Activities of the Research Platform Production and Conservation in Partnership (RP-PCP) on wildlife-livestock interface in Zimbabwe: outputs after 3 years

M. de Garine-Wichatitsky, Murwira A., Caron A., Pfukenyi D., Mundy P., Fritz H., Mukamuri B., Manjengwa J., Mwenje E.

**Overview RP-PCP, 2007-2010**

- **Background:**
  Research Platform based in Zimbabwe with a regional perspective (SADC/TFCAs)
  Created in 2007 (MoU Dec 2007)
  External evaluation in October 2010; renewed MoU Dec 2010, bureau Jan 2011
  More than 40 senior researchers and post-graduate students involved
Overview RP-PCP, 2007-2010

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- **Partnership:**
  4 main scientific partners: UZ, NUST, CNRS et CIRAD
  UZ (6 Dept/Faculties), NUST (1 Dept), CIRAD (3 research units), CNRS (2 RU)
  Other scientific partners: Universities in S.Africa (UP/MRI&OP) and Europe (UL1, UM2, WUR)
  Regional scientific networks: AHEAD, GDRI, TFCAs, Competing Claims
  Operational partners: Veterinary, agricultural, forestry services, National parks, NGOs
  Donors: MAEE France, EU, FAO, ANR, FFEM
One Health approach

AHEAD-GLTFCA Draft Thematic Concept Note for the proposed March 2011 meeting

Fig 1. One Health approach based on three pillars

RP-PCP: “Wild-Domestic interfaces”

Object of research: «Socio-ecological systems at the wild/domestic interface»

Main research question: «sustainability», role of «heterogeneity and resilience»
PCP = Production & Conservation in Partnership

- Ecological Functioning
- Natural Resources Governance and Institutions
- Agriculture & Conservation
- Animal Health & Environment

+ cross-cutting issues

RP-PCP productions 2007-2010

- Examples of RP-PCP projects in which RP-PCP has been involved since 2007

  * Research projects: e.g. GLTFCA Buffalo-Cattle interactions, ANR-FEAR (Landscape of fear and the use of landscape resource heterogeneity by ungulates of different body size)

  * Development projects: EU-PARSEL (Public-Private-Community partnerships to improve food security in the South-East Lowveld of Zimbabwe) and EU-LIFIN (with NGO Action contre la Faim)

  * Competitive fund to support students (SCAC)
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- **Proposal AHE # 1 (accepted 2007, funded by SCAC, ongoing)**: “Tick diversity and abundance and tick borne infections in domestic and wild animals at the livestock/wildlife interface in marginalised communities of the SEL of Zimbabwe”, UZ-Vet Fac & CIRAD. 1 MPhil UZ/Vet Fac, Student name L. Jomane

- **Proposal NRGI # 2 (accepted 2008, funded by SCAC, completed 2009)**: “Scenario Planning and Iterative Assessment in selected communities in Beitbridge” UZ/CASS, 2 MSc students. Student names F. Marimira and L. Mugabe

- **PhD proposal Eco # C (started mid-2009, funded by CNRS and ERAMET, ongoing)**: Title: Integrated and sustainable management of African wildlife through protected areas. Developing modelling tools for exploring scenarii and decision making. Student name C. Guerbois. PhD. U. Lyon 1

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**RP-PCP productions 2007-2010**

28 Students supervised/support by RP-PCP

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<thead>
<tr>
<th>Surname</th>
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- Students

- 28 postgraduate students have been/still are supervised under the RP-PCP since its inception in 2007:

- 20 Zimbabweans (4 female) and 8 European (5 female)

- 10 students were registered as PhD and 12 as Mphil and 6 as MSc

- Students were registered in 12 different faculties (UZ/CASS, UZ/Vet Faculty, UZ/GeoES, UZ/TREP, UZ/SSAE, NUST/DFRWM, UP/MRI, UL1, UM2, WU, MNHN, SUPagro)

- 9 thesis have been accepted/submitted/drafted


6. Mutema, M. 2009. The effect of conservation agriculture on soil macrofauna diversity and selected soil physical properties in semi-arid areas of Zimbabwe. MSc thesis, University of Zimbabwe, Faculty of Agriculture, Department of Soil science and Agricultural Engineering.


- **Scientific productions (September 2010)**

Articles in peer-reviewed international journals included 9 papers published or in press (September 2010), 4 papers submitted or under revision, and 26 manuscripts in preparation (at least one draft version circulated to co-authors). The large majority of these papers have one student as first author (33/39).

Books and book chapters:
- Special issue of *Biodiversity and Conservation* (Edited by Taylor & Torquebiau) following the Tapoa workshop co-organised with several members of RP-PCP (Niger in 2008), and several books/reports produced for IED and EU-PARSEL project.

Communications in international conferences and workshops included 20 oral communications and 14 posters. Most of these communications were presented by students (12 students in total).

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**Key themes that feed into the One Health Approach for the AHEAD-GLTFCA**


1. Animal health and disease
2. Land use, ecosystem goods and services
3. Human Livelihoods, animal and ecosystem health
4. Policy support and capacity building at national and regional levels
5. Communication and outreach
1. Animal health and disease

Baseline studies of livestock/wildlife diseases
Projects since 2007

* Proposal AHE #1 (accepted 2007, funded by SCAC):
  “Tick diversity and abundance and tick-borne infections in domestic and wild animals at the livestock/wildlife interface in marginalised communities of the SEL of Zimbabwe”, UZ-Vet Fac & CIRAD. 1 MPhil UZ/Vet Fac, Student name L. Jomane

* Proposal AHE #2 (accepted 2007, funded by SCAC):
  “A survey of tuberculosis and brucellosis in wild and domestic animals in the SEL of Zimbabwe”, 1 MPhil UZ/Vet Fac, supervision UZ-Vet Fac & CIRAD. Student name C. Gomo

* Proposal AHE #3 (accepted 2009, funded by CORUS and SCAC):
  Title “Evaluation of vaccination efficiency against FMD in cattle populations at the wildlife livestock interface within the lowveld region of Zimbabwe”
  No student. Collaboration Univ. Pretoria/Vet Fac, UZ/Vet Fac & CIRAD

* EU-PARSEL, livestock production component (reports in prep)
* CORUS-FMD project, prevalence and vaccination efficiency
* FSP-GRIPA VI, prevalence of AIV and NCD
Selected productions


Poster 7. Jomane, L. Tick diversity and abundance and tick-borne infections in domestic and wild animals at the livestock/wildlife interface of the Southeast Lowveld. Poster. 9th AHEAD meeting. 4-6 March 2009. Namaacha, Mozambique.


1. Animal health and disease

2. Land use, ecosystem goods and services

Mobility and contacts
wild/domestic hosts
Projects since 2007

* Proposal AHE # 4 (accepted 2009 funded by SCAC):
  Title “Permeability of selected fences to wildlife and livestock in the South East Lowveld of Zimbabwe”
  Student name T. Dube, MPhil UZ/GeoES; supervision MPhil UZ/GeoES, UZ/Vet Fac & CIRAD.

* Proposal CC # 2 (accepted 2008, funded by SCAC and EU-PARSEL):
  Title “Understanding the distribution of cattle at the livestock-wildlife interface using real-time Global Positioning Systems (GPS) and satellite remotely sensed data”
  Student name F. Zengeya, PhD/UZ_Department of Geography and Environmental Science; supervision UZ/GeoES & CIRAD

* Proposal CC # 3 (accepted 2008 funded by SCAC and WATERNET):
  Title “Waterhole use by wild and domestic ungulates; exploring temporal niche use and associated competition and pathogen transmission potentials”
  Student name M. Zvidzai. MPhil/UZ_Department of Geography and Environmental Science; supervision UZ/GeoES, CIRAD & CNRS

* EU-PARSEL livestock component

* « GLTFCA buffalo-cattle mobility and interactions »

Selected productions


Poster 12. Zengeya, F. Understanding the Distribution of Cattle at the Wildlife-Livestock Interface Using Real-Time Global Positioning System (GPS) and Satellite Remotely Sensed Data. Poster. 9th AHEAD meeting, 4-6 March 2009, Namaacha, Mozambique.

1. Animal health and disease
2. Land use, ecosystem goods and services

Ecological determinants of diseases at the wildlife-livestock interface

Communities of wild and domestic hosts
Communities of pathogens

Projects since 2007

* PhD proposal AHE # A (started Dec 2006; mainly funded by Gripavi/CIRAD project):
  Title “Interaction of Host-Pathogen Community at the Wildlife/domestic Interface”
  Student name A. Caron. PhD Univ. Pretoria/MRI; supervision Univ. Pretoria/MRI, CIRAD, UZ/TREP, Univ. Montpellier II.

* PhD proposal AHE # B (started Dec 2008; mainly funded by Gripavi/CIRAD project):
  Title “Avian influenza virus and Waterfowl: Virus introduction and maintenance into the Chivero-Manyame dams and Hwange pans”
  Student name J. Mundava. PhD NUST, supervision by NUST and CIRAD), mainly funded by Gripavi/CIRAD project.

* PhD proposal AHE # C (started Dec 2009; mainly funded by CIRAD, CNRS, FEAR and PARSEL projects, ongoing):
  Title “Impacts of predation and parasitism on epidemiological risk for wild and domestic herbivores in Southern Africa”
  Student name E. Miguel. PhD Univ. Montpellier II, supervision by CIRAD and CNRS

* EU-PARSEL
* FSP-GRIPAVI
Selected productions


**Poster 10.** Mundava J., Mundy P., Caron A., Gaidet N., de Garine-Wichatitsky M., Couto T., Couto F. An ecological approach to estimating the risks of introduction, maintenance and spread of avian influenza viruses in the Chivero and Manyame Ecosystem. Poster. ISVEE Conference XII, 10-14 August 2009, Durban, South Africa.
Projects since 2007

*Proposal AHE # 5 (accepted 2009 funded by AHEAD-Seed Grant and SCAC): “Pathogens, Parks and People: Assessing the Role of Disease in Trans-Frontier Conservation Area Development: Zimbabwe Component” U.Pretoria/MRI. Zimbabwe component conducted by CIRAD/UZ-Vet Fac/UZ-CASS. C. Geoghan (UP) + L. Mugabe (UZ-CASS)

* Proposal AHE # 5 (accepted 2010 funded by SCAC, ongoing):
Title “A survey of brucellosis and bovine tuberculosis in humans at a wildlife/domestic animal/human interface in Zimbabwe”
Student J. Burumu, MPhil UZ/Vet Fac, supervision UZ/Vet Fac-CIRAD-Min. Health.

Proposal NRGI # 2 (accepted 2008, funded by SCAC, completed 2009)
“Scenario Planning and Iterative Assessment in selected communities in Beitbridge” UZ/CASS, 2 MSc students. Student names F. Marimira and L. Mugabe

* Proposal NRGI # 5 (accepted 2010, funded by SCAC, ongoing )
Title “A Study Of Competing Interests Over Agriculture, Wildlife And Other Natural Resources In The South Eastern Lowveld, Mwenezi District (Zimbabwe)"
Student Name D. Madumbo, MSc, UZ/CASS; supervision by UZ/CASS

-- Selected productions


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1. Animal health and disease
2. Land use, ecosystem goods and services
3. Human Livelihoods, animal and ecosystem health
4. Policy support and capacity building at national and regional levels

- Training and capacity building

* “Paper writing workshop”: 2 days in June 2010 (Hakamela)
16 students presented a paper during plenary sessions with supervisors and external experts (statistician)

* “Best poster competition”: 1 day in November 2009 (Harare)
20 students presented a poster. The best three poster received funds to present their poster during the AHEAD/GLTFCA workshop February 2010 (6 RP-PCP students at AHEAD)

* Funding of the participation of 12 students to international conferences or workshop in South Africa (Pretoria, Bloemfontein, Durban) and France (Montpellier and Lyon)

* Student presentations during SSC (on average 10 students invited to present during November SSC meeting)

* Training in statistics (R software) in Harare in November 2010 (15 RP-PCP students and supervisors)

* Capacity building: 3 RP-PCP post-graduate students are employed by DVS or NPWMA
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Merci! Thank you

Zimbabwe, Mozambique, South Africa: Veterinary Services and Park and Wildlife Management Authority
(Thank you Markus, Chris and Nazare!)