





A landscape genomics approach towards improving production and conservation of the Ugandan domestic goat (GOATGEN)

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Livestock Genomic Resources in a Changing World
19th June 2014
Cardiff University, Wales, United Kingdom



THEMES

1. Improving productivity and utilization in the crop subsector
2. Enhancing productivity and utilization in the Livestock subsector
3. Enhancing sustainable management for environment, natural resources
4. Improving natural fish stock management and commercialization of aqu.
5. Cross cutting issues to enhance development, promotion and utilization

FOCUS THEMATIC AREA

Enhancing productivity and utilization in the Livestock sector (GOATGEN)

TOPIC

Harnessing technologies for genetic conservation and improvement of indigenous livestock breeds

Thematic Area 2: Enhancing productivity of Livestock

1. Improved control strategies for major livestock diseases and pests.
2. Technologies and Innovations for enhanced survival and performance of young livestock.
3. Technologies and Innovations for enhanced management of livestock feeds
4. Technologies and Innovations for enhanced commercial production of insects.
5. Enhancing livestock products value addition, quality assurance and traceability.
6. Management of diseases of livestock-human interface.
- 7. Harnessing technologies for genetic conservation and improvement of indigenous livestock breeds.**

Why the indigenous Ugandan goat?

1. In Africa ~70% of rural poor keep goats
2. 200 million people rely on these animals for their livelihoods.
3. Goats play an essential role in most agro-ecological production systems - surviving extreme conditions
4. Goats are a source for meat, milk, pelts, have agricultural, economic, cultural and religious roles
5. **Selection** driven primarily by sociocultural concerns and the need for goats to survive

Unknown goat resources threatened?

1. with the global trend of introducing high-yielding breeds, goat diversity is threatened
2. Twenty per cent of African livestock breeds are classified as at risk for extinction, and more than 50% are classified as of unknown status- a **huge knowledge gap**
3. Valuable goat breeds are being lost, before their characteristics can be studied and their potential evaluated (modernization of agriculture)





Different varieties, same environment and disease?



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FARMING

The goat breeder promoting commercial goat farming

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Ugandan farmers earn income and feed their families by raising and selling goats

November 14, 2013



Herd size by household and region

Region	HHs owning goats, % of all HHs	HHs owning goats, number	Indige- nous, %	Dairy, exotic or cross breeds, %	Meat, exotic or cross breeds, %
UGANDA	39.2	2,496,840	99.5	0.5	1.1
Central	21.5	401,880	98.9	0.9	0.2
Eastern	45.9	739,200	99.6	0.6	0.7
Northern	47.0	531,000	99.9	0.1	0.5
Western	45.7	715,980	99.4	0.7	1.5
<i>karamoja sub-region</i>	53.7	108,780	100.0	0.2	1.1

Herd size by “BREED” and region

Region	Indigenous, % of all goats	Indigenous		
		Mubende, % of indigenous	Small East African, % of indigenous	Kigezi, % of indigenous
UGANDA	98.7	14.5	83.3	2.2
Central	97.2	37.9	60.6	1.5
Eastern	99.1	6.0	93.6	0.4
Northern	99.7	4.3	95.4	0.2
Western	98.0	24.7	68.6	6.7
<i>karamoja sub-region</i>	99.5	2.8	96.9	0.3

NEXT GENERATION METHODS TO PRESERVE FARM ANIMAL BIODIVERSITY **NEXTGEN**

Involved laboratories Material for students



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KBBE-2009-1-1-03: Optimisation of methods to maintain farm animal biodiversity

Next generation methods to preserve farm animal biodiversity by optimizing present and future breeding options

NEXTGEN is the first project in the area of conservation genetics that proposes a comparative analysis of **whole genome data** at the intraspecific level. Therefore, the project will gather data on an unprecedented

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Improving production and conservation of the Ugandan domestic goat: control of diseases and optimizing present and future breeding options using a landscape genomics approach (GOATGEN)

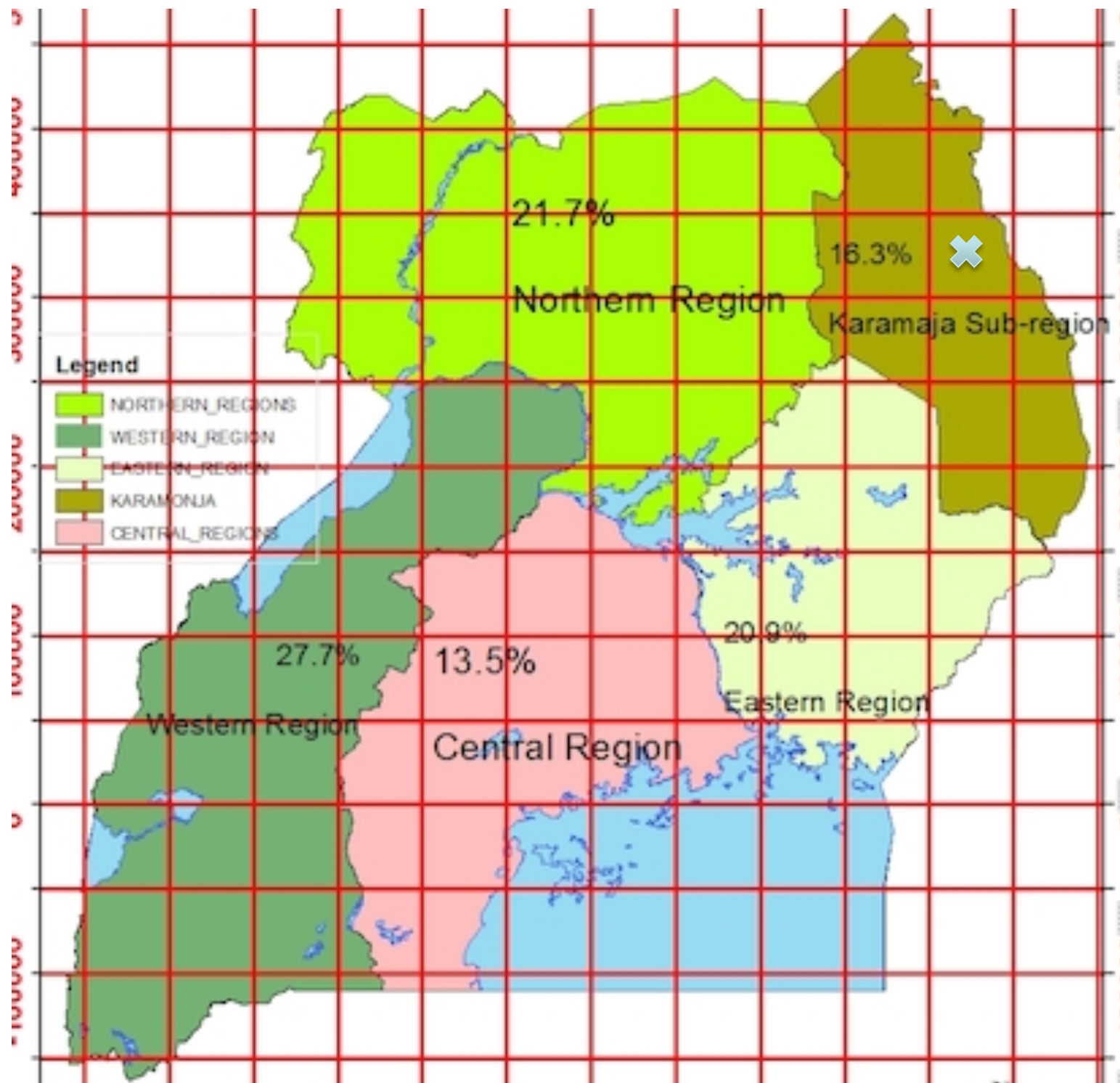
1. Geospatial genetic variability and differentiation among goats in Uganda in relation- landscape & production systems.
2. carry out comparative evolutionary genomics among the goat populations in Uganda - host adaptive evolution
3. Alleles conferring selective advantage – adaptation – diseases - breeding guidelines
4. Capacity building 2 MSc training (**PhD?**)
5. Technology transfer

Very limited budget



MAAIF, NAGRIC, CARDIF





LOCAL ↔ INTERNATIONAL PERSPECTIVE

African Goat Improvement Network - Community Based Breeding Programs (CBBP) Feed the Future



Thank you

