



# **Work package 7: Humans, Rats and Health**

Findings to date and further work  
planned

September 2004

# Field sites

- Mapate, Limpopo Province, South Africa.
- Cato Crest, Durban, South Africa
- Lushoto, Tanzania

Further possible sites envisaged, to be discussed with in-country partners:

- Maputo, Mozambique
- Northern Mozambique (site where plague is present and rodents are eaten)
- Harare, Zimbabwe

# Collaborators in fieldwork carried out to date

- Mapate: Pfarelo Matshidze, University of Venda
- Cato Crest, Durban: Prof Suzanne Leclerc-Madlala, University of KwaZulu Natal
- Lushoto: Dr. Flavianus Magayane, SUA

# Status of research and reports

- Mapate: report completed, edited and finalized, awaiting map
- Cato Crest: report completed, edited, finalized, printed and distributed to RATZOOMAN partners
- Lushoto: draft report received 9/9/04, to be edited, finalized and printed for distribution

# Research approach

- Selection of key informant HH representative of different types of HH
- Methods: participant observation + informal interviews
- Observation of behaviour of related and adjacent households

# Mapate, Limpopo, S. Africa

- Cluster of hamlets close to Thohoyandou town
- No known prevalence of plague, toxoplasmosis or leptospirosis. Plague never known.
- Risky behaviour assessed in relation to lepto and toxo.



# Housing in Mapate

- Mapate HH usually have a number of buildings, often of different styles including thatched and modern.
- Access to thatched huts by rats is easier than to finished, well-built modern building; but modern buildings often in process of construction, with many gaps for access by rats.
- Separate buildings usually used for sleeping and for cooking, and grain is stored in sleeping huts in order to protect them better from rats.

# Mapate: notions of hygiene

- Local notions of hygiene among young relate to keeping one's body clean and among older people to keeping a tidy kitchen.
- Toilets are said to be relatively common, but many men are said to urinate 'just anywhere' and a significant number of people use the bush as a toilet.
- About half of HH questioned dispose of waste by placing it in pits, often uncovered, near the house, which attracts rodents. Other HH burnt waste.



# Mapate: local notions of disease transmission and water

- Opinion divided as whether water can carry illness - government campaigns partially effective
- Some believe that running, 'indigenous' water cannot carry disease, only contaminated water from elsewhere
- Few people boil water before drinking. Some put bleach into drinking water if there is an outbreak of disease.

# Mapate: rats and humans

- Seen as a nuisance rather than bearers of disease
- 91% of people in questionnaire survey had seen rats in house or bush
- Rats controlled using rattex or local traps called *zwilibana*
- Rats often enter sleeping rooms at night in search of stored grain and bite or lick people's hands and feet, especially if unwashed after eating
- People say most rats come in from fields and do not have nests in houses; however this may be because do not want to admit nests may be in house

# Mapate: local notions of disease transmission. Rats and witchcraft.

- Because rats are fast, they are believed to be used to bewitch others and make them ill.
- Many people, at least half of informants, believe that rats carry a mental illness called *thuri*, sent via witchcraft.

# Mapate: practices relevant to leptospirosis

- Though there is some access to standpipes, a good deal of water from rivers continues to be drunk, without boiling
- Children play in rivers and women often wash in them
- Water used for drinking and food preparation often not stored properly covered
- Raw and cooked food often left in the open, uncovered, accessible to rats
- People's hands are often licked or bitten at night by rats, due to storage of grain in sleeping huts and the fact that people do not always wash their hands after eating
- Food is often regularly shared with other households, and may be contaminated

# Mapate: practices relevant to toxoplasmosis

- Hunting is very common and wild animals are regularly eaten; they are roasted and not always well cooked
- Cats are regularly cuddled, particularly by children
- Raw or cooked meat is often left in the open, uncovered, accessible to cats and in potential contact with cat faeces either directly or via cats' paws
- Hunted meat may be shared with other households and may carry toxoplasmosis

# Mapate: recommendations

- Build on relatively high levels of social cohesion by improving employment and livelihoods
  - To reduce levels of hunting and consumption of wild meat
  - To enable people to improve levels of hygiene and quality of housing
- Improve access to clean water for drinking and washing
- Improve awareness of leptospirosis and toxoplasmosis and other illnesses transmitted through current practices, using appropriate media including FM radio and print media

# Cato Crest, Durban, S. Africa

- Squatter settlement with some more formal areas, close to centre of Durban
- No known incidence of leptospirosis, toxoplasmosis or plague
- Plague could enter via port



# History of Cato Crest

- Cato Crest is one of six informal settlements in Cato Manor 7 kms from business district of Durban
- 1980s most recent settlement after eviction of black residents under apartheid
- First area to be re-inhabited was the upper ridge, Cato Crest. 97 hectares of land, now home to 20,000 people, of many origins but with Zulu predominating.



# Housing in Cato Crest

- Most houses informal, of wattle and daub, wood and plastic, or concrete block. Many homes combine these.
- Homes consist usually of one building, with 1 or 2 rooms.
- 'Smartie' houses in Area 9 are better built, solid 3-room concrete houses.
- Only 'smartie' houses have piped sewerage. Toilets are pit toilets often shared with other houses
- Physical environment is moist and dirty.

# Health in Cato Crest

- Illnesses are common among Cato Crest residents.
- Local clinic reported 55% of patients had HIV/AIDS related illnesses, 30% had TB and 15% had diarrhoea related illnesses.
- High rates of malnutrition reported among children.
- Informants for study reported that diarrhoea, skin sores, influenza and colds were common.

# Concepts of illness in Cato Crest

- Beliefs about internal 'dirt' a fundamental aspect of beliefs about illness among Zulu.
- Illness also believed to be brought about through witchcraft medicine (*umuthi*). Transmissible through both rats and cats.
- Illnesses not believed to be treatable only by modern medicine; frequent recourse to traditional healers, who deal with the 'curse' placed by a witch, which is causing illness.
- Many, perhaps most people have heard of plague but none had heard of toxoplasmosis or leptospirosis

# Notions of hygiene in Cato Crest

- Local notions of hygiene rooted in idea of internal dirt, not external dirt.
- Emphasis on tidiness rather than removal of external dirt.
- High level of awareness of need to wash hands before preparing food, but not before eating.

# Rats and humans in Cato Crest

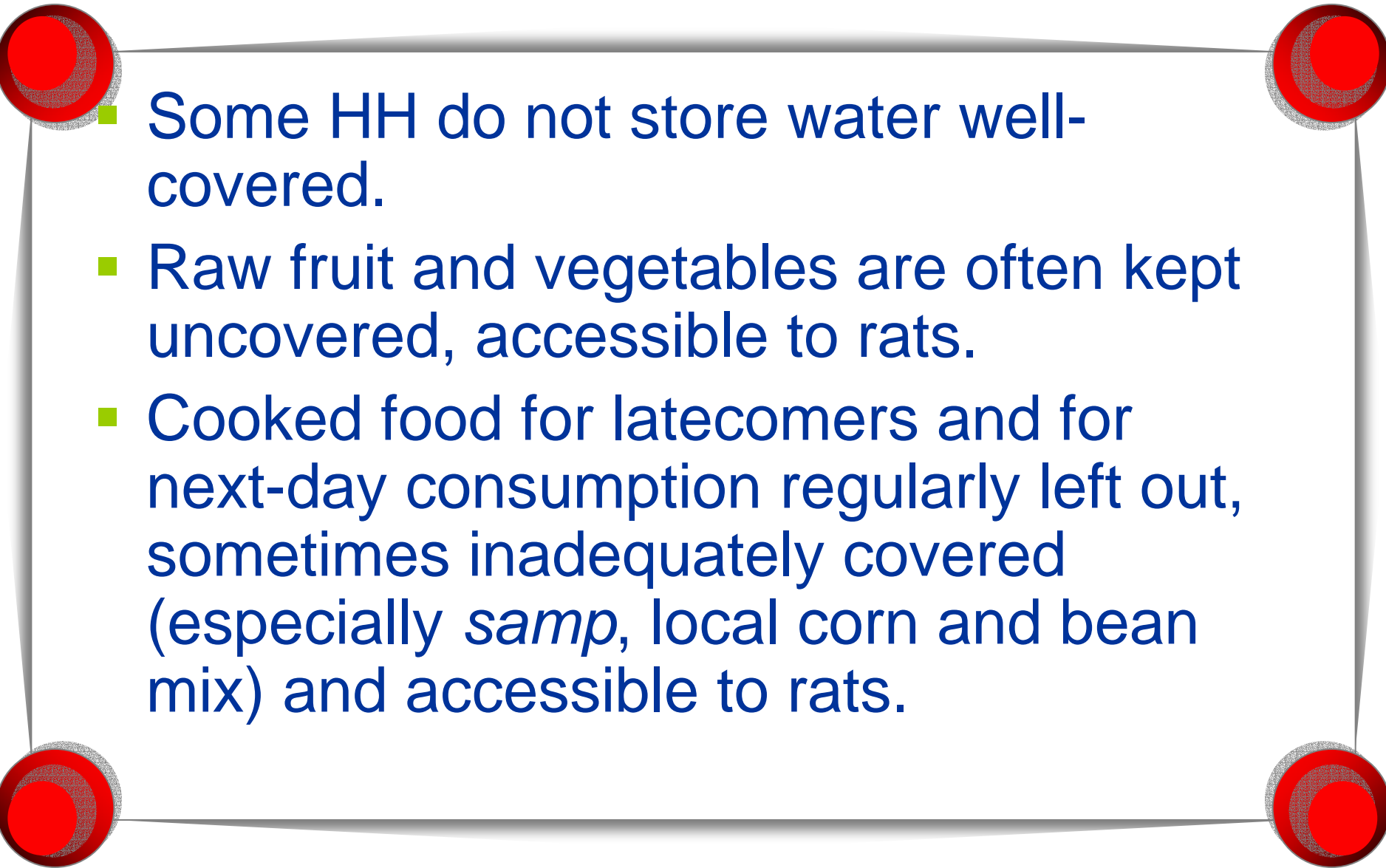
- Rodents are ubiquitous in Cato Crest. Mainly Norway rat and house mice.
- Seen as competitors for scarce resources.
- Especially a problem at night. Reported as trying to get into water containers.
- Control through rattex and traps. Man's job if there is a man. Norway rats said to be very difficult to either trap or kill with rattex poison.
- People say they do not eat rats; but given high levels of malnutrition it is possible that young boys do.

# Cato Crest: practices relevant to plague

- Fleas are common, particularly in poor houses; not so common in better 'smartie' houses.
- Rodents and hunted meat not eaten. Purchased meat usually roasted on braii. However said to be well cooked. High prestige food; not shared.

# Cato Crest: practices relevant to leptospirosis

- Clean piped water now available for drinking and food preparation
- However regular contact with standing water, particularly children
- Children play in the river
- Children in particular go barefoot

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- Some HH do not store water well-covered.
  - Raw fruit and vegetables are often kept uncovered, accessible to rats.
  - Cooked food for latecomers and for next-day consumption regularly left out, sometimes inadequately covered (especially *samp*, local corn and bean mix) and accessible to rats.



# Cato Crest: practices relevant to toxoplasmosis

- No hunting and no evidence of consumption of rodents, wild meat or improperly cooked meat.
- Cats common and presence is tolerated, even welcome.
- Children often cuddle cats.
- Cat urine believed to be an antidote to witchcraft by Zulu; possible that collected and used for this purpose though this study not able to investigate this.

# Cato Crest: recommendations

- Overcome high levels of apathy and resignation associated with low levels of social cohesion and enable people to improve hygiene standards by improving living standards and employment
- Use appropriate media to increase awareness of leptospirosis, toxoplasmosis and potentially plague, spread through current practices. These include ILANGA and UmAFRIKA, Zulu-language newspapers, and UKHOZI FM, Zulu language radio station.

# Lushoto, Tanzania: some early results

- Mountainous area, one of 6 districts of Tanga region
- Population of 419,970.
- 7869 reported cases of plague with 8% deaths as of Dec 02
- Probably larger number since cases often not reported



# Field sites in Lushoto

- Plague first documented in Lushoto in 1980, but probably occurred earlier, in 1970s.
- Fieldwork carried out in three villages:
  - One had experienced plague in last 10 years (Lukozi)
  - One experienced plague up to 1990 but not since then (Ubiri)
  - One has had low levels of plague since 1980 (Mbuzi)

# Lushoto: awareness of plague

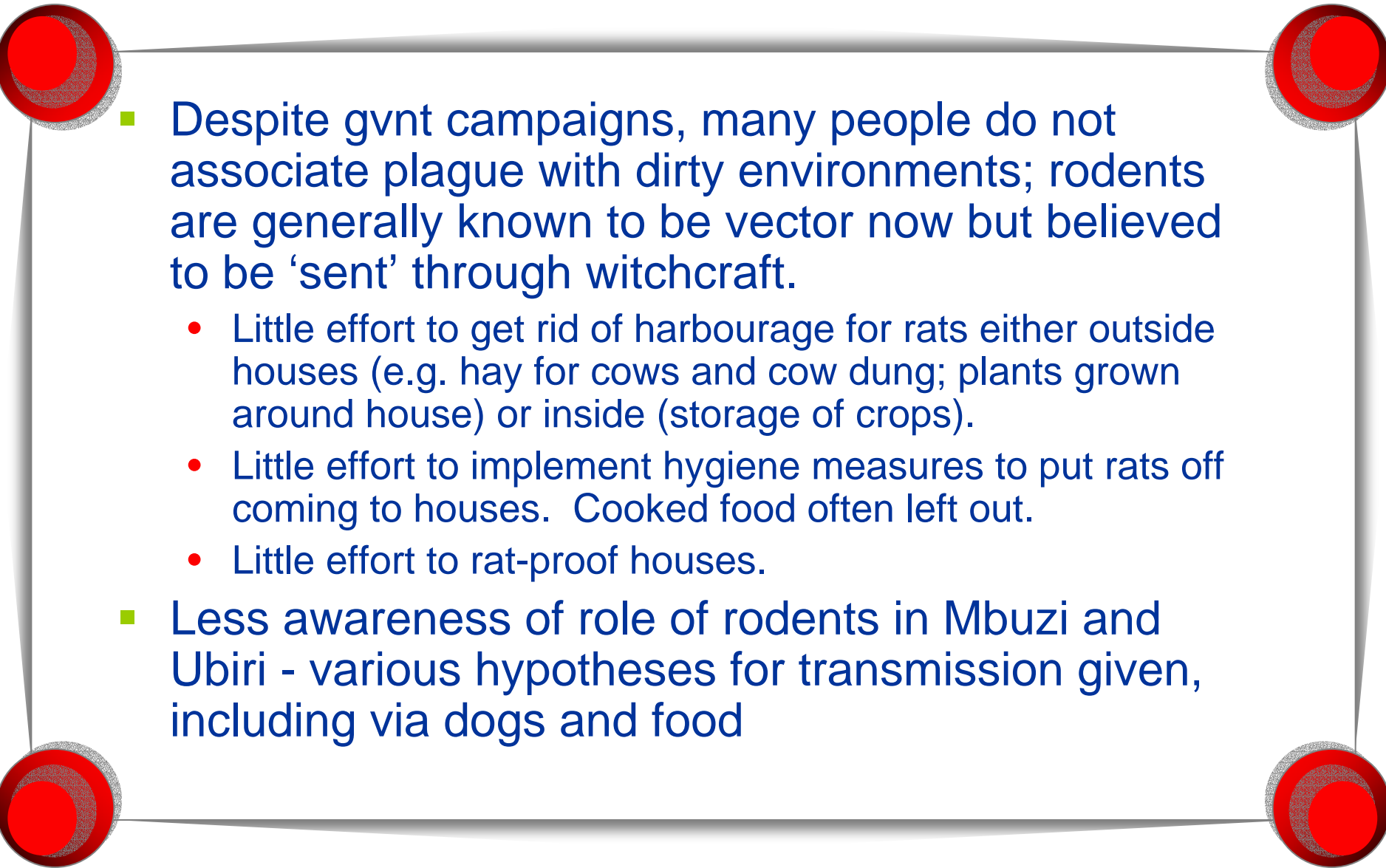
- Study focused on practices and beliefs associated with plague with some data gathered relevant to toxoplasmosis and leptospirosis.
- In Lukozi village, where plague currently exists, informants well aware of symptoms of bubonic and pneumonic plague and of aetiology of illness. Less awareness in Ubiri where it no longer occurs and in Mbuzi where it has not occurred.

# Lushoto: leptospirosis and toxoplasmosis

- No local awareness of these diseases.
- No evidence that wild rodents are eaten was gathered but it is possible that this takes place.
- Rats common and almost certainly urinate in vicinity of houses.
- Cats are common and can easily gain access to houses. Spontaneous abortion reported in Ubiri and Mbuzi.

# Lushoto: local beliefs about transmission of plague

- Witchcraft. Some informants believed plague was in fact *kuvunja vyungu* ('breaking a pot') - an illness caused by a jealous woman - or *usinga* (tail end of a wildebeest, worn by traditional healers).
- There is now understanding that it comes via rodents, but witchcraft still implicated. In Mbuzi belief that a local chief (*zombe*) sent plague first through rodents, by witchcraft.
- Forest rats believed to be most dangerous, infecting rats in the house. Fleas from these rats believed to infect people with plague. Infected rats said to have 'twisted legs' (stagger?).

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- Despite gvnt campaigns, many people do not associate plague with dirty environments; rodents are generally known to be vector now but believed to be 'sent' through witchcraft.
    - Little effort to get rid of harbourage for rats either outside houses (e.g. hay for cows and cow dung; plants grown around house) or inside (storage of crops).
    - Little effort to implement hygiene measures to put rats off coming to houses. Cooked food often left out.
    - Little effort to rat-proof houses.
  - Less awareness of role of rodents in Mbuzi and Ubiri - various hypotheses for transmission given, including via dogs and food



# Lushoto: seasonal incidence of plague

- Rats come into houses to seek food between June and Dec, when there are no crops in the fields.
- During this period people are bitten more frequently by fleas.
- This is the period when plague is most common.

# Lushoto: differences in incidence within villages

- Higher incidence among women and small children
  - They tend to sleep on the floor and are more vulnerable to rats
  - At births, deaths and weddings esp. female guests and children sleep on the floor
- There is a higher incidence of plague among young boys and girls, but esp boys and esp poorer youngsters
  - Both girls and boys between 6 & 13 stay in *bweni*, dormitories, which are dirty and heavily rat-infested
  - Boys, and poorer youngsters, more likely to stay in *bweni*
- Poorer households built closer together, less well-built, less rat-proof, and surrounded by vegetation and often waste - higher incidence of plague

# Possible reasons for differences between villages in Lushoto

- Hypothesis that plague entered Lushoto because of heavy deforestation (Kilonzo).
- Lower incidence in Mbuzi and Ubiri than in Lukozi may be because they have warmer weather and less forest nearby than Lukozi.
- Local people believe this significant.
- Land shortages in Lukozi mean that fields are close to houses.

# Lushoto: Health-seeking behaviour

- Because plague believed to be caused by witchcraft, people often seek help from traditional healers, and may die.
- Those who go to government clinics often go after traditional treatment fails
- Quarantine imposed by community leaders but often broken so that traditional healers can enter houses,

# Lushoto: Traditional healers and plague

- Both male and female traditional healers interviewed as part of study.
- All knew symptoms of plague and that it was associated with poor hygiene and presence of forests and bushes near village. Some aware of role of fleas.
- Most said that they could treat plague; some said they would refer patient to hospital.



# Lushoto: obstacles to lowering incidence of plague

- Belief that it is caused by witchcraft,
  - Even if people believe it is caused by rats, they do not implement hygiene measures to keep rats out
  - Do not maintain quarantine
- Local health workers administer inadequate doses of medicine
- Fire-fighting, unsustainable approach on part of health authorities to outbreaks of plague. Use of chemicals on temporary basis rather than introducing sustainable changes in daily practice.

# Lushoto: recommendations

- Understand local beliefs, and bring in traditional healers and *zombe* chiefs to cooperate in intervention programme
- Hold meetings within villages to plan interventions
- Determine feasible and sustainable changes in daily practice to reduce levels of rat infestation and of exposure to rats and fleas