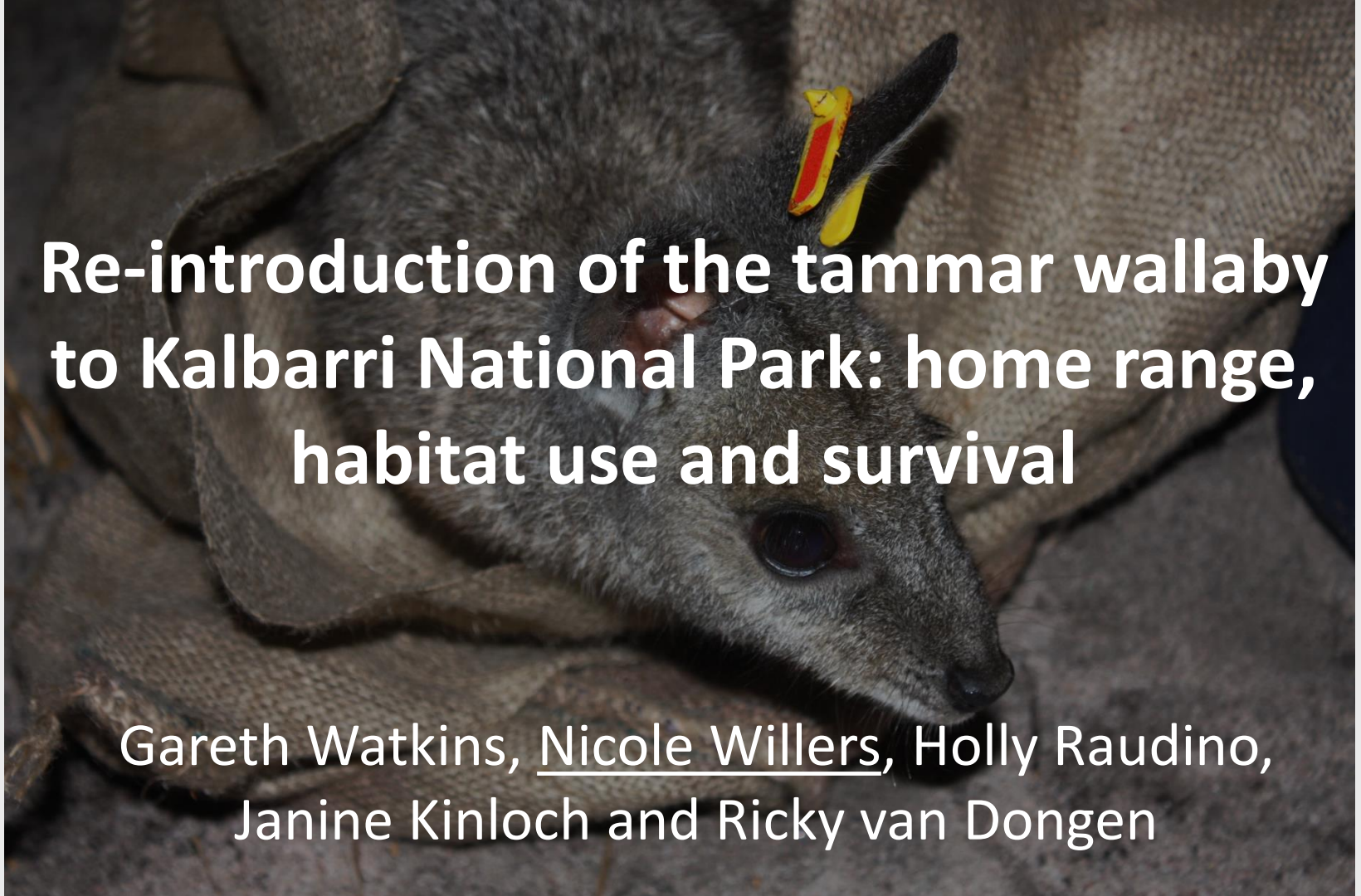
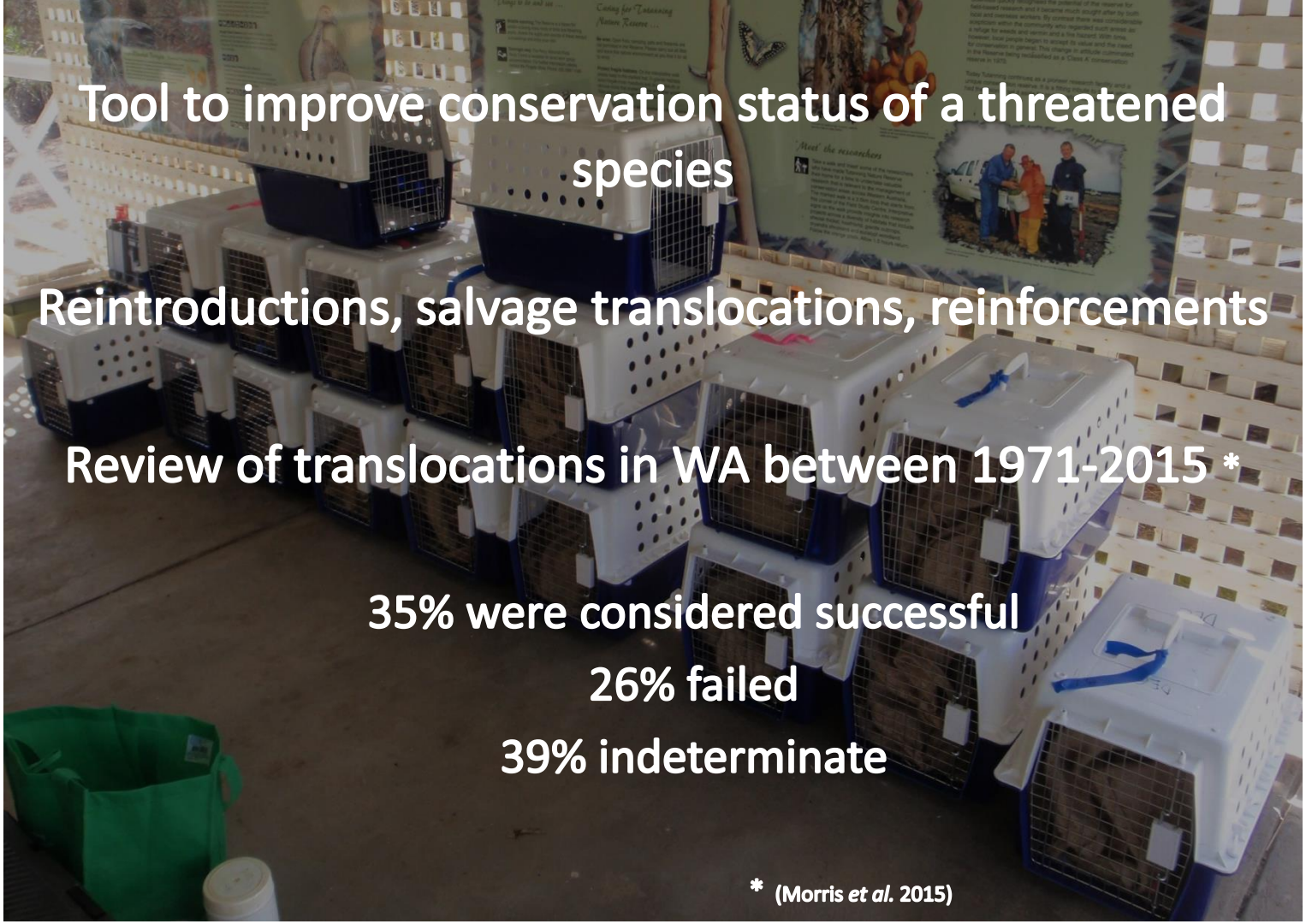


Re-introduction of the tammar wallaby to Kalbarri National Park: home range, habitat use and survival

Gareth Watkins, Nicole Willers, Holly Raudino, Janine Kinloch and Ricky van Dongen



Tool to improve conservation status of a threatened species

Reintroductions, salvage translocations, reinforcements

Review of translocations in WA between 1971-2015 *

35% were considered successful

26% failed

39% indeterminate

* (Morris *et al.* 2015)

Kalbarri National Park (KNP) – fauna reconstruction site

2000

Aims

To evaluate a reintroduction of the tammar wallaby by determining:

(1) the short-term survival of individuals

(2) home range and core areas of individuals

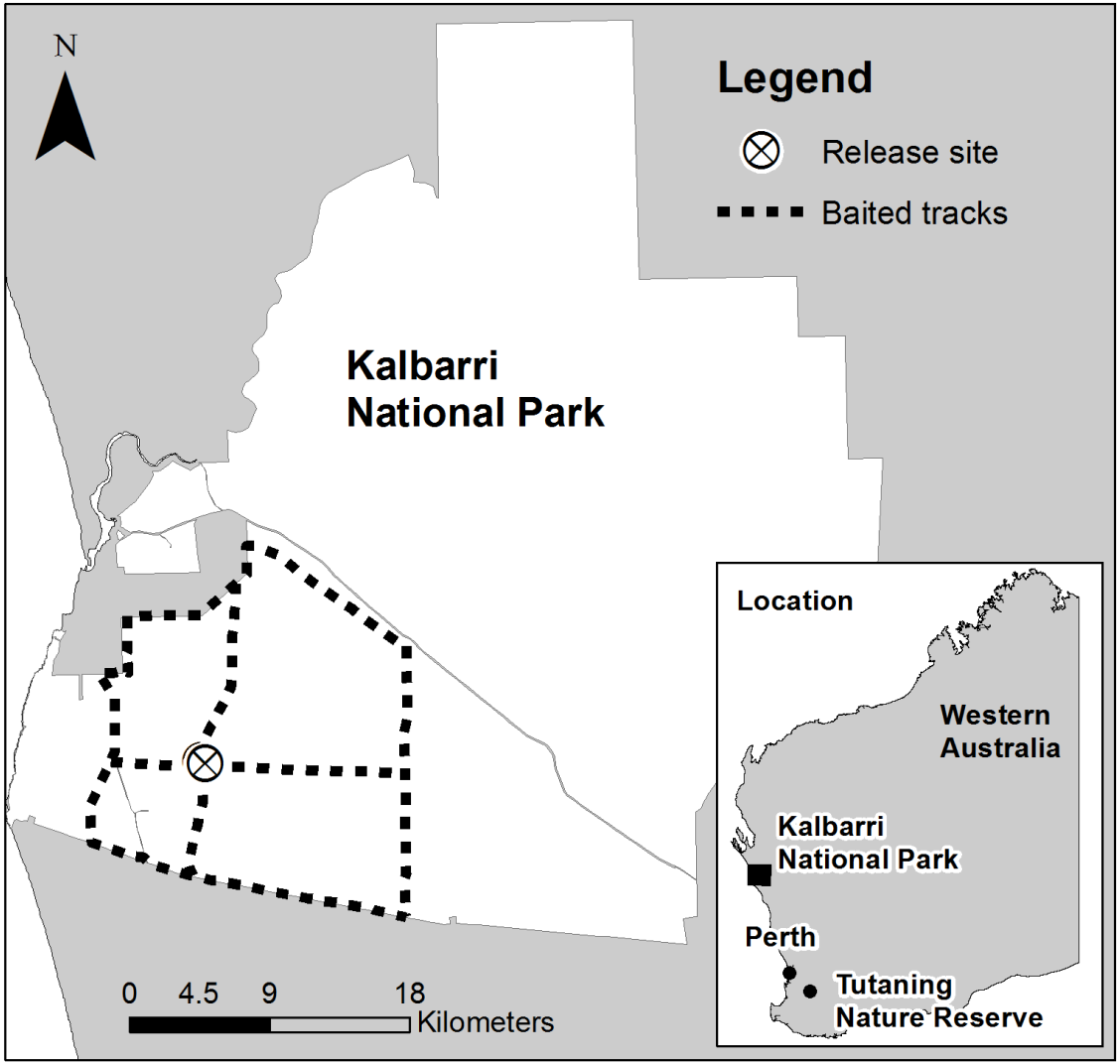
(3) if individuals demonstrated habitat preferences

Methodology

69 * adult tammar wallabies reintroduced to KNP in March 2010

- 51 '*captive*' source (31F:20M) – university research facility
- 18 'wild' source (8F:10M) - Tutanning Nature Reserve

* Morris *et al* 2015



Aerial fox baiting quarterly except March 2010-February 2011

One week prior to the release ~130 km of surrounding tracks were ground baited (one bait/200 m)

repeated monthly for three months' post-release (8 months no baits)

Release site - variety of vegetation ages, mature ‘thickets’ and more recently burnt areas for feeding

GPS data loggers for 9 *wild* wallabies – 4F:5M

Timed release at 246 days
Locational fix from 1800-0700 hours

VHF transmitters for 16 wallabies – 10F *captive*: 3M:3F *wild*

March 2010 - February 2011 all collared wallabies were radio-tracked

-intensively for 6 weeks

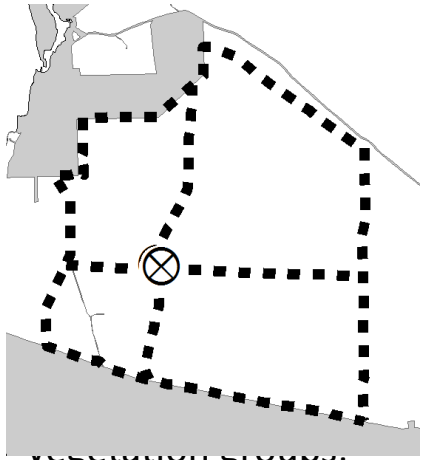
- fortnightly thereafter

Home range estimates were calculated using MCP95 and KDE95

Forensic protocol for mortalities

Vegetation groups and temporal signatures

- Calibrated Landsat imagery from 1990 to 2010 were used to classify vegetation history in the '*wallaby habitat' area*



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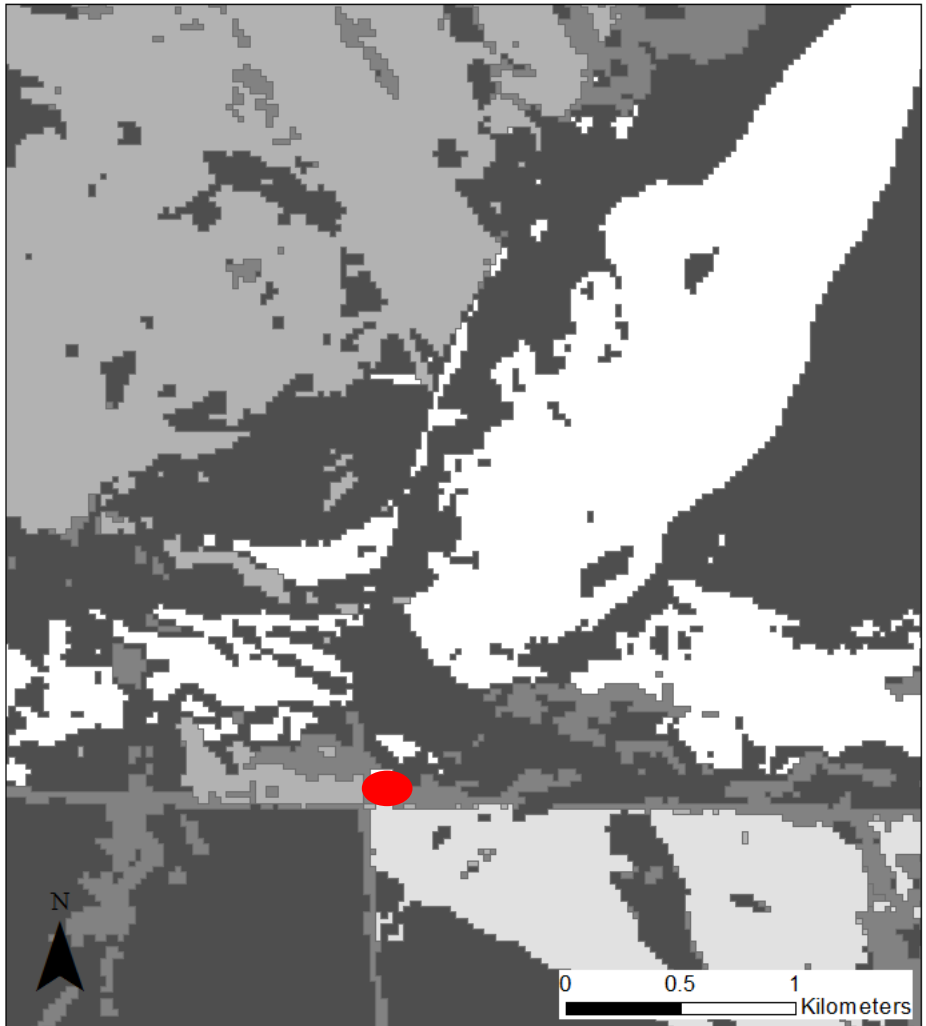
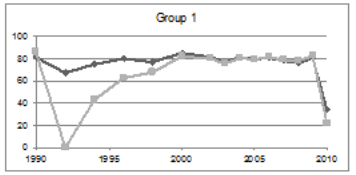
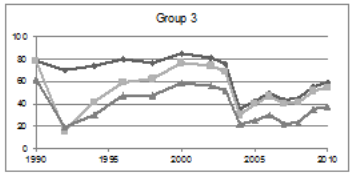
vegetation groups, based on the similarity of the temporal signature



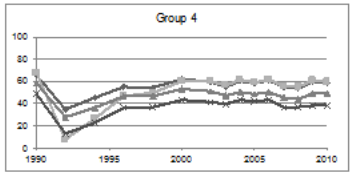


1. Most recently burnt 2010 / 20-35% canopy cover

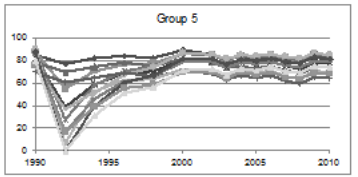
2. Burnt 2006, 40-53% canopy cover



3. Burnt 2004, 37-60% canopy cover



4. Stable > 10 years unburnt / 35-70% canopy cover



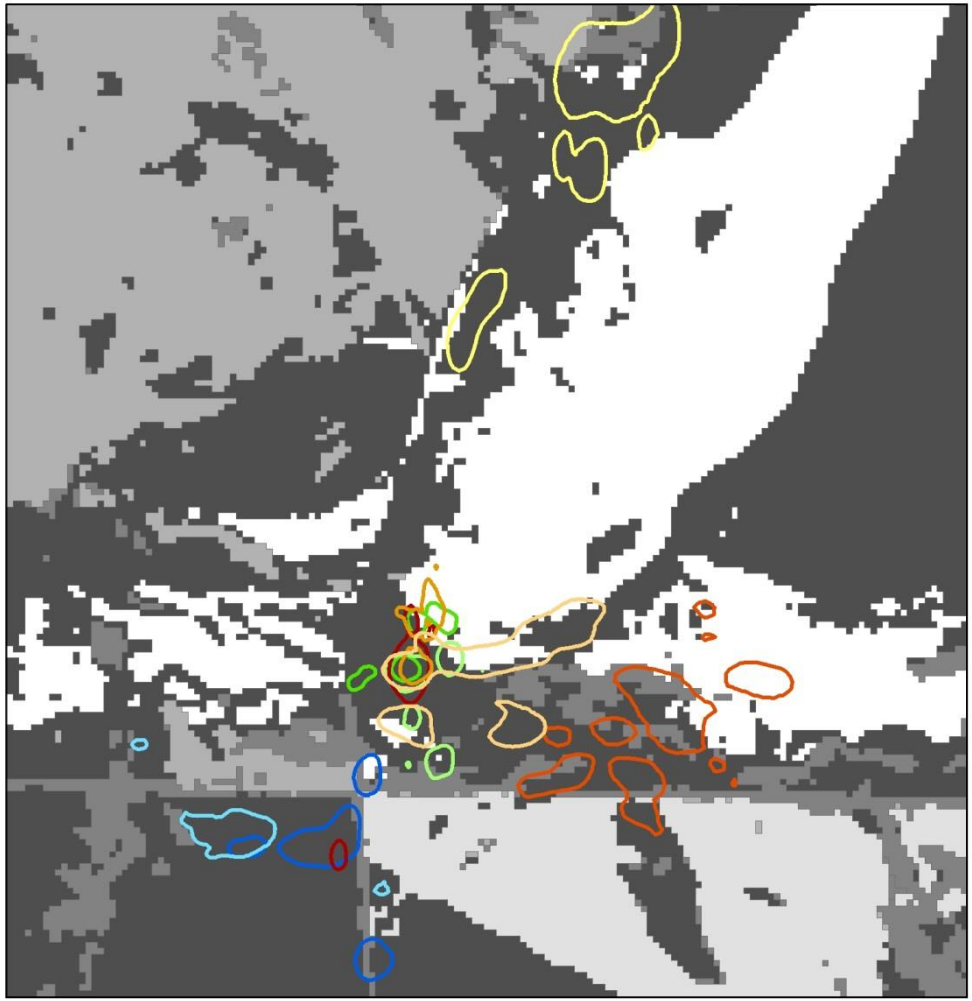
5. Stable > 10 years unburnt / 65-90% canopy cover

Survival

- 16 of the 25 collared wallabies died within 11 to 319 days of release

- 10 predation events (9 fox and 1 unknown; 8 *wild*, 2 *captive*)
- 6 unknown causes (5 *captive*, 1 *wild*)

Tammar core home range and habitat use

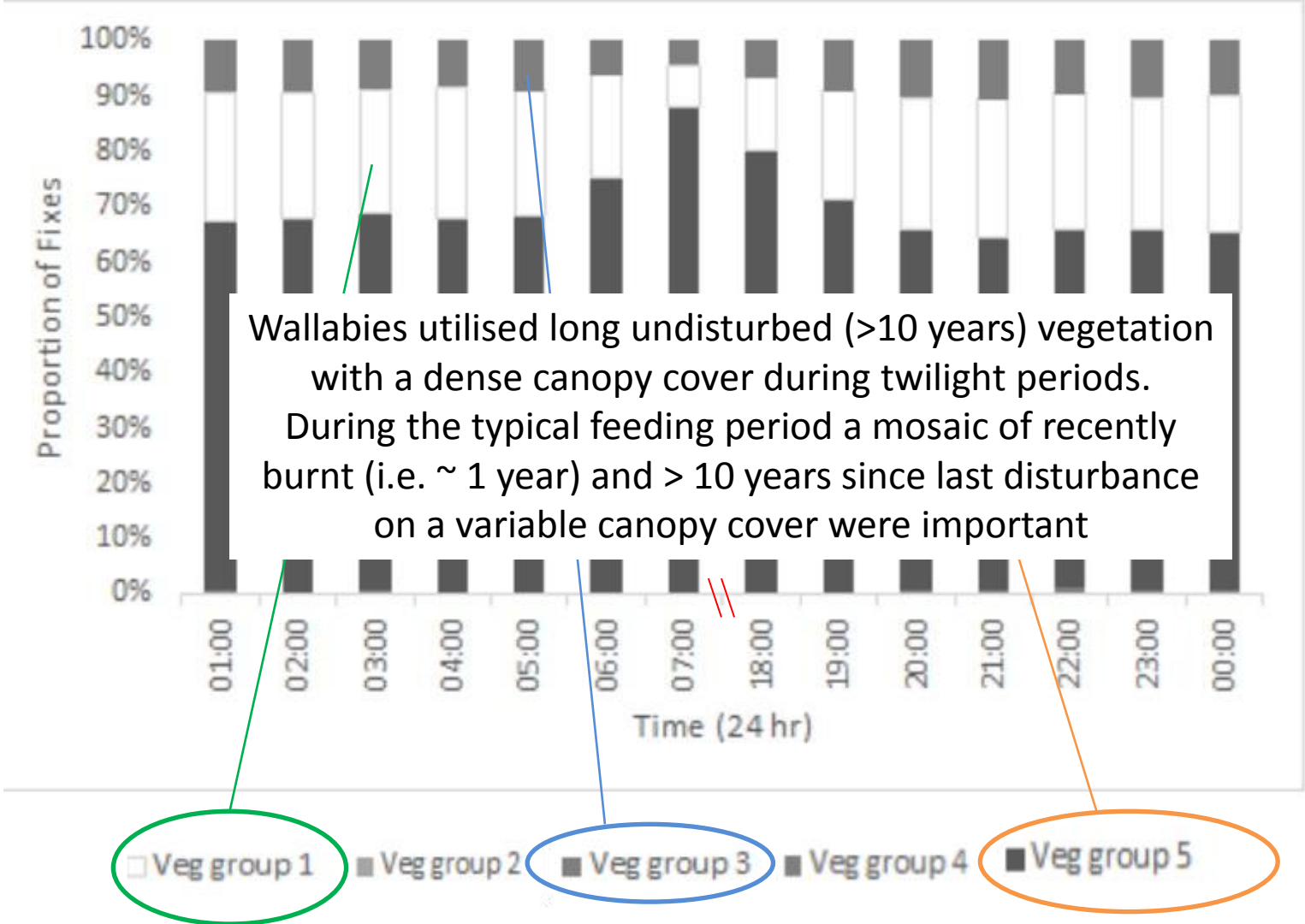


Home range area of males was significantly larger than females (p=0.02)

Males 59 ± 10 ha
Females 20 ± 3 ha

Core ranges (p=0.06)

Males 18 ± 5 ha
Females 6 ± 1 ha


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Proportion of Fixes
01:00
02:00
03:00
04:00
05:00
06:00
07:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Time (24 hr)
Wallabies utilised long undisturbed (>10 years) vegetation with a dense canopy cover during twilight periods. During the typical feeding period a mosaic of recently burnt (i.e. ~ 1 year) and > 10 years since last disturbance on a variable canopy cover were important
Veg group 1
Veg group 2
Veg group 3
Veg group 4
Veg group 5

Summary

- Mortalities - predator dynamics and drought
- Larger home ranges than reported elsewhere
  - sexual dimorphism
- Habitat use – mainly utilised stable vegetation classes, some recently burnt vegetation for browsing
  - selection for thickets, influenced by predation?

Management implications

- Integrated predator management
- Supplementary feeding, alter time of release?

- Additional research to improve success
  - release of smaller groups, over time in to avoid attracting predators?
  - monitoring of predator numbers

- GPS data loggers - helpful in ascertaining the success of translocation especially in a remote area

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