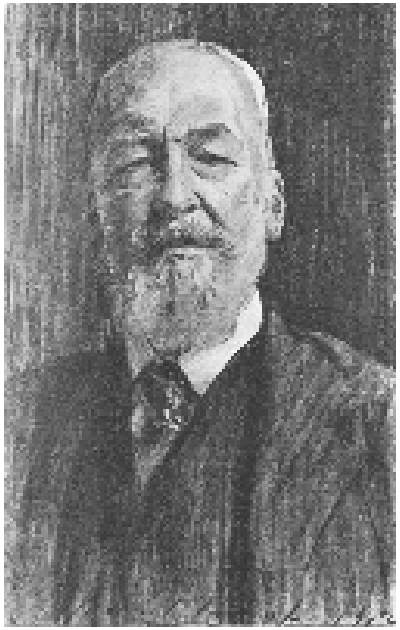
Conservation and the Management of Human-Wildlife Conflict

Bill Adams, 3 October 2007

Darwin Initiative Workshop: Livelihoods and Conservation



Edward North Buxton

Earl of Onslow

Fortress Conservation: Protecting Game

- The Society for the Preservation of the Wild Fauna of the Empire 1903
- Lobbied for Game Reserves, and eventually national parks
- Recreating private hunting estates in the African bush? (Neumann 1996)

- ‘Human life and the wild life must be separated permanently and completely. So long as man and animals live together there will be trouble’ (Richard Hingston, 1931)

USA: Making wilderness National Parks

- Yosemite 1864/1890: cleared in 1852 by the army.
- Yellowstone 1872: ‘Sioux Wars’ 1876-7; US Army garrison 1886 - 1918.
- 1918 National Park Service: former soldiers in service as rangers; military model
- People intruders into 'pristine’ or ‘natural’ landscapes

Fort Yellowstone

Local Hunter: proprietor or poacher?

Sir Alfred Sharpe, Commissioner of the Central African Protectorate1905: ‘there seems to have been a general tendency, while rigidly restricting Europeans from shooting big game, to leave the native free to slaughter all he wishes without let or hindrance’ (*Journal SPWFE* Volume 2)

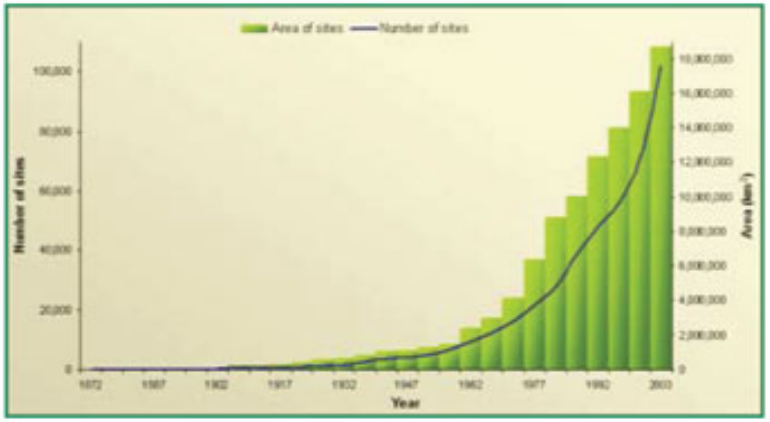
George Morland, www.sterlingtimes.org

www.sheldrickwildlifetrust.org

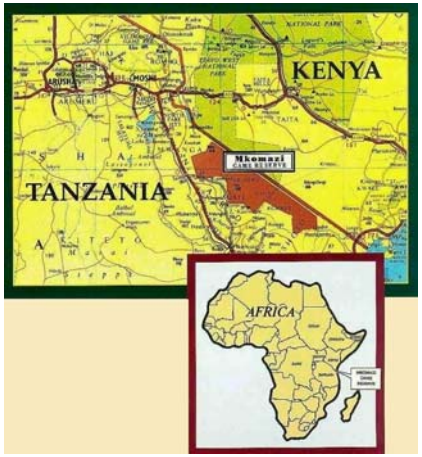
Global Protected Areas

‘A geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives’ (article 2, Convention on Biological Diversity)

- United Nations List
- **102,102 sites** covering an area of 18.8 million km^2
- 12 % of the Earth’s land surface
- ‘the largest purposeful land use planning exercise in the history of the world’



Cumulative growth in protected areas 1872-2003



Conservation Displacement: Tanzania

Selous Game Reserve: 40,000 people relocated

Serengeti National Park: 1000 Maasai and 25,000 head of cattle removed 1959

- Neumann, R.P. (1998) *Imposing Wilderness: struggles over livelihood and nature preservation in Africa*, University of California Press, Berkeley

- Mkomazi: Maasai cleared from the reserve 1988 ‘making it 'wilderness' for the first time, because of conservation planners' fears of the people, and their present and unknown future impact’ (Brockington and Homewood 1996, p.104)
  - Dan Brockington (2002) *Fortress Conservation: the preservation of the Mkomazi Game Reserve, Tanzania*, James Currey, Oxford

Costs of conservation

- Population displacement
  - Lost homes, land or resources
  - Lost opportunity for future use of land or resources
  - Loss of non-use values (e.g. religious, cultural)
- Neighbour costs
  - Crop raiding by wild animals
  - Physical attack by wild animals
  - Harrassment from Park staff
- Opportunity costs
  - Global value of land set aside $5 billion/yr
  - e.g. Kenya: 60,000 km^2 costs $270 million/yr

The ‘New Conservation’
(Hulme and Murphree 2001)

- **Community**: Moves conservation from state-centred to society-centred activity, particularly society at the local level: ‘community’ conservation, or ‘community-based conservation’.
- **Development** Moves conservation from a concern with preservation to sustainable development, where *both conservation and development goals are achieved* at the same time.
- **Market**: Moves conservation from a concern to protect nature *from* the market to a concern to achieve conservation *through* the market: *neoliberalism*

A Typology of Community Conservation Initiatives (Hulme and Murphree 2003)

	Conservation for Use Values	**Conservation for non-use Values**
Community Influence Low	CC to conserve resource (e.g. government fishing or hunting control area)	CC to protect wildlife (e.g. National Park Buffer Zone)
Community Influence High	CC to achieve Development (e.g. CAMPFIRE)	CC to achieve conservation (e.g. sacred grove)

Community and Conservation

- Protected Area Outreach
- ICDPs (Integrated Conservation and Development Projects)
- CBNRM (Community-based Natural Resource Management: CAMPFIRE and ADMADE)
- CCAs: Community Protected Areas

Conservation and Poverty: Sharing Benefits of PAs.

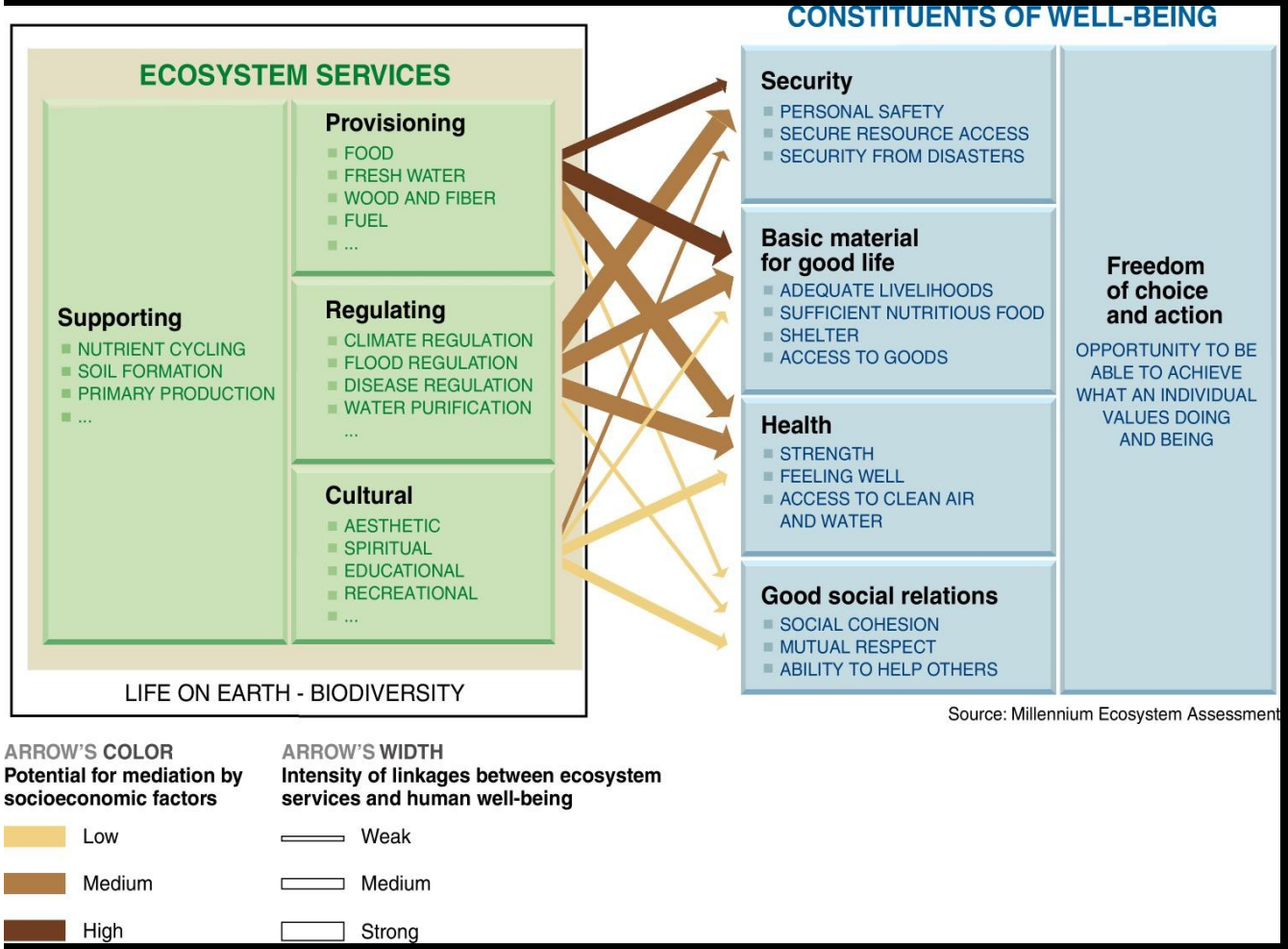
- 1971 ‘Biosphere Reserves’, UNESCO MAB Programme
- World Congresses on National Parks and Protected Areas, 3rd Bali 1982, 4th Caracas 1992, 5th Durban 2003.
- ‘Perhaps the greatest challenge of all is to change the way we think about protected areas. In the past they have been seen as islands of protection in an ocean of destruction. We need to learn to look on them as the building blocks of biodiversity in an ocean of sustainable human development, with their benefits extending far beyond their physical boundaries’
  - ‘Achim Steiner *New Scientist* 18 October 2003, p.21

Sharing the Benefits of Conservation

web.worldbank.org

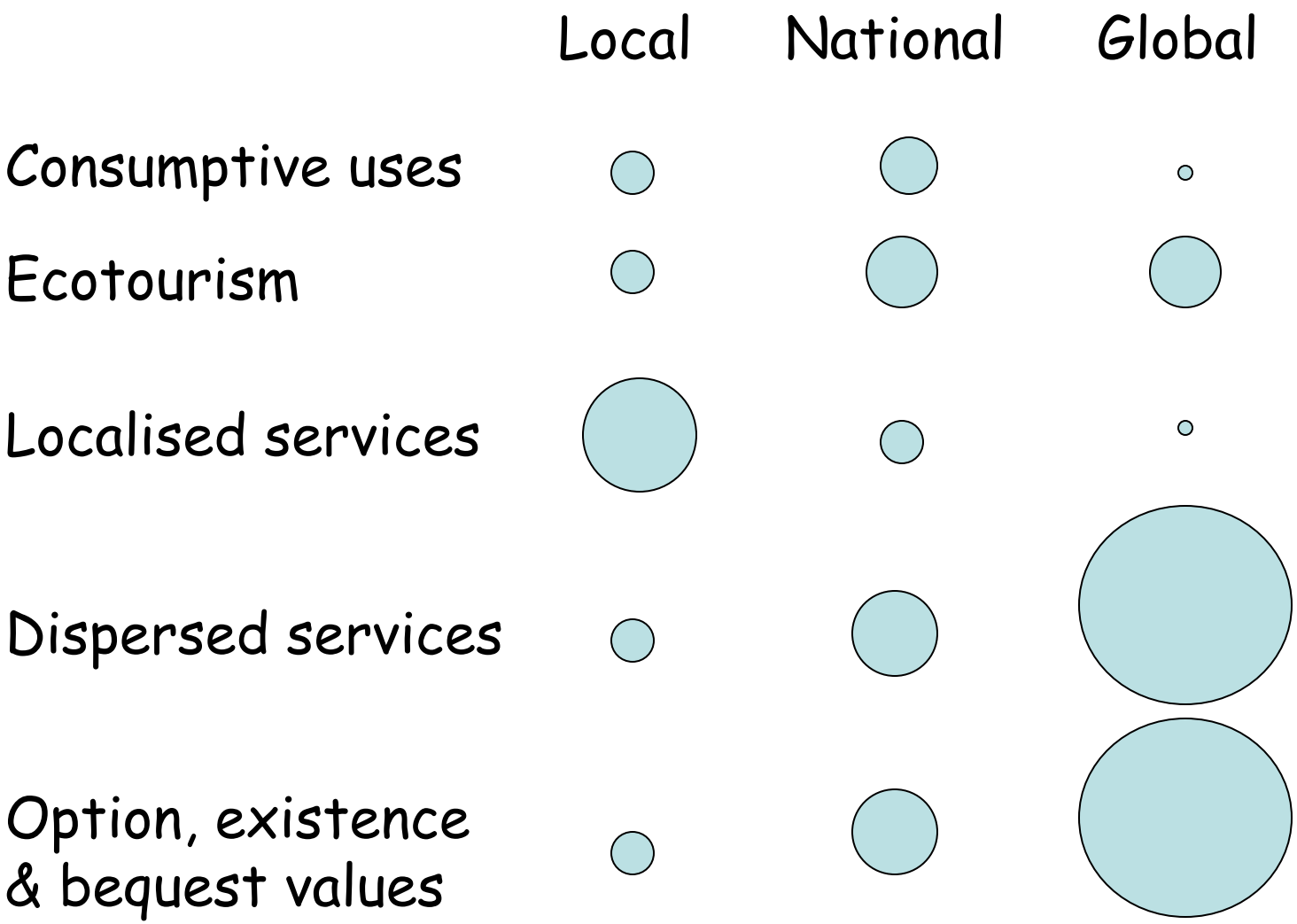
- Consumptive uses (food, timber, medicines)
- Eco-tourism (jobs; shares; sensitive to security)
- Localised services (water, erosion control)
- Dispersed services (climate, carbon: US$ 38 trillion?
- Option, existence & bequest values (International support for conservation)

Ecosystem Change and Human Wellbeing



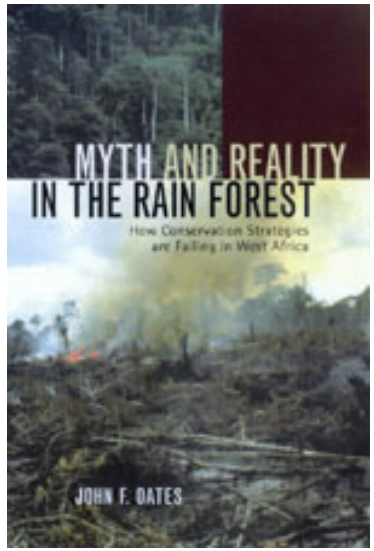
'progress achieved in addressing the goals of poverty and hunger eradication, improved health, and environmental protection is unlikely to be sustained if most of the ecosystem services on which humanity relies continue to be degraded' *(Millennium Ecosystem Assessment Synthesis Report 2005)*

Who gets the benefits of protected areas?



‘Conservation and Development Projects’

- Cost, speed, complexity
- Trade-offs
- Conservation doubts:
  - effective?
  - Cost-effective?
- ‘excessive emphasis on development can lead to a de-emphasis of conservation goals to the extent that they are no longer seriously addressed’
  - John Oates (1999)



CBNRM

- Works with:
  - Very high value resource
  - No competing higher value resource
  - Low population density
  - Lots of social capital
  - No immigration
  - Strong CPR management institutions
  - Good governance

Community-Controlled Areas

- 5th Parks Congress Durban 2003 ‘Durban accord’
- ‘natural and modified ecosystems (including those with minimum to substantial human influence), containing significant biodiversity values, ecological services and cultural values, voluntarily conserved by concerned indigenous and local communities through customary laws or other effective means’
  - One or more communities closely relate to the ecosystems and species culturally and/or because of survival and dependence for livelihood;
  - Community management decisions and efforts lead to the conservation of habitats, species, ecological services and associated cultural values (although objective of management may differ, e.g., livelihood, water security, safeguarding of cultural and spiritual places).
  - Communiti(es) are major players in decision-making and implementation regarding management; community institutions have the capacity to enforce regulations;(other stakeholders in collaboration or partnership).
- 400-800 million ha forest owned / administered by communities.
- 18 developing countries with largest forest cover, over 22% of forests are owned by or reserved for communities.
- Community forests 80% of total (e.g. Mexico and Papua New Guinea)
  - IUCN Commission on Environmental, Economic and Social Policy: www.iucn.org/themes/ceesp/CCA.htm

‘Community-based conservation: the new myth?’

- ‘CBC has to date not been tried and found wanting; it has been found difficult and rarely tried’
- ‘Slowly, and sometimes reluctantly, we have come to accept that people count, and thus have reached the stage of *conservation with the people*….But we reserve to ourselves the status of being the final arbiters of what CBC should be, based on our science and professional experience’. ‘We need to move onto a fourth stage, *conservation by the people’*.

- Marshall Murphree (2000) ‘Community-based conservation: the new myth?’, unpublished paper to Conference on African Wildlife Management in the New Millennium, Mweka. December 2000.

Back to the barriers?

- Resurgence of the ‘protectionist paradigm’ (Wilshusen *et al*. 2001)

Conservation and the Millennium Development Goals

Goal 1 Eradicate extreme poverty and hunger
Goal 2 Achieve universal primary education
Goal 3 Promote gender equality and empower women
Goal 4 Reduce child mortality
Goal 5 Improve maternal health
Goal 6 Combat HIV/AIDS, malaria, and other diseases
Goal 7 Ensure environmental sustainability
Goal 8 Develop a global partnership for development

Conservation and MDGs

- MDG 7: Ensure Environmental Sustainability **:**

Target 9 Integrate the principles of sustainable development into country policies and programmes and reverse the losses of environmental resources. s:

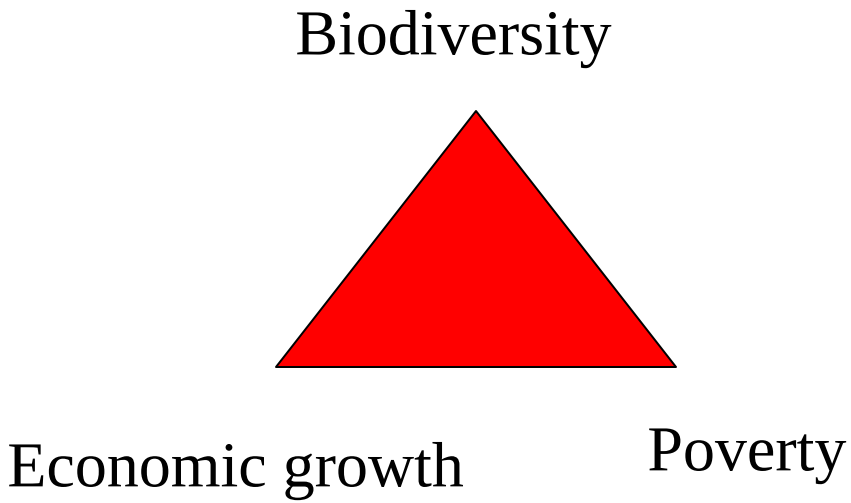
  - Indicator 25: Proportion of land area covered by forest
  - Indicator 26: Ratio of area protected to maintain biological diversity to surface area

Target 10 Halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation.

Target 11 Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers.

Trade-offs between Conservation, Development and Poverty

- Do win-win solutions exist?
- ‘Poor people should not pay the price for biodiversity protection’
  - (Dilys Roe and Joanna Elliott, 2004, *Oryx* 38: 137-9)



Conservation Costs and Benefits

- Maximise benefits, minimise costs
- Within and away from protected areas
- Fragmented habitats, shared landscapes
- Landscape-scale approach
- Identifying and mitigating conflict

Building Capacity to Alleviate Human-Elephant Conflict in North Kenya (15/040)

- Purpose:
- Alleviate human-elephant conflict and promote tolerance of elephants in Laikipia District, Kenya

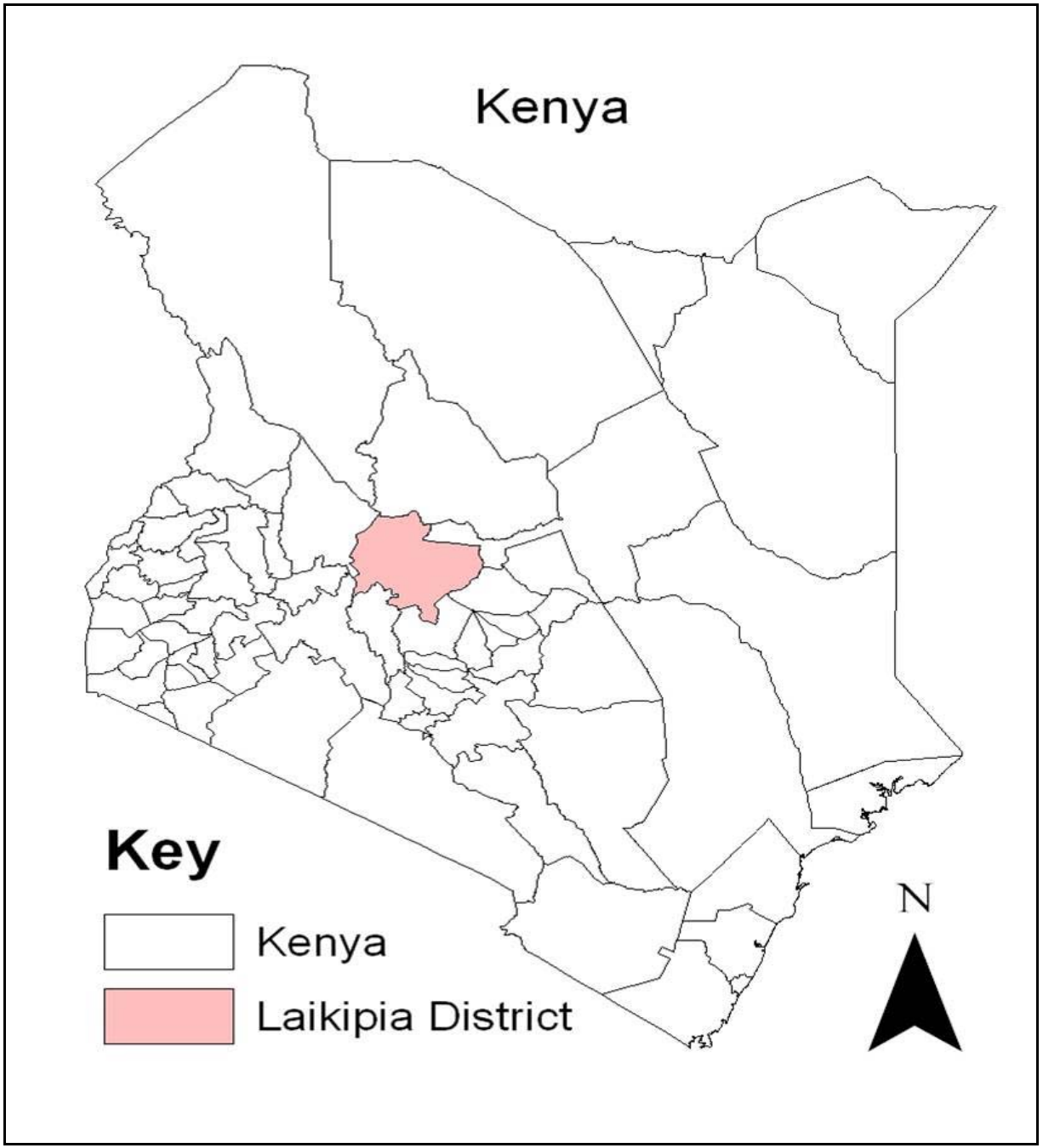
Dr. Max Graham,
Professor Bill Adams
Department of Geography, University of Cambridge, CB2 3EN

15/040 Project Purpose

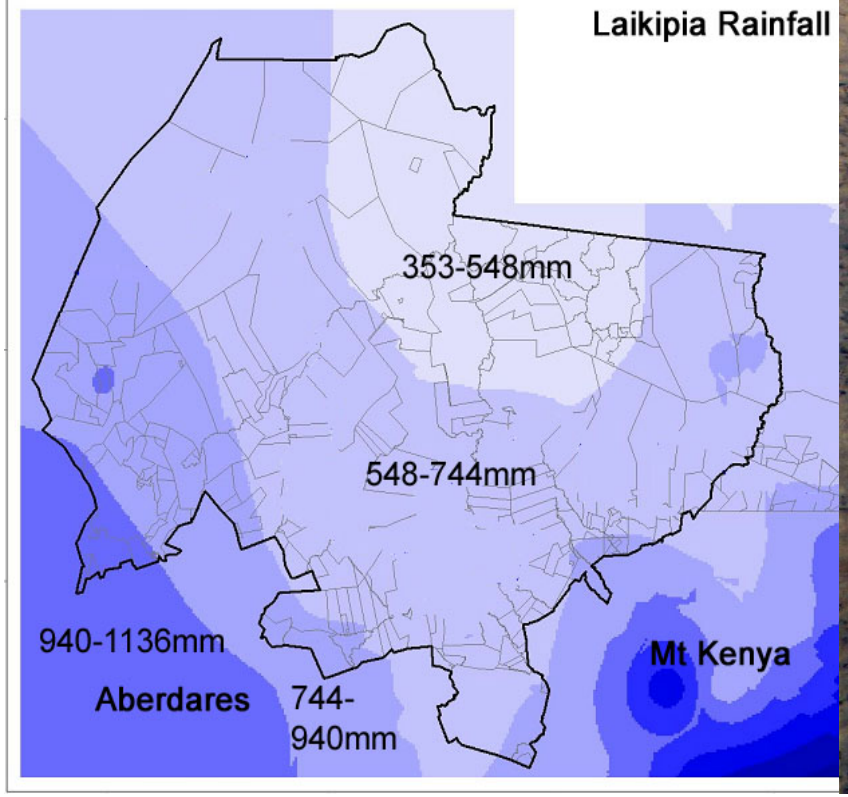
Project summary	Measurable Indicators	Means of verification	Important Assumptions
Purpose Alleviate human-elephant conflict and promote tolerance of elephants in Laikipia District, Kenya	-Reduction in the total number and severity of elephant crop-raids in Laikipia by year three	-HEC database, field reports, published papers	-Sustained support from the Kenya Wildlife Service, the Laikipia Wildlife Forum and landowners in Laikipia District.
	-Permanent community based HEC management and research project established; HEC management training provided at the local, national and international levels.	-Maps, booklets, posters; training manual; conservation and management plan; elephant fencing impact assessment; workshop assessments/ reports; meeting minutes; newsletters; published papers; popular articles	-Regional expertise in HEC alleviation remains limited
	Sustainable revenue streams secured to maintain project activities beyond Darwin funding	Laikipia wildlife magazine website; Successful grant applications by trained project assistants	-Content of the web magazine is sufficiently interesting and marketable to attract paying subscribers -Funding bodies continue to value project activities
	-Income generated by local communities through sustainable elephant defence livelihoods	-Financial statements by partner organisations; project reports	-A market exists for products developed through sustainable elephant defence livelihood programme.

15/040 Outputs

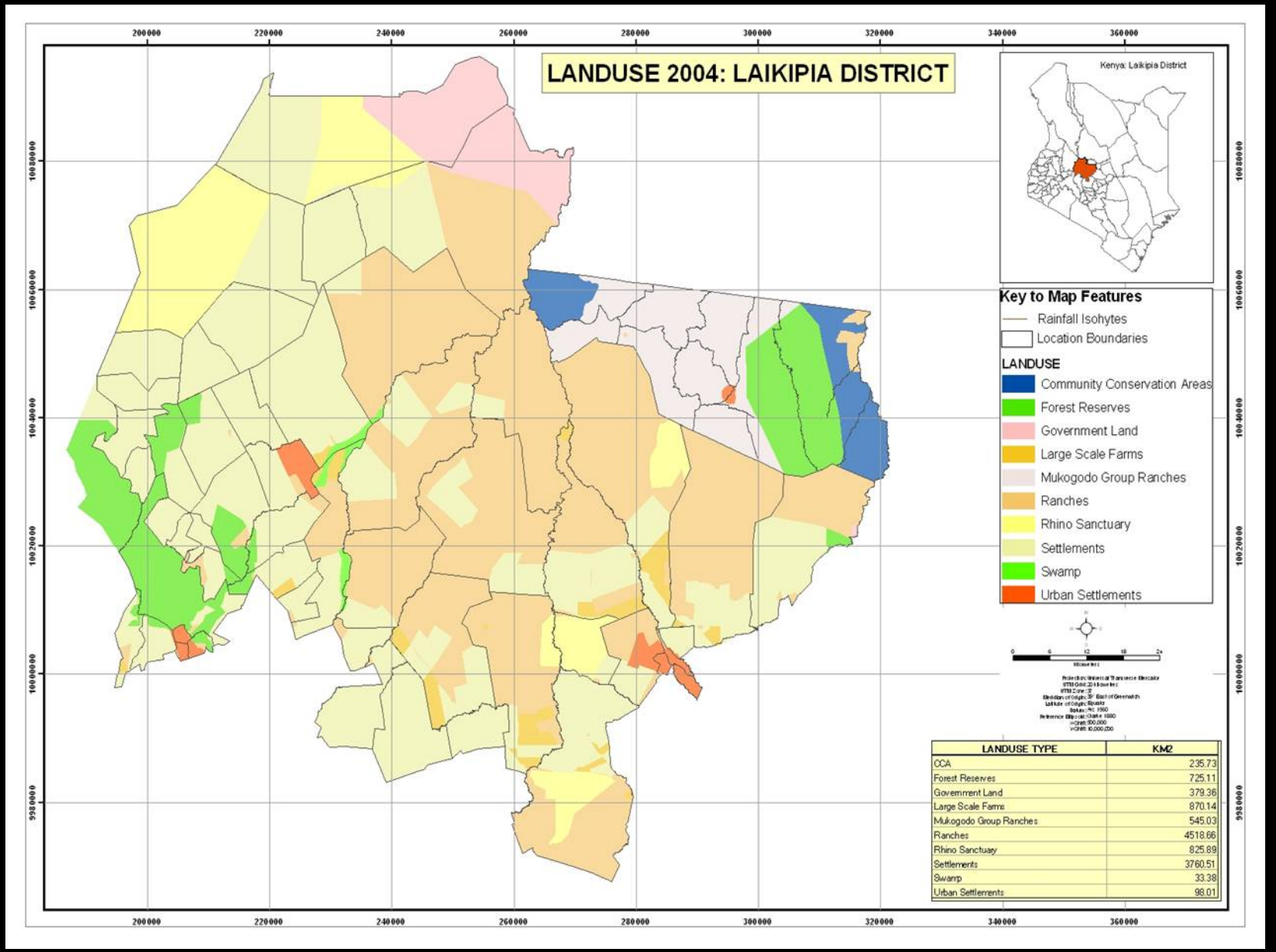
- 1. GPS/GSM collar based HEC early warning system
- 2. Local Knowledge based HEC Early Warning System (formerly Remote sensing (NDVI) HEC early warning system)
- 3. Community based HEC management and research programme established
- 4. Dissemination of Farm-based Elephant deterrence approaches among vulnerable communities and conservation practitioners
- 5. Elephant defence livelihood systems established
- 6. Sustainable revenue streams established for a permanent HEC management training team in Laikipia

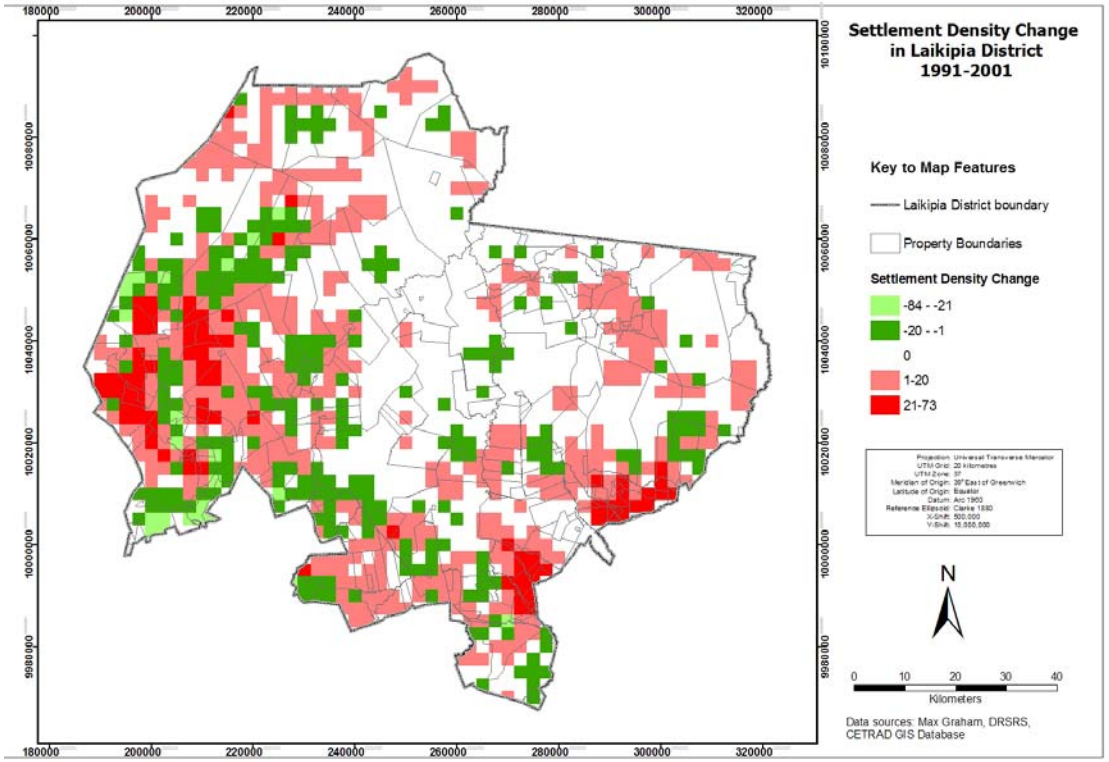


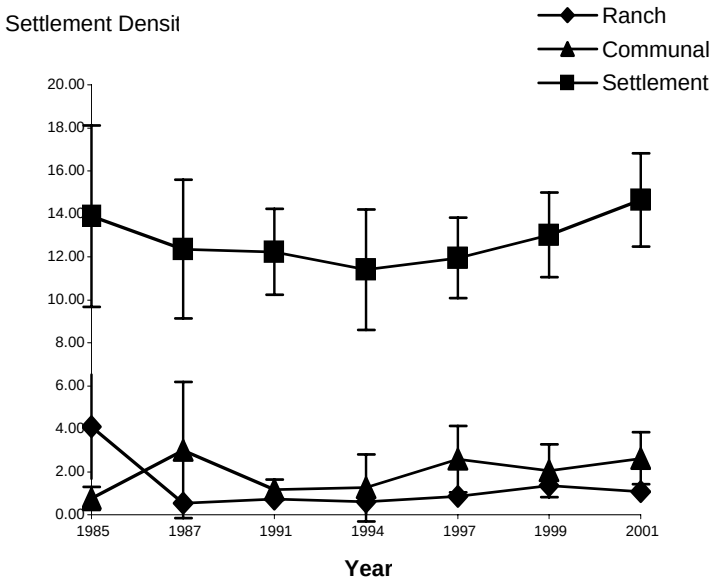
Laikipia District, Kenya

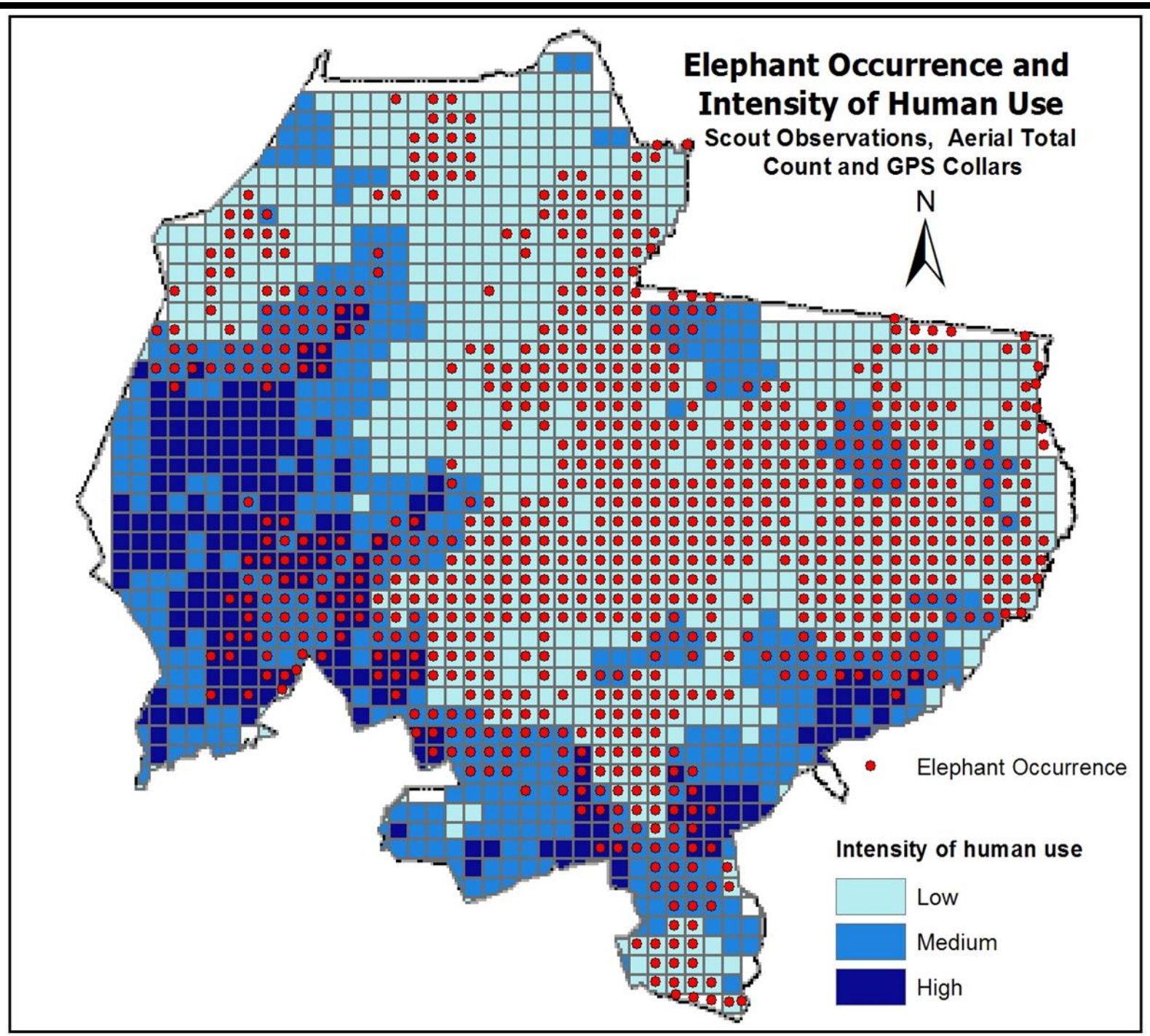

Laikipia Rainfall
353-548mm
548-744mm
940-1136mm
Aberdares
744-
940mm
Mt Kenya

Laikipia Plateau, Kenya

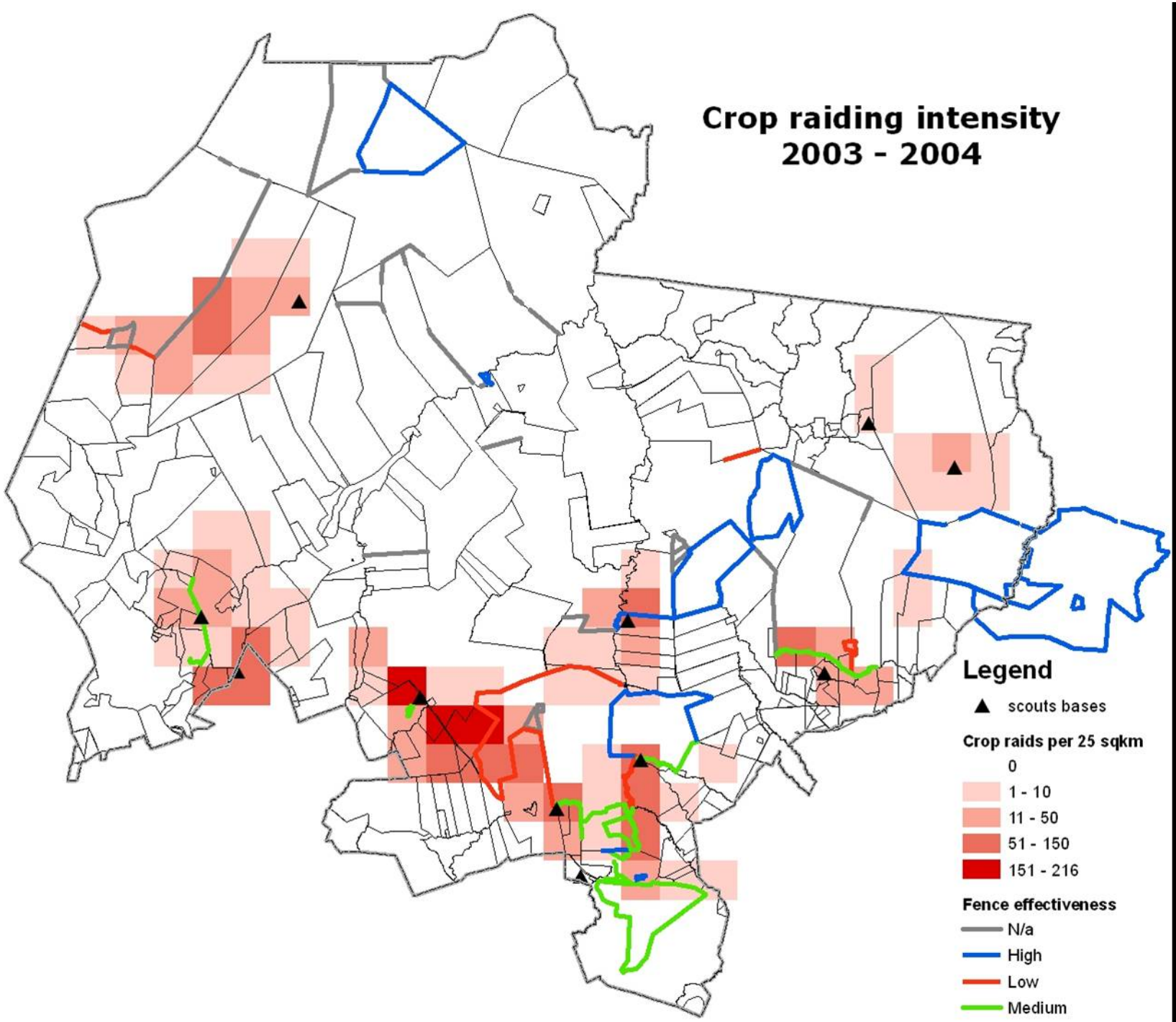



Settlement Density Change
in Laikipia District
1991-2001
Key to Map Features
Laikipia District boundary
Property Boundaries
Settlement Density Change
-84 - -21
-20 - -1
0
1-20
21-73
N
0 10 20 30 40
Kilometers
Data sources: Max Graham, DRSRS,
CETRAD GIS Database


Settlement Densit
Ranch
Communal
Settlement
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1985
1987
1991
1994
1997
1999
2001
Year


Elephant Occurrence and Intensity of Human Use
Scout Observations, Aerial Total Count and GPS Collars
N
Elephant Occurrence
Intensity of human use
Low
Medium
High

Sharing land with elephants: crop raiding


Crop raiding intensity
2003 - 2004
Legend
scouts bases
Crop raids per 25 sqkm
0
1 - 10
11 - 50
51 - 150
151 - 216
Fence effectiveness
N/a
High
Low
Medium

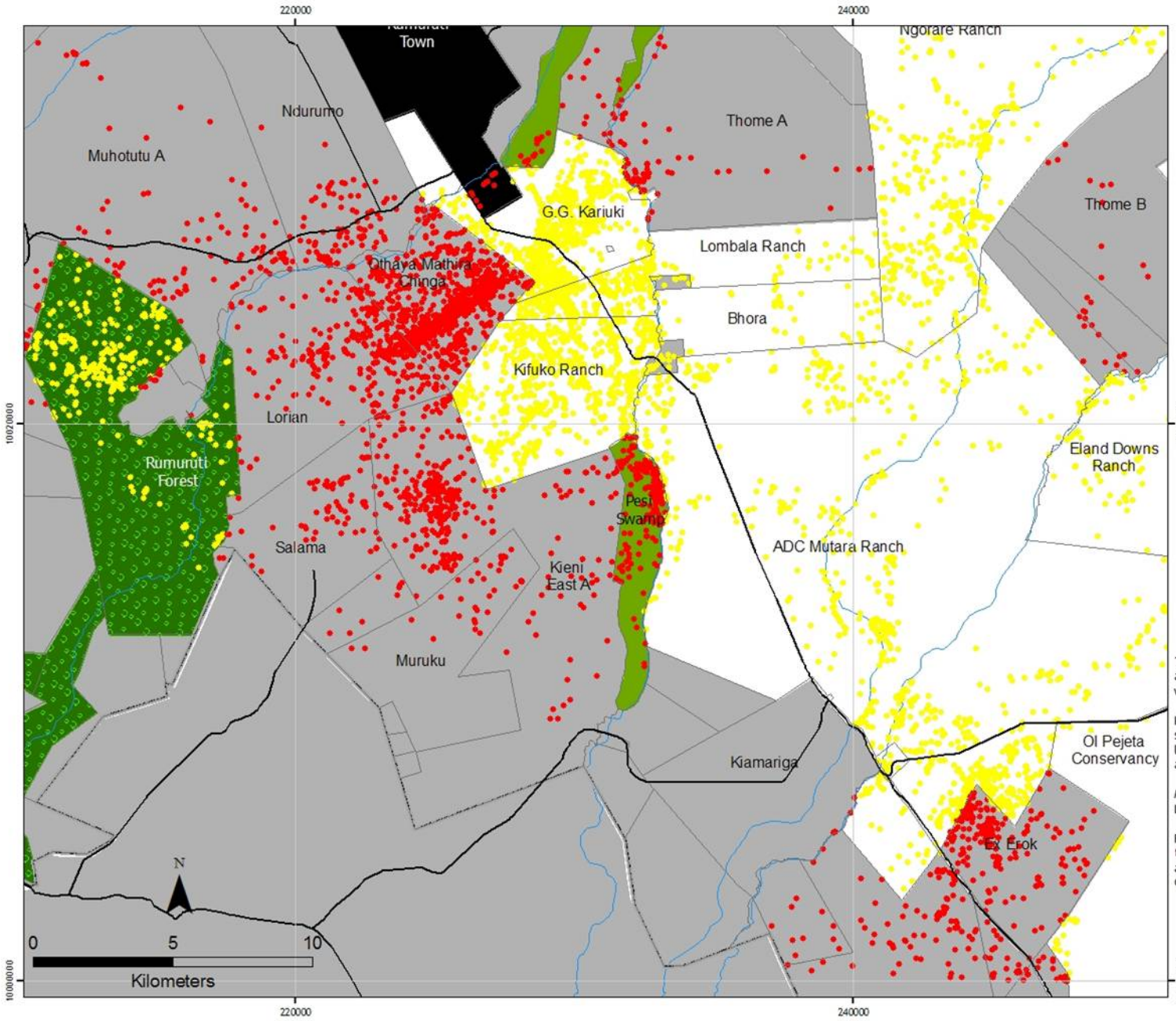
Building Capacity to Alleviate Human-Elephant Conflict in North Kenya

- Elephant movement
- Early warning
- Community-based elephant deterrence
- Sustainable livelihoods
- Training and education

Mapping elephant movement

- Radio-collar
- Track: gsm software

SAVE THE ELEPHANTS



Movement Patterns of Genghis Khan (K16) 2004-2006

Legend

- Rivers
- District Boundary
- Roads

Land use

- Ranch
- Smallholder
- Urban
- Forest
- Swamp

Location of Hourly GPS Fixes

- Ranch/Forest
- Smallholder

Movement Statistics

MONTHS TRACK		18
SEX		M
MCP (Km.sq)		3126.8
UD (Km.sq)	95%	815.1
	50%	46.5
SETTLEMENT		32%
RANCH		65%
FOREST		3%
PASTORAL		4%

This map shows the hourly positions for K16, a male elephant fitted with a GPS collar in south-west Laikipia.

K16 has been tracked for almost years, and spends 32 % ofhis time on unfenced smallholder land, particularly between the Rumuruti Forest and ADC Mutara Ranch

Map prepared by Dr Max Graham for the Laikipia Wildlife Forum

Radio collar data owned and provided by Save the Elephants (www.savetheelephants.org) under a collaborative project with the University of Cambridge, funded by the UK Darwin Initiative

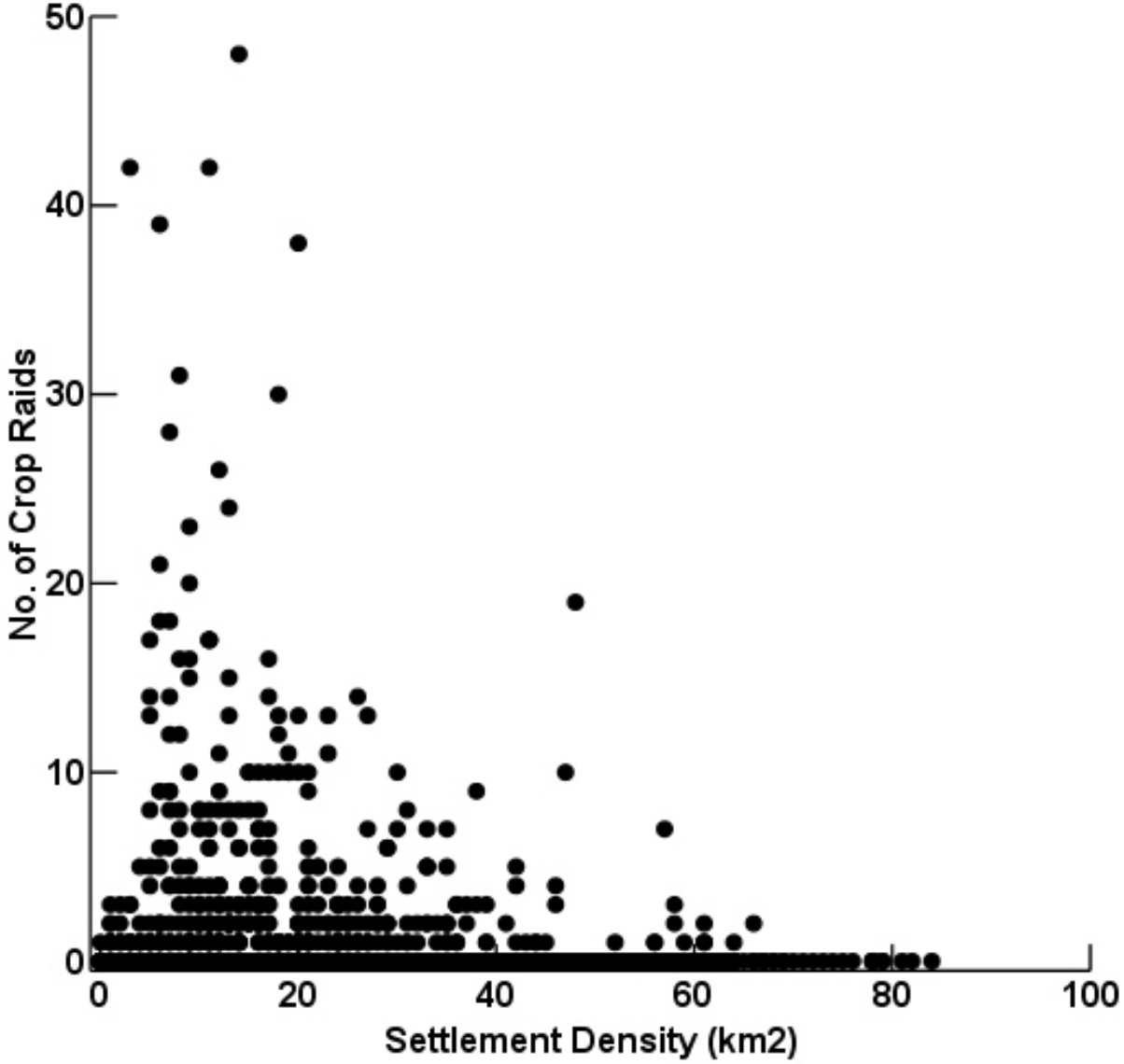
SAVE THE ELEPHANTS

DARWIN INITIATIVE

UNIVERSITY OF CAMBRIDGE

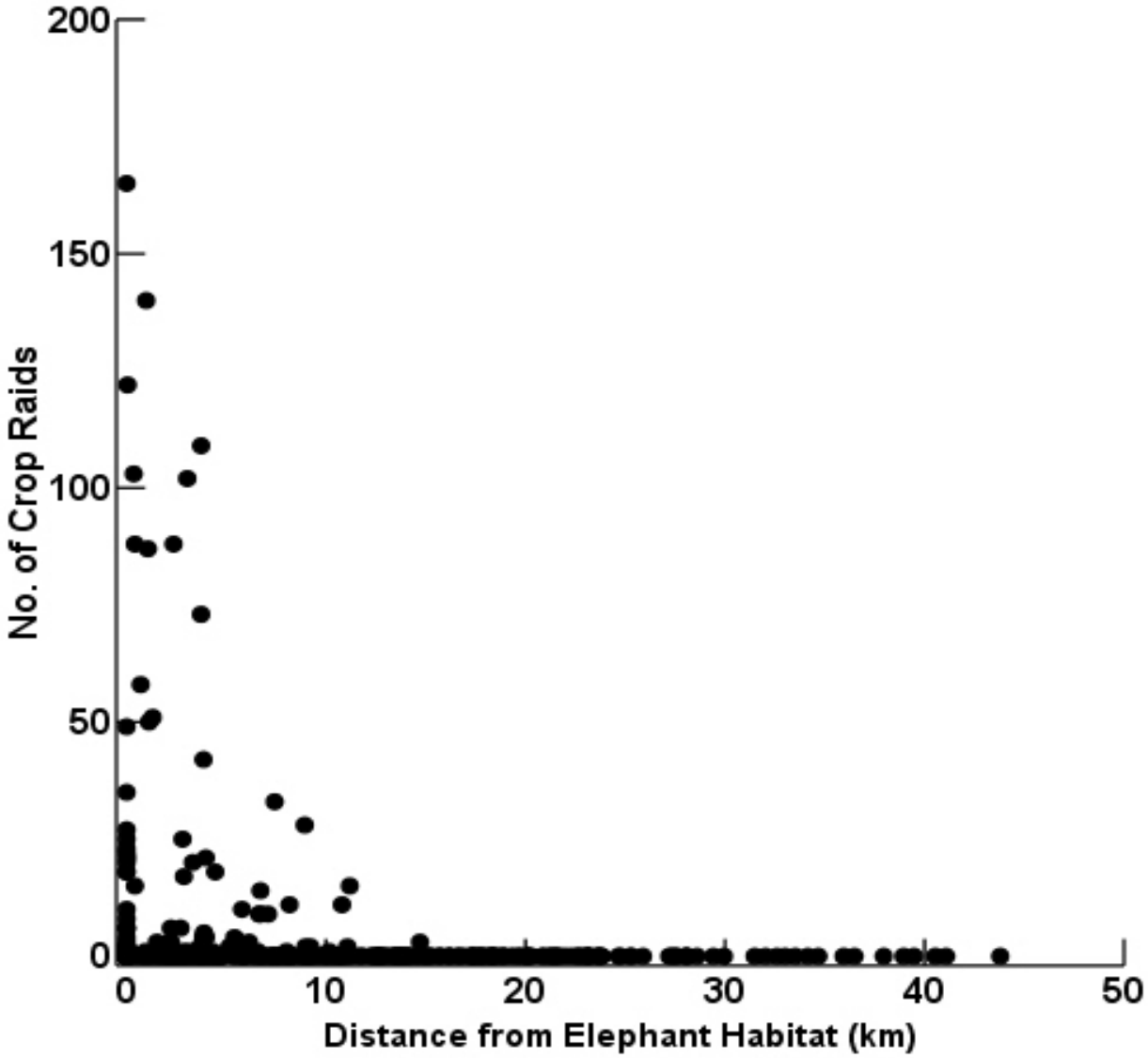
Relationship between crop-raiding intensity and settlement density in 1km^2 grid cells

Graham (2006)



Relationship between crop-raiding intensity and distance from elephant habitat among 25km^2 grid cells in Laikipia

Graham (2006)



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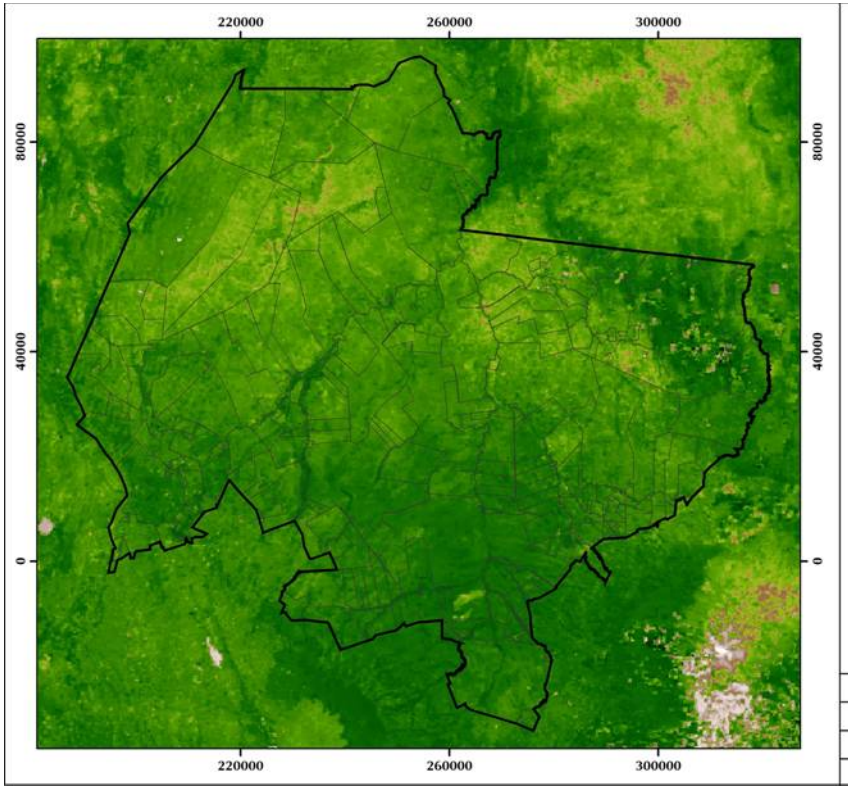
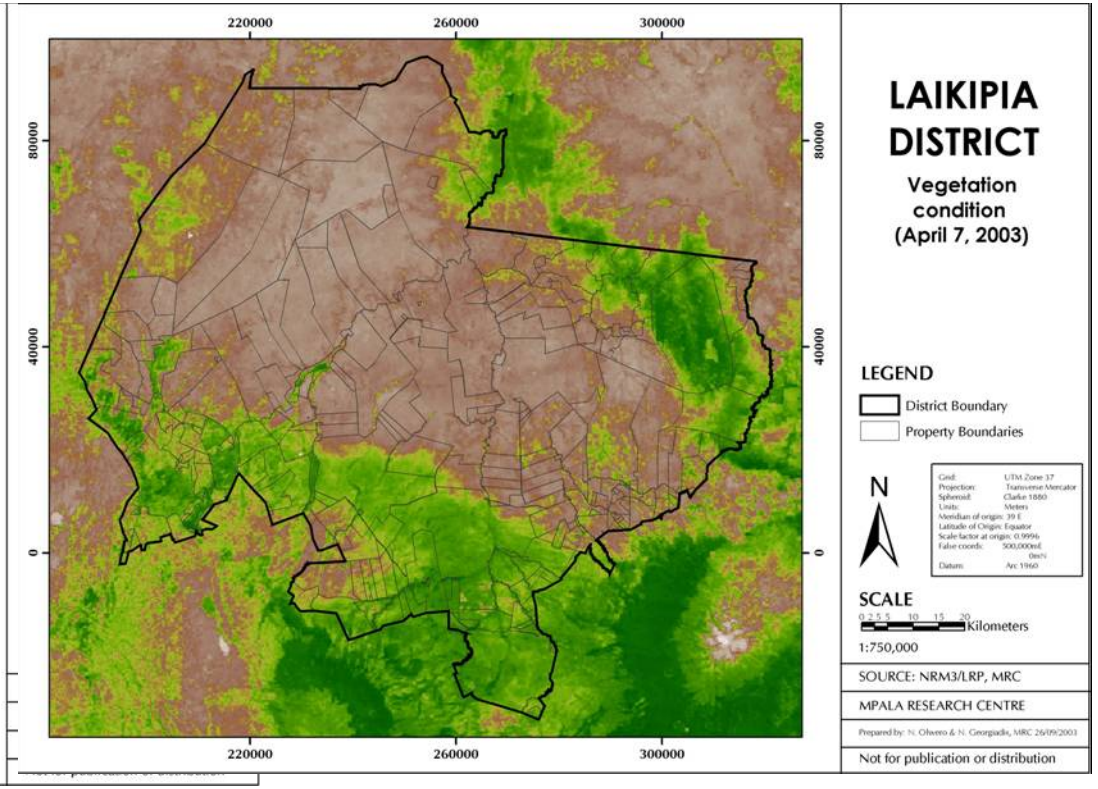
Early warning

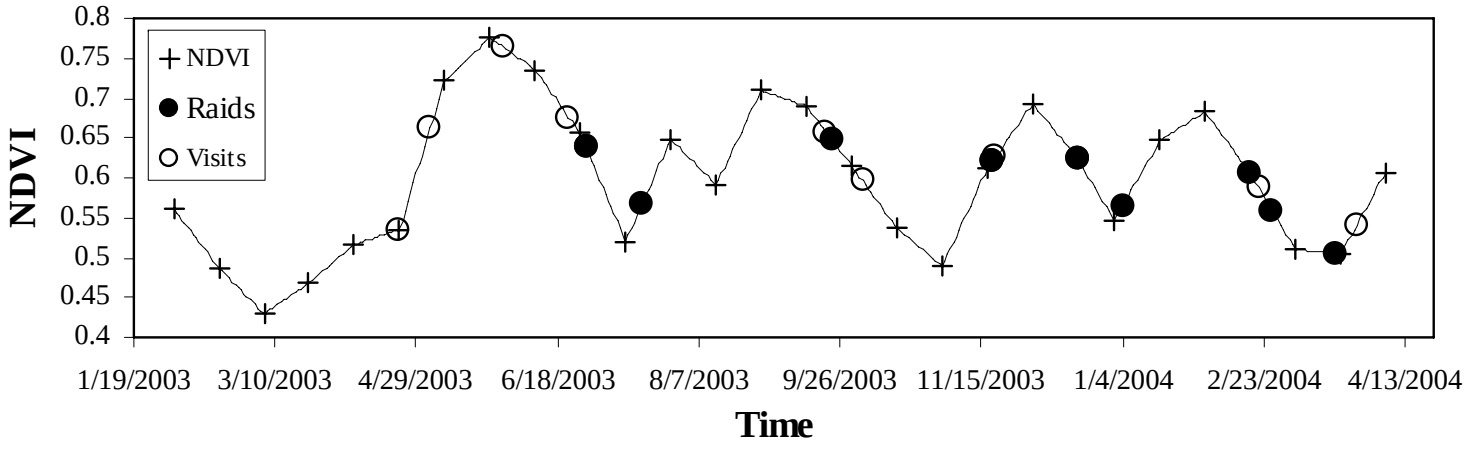
- NDVI
- Local Knowledge-based early warning
- E-fence

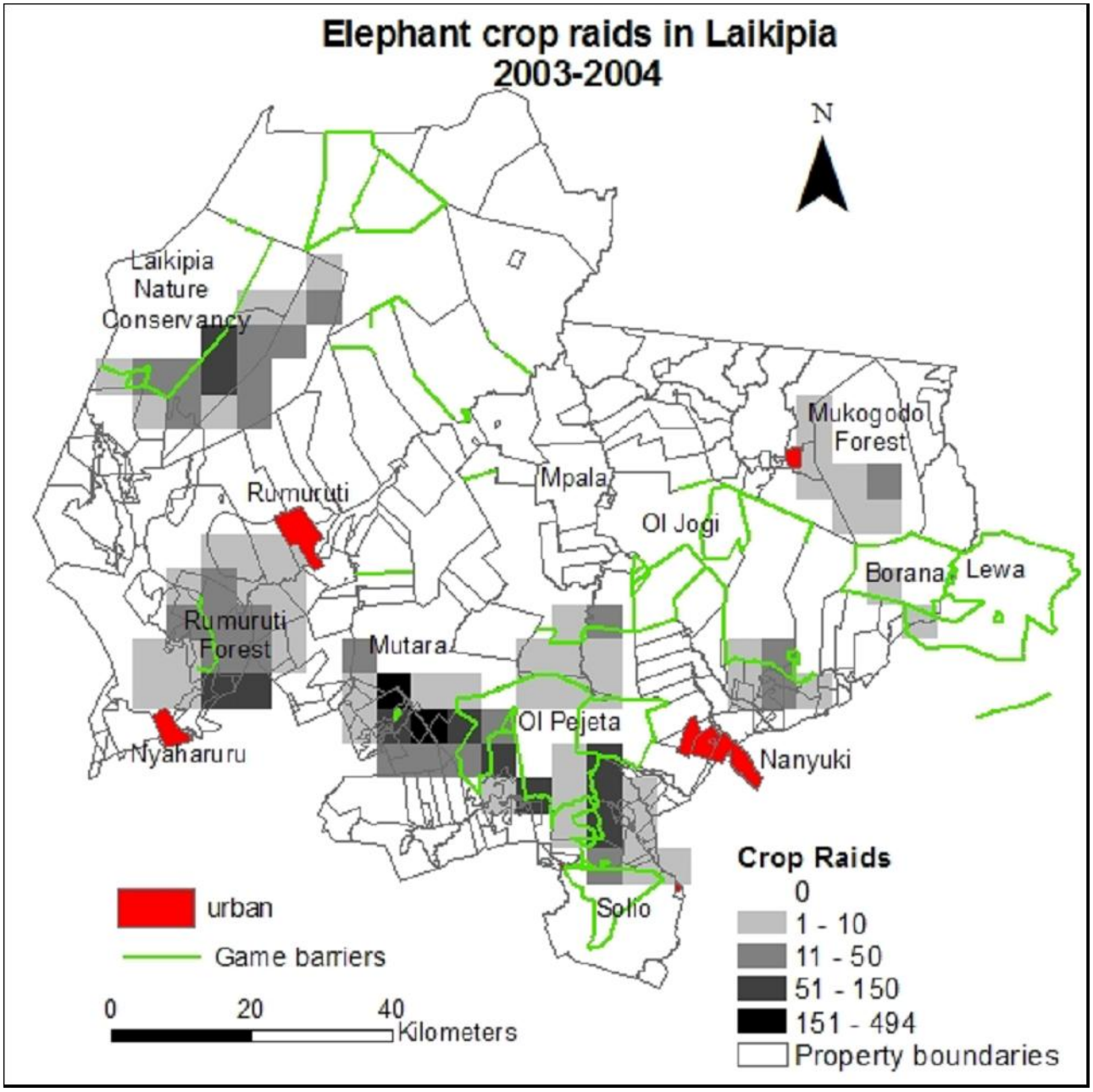


May 9th 2003

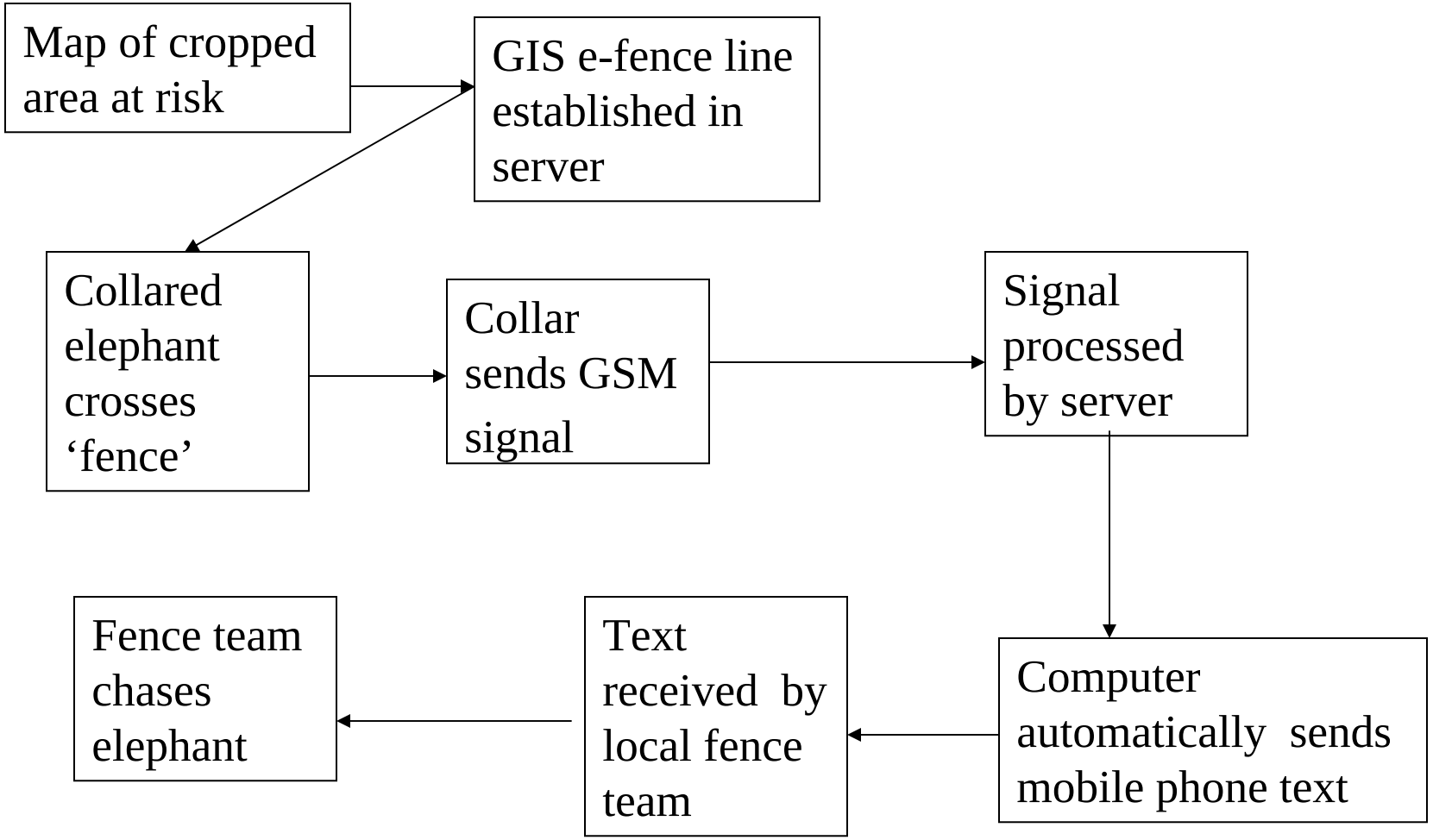


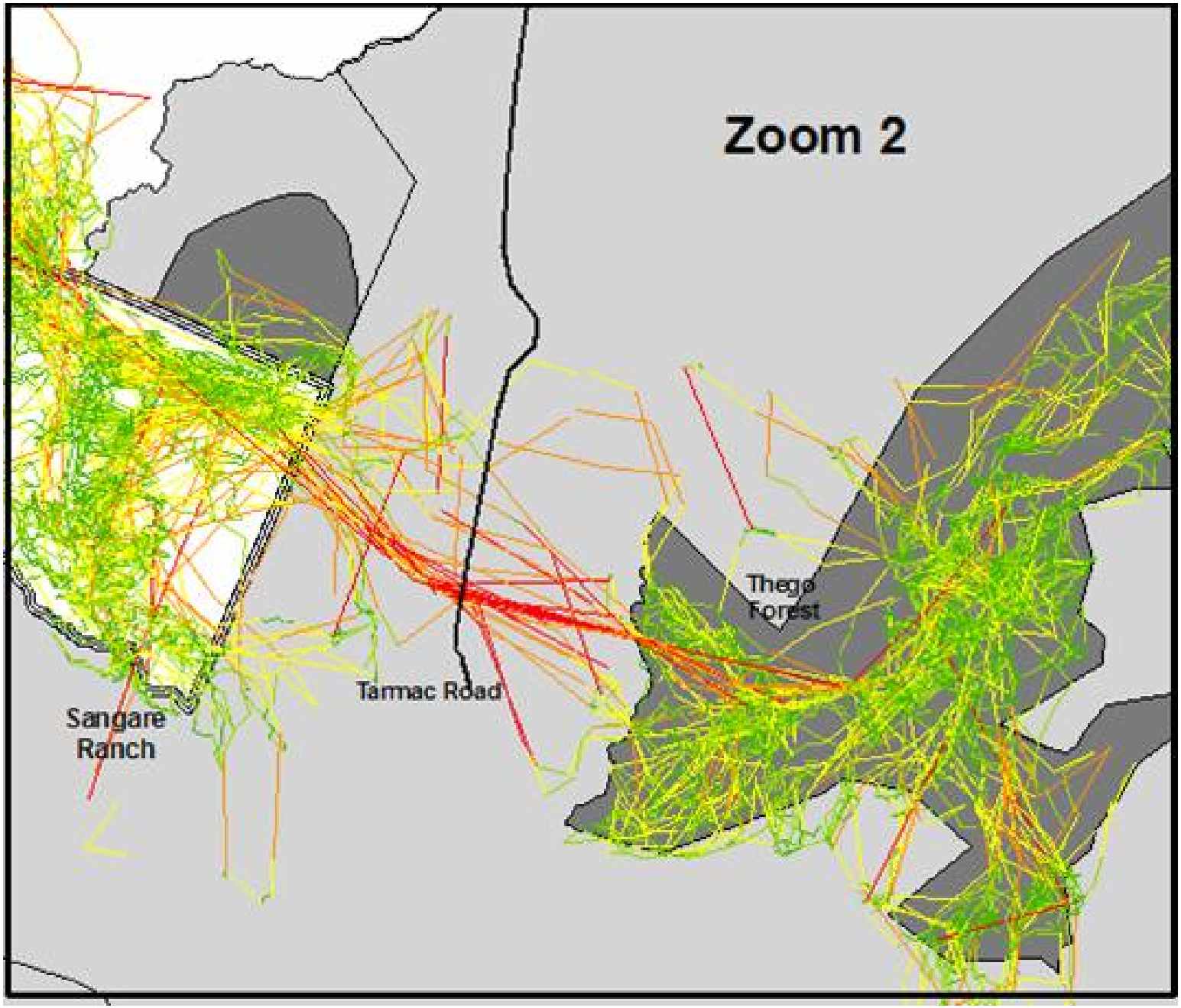
April 7 2003



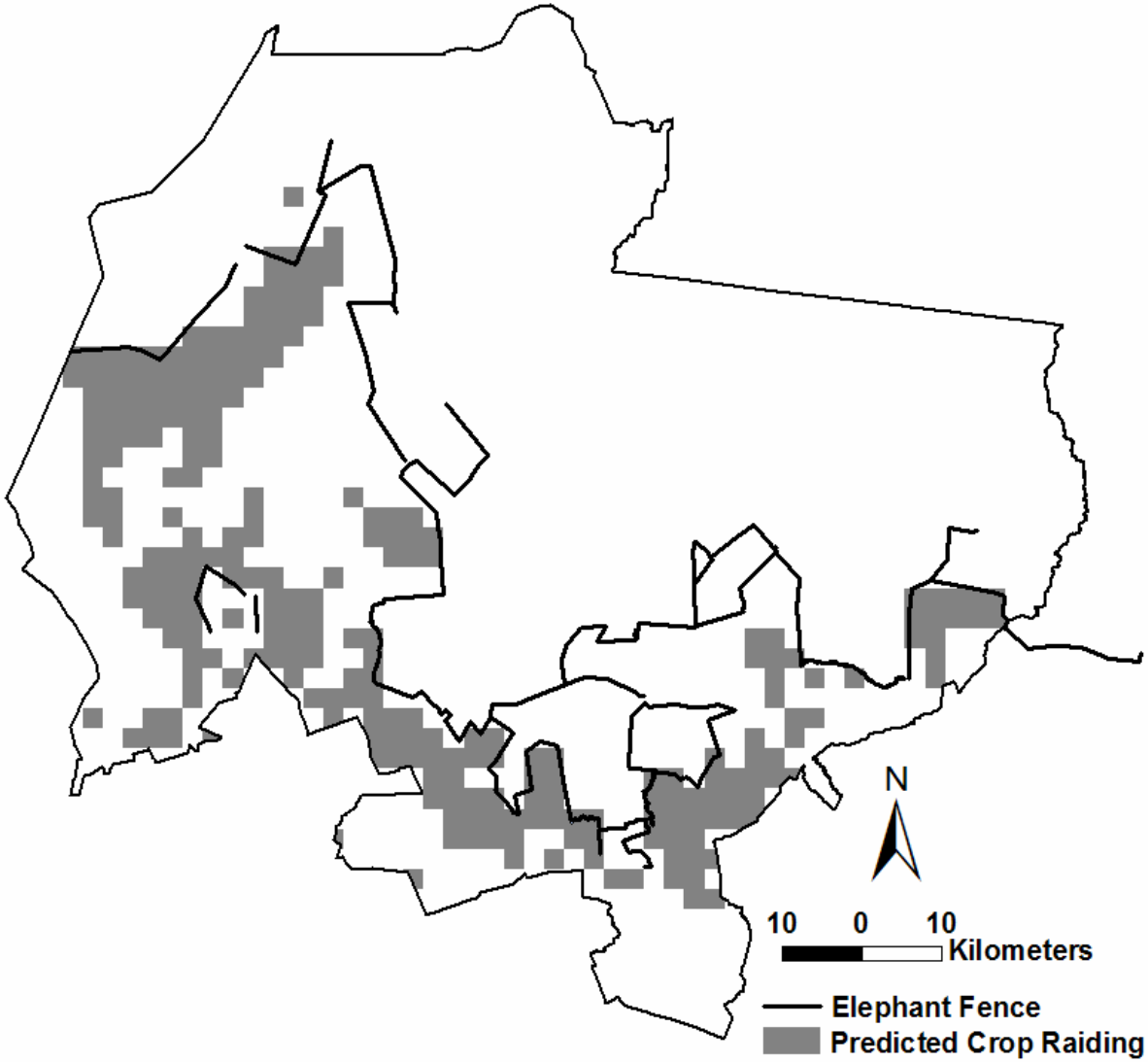

Elephant crop raids in Laikipia
2003-2004
N
Laikipia
Nature
Conservancy
Rumuruti
Rumuruti
Forest
Nyahururu
Mutara
Mpala
Ol Jogi
Mukogodo
Forest
Borana
Lewa
Ol Pejeta
Nanyuki
Sollo
urban
Game barriers
0
20
40
Kilometers
Crop Raids
0
1 - 10
11 - 50
51 - 150
151 - 494
Property boundaries

e-Fence Early Warning




Zoom 2
Thegé
Forest
Tarmac Road
Sangare
Ranch

Model results showing probably occurrence of crop-raiding with the district-wide proposed fence line



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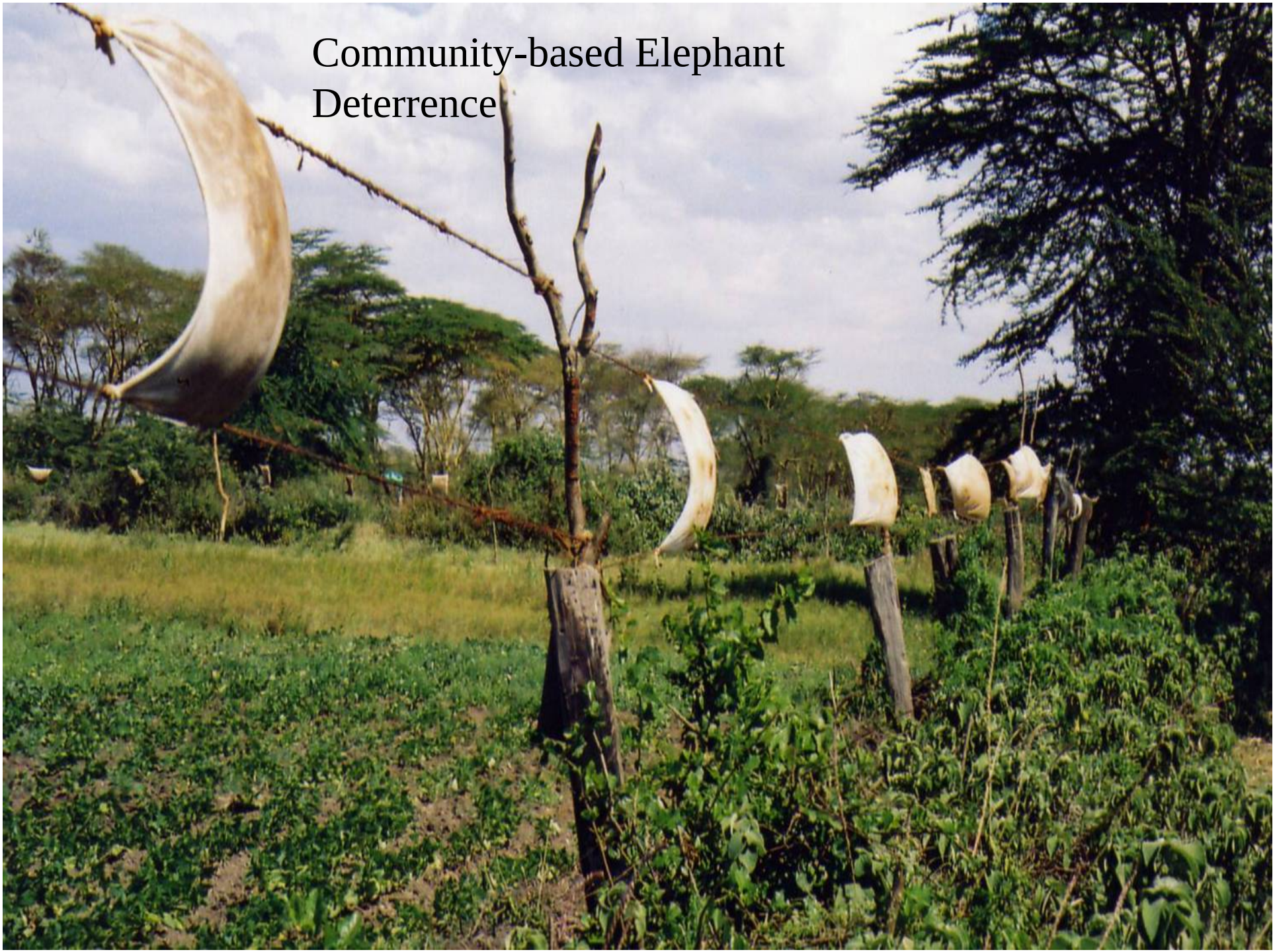
Community-based Elephant
Deterrence

Alternative livelihoods: elephant deterrence crops

Chillies

Honey

Mukogodo Womens Group: making elephant dung paper

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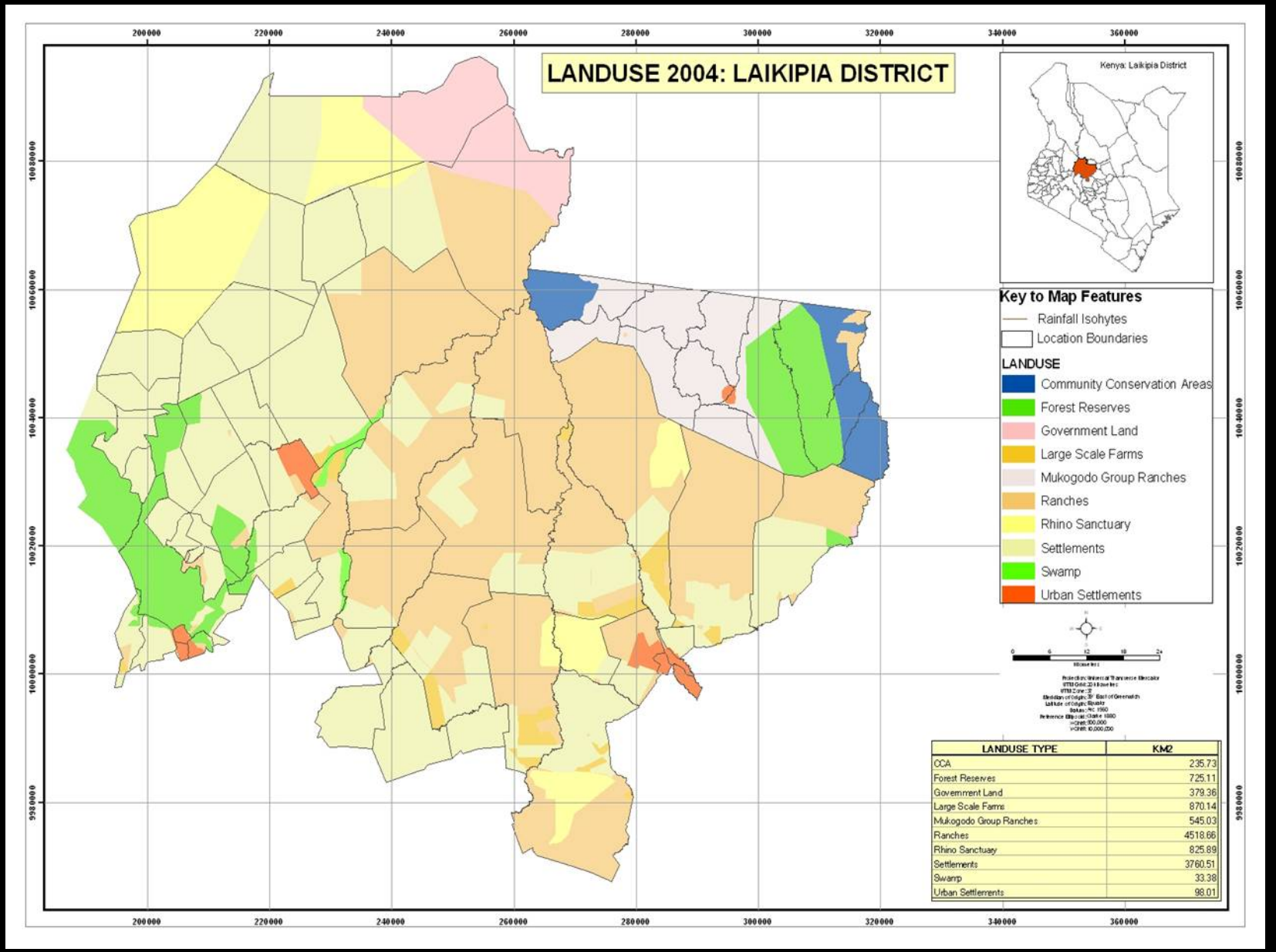
KUISHI PAMOJA

TO LIVE TOGETHER

Theatre group: elephants and the community

Laikipia Plateau, Kenya



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