

Evaluating the impact of Tanzania's Wildlife Management Areas

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Tanzania Background to the study

- Tanzania's natural resources**
- High biodiversity, iconic wildlife populations
 - Widespread poverty, esp. rural areas
 - ~30% of GDP, esp. agriculture and tourism
 - ...but GDP misses most pastoral production
 - 75% of population dependent
 - High tourism potential

- Challenges**
- Poor governance
 - Low resource management capacity
 - Inequitable access and income sharing
 - High levels of poaching

Tanzania Conservation policy

- Conservation in Tanzania**
- Currently 16 National Parks
 - ~35-40% of country under some form of protection
 - Land seizure and forced resettlement
 - 1974 Wildlife Conservation Act: State control
 - 1998 Wildlife Policy of Tanzania (rev. 2007): Local community participation
 - 2002 WMA regulations developed
 - 2003 Implementation started
 - 2006-7 First pilot WMAs registered

Wildlife Management Areas Process and current status



- WMA process:**
- Villages set aside land for wildlife
 - Elect community management organisation
 - Land use plans; Bylaws & regulations; Resource Zone Management Plan
 - Director of Wildlife approval and granting user rights
- Status:**
- 19 WMAs in operation
 - 148 villages
 - >450,000 people
 - 38 planned in total
 - Will cover 7% of land area

The PIMA Project Evaluating Tanzania's WMAs

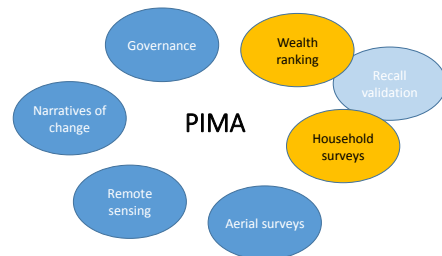
WMA objectives:

"increase participation of local communities in management of wildlife resources; enable local communities to derive benefits from wildlife resources; and enhance conservation of wildlife resources"

PIMA research question:

What are the social and ecological outcomes of WMAs?

Data collection approaches Mixed methods



Impact Evaluation

Common challenges for conservation

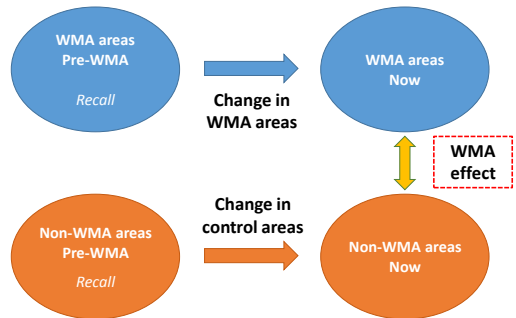
Why is it hard to evaluate conservation?

- Experiments are rarely possible
- Interventions cannot always be replicated
- Many interventions occurring together
- Complex histories
- Lack of baselines
- Lack of "controls"...
- Multiple outcomes of interest
- Some outcomes multidimensional (e.g. wellbeing)



Impact Evaluation

BACI comparison



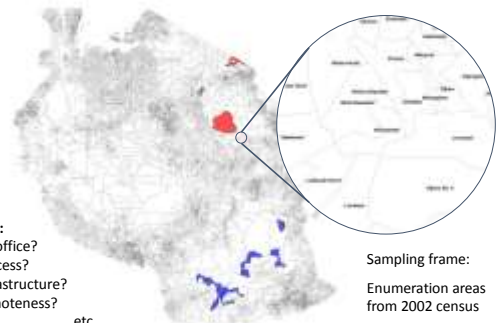
Study areas



- 6 WMAs selected:
- North vs. South
 - Existing data
 - (+ Familiarity)

- 8 villages per WMA:
- 4 inside
 - 4 outside

WMA village selection



- Criteria:
- AA office?
 - Success?
 - Infrastructure?
 - Remoteness? ...etc.

Sampling frame:
Enumeration areas from 2002 census

Control village selection

Non-parametric matching



WMA units



"Control" units?

Control village selection

Non-parametric matching



WMA units



Pool of potential control units

Control village selection Non-parametric matching



WMA units



Pool of potential control units

Control village selection Non-parametric matching

Matching on:

- Demographics (population density)
- Market access (distance to roads; distance to towns)
- Wildlife & conservation (wildlife corridors; presence of key species, distance to PA)
- Biophysical characteristics (slope, elevation, precipitation, land cover)

Excluding:

- Protected areas

Wealth data and analysis

Wealth ranking dataset

- 13,573 households, 42 villages
- Participatory wealth ranking:
 - 2 groups of 2-3people, male & female
 - >10 years in village
 - What constitutes poverty / wealth in community?
- Recall relative to anchor events (e.g. OI Doinyo Lengai)

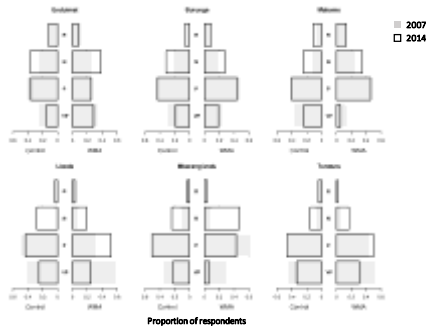


Wealth data and analysis

Analysis:

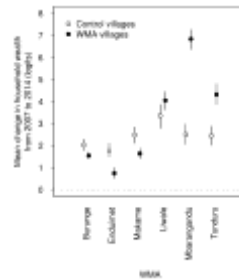
- Bayesian hierarchical cumulative logit
- Response = wealth category (ordered: Very poor < Poor < Normal < Rich)
- Village-varying coefficients
- Predictors:
 - Before/After
 - WMA/Control
 - Wealth ranking "before"
 - WMA leadership position
 - Community leadership position
 - Female-headed household

Wealth change Raw wealth ranking data

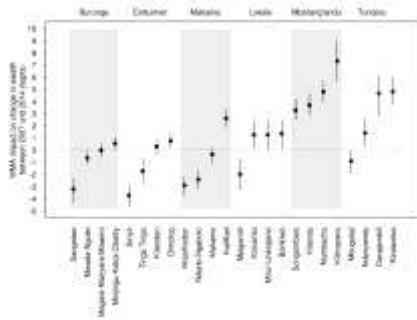


Wealth change

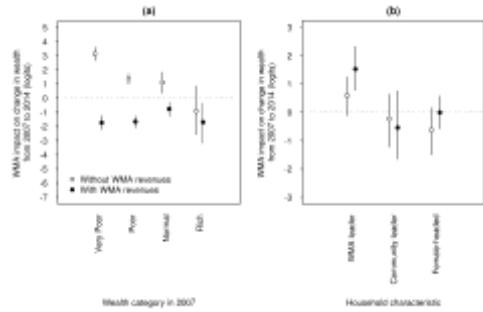
Comparison between WMAs and controls



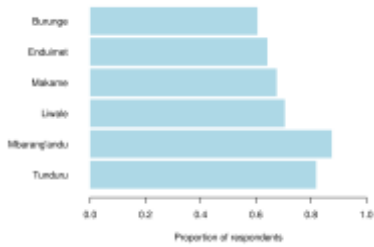
Wealth change Village-level WMA effects



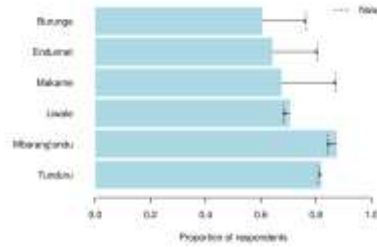
Wealth change Household-level WMA effects



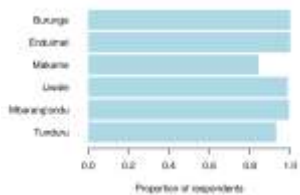
Acceptance of WMAs Initially...



Acceptance of WMAs ...and Now

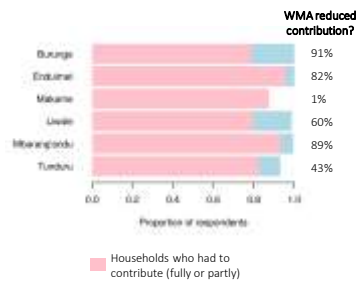


Community benefits Public development projects



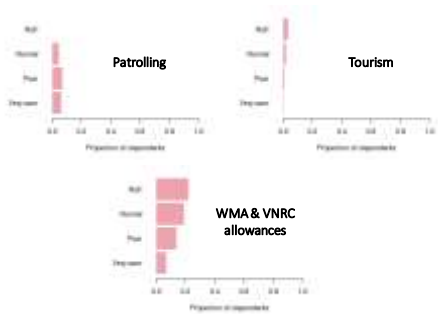
Primary or secondary school built or repaired since 2007?

Community benefits Public development projects



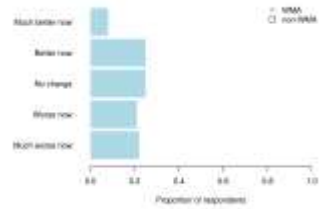
Direct household income

Frequency and distribution by wealth



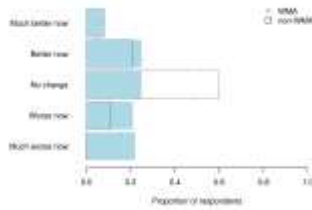
Costs: Burunge

Change in crop damage



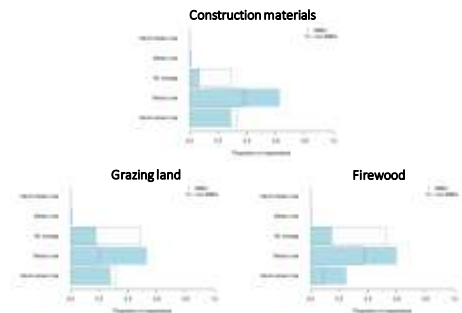
Costs: Burunge

Change in crop damage



Costs: Burunge

Change in access to natural resources



Discussion

What does this all mean?

WMA objectives:

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PIMA research question:

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Discussion

What does this all mean?

Have WMAs helped people?

- Mixed: 3 Worse, 1 No change, 2 Better
- Also village-by-village variation
- Differences btw. revenue/not and age

With tourism revenue

- Generally worse-off: loss of opportunities not fully compensated
- WMA leadership have benefitted
- Elite capture?

Without tourism revenue

- Generally better-off
- Philanthropy?
- Unlikely to be sustainable

Discussion

What does this all mean?

Benefits of WMAs?

- Community-level projects
- Secure dry-season grazing
- Regulate access/use of resources
- Secure land tenure

Room for improvement

- High costs
- Excessively technical process
- Lack of proper participation: really **CBNRM**?
- Favours government and investors over local communities

Next steps

Continuing analysis

- Qualitative narratives
- Linking wealth analysis to household-level samples
- ...and exploring governance further
- Exploring gender differences
- Linking to social to ecological outcomes



Join us!

Improving Protected Area management

- 3yr PDRA** (Edinburgh, Deadline: 2nd Dec)
 - Modelling poacher and patrol behaviour
- 3yr RA** (Oxford, Deadline: 7th Dec)
 - Novel approaches to measuring poacher behaviour
- E3 DTP PhD studentship** (Edinburgh, Deadline: 22nd Jan)
 - Information transfer and the effectiveness of behavioural change strategies

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