Multi-scale movements of West African buffalo

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7 mixed herds GPS tracked (-> 2 years) in W Regional Park
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7 mixed herds GPS tracked (-> 2 years) in W Regional Park

Spatial scale

Time scale

50 Km

W Regional Park
7 mixed herds GPS tracked (-> 2 years) in W Regional Park
Annual home ranges established on sections of permanent rivers

Spatial scale

Time scale

W Regional Park
Permanent rivers

50 Km

Tapoa river
Mekrou river
Niger river
Space is organised according to watersheds

- Permanent rivers
- Watersheds

Tapoa river
Mekrou river
Niger river
Annual home range (herd 1)

Spatial scale

Time scale

Annual home range

5 Km
Behaviour-based segmentation of movement data

- Time scale
- Spatial scale

**WET SEASON**
- EARLY
- LATE

**DRY SEASON**
- EARLY
- MID
- LATE

Sub-annual functional home range
Sub-annual functional home range

Annual home range
Late dry season home range

5 Km
Sub-annual functional home range (Utilisation Distribution)

Spatial scale

Time scale

Space use intensity

Niger river

2 Km
Habitat selection analyses

- Perennial grasses
- Annual grasses
- Other
3 days movement sample

- **Spatial scale**
  - Perennial grasses
  - Annual grasses
  - Other
  - 3 days movement

- **Time scale**
  - 3 days movement sample
  - Perennial grasses
  - Annual grasses
  - Other
  - 3 days movement

- **Scale**
  - 2 Km
Movement data segmentation (residence time).
Time scale

Spatial scale

Intensively used areas

3 days movement

Sub-annual functional home range

2 Km
**Time scale**

**Spatial scale**

**Sequence of movements**

**Sub-annual functional home range**

[2 Km]
Time scale

Spatial scale

- Annual home range
- Sub-annual functional home range
- Sub-annual core areas

5 Km
Time scale

Spatial scale

- Annual home range
- Sub-annual functional home range
- Sub-annual core areas

5 Km
Time scale

Spatial scale

- Annual home range
- Sub-annual functional home range
- Sub-annual core areas

5 Km
- Annual home range
- Sub-annual functional home range
- Sub-annual core areas

5 Km
Annual home range
Sub-annual functional home range
Sub-annual core areas

5 Km
Time scale

Spatial scale

Annual home range
Sequence of movements

5 Km
Address questions at scales that are behaviour-based rather than arbitrary make it possible to identify the various environmental scales at which an animal specifically reacts and the main determinants.

The main determinants in our study (whole dataset):

- **Large** scale (annual home range): *water*
- **Medium** scale (“sub-annual functional home range”): *perennial grasses*
- **Small** scale, investigations about the way buffaloes alternate between intensive and extensive search are still *under work*.

Determining the extent to which theses scales are coupled is a challenging perspective.