anyone stealing it.

The site, while close to a road, was remote, with little traffic. The next morning they found the femur missing. "I have never had anything like this happen to me before," said Choiniere.

The femur is about 35cm long and 10cm in diameter, and probably weighed about 6kg.

Choiniere suspects that the

thief might have carried it a short distance to a vehicle.

The thief could have used a screwdriver to remove the bone.

The missing part has anatomical details that would be vital to identify the species.

Fossils are protected by the South African National Heritage Act 25 of 1999, and can be excavated, sold or traded only with a valid permit.

Fossils in South Africa, noted Choiniere, have no monetary value.

"It might look cool on a shelf, but the value to science is immeasurable," Choiniere said. "I don't care who you are, I just want it back."

Anyone with information about the missing fossil can contact Choiniere on 011 717 6684.



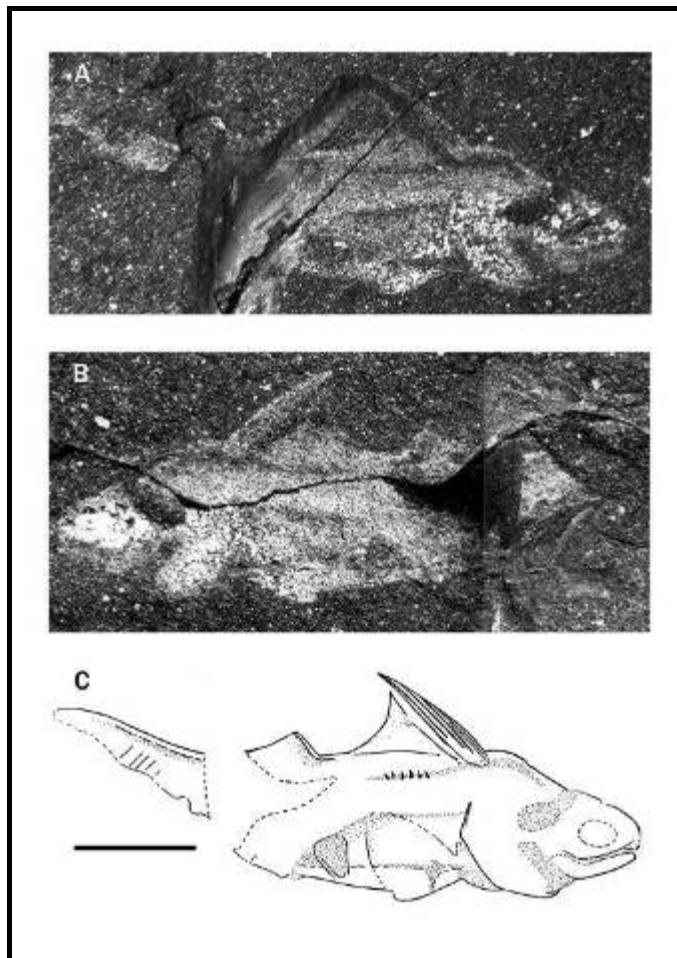
**Rob Gess** completed a one year postdoc at BPI (ESI) at the end of June and has been very busy finalising a series of papers resulting from that association. At the beginning of July he began a postdoc at Rhodes University (a mere two kilometres from his principle type locality) where he will continue his work on high latitude Late Devonian marginal marine and terrestrial ecosystems, biogeography and the end Devonian extinction event. Otherwise he has been very busy doing EIA related survey work which he recommends as a vehicle for getting to explore regional geology and which sometimes leads to unexpected discoveries in seemingly unlikely places."



"Glossopteris leaf from near Daggaboersnek south of Cradock collected by Rob Gess during roadworks"



Gess rescuing Glossopteris leaves from road works south of Cradock"



A 2.8 cm long fossil juvenile shark from Waterloo Farm that features in one of Rob's recently submitted papers - the world's smallest known Devonian fossil shark!"

**Annette Götz** - Rhodes University, Grahamstown.

### **Shell Lecture Series 2013 at Rhodes University**

The next Lecture Series is scheduled for mid-November 2013 and will focus on Palynostratigraphy and Palynofacies.

Presenters will be Dr Katrin Ruckwied and Dr Iain M. Prince (Shell), and Prof Annette E. Götz (Rhodes University).

For further information and registration please contact the course organiser ([a.gotz@ru.ac.za](mailto:a.gotz@ru.ac.za)) and visit our webpage:

<http://www.ru.ac.za/geology/shelllectureseries/>

### Jennifer Botha-Brink - National Museum

The Karoo Palaeontology Department at the National Museum increased its' members in April 2013 by adding a new fossil preparator, Kesebogile Noe, so we now have seven preparators working in our lab. The department has been busy with several research projects and field excursions to the Lower Triassic *Lystrosaurus* Assemblage Zone and overlying *Cynognathus* Assemblage Zone. The excursions yielded numerous *Lystrosaurus* and several cynodont skulls and skeletons, which are currently undergoing preparation. I am working on several research projects at the moment including a few bone histology papers. One of these includes a project on the new archosauriform *Garjainia* from the *Cynognathus* Assemblage Zone subzone A with David Gower from the Natural History Museum in London, John Hancox from the Evolutionary Studies Institute in Johannesburg, Andrey Sennikov of the Borissiak Paleontological Institute in Moscow and Richard Butler of the GeoBio-Center, Ludwig-Maximilians-Universität München in Munich. Another bone histology project involves a new collaboration with Tyler Lyson from the National Museum of Natural History, Smithsonian Institution in Washington and entails the

examination of the ribs of *Eunotosaurus*, *Pareisaurus*, *Nanoparia* and *Milleretta* in order to shed light on the origins of turtle lung ventilation. Other projects include an examination of cynodont disparity with Marcello Ruta from Lincoln University and Michael Benton from Bristol University, and a study on the microstructure of egg shells from Wonderwerk Cave, Northern Cape Province with James Brink of the National Museum and Liora Kolska Horwitz from the Hebrew University. In July, I will be travelling to Bozeman Montana, USA for the second International Symposium on Paleohistology to present results on a bone histology project on the four South African species of *Lystrosaurus*.

In other news, our department launched an Evolution Education Programme to communicate with Bloemfontein educators, provide them with resources and resolve the common misconceptions and problems that educators have with teaching the subject of evolution. In February 2012, we began this endeavour by providing 10 schools with resource materials, which included printed information, CDs, posters and fossil casts. The programme ran in conjunction with the Palaeontological Scientific Trust's (PAST) *Walking Tall* Programme. We visited 10 schools



(720 learners) and delivered the education packages while the cast of the *Walking Tall* Programme gave a theatre performance about past life on Earth. This was PAST's first visit to the Free State and the positive response from the learners was overwhelming. Thus, we ran the programme again in 2013 and expanded it to include outlying areas in Thaba N'Chu and Botshabelo. This year, we reached an estimated 1058 learners. The schools received the education packages, as well as new materials, which comprised four hominid skull casts of a modern chimpanzee, a modern human, *Australopithecus sediba* and *Homo erectus*. We also included teacher's workshops, which were presented by Professor Robert Blumenshine, the Chief Scientific and Education Strategist of PAST and Ms Andrea Leenen, the CEO of PAST. Seventy educators from 48 schools attended the workshops. Due to the positive response and encouraging feedback from the teachers, the National Museum and PAST have resolved to repeat these workshops next year. It is hoped that we will eventually reach all teachers and subject advisors in the Free State, thus ensuring that all educators in this province are comfortable and capable of teaching the subject in an appropriate manner.

#### **Recent Publications:**

Botha-Brink, J. and R. M. H. Smith. 2012. Palaeobiology of Triassic procolophonids inferred from bone microstructure. *Comptes Rendus Palevol* 11: 419-433.

Botha-Brink, J., F. Abdala and A. Chinsamy. 2012. The radiation and osteohistology of non-mammaliaform cynodonts; pp. 223-246 in A. Chinsamy-Turan (ed.), *The forerunners of mammals: radiation, histology and biology*. Indiana University Press, Bloomington, 360 pp.

Ray, S., J. Botha-Brink, and A. Chinsamy. 2012. Dicynodont growth dynamics and lifestyle adaptations; pp. 121-146 in A. Chinsamy-Turan (ed.), *The forerunners of mammals: radiation, histology and biology*. Indiana University Press, Bloomington, 360 pp.

Huttenlocker, A. K. and J. Botha-Brink. 2013. Body size and growth patterns in the therocephalian *Moschorhinus kitchingi* (Therapsida: Eutheriodontia) before and after the end-Permian extinction in South Africa. *Paleobiology* 39(2): 253-277.

**Steve Tolan - Chipembe Wildlife Education Trust**  
Mfuwe, Zambia. [www.chipembele.org](http://www.chipembele.org)

#### **RENAISSANCE OF KAROO PALAEOLOGY IN ZAMBIA**

Karoo Supergroup deposits are dotted throughout much of Zambia, but by far the most extensive and fossiliferous area is in the Luangwa Valley in Eastern Zambia. The Luangwa River is one of the major tributaries of the Zambezi River, and is one of the biggest unaltered rivers in southern Africa at c. 1000 km long. The Luangwa Valley, part of the Great Rift Valley system, comprises around 50,000 square kilometres of hot, low-lying country, home to abundant wildlife and several national parks. Karoo-aged rocks are generally buried under recent alluvial soils, and outcrops of these Early Permian to Early Jurassic strata are not common.

David Livingstone crossed the Luangwa River in the mid-Luangwa Valley in 1866, and reported what appears to be green Madumabisa Mudstones, in an area that produced Karoo tetrapod fossils in significant numbers over 100 years later for Dr. Tom Kemp.

The Karoo fossils of the Luangwa Valley are still relatively poorly known, and comparatively little has been published

on them. That is hardly surprising, as so little fossil collecting has ever been carried out here, particularly when compared to South Africa, where countless collectors have been actively gathering up fossils for over 180 years.

The first Karoo synapsid fossils from Zambia, (later confirmed as dicynodont), were found in the Lukusuzi River in the early/mid 1920's by a Dr. George Prentice, a friend of Frank Dixey, who was, at the time, the only geologist of the Nyasaland Geological Survey. Dixey was the first true Zambian fossil hunter, who went to the upper Luangwa Valley; possibly as a result of Prentice's observations, who carried out work as a missionary doctor there. Dixey walked into the Valley from Malawi and collected in the area, first for a few days in 1928 and then for 4 weeks in 1935.

Of the 1935 expedition, in which Dixey used up to 50 porters, he wrote to his friend W. Campbell Smith at the British Museum (NH) to say:  
'...I returned to Zomba recently from my excursion to the Luangwa Valley.

The latter journey proved quite successful, in spite of difficulties due to tropical heat (as trying as anything previously experienced),

unburnt bush, shortage of labour, scarcity of food and water, and abundance of elephant, buffaloes, and other big game.

My specimens, well over a ton of them, had to be carried by head transport over mountainous country for 60 miles, and then 500 miles to Zomba by lorry.

Dixey's specimens were then sent to the South African Museum, Cape Town, where Boonstra wrote a paper on them (1938). As a direct result of Boonstra's report, the Bernard Price Institute (BPI) for Palaeontological Research, Johannesburg, sent James Kitching on two long expeditions in the upper Luangwa Valley in 1960 and 1961 with Alan Drysdall, a geologist with the Northern Rhodesia Geological Survey. They worked in the same area as Dixey did decades before. During those 2 field trips, they collected nearly 500 skulls. Ian (A.S.) Brink from the BPI also joined them in the field for a few days in 1960 and later published 'Two cynodonts from the Ntawere Formation in the Luangwa Valley of Northern Rhodesia' (1963).

The British Museum (Natural History) and University of London Joint Palaeontological Expedition to Northern Rhodesia and Tanganyika, consisting of Alan Charig, Barry Cox, John Attridge and Bill Ball, spent 6 weeks collecting

in the same area as the BPI and Dixey in the summer of 1963. The BPI 'loaned' them J. W. Kitching at the start of their expedition, thus assuring the expedition of success, as he knew the area so well, having been there in 1960/1. Vehicle tracks were made (one track was over 50km long and crossed 20 river-beds), and a total of 220 specimens were collected weighing around 2,500 kg. The expedition then drove to the Ruhuhu area in Tanzania where they collected a similar amount of fossils, having been joined by Fuzz Crompton, Arthur Cruickshank and Barney Hirschson. Up to the 1970's, all fossil exploration was carried out in the same area of the upper Luangwa Valley, but in 1972 the Zambian Geological Survey Department (GSD) carried out the 'Mid-Luangwa Karroo Survey', which identified several new fossil sites, leading to Tom Kemp and Phil Powell from Oxford University Museum carrying out a joint palaeontological expedition with the GSD in the area in 1974.

In 1988, John Utting, once a member of Zambia's GSD, reported that: **'the Luangwa Valley contains some of the most prolific fossil reptile sites in the world'.**

I retired from Oxford, England to the mid Luangwa Valley, Zambia in 1998. Inspired by the classic statement by Utting (1988), I soon started to visit some of the fossil sites described by Dixey, Drysdall & Kitching, the BM(NH) expedition and **Tom Kemp**. Some areas were so remote that in one village in the upper Luangwa Valley, I was told that I was the first white man the locals had seen there since the BM(NH) expedition, 43 years earlier! By an amazing coincidence, the father of the man guiding me had guided the BM(NH) team.

As a result of the fossil potential I reported, a team of Karoo fossil experts came to Zambia in July 2009, including **Ken Angielczyk, Chris Sidor, Roger Smith, Sébastien Steyer** and Robin Whatley, funded by the National Geographic Society. Working with Zambia's National Heritage Conservation Commission, we explored sites in the upper Luangwa Valley, North Luangwa National Park and localities outside the park in the mid Luangwa Valley. We collected fossils of various dicynodonts, gorgonopsians, pareiasaurs, therocephalians, cynodonts (both Permian and Triassic), archosaurs and a silesaur, as well as a small gracile reptile, huge temnospondyls, fish, fossil wood, molluscs and coprolites. The fossils were from the Upper Permian and Middle Triassic.

In 2010, Adam Goulding (a geologist friend from Lusaka) and I discovered a small exposure containing Middle Permian dinocephalian and amphibian fossils in the mid-Zambezi Valley in southern Zambia, over 700km south-west of our regular sites in the Luangwa Valley. As a result, in 2011 the same team as 2009, (minus Roger Smith, Sébastien Steyer and Robin Whatley, but plus Sterling Nesbitt and Brandon Peacock), returned for another expedition, funded by the Field Museum, Chicago. The expedition commenced in the mid-Zambezi Valley, where dinocephalian fossils, both carnivorous and herbivorous, were collected, together with Zambia's first Permian amphibian fossils. Up to then, dinocephalians had merely been suspected to be found in this area, but not confirmed.

The team then continued to the upper Luangwa Valley, where, in addition to therapsid, archosaur and amphibian fossils, they found an abundance of silesaur fossils in a small exposure. Nearby was the bone of a possible shuvosaur (the first ever found outside of the Americas). Moving to the mid Luangwa Valley, several excellent examples of dicynodonts, a pareiasaur skull and a gracile reptile were collected. Moving to a different area of outcrops 20km away, we collected examples of up to 4 new

species of dicynodonts, including an interesting, seemingly new dicynodontoid. We also found a *Theriongnathus* skull and a snout of a second one (never reported from Zambia before), and what may yet prove to be the world's largest gorgonopsid femur; certainly it rivals Russia's *Inostrancevia*. In June 2012, Chris Sidor and Roger Smith were due to visit the mid Zambezi Valley for a short trip, so that Roger, who had not been there yet, could work on the geology of the 2011 locality. Adam and I recce'd the area just before they arrived, trying to find new fossil areas, and found one, 13km distant from the 2011 site. When the team arrived and visited the new area, we collected around 15 dicynodont skulls and 3 gorgonopsid skulls. It is thought to be an Upper Permian area, due to the presence of *Endothiodon*, with no obvious dinocephalians.

The following day, while the others were working on the geology of the main site, I explored new areas nearby and discovered a very fossiliferous Middle Permian site only 1.3km from the 2011 site, which produced, (that afternoon and the next morning), 3 burnetiid skulls (two different species), around 25 dinocephalian teeth, as yet unidentified and unusual Middle Permian dicynodont skulls, amphibian fossils, etc. The trip only lasted 4 days (with only 2½ days in the field), but yielded some very important

fossils, and it will lead to more expeditions here soon. (A manuscript describing the dinocephalian teeth has been submitted to the Journal of Vertebrate Paleontology). In the early 1960's, remains of a possible small dinosaur were found in the mid Zambezi Valley, over 100km east from the 2011 dinocephalian site. If confirmed, this would be a first dinosaur record for Zambia. A short recce of the area in 2012 has shown the presence of vertebrate fossils including dicynodonts. There are both Triassic and Permian outcrops, and the area requires further investigation.

Springer books will soon publish the long-awaited edited volume 'Early Evolutionary History of the Synapsida'. One chapter is entitled 'Permian and Triassic dicynodont (Therapsida: Anomodontia) faunas of the Luangwa Basin, Zambia: Taxonomic update and implications for dicynodont biogeography and biostratigraphy', written by members of the 2009 team. It contains new data on what is, and is not, found in the Valley, although in 2011 we found even more new species to add to the next edition.

The future for Zambian palaeontology looks brighter than it has done for many years, due to the recent expeditions and the fossils they have collected. With a plethora of



papers due to be published on the findings, Zambia will, once again, be in the palaeontological spotlight.

**Steve Tolan**

Director: Chipembele Wildlife Education Trust, Mfuwe  
[www.chipembele.org](http://www.chipembele.org)

**NOTE:** While all these positive things have been happening in Zambian palaeontology, a small group of collectors from Europe have been visiting Zambia to steal fossils. A biarmosuchian skull, the first ever found in Zambia, was illegally collected, exported and traded with a collector in America, but has since been recovered. The Zambian authorities have reacted to the threat, and hopefully this marks the end of further illegal collecting.

*Ed. - While corresponding with Steve he sent me an account (right) of a canoe trip he recently did on the Kafue River. Although not directly related to palaeontology, it gives one some idea of the "African" conditions Steve has experienced.*

11<sup>th</sup> April 2013 - Chpembele

Dear Billy,

Just back from the canoe trip, which was pretty exciting. We canoed the Kafue River through the Kafue National Park, and camped in the bush at night. One day the hippo seemed really aggressive and charged one canoe and overturned it, dumping the two people onto the river. They feared being attacked but fortunately the hippo left them alone. We recovered the upturned canoe but not their loose items, including a camera. Then the hippos all came to the bank threatening us, so we had to carry the canoe several hundred metres down the bank to evade them, but they followed us and we had to wait 3 hours before they lost interest, and we were able to continue.

The next morning we started off with frayed nerves, and soon a big croc came racing across the water surface towards us, and was not deterred by four .44 shots fired at it, before it decided we weren't easy pickings and turned away. We had several close calls with crocs and hippos on the trip but these two incidents were the worst.

We had several rapids to get through, but found the biggest, a real raging maelstrom that was too violent to run, had several hippos in it, seemingly enjoying the feeling of the white water!

**Best wishes - Steve**

## 2009 Field Trip - Zambia



Nabwalya pontoon

At right: A small encrusted dicynodont skull found by Ken Angielczyk (left – semi prepared). Ken first thought that it was baby *Oudendon* but then identified it as the first *Compsodon* to be reported from Zambia!



Encrusted skull



Partly prepared



**A rare find** - Ken Angielczyk holding an encrusted skull of the small dicynodont *Compsodon*. The first find in Zambia.



Finished - Roger Smith looking very pleased with himself.



Carrying the *Odontocyclops* skull



Team at the hot springs



Site L.7



## 2011 Field Trip – Zambia



2011 Team at Lundazi Castle (l - r): Chris Sidor, Ken Angielczyk, Museba, Sterling Nesbitt, Brandon Peacock and Steve Tolan



National Heritage Conservation Commission sign at Lundazi Castle.





2011 – Land Cruiser on pontoon



Extensive open exposures



Turning over dicynodon skull after plastering. Note added security.



Oudenodon skull M135 in situ



Chris Sidor crossing the Luangwa River.



Chris Sidor with world's largest gorgon femur?



2012 Field Trip - Zambia



Steve between B1-3



Tooth - of what??



Steve first burnetiid skull L149



Dinocephalian back molar



Dinocephalian teeth



Amazing - you see hardly a single vehicle in this area, but lots of these!  
They leave great tracks through the bush which provide easy access from one exposure to the next.

Cheers  
**Steve Tolan**

## SAHRA matters



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## Conferences, Recent fossil discoveries and press releases.

- 4<sup>th</sup> International Palaeo Congress - Argentina 2014  
<http://ipa.geo.ku.edu/pdf/IPC4.pdf>
- The great dinosaur stampede that never was?  
<http://www.bbc.co.uk/news/magazine-22382503>
- Scientists discover 250 million year old Karoo odd couple. *Times LIVE* / 09 July, 2013  
<http://www.timeslive.co.za/scitech/2013/07/09/scientist-s-discover-250-million-year-old-karoo-odd-couple>
- Looks as if the warm-blooded dinosaur debate is on again... click on link below  
<http://www.sciencedaily.com/releases/2013/07/130717194948.htm>  
New evidence for warm-blooded dinosaurs  
Posted: 17 Jul 2013 04:49 PM PDT  
A scientist in Australia has shown new evidence that dinosaurs were warm-blooded like birds and mammals, not cold-blooded like reptiles as commonly believed. The researchers argues that cold-blooded dinosaurs would not have had the required muscular power to prey on other animals and dominate over mammals as they did throughout the Mesozoic period.

- **From ScienceDaily** - The Mammoth's Lament:  
How Cosmic Impact Sparked Devastating Climate Change  
*May 20, 2013 — Herds of woolly mammoths once shook Earth beneath their feet, sending humans scurrying across the landscape of prehistoric Ohio. But then something much larger shook Earth itself, and at that point these mega mammals' days were numbered. Something -- global-scale combustion caused by a comet scraping our planet's atmosphere or a meteorite slamming into its surface -- scorched the air, melted bedrock and altered the course of Earth's history. Exactly what it was is unclear, but this event jump-started what Kenneth Tankersley, an assistant professor of anthropology and geology at the University of Cincinnati, calls the last gasp of the last ice age.....*  
*.... Tankersley explains what he and a team of international researchers found may have caused this catastrophic event in Earth's history in their research, "Evidence for Deposition of 10 Million Tonnes of Impact Spherules Across Four Continents 12,800 Years Ago," which was published in the Proceedings of the National Academy of Sciences.....*

Ref: James H. Wittke, James C. Weaver, ... et. al. [Evidence for deposition of 10 million tonnes of impact spherules across four continents 12,800 y ago. PNAS, 2013](#)

## Palaeontology

### A heroic find

#### Shedding light on the evolution of primates

THE fossil record for early phases of primate evolution is notoriously patchy. As a result, little is known about it. This makes *Archicebus achilles* a boon to palaeontologists. Its nearly complete skeleton was unearthed in China's Hubei province by Ni Xijun, of the Chinese Academy of Sciences in Beijing, and colleagues. As they report in *Nature*, the critter, which lived around 55m years ago, in the Eocene epoch, seems to be the most primitive relative of tarsiers, mouse-sized primates which now inhabit the islands of South-East Asia.

Like its modern-day kin, it appears to have moved mostly by leaping between twigs, which it grasped with all four limbs. Large eye sockets, indicating fine vision, and small, pointy teeth both suggest that it hunted insects. In this, too,

it resembles agile (and even more wide-eyed) tarsiers, which are the only existing primates to enjoy an exclusively carnivorous diet of bugs, as well as small birds, snakes, lizards and bats.

However, an analysis of the fossil also revealed some features which resemble those of anthropoids like monkeys and apes, including man. One is its strikingly anthropoid heel bone, which Dr Ni alludes to in the specimen's name. The findings imply that the split between anthropoids and tarsiformes, previously reckoned to have happened 55m years ago, must have occurred earlier.

The animal is estimated to have weighed 20-30 grams and measured 7mm (or about 200mm including the tail). That makes the 3D reconstruction pictured below just about life-size.



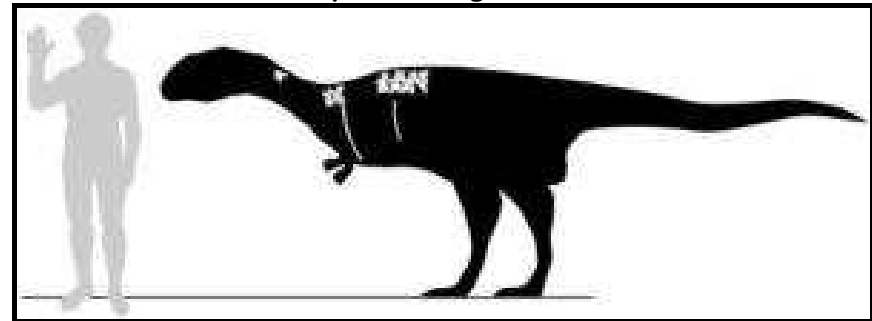
An Eocene Achilles

The Economist – 8<sup>th</sup> June 2013 p.74

Why can't you hear the pteradactyl in the bathroom?

Because the 'p' is silent!

### New dinosaur discovery in Madagascar



*Dahalokely tokana* (pronounced "dah-HAH-loo-KAY-lee too-KAH-nah") is estimated to have been between nine and 14 feet long, and it lived around 90 million years ago. (Credit: Image courtesy of Raymond M. Alf Museum of Paleontology) Apr. 18, 2013

The first new species of dinosaur from Madagascar nearly a decade was announced in April 2013. The paper naming *Dahalokely* appears in the April 18, 2013, release of the journal PLOS ONE.

[http://www.sciencedaily.com/releases/2013/04/130418214043.htm?utm\\_source=feedburner&utm\\_medium=email&utm\\_campaign=Feed%3A+sciencedaily%2Fearthclimate+%28ScienceDaily%3A+Earth+%26+Climate+News%29](http://www.sciencedaily.com/releases/2013/04/130418214043.htm?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+sciencedaily%2Fearthclimate+%28ScienceDaily%3A+Earth+%26+Climate+News%29)

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**NEXT DEADLINE FOR CONTRIBUTIONS**  
**Wednesday, 15<sup>th</sup> of JANUARY 2014**

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