# Spatial Behaviour of Fallow Deer (*Dama dama*) in NSW

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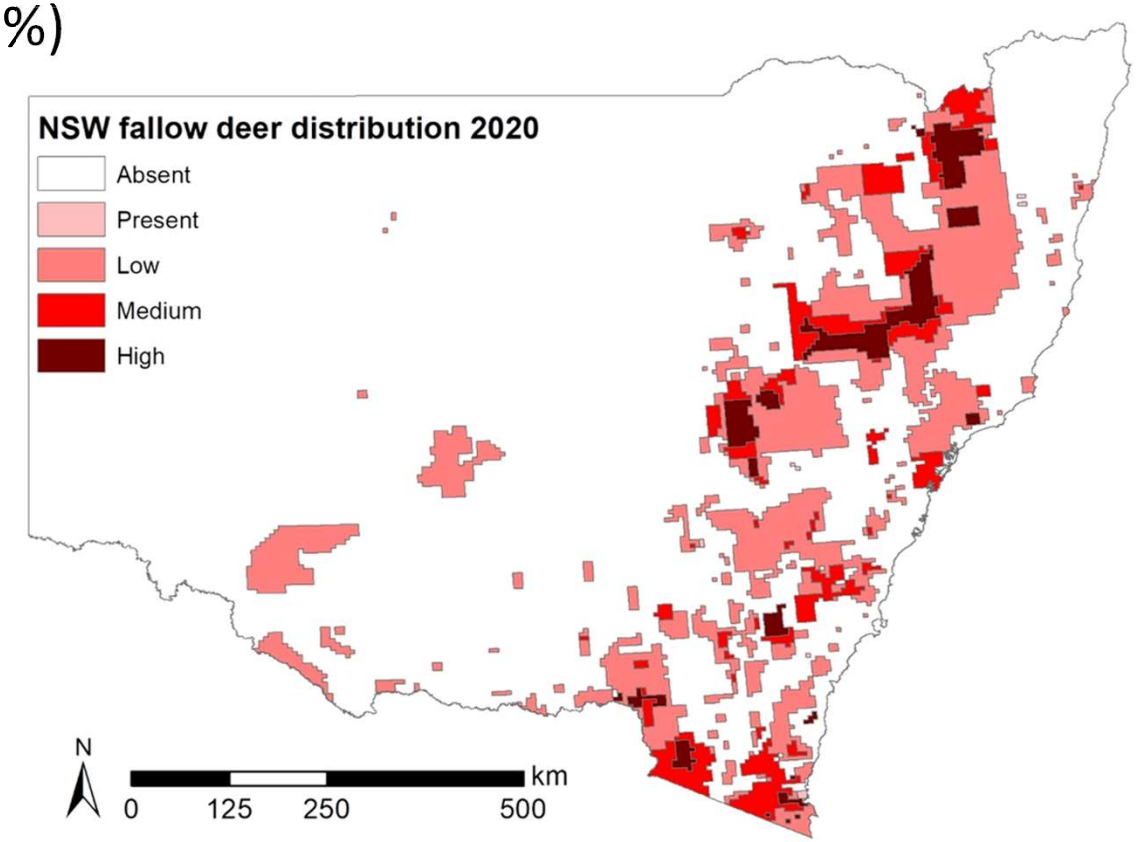
## Fallow deer NSW 2020

Present across > 135,000 km$^2$ (17%)
60% increase 2016-2020
Still spreading

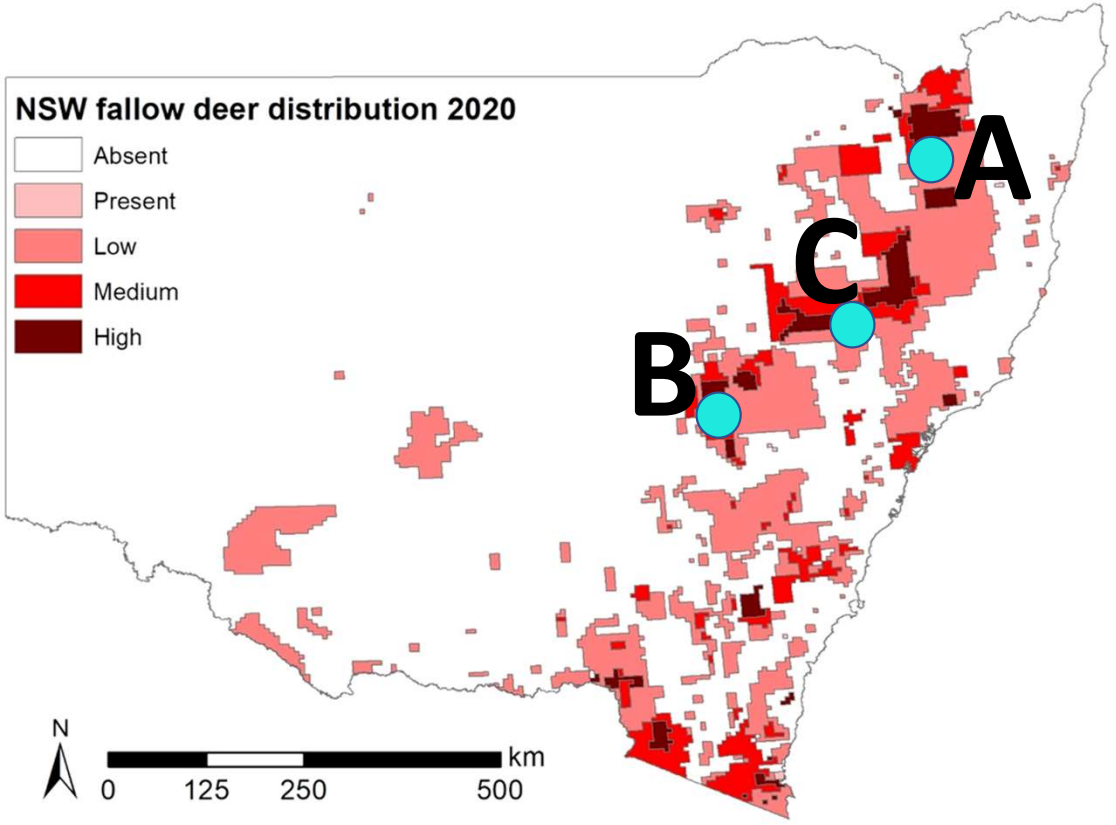



Crittle and Millynn (2020) NSW Pest Animal Mapping 2020

## Aerial net gunning

2020 – 2022

Spatial ecology
Response to aerial shoot




Bengsen et al. (2023) Evaluation of helicopter net-gunning to capture wild fallow deer (*Dama dama*)

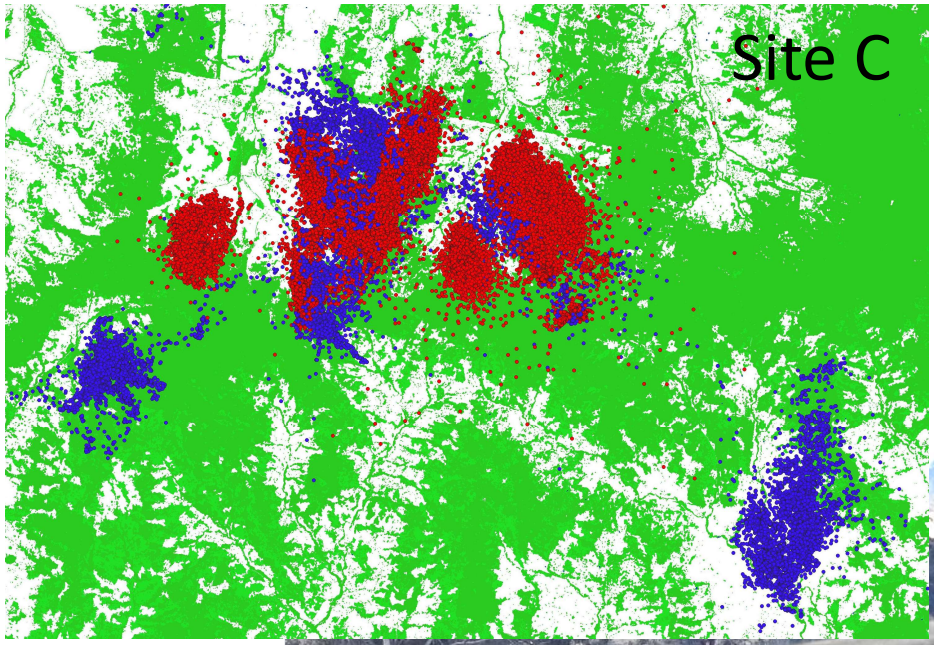
## Aerial net gunning

2020 – 2022

68(3) Fallow deer
22(3) Males + 46 Females

> 520 000 locations (hourly fixes)

Success rate 88%



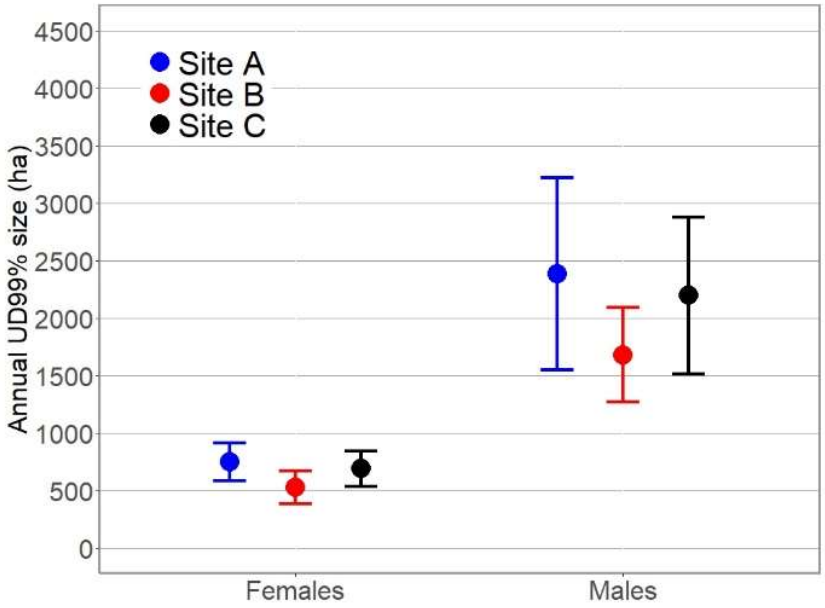

| Site | Capture | Males | Females | Duration (days) |
|---|---|---|---|---|
| A | July-September 2020<br>June 2021 | 13 | 28 | 33 - 815 |
| B | October 2021 | 5 | 8 | 163 - 668 |
| C | April 2022 | 4 | 10 | 66 - 491 |

## Spatial ecology

Annual home range (BRB99%)

Males (n=10): mean 1882 ha (range 478-3365)

Females (n=22): mean 679 ha (range 295-1131)



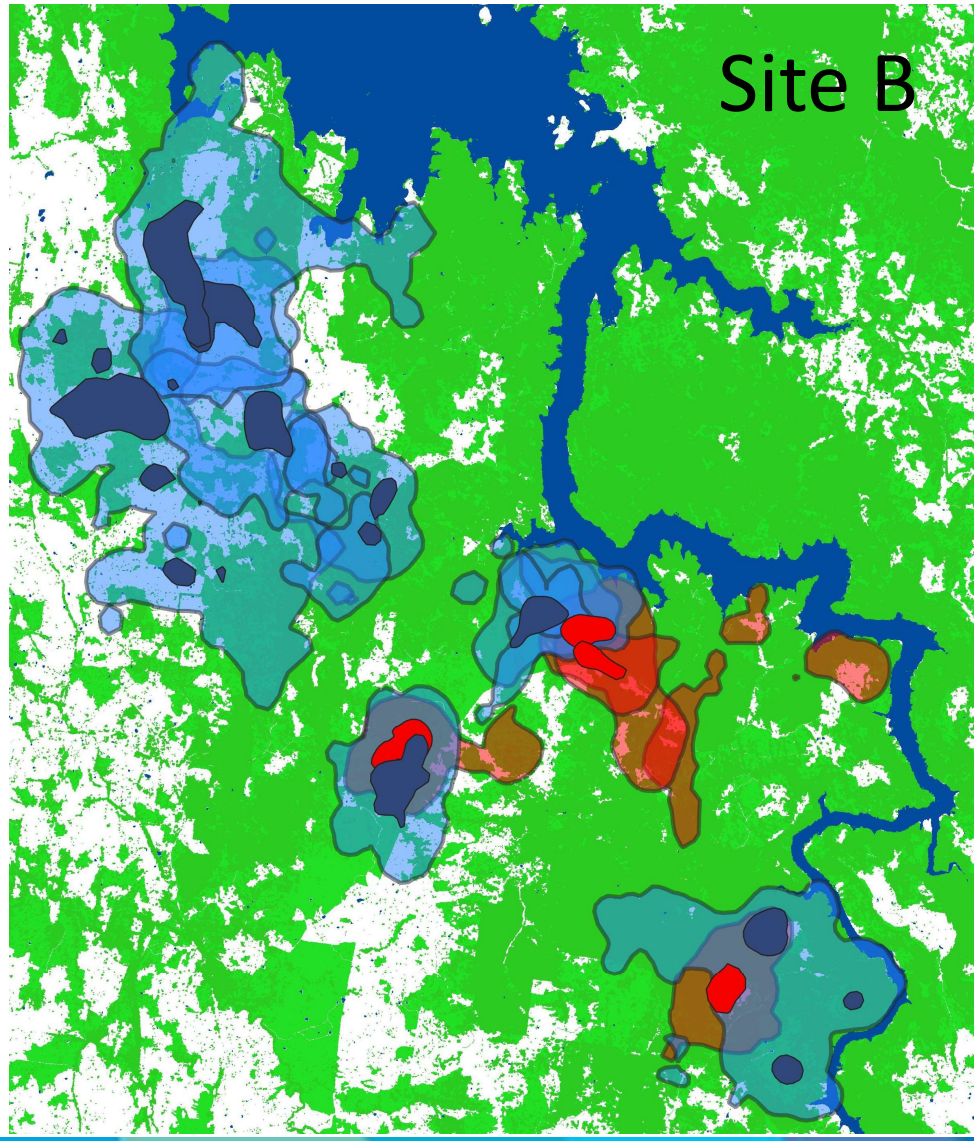
**Spatial ecology**

Annual home range (BRB99%)

Males (n=10): mean 1882 ha (range 478-3365)

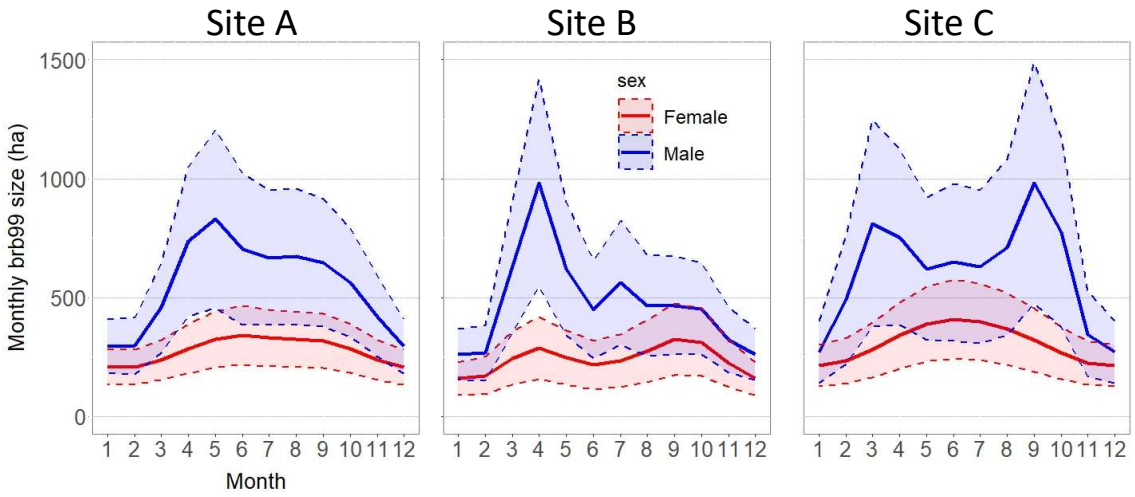
Females (n=22): mean 679 ha (range 295-1131)

Core area (BRB50%) = 10% of home range



# Spatial ecology

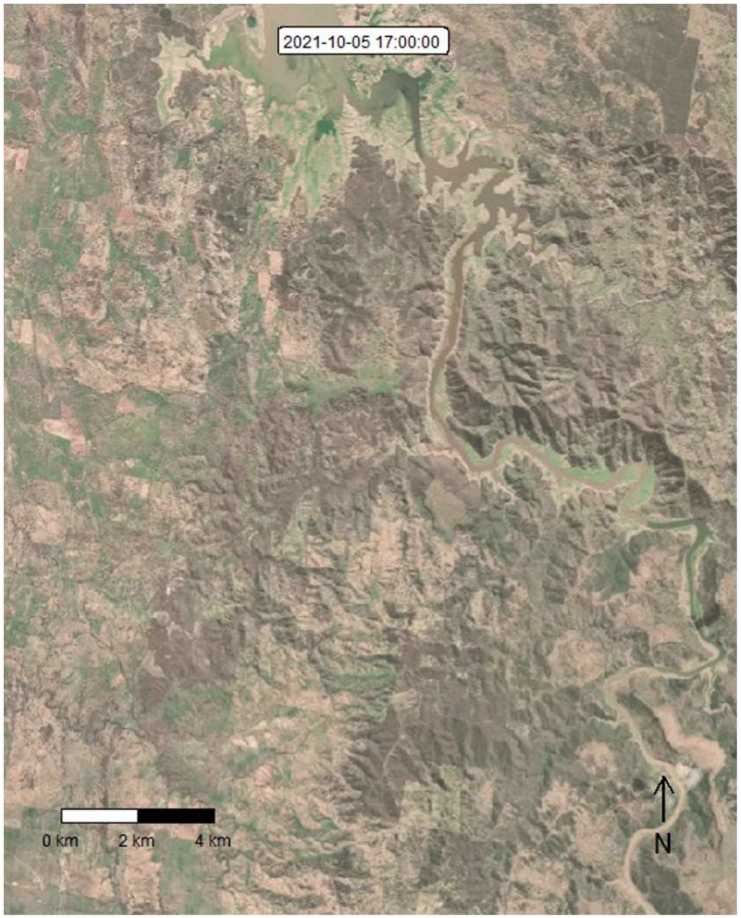
Monthly space use




To be continued…

Individual behaviour + habitat use

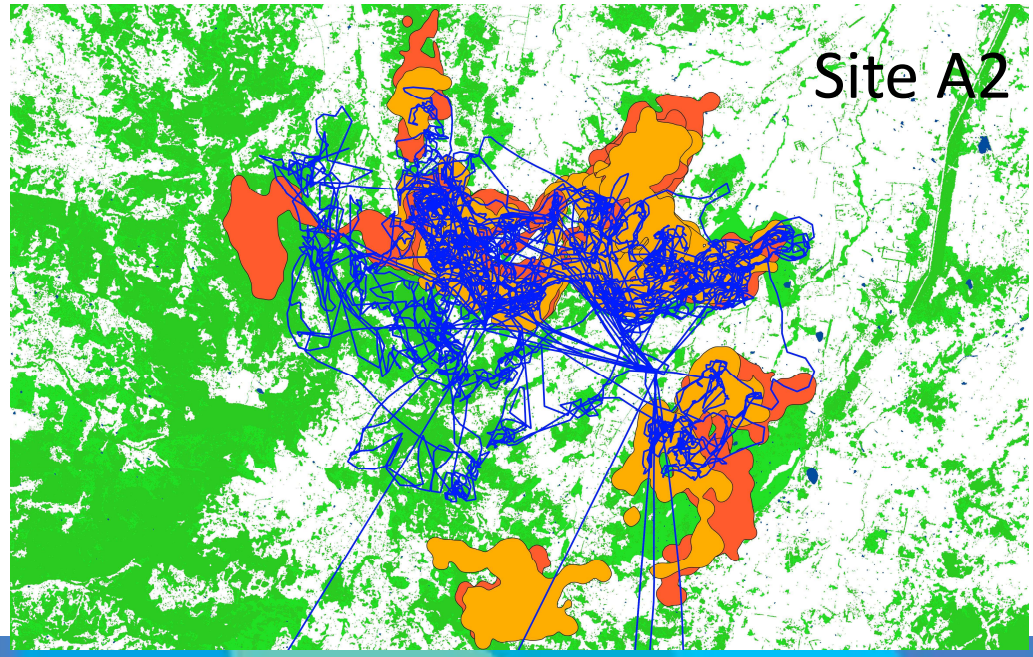
Site B: males 10/2020 – 04/2021



# Response to aerial shoot

| Operation | Date | Flight time (h) | Area ($km^2$) | Deer killed | Deer killed $km^{-2}$ | Collars |
|---|---|---|---|---|---|---|
| Site A1 | September 2020 | 24 | 135 | 778 | 5.7 | 3m, 5f |
| Site A2 | September 2021 | 19 | 135 | 1060 | 7.9 | 4m, 14f |
| Site B1 | April 2022 | 15 | 282 | 146 | 0.5 | 7m, 5f |
| Site C1 | February 2023 | 101 | 491 | 3228 | 6.6 | 3m, 9f |

Tracking data 30 days before /after shooting operations

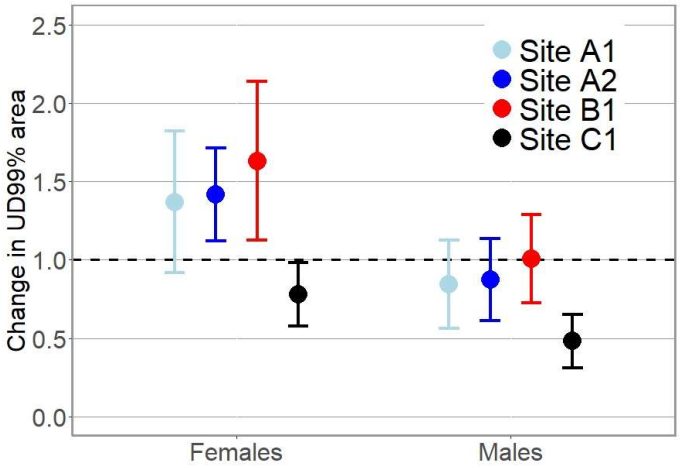


## Response to aerial shoot

**Ranging area**

Female increase monthly range

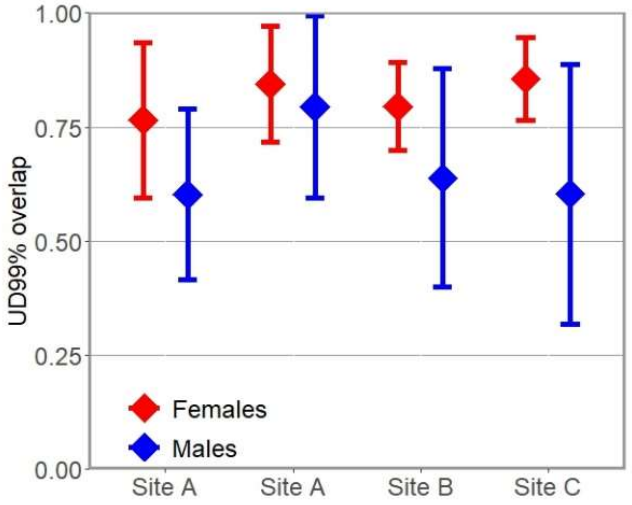
Male keep same range




**Ranging overlap**

No individual left range (min 22% overlap)

Females have higher site fidelity

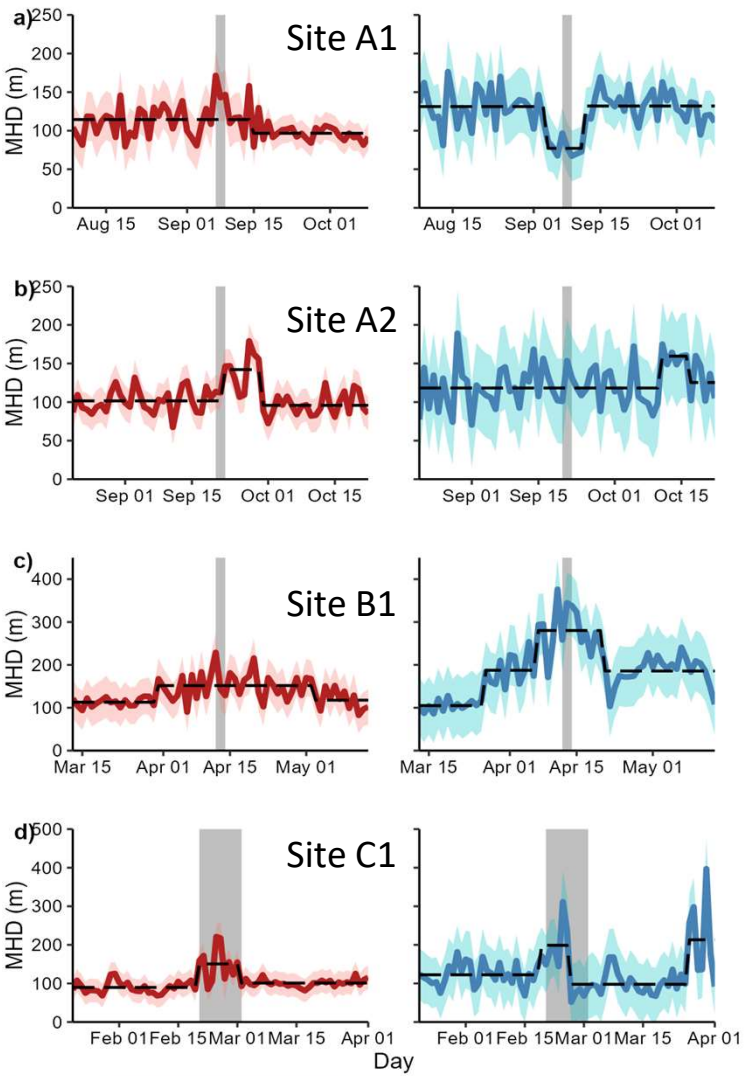


## Response to aerial shoot

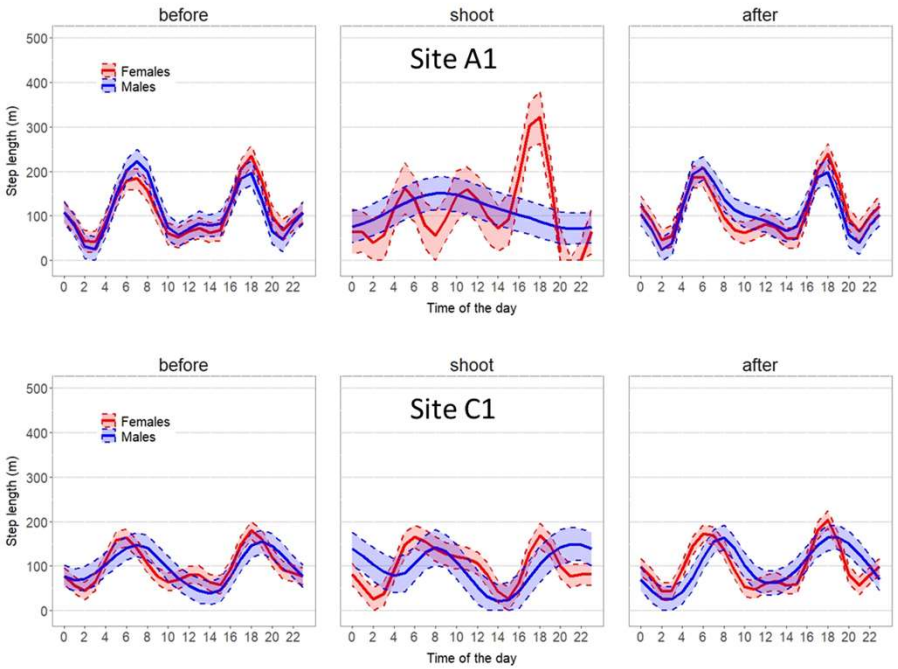
## Hourly movement

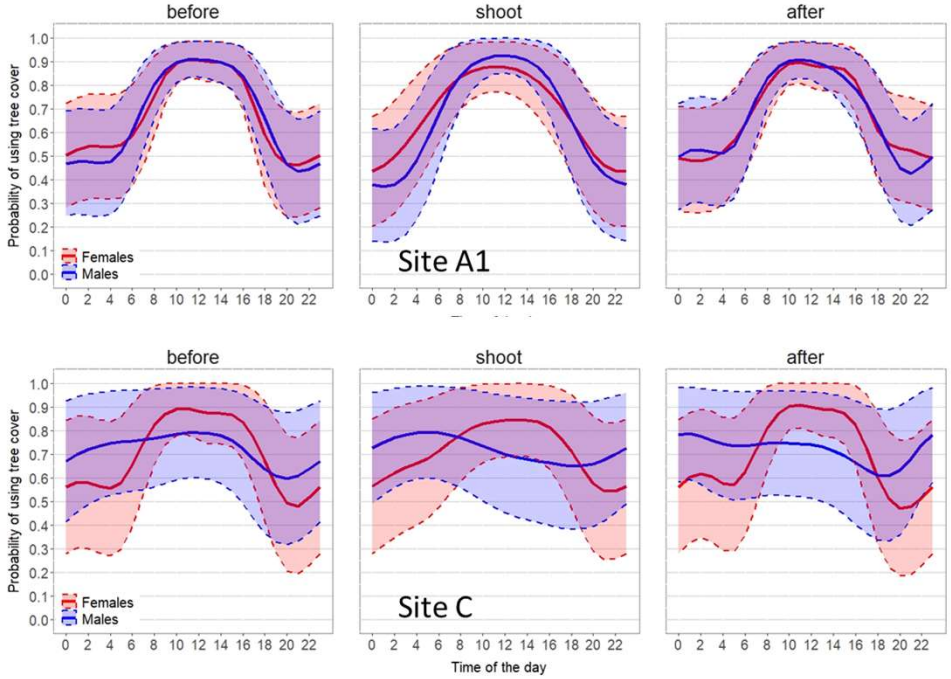
Female increase movements in Site C

Changes in movement rates not correlated to start or end of shooting



# Response to aerial shoot




Short-term changes
in daily activity

No change in use
of tree cover

Evidence that female increase their movements

No evidence of effect on male behaviour

No animal left its activity range

Rapid reduction of deer populations across large areas

Appropriate method to respond to disease outbreak

NSW GOVERNMENT | Department of Primary Industries

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# Questions?