# FIRM-GLFTCA

Fence Interface Research and Monitoring

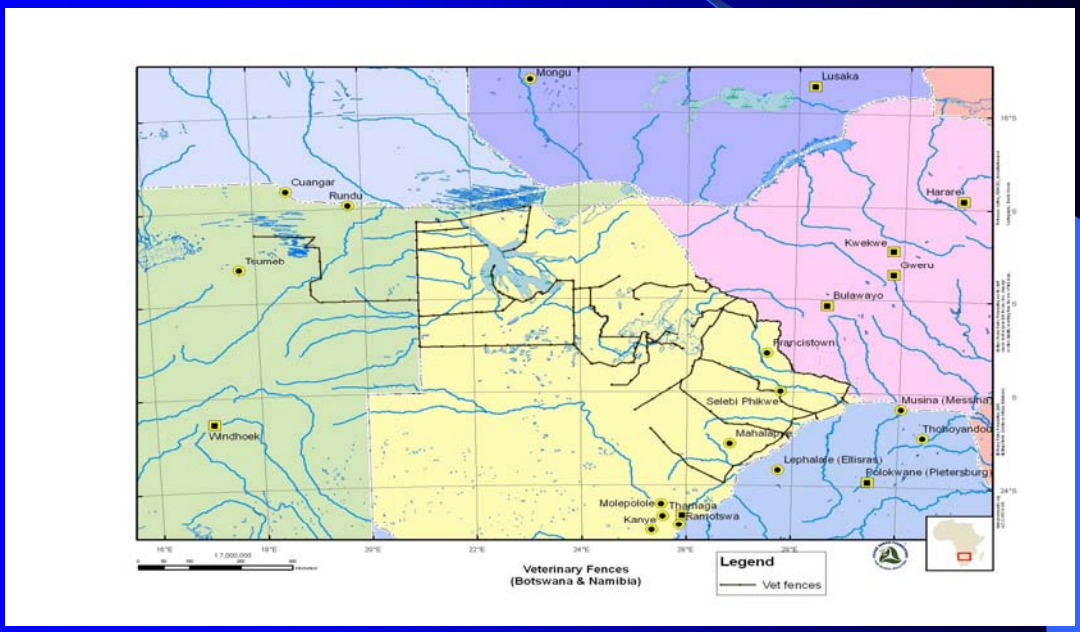
# Who is the 'FIRM'?

- Ken Ferguson : Project Executant
- SANParks : Project Leader
- WWF-SA: Project Sponsor

South African NATIONAL PARKS

WWF

# Fences are of seminal importance to conservation



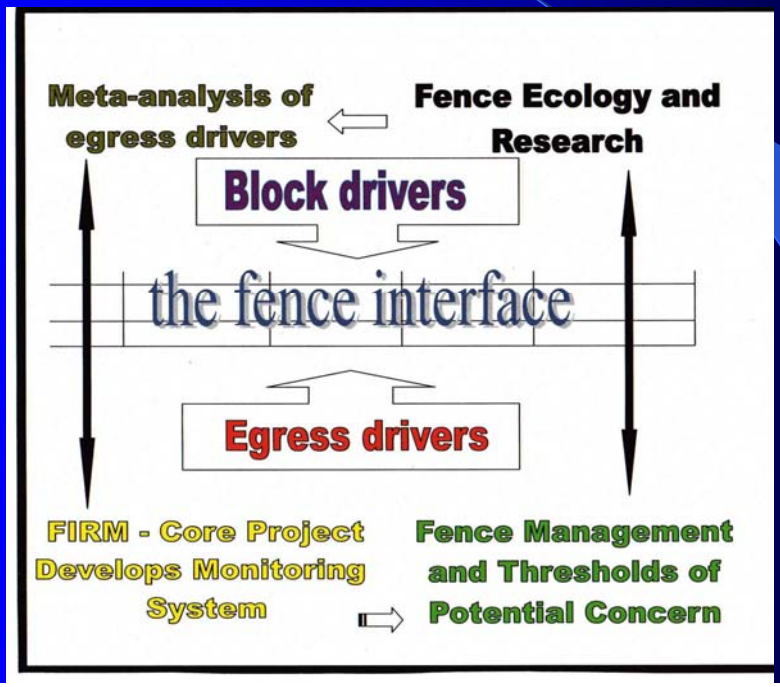

# Fences are neither good or bad!

- Fences Deter
- Fences Attract

# What are the core ideas of FIRM?

- To develop a simple cost-effective 'one-size fits all' fence monitoring system
- To define the ranging movement and challenges by large mammals across and along the fence line
- Provide novel research into the emergent ecotonal and permeable properties of the fence
- Our 'study animal' is the fence itself
- To transfer our monitoring system to other PA's
- Aid other fence interface/disease projects

# Meta-analysis of fence drivers



# What are the FIRM Methods?

ALONG/PATTERNS:FLCT

- Mini- transect FLCTs are 30x30m and span the fence
- Mega-transects FLCTs are 1km long and span the whole fence line study area
- Spoor and bio-indicators data
- Identify Ranging Permeability patterns
- HOW QUESTIONS

ACROSS/PROCESSES

- GPS/GSM Collars
- 5 elephants and 5 buffaloes
- Co-variation in species movement and 'escape' facilitation
- Least-Cost Path Analysis: measuring resistance and cost
- Identify and weighting Ranging Permeability factors/processes
- WHY QUESTIONS

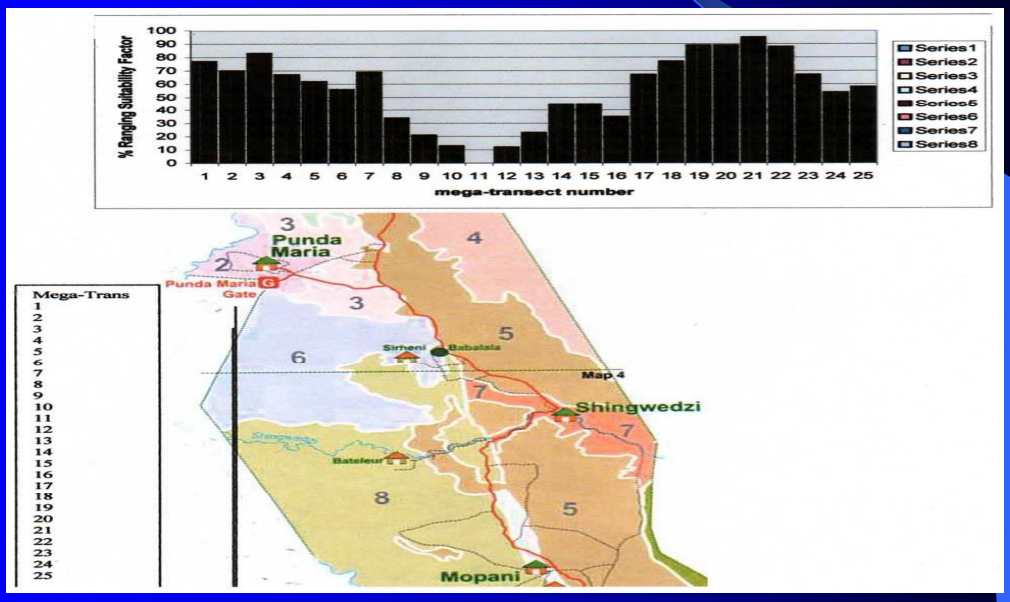
# FLCT =The core aim of FIRM

- A universal fence monitoring system
- Based on 'spoor transects', FLCTs provide much more data e.g. camera traps
- The transects will enable managers to predict patterns of egress and develop/test the efficacy of mitigation strategies such as chilli ,bees and track widening

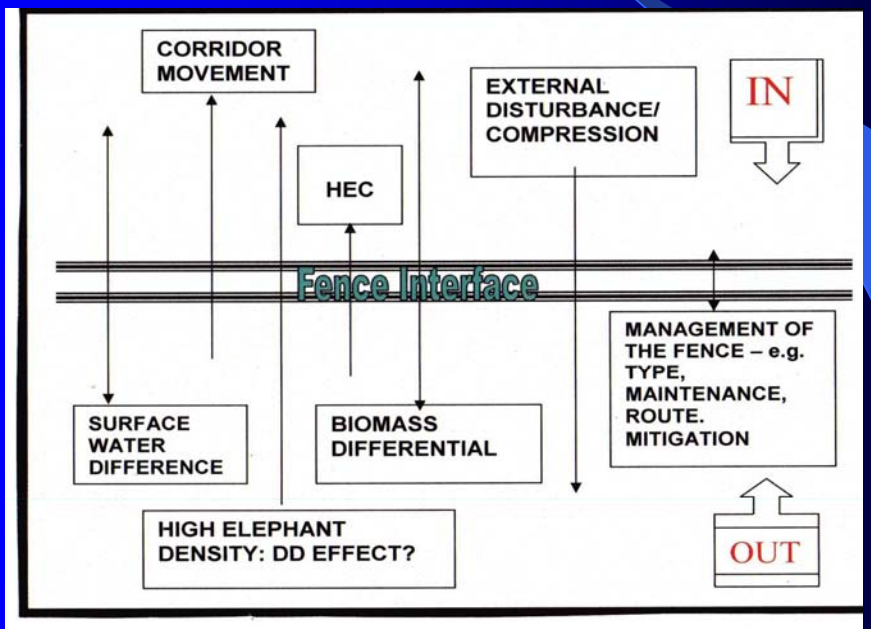
Fence Line Contrast Transects

# What will the data tell us?

## Developing Fence Permeability Profiles




# A dynamic interface: Identifying Ranging permeability factors/drivers



# What will FIRM deliver?

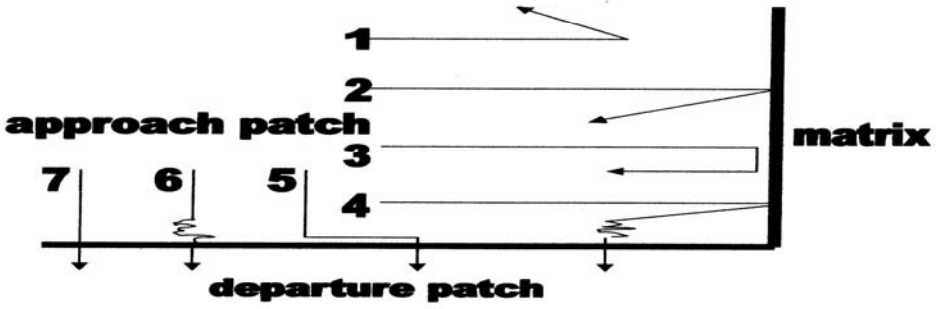
- FIRM will identify zones of high, low and no impact in relation to key drivers/permeability factors (blocking and egress) e.g. surface water, habitat types, fence type, disturbance etc.
- Help to define ‘corridors and micro-corridors’
- Deliver a seasonal pattern profile for identifying fence maintenance priorities and aid DAH/CORUS/EPISTIS in producing disease risk assessments
- PAC – insight into habitual fence challengers/offenders – elephants and buffaloes
- Aid in TPC and Mitigation development

# Q? : Why is a fence contrast monitoring system vital to AHEAD-GLTFCA?

## A = $15,500,000 Reasons!

# Fence ‘challenging’ and potential mitigation

**Figure 1**: Seven behavioural responses to a fence line (thick black line). Rules 1-3 are mediated by an external fence matrix or unsuitable internal approach patch. 1: Avoidance of fence edge. 2: Approach to fence edge with immediate retreat to patch interior. 3: Following of fence parallel path before return to the interior. 4: Rejection of fence edge followed by second cautious approach and subsequent outward movement. 5: Follow fence in a parallel pathway before departure. 6: Cautious approach to fence leading directly to entering outward patch. 7: Crossing fence edge without inhibitions (modified from Lidicker and Koening 1996).

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# Behaviour ‘drives’ disease: the AAD Model

**Figure 2**: Seven behavioural responses by elephant to fence line (thick black line) manipulation experiments . 1.Avoidance of fence track vegetation border. 2: Vegetation Border moved further back into the interior, deflection of movement path likewise. 3: Deflection by unfamiliar elephant boli, return to the interior. 4: Attraction by familiar elephant boli followed either by egress or parallel path exploration 5:Attraction to artificially placed water tank followed by exploration parallel to the fence line. 6: Attraction to artificial water tank followed by egress through the fence. 7: Deflection caused by predator scats (modified from Lidicker, W.Z. and W.D. Koening (1996). Responses of Terrestrial Vertebrates to Habitat Edges and Corridors. Chapter 5 In D.R. McCullogh (Ed.). Metapopulations and Wildlife Conservation. Island Press).