Forensic Anthropology Research Centre (FARC)
2010 Final Report
M Steyn

Introduction

This report serves as a final report of activities from 1 January 2010 to 31 December 2010. The aims of the centre are to:
(a). produce research of international standard on all aspects regarding the recovery and study of human skeletal remains
(b). provide professional anthropological and archaeological services
(c). contribute to the education and training of the private and formal sectors, graduate students, and professionals in the fields of anthropology, archaeology and law enforcement.

A. Research

Short overview of current research projects:

a. Research on the remains of southern Africans held in European and other international institutions. This forms part of a SANPAD funded initiative and is done in collaboration with Prof GJR Maat and Dr AE van der Merwe from the Netherlands and Prof AG Morris from Cape Town. For this purpose one research assistant (D Botha) and a post-doctoral candidate (Dr MN Mosothwane) were appointed. Several post-graduate students are involved in this programme. For this purpose a start-up workshop was held in Feb 2010, and a progress workshop in 2011. As part of this project, M Steyn and D Botha visited collections in Vienna and Paris, A.E. van der Merwe recorded data in The Hague, and MN Mosothwane recorded skeletons in the USA. We also made contact with the National Museum in Harare, visited them twice and the PhD proposal of E Swanepoel in this regard was approved. D Botha and a Meyer’s MSc proposals were also approved. We also received information on collection in the UK, which Y Scholtz will record in 2011.
b. Research on evaluating the prevalence of hyoid bone fractures in cases of upper body trauma, such as hangings, strangulations, falls from heights, and motor vehicle accidents. The project is done by Dr EN L’Abbé in collaboration with Forensic Pathology Services: Johannesburg. In 2010, a total of 270 hyoid samples were
collected. These remains have been cleaned, documented and accessioned into a bone archives which is to be held at the Forensic Pathology Services: Johannesburg. Dr EN L’Abbé, in collaboration with Professor SA Symes of Mercyhurst College, are to examine the material in August of 2011. The results are to be disseminated through an international conference in 2012 and subsequent publication in an appropriate forensic journal.

c. Research into investigating an alternative approach to the determination of ancestry from unidentified skeletal remains. This forms part of a CSUR-NRF grant and is done in collaboration with Professor Stephen D. Ousley of Mercyhurst College, Erie, PA. Two MSc have been identified from this research and are progressing well.

d. A project on determining the age of fractures through the use of histology, X-rays, and ct-scans. This is done in collaboration with Dr AE van der Merwe (Leiden).

e. MSc research done on tissue depths of South African black females, for use in facial reconstruction. In addition, reconstructions were done using the newly developed tissue thicknesses for South Africans as well as other published tissue thicknesses for non-South African populations. The effect of this was then tested with an identification parade. This project has been completed and the first paper was accepted.

f. MSc research on the mandibular and maxillary canines, specifically dealing with their use in determination of sex and ancestry.

g. A PhD project on burn patterns in decomposing human remains, which is progressing well.

h. An MSc project to use a pig model and Accumulated Degree Days to determine the PMI has been completed and a paper submitted.

i. A PhD project using finite element analysis to assess masticatory stress in prognathic and non-prognathic individuals is progressing well.

j. A PhD project on facial growth and tissue depths in South African children is progressing well.

k. A PhD project on assessing the accuracy of skull-photo superimposition has been completed and is under examination.

l. A project to evaluate the acetabulum for its usefulness in age determination has just been commenced.

m. A project concerning graves from the Anglo-Boer War from Mafikeng is currently in planning. These graves need to be relocated, and provides an excellent opportunity for research. Mr WC Nienaber will be in charge of this project.

Conferences attended and invited lectures

- EN L’Abbé attended the 62nd Annual American Academy of Forensic Sciences in Seattle, Washington, USA in February, 2010
- M Steyn and D Botha attended and presented posters at the 18th European Meeting of the Paleopathology Association in Vienna 23-26 August 2010
- M Steyn was key note speaker and workshop presenter at the conference of the Northwest Association of Forensic Scientists in Portland, USA, Sept 2010.
- M Steyn presented research and chaired a session at a Women in Science workshop organized by SANPAD in Durban in 26-29 Oct 2010
- More than 10 posters and a student presentation was presented at Faculty Day 2010 (Faculty of Health Sciences)
- C Nienaber chaired a session on Heritage Related Graves and Human Remains during the National Heritage Council Workshop on Repatriation Policy during February 2010.
• D Cavanagh and N Briers (post-graduate students) presented posters at the CFA conference Chile, Sept 2010.
• C Nienaber attended and presented a paper at the Oorlogsmuseum van die Boererepulieke Konsentrasie-kampe Kongres, Bloemfontein, Oct 2010.
• A Meyer attended the Oorlogsmuseum van die Boererepulieke Konsentrasie-kampe Kongres, Bloemfontein, Oct 2010.

Papers published 2010

1.  Ossified Haematomas and Infectious Bone Changes on the Anterior Tibia: Histomorphological Features as an Aid for Accurate Diagnosis
    A.E. Van der Merwe, G.J.R. Maat, M. Steyn

2.  Adult scurvy in skeletal remains of late 19th century mineworkers in Kimberley, South Africa
    AE van der Merwe, M Steyn, GJR Maat

3.  Trauma and amputations in 19th century miners from Kimberley, South Africa
    AE van der Merwe, M Steyn, EN L’Abbé

4.  A cross-sectional analysis of age related changes in the osteometric dimensions of long bones in modern South Africans of European and African descent
    VL Vance, M Steyn, EN L’Abbé, PJ Becker
    Forensic Science International 2010 190:110.e1-110.e9

5.  Analysis of ante mortem trauma in three modern skeletal populations
    M. Steyn, M.Y. İşcan, M. De Kock, E.F. Kranioti, M. Michalodimitrakis, E.N. L’Abbé
    International Journal of Osteoarchaeology 2010 20:561-571

6.  The Origins of late 19th century migrant diamond miners uncovered in Kimberley, South Africa
    A.E. van der Merwe, I. Ribot, M Steyn, G.J.R. Maat

7.  The history and health of a nineteenth-century migrant mine-worker population from Kimberley, South Africa
    A.E. Van der Merwe, D. Morris, M. Steyn, G.J.R. Maat
    South African Archaeological Bulletin 2010 65(192):185-195

8.  A geometric morphometric study into the sexual dimorphism of the human scapula
    Y Scholtz, M Steyn, E Pretorius

9.  A Oosthuizen, M Steyn
    The usefulness of canine measurements and indices in determination of population affinity in South Africans.

10. Robusticity of Bovidae skeletal elements from southern Africa and their potential in species identification
    E. Swanepoel, M. Steyn
B. Professional anthropological and archaeological services

B.1 Anthropological

We are very pleased to report that our new macerating facilities have been completed and have been opened with an official function on 13 April 2010. Several guests from the university, the SAPS and other colleagues attended. Thanks to Prof Meiring for his efforts in this regard.

Confidential.

B.2 Archaeological

Several rescue excavations and assistance to the SAPS, SAHRA and private sector archaeologists were conducted.

The rescue excavation of two remains uncovered during the construction of the new multi-product petroleum pipeline at Waltloo (Pretoria) was conducted at the request of SAHRA Burial Grounds and Graves Unit in co-operation with PGS (Pty Ltd). The situation is currently developing since more graves were damaged at the site. Additional work to mitigate the situation will be conducted.

The SAPS was assisted with the recovery of inadvertently discovered human remains, of non-forensic origin, at Boksburg during March 2010.

The rescue recovery of 2 human remains of archaeological nature was conducted with students at Nurney Hill (Standerton) on request of SAPS. The remains were found in an archaeological site of large extent and mitigation actions were recommended. Further involvement is possible.

Three instances of request for assistance with similar discoveries at Imbali in the Kruger National Park (remains of archaeological origin) and at Erasmia (5 recent-modern graves including children) as well as at Malotto were received and are currently being considered.

The NPA Missings Persons Task Team was assisted with the exhumation of the “Langa Six” at Rebecca Street cemetery.

Consulted with SAHRA BGG regarding the possible relocation of the grave of Queen Thomo Zulu.

Consulted with the UP Law Clinic regarding the relocation of graves at Vlakplaas, Erasmia.

PGS was assisted with the relocation of 108 graves at Osezweni (KwaZulu-Natal).

5 graves were excavated at the De Hoop Dam for DWA.
45 graves were located and verified at the Mooi-Mgeni Transfer Scheme project for TCTA. The project is ongoing and will result in the excavation and relocation of the graves.

A re-assessment of a Phase I HIA of several heritage sites, a.o. Stone Age, Historical structures and Cultural landscapes and natural features were undertaken in conjunction with the Natal Museum and private sector heritage specialists for TCTA on the Mooi-Mgeni Transfer Scheme. This project is ongoing and will progress to Phase II mitigation.

The Phase I AIA/HIA for the Olifants River Water Resources Development Project for TCTA was conducted. The project is ongoing and re-alignment and additional surveys will develop.

14 graves on the Grassridge Dam were located and verified for DWA. The project is ongoing and the relocation of the graves is currently in process.

A survey and site description of the Mogogwe Cemetery at the Mafeking Concentration camp was conducted with students during Oct 2010.

C. Education and training

From 16 to 18 August, 2010, a three day workshop/seminar entitled an “Introduction to Anthropology for Forensic Pathologists” was presented at Forensic Pathology Services: Johannesburg. The aim of this workshop was to provide hands-on participation with regard to the use of a forensic anthropologist at a medico-legal autopsy and in constructing a decedent profile from skeletal remains. Additionally, three afternoon seminars were presented on the retention and use of bone as evidence in a death investigation, the interpretation of post-cranial gunshot wounds in bone tissue, and on the examination of cut and saw mark injuries in bone in cases of stabblings and dismemberment. These seminars were to be presented by invited guest lecturer Professor Steven A. Symes of Mercyhurst College, USA.

A workshop on forensic archaeology was presented as a two day course in conjunction with the opening of the macerating facilities in April 2010, presented by Dr. S Nawrocki together with members of FARC.

A 5-day workshop on facial identification / face mapping is planned for 14 – 18 February 2011, with Dr C Wilkinson of Dundee, Scotland as presenter. This is done on request of the SAPS, who will send 10 delegates. This is not an open workshop.

D. Students

We had 4 honours, 8 MSc and 7 PhD students in our programme. Carla van Rooyen and Desire Brits have graduated with MSc’s earlier this year, and Nadia Navsa has completed her PhD and graduated in November. D Cavanagh and J Myburgh both
completed their MSc’s with distinction, and will graduate in April 2011. Lida van der Merwe has completed her PhD at Leiden University (co-supervised by M Steyn) – this defence was attended by EN L’Abbé and M Steyn. The PhD of G. Gordon was submitted and is currently under examination.

E. Other highlights

We are very pleased to announce that Dr EN L’Abbé passed her board certification examination for forensic anthropology in the USA; she is now the 84th diplomate of the American Board of Forensic Anthropologists (D-ABFA).

We are also very pleased to have acquired a post-doctoral position for Morongwa N Mosothwane, who will work on the SANPAD project and also assist with excavations. Dr Mosothwane is a Botswanan citizen (permanent South Africa resident) who obtained her PhD from Wits. She will be working with us for the next two years on a full time University of Pretoria funded scholarship.

D. Botha was appointed as research assistant for 2010, and worked mainly on the SANPAD and acetabulum projects.

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