Camera trap survey methods for estimating changes in deer density and occurrence

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Three ways to use camera traps to detect change in deer populations

1. Relative Abundance Index

2. Occupancy

3. Density

AIM: Taste of what can be done

| Relative Abundance Index	
Data type	Repeated detections
Complexity	😎
Output	Detectability x abundance
Use	Increasing or Decreasing
Limits	Confounded, Vague
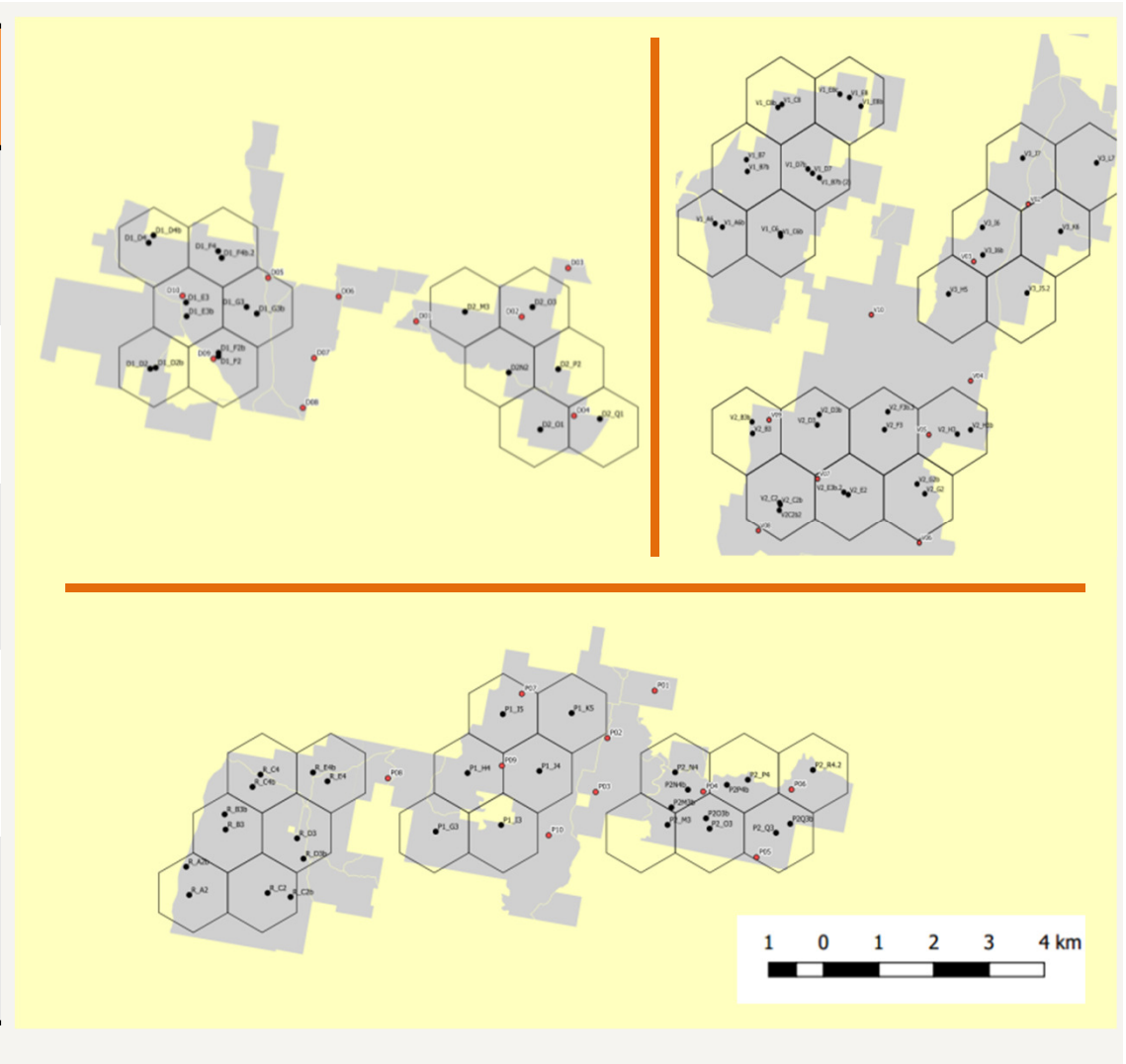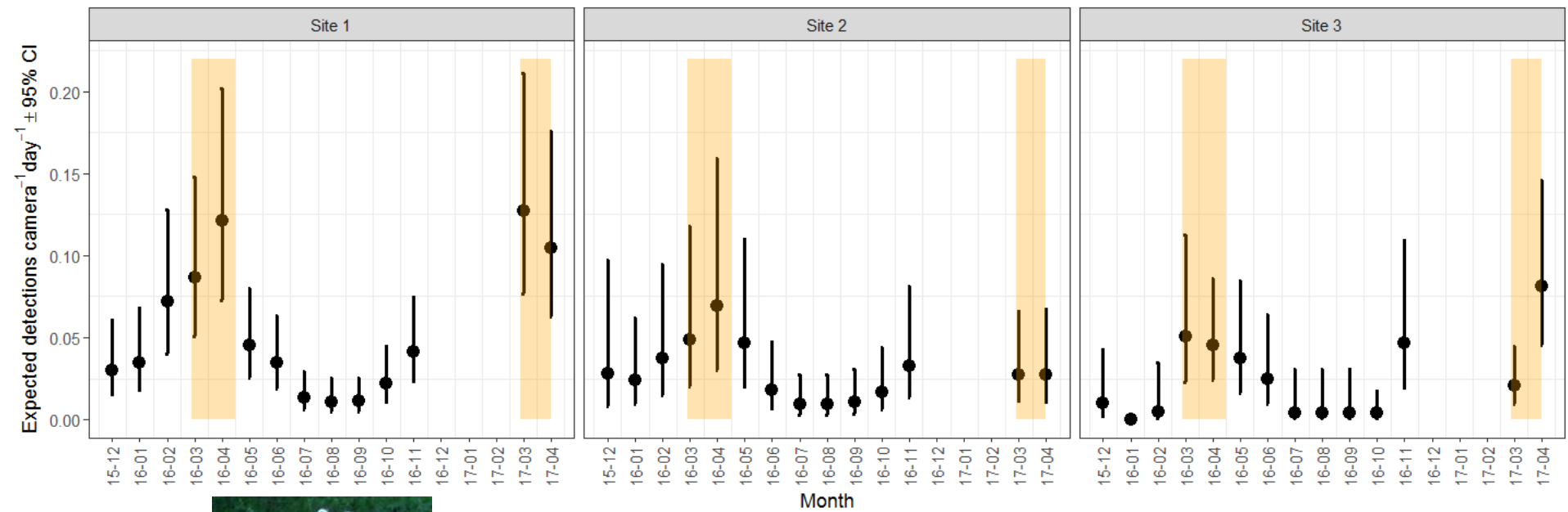
Daily fallow detections at three State Forests

Occupancy	
Data type	Repeated spatially-independent detections
Complexity	😐
Output	Area occupied, …
Use	Distribution
Limits	≠ Abundance

Feb 2016

○ 0 deer
● >0 deer

Jun 2016

Nov 2016

5 0 5 10 15 20 km
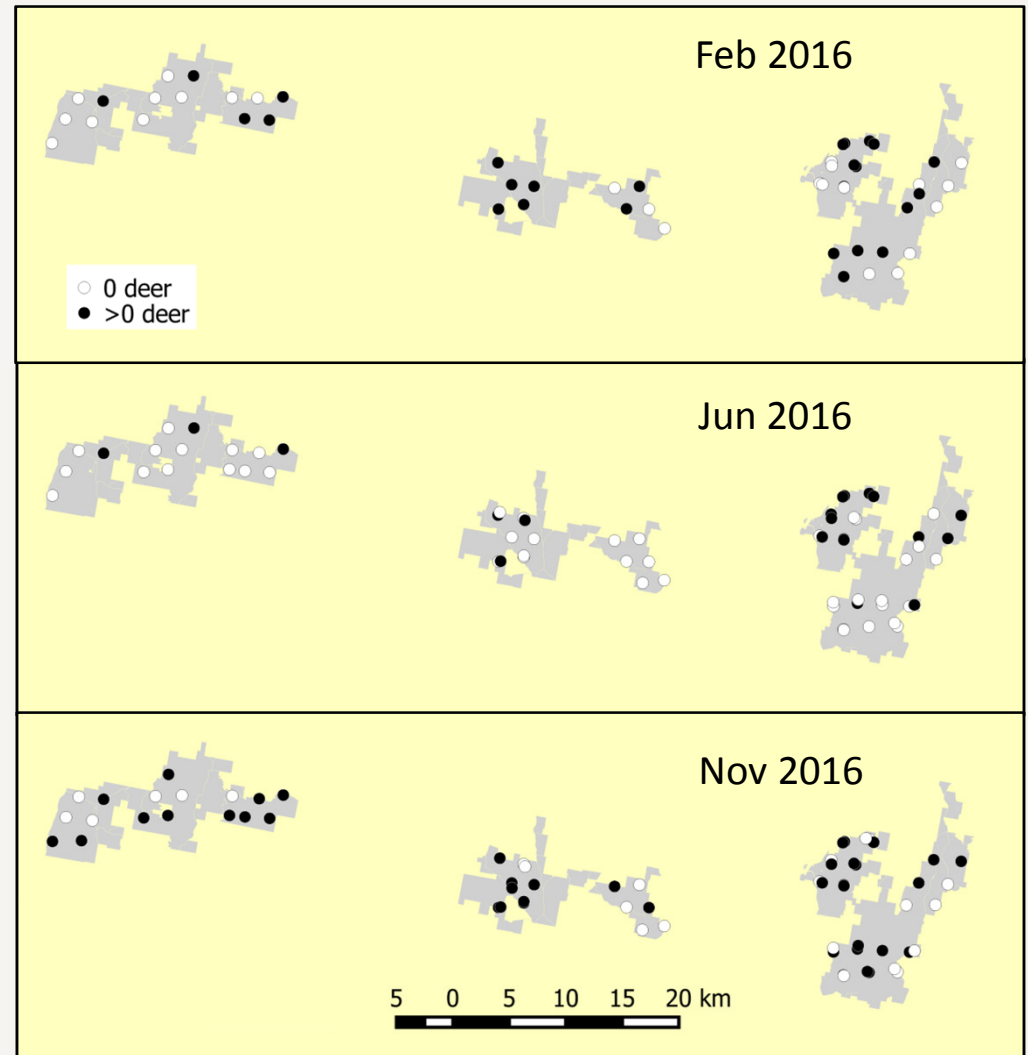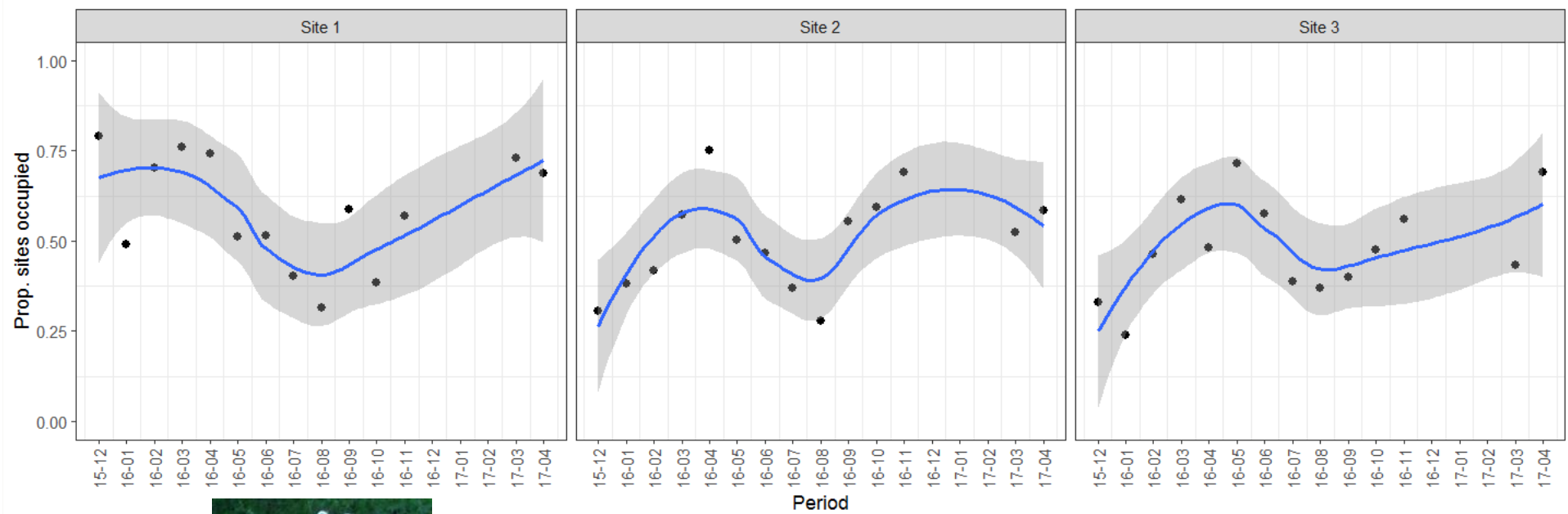
Fallow deer occupancy at three State Forests

Density	
Data type	Spatially-correlated detections ± Mark-recapture ± …
Complexity	😵
Output	Density, …
Use	How much of a difference did/must we make?
Limits	Site size, ?

- ● No deer
- ● Some deer
- ⬤ Heaps of deer

0   1.6 km
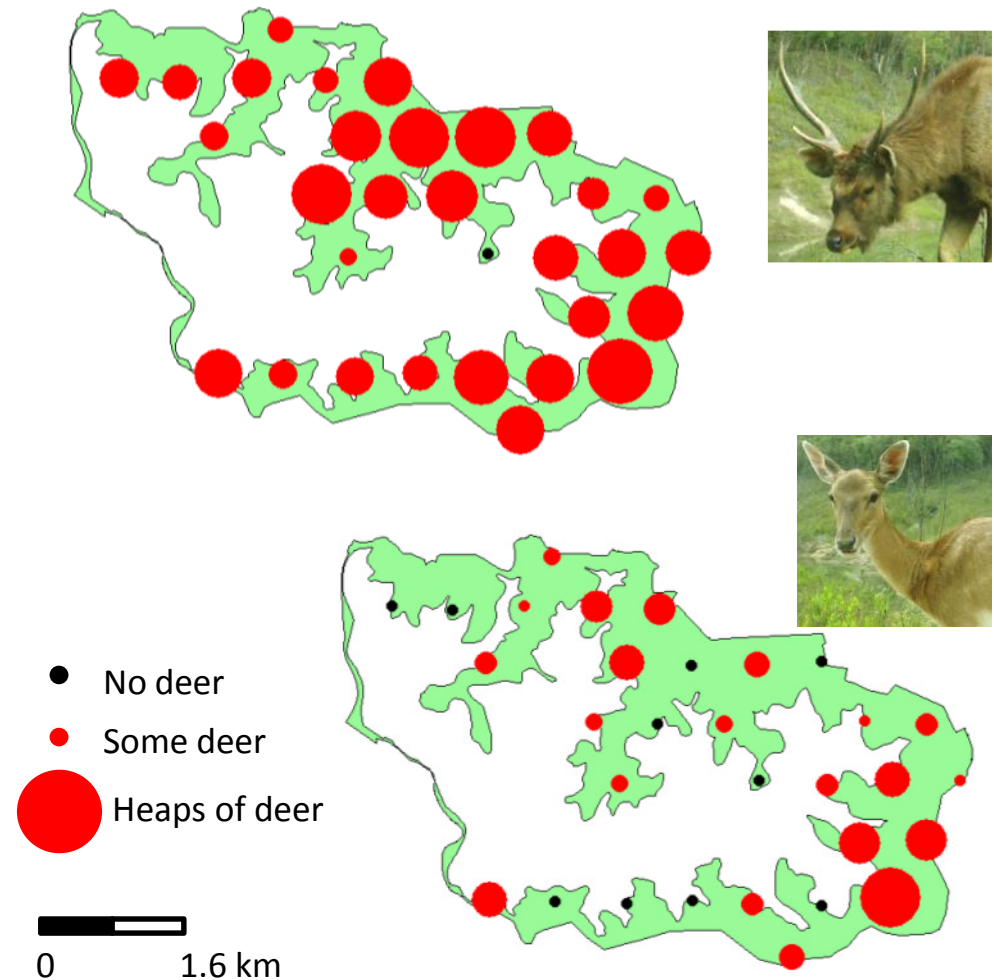
Spatial Mark-Resight

$\hat{N} = 139$
11.3 km^{-2}

$\hat{N} = 23,$
1.9 km^{-2}
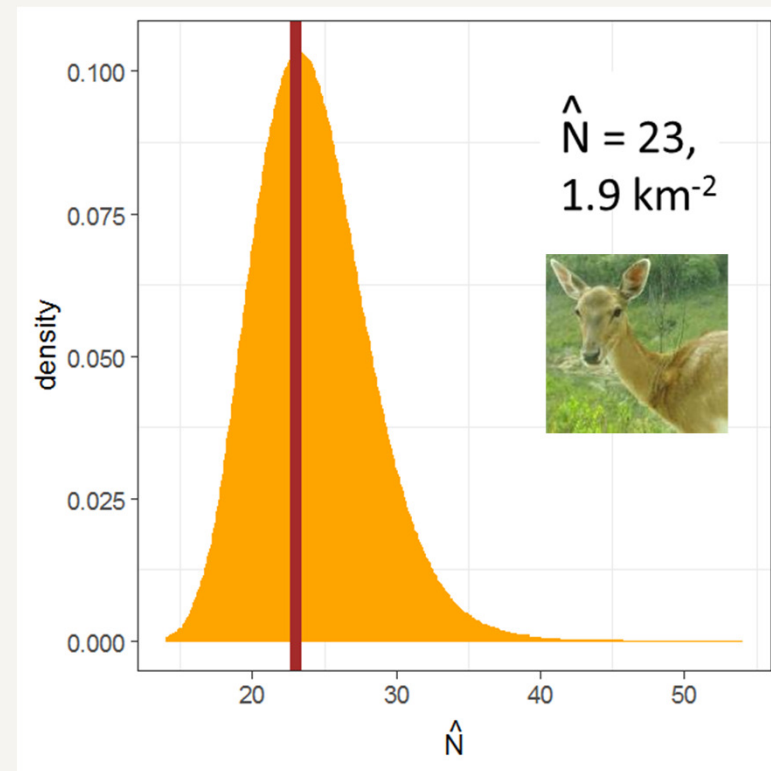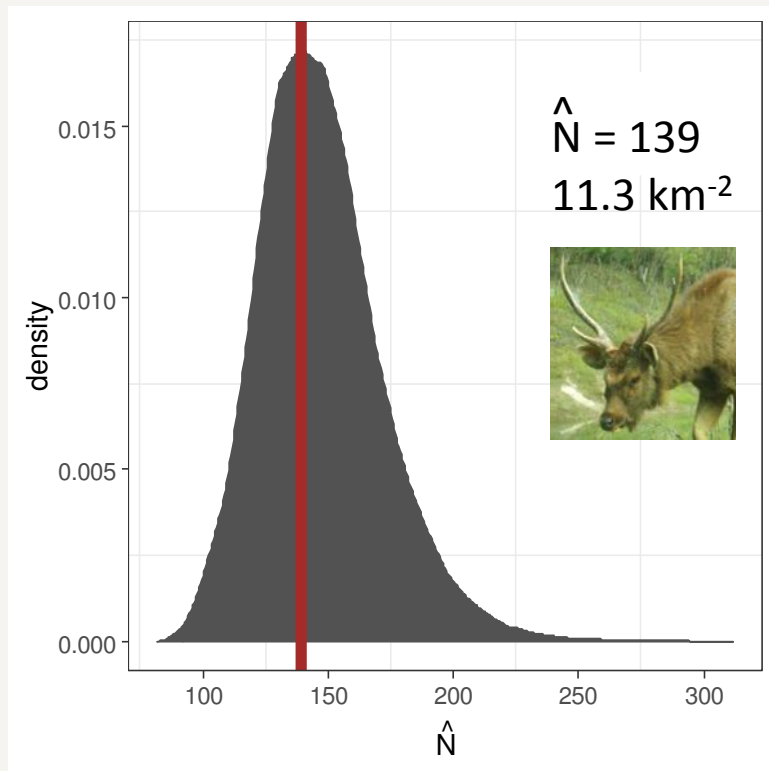
- **SMR models show promise**

- **Desired output → method**

- **Have a fallback option**

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