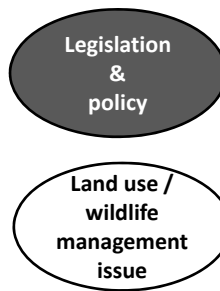




Managing contentious flying-fox camps

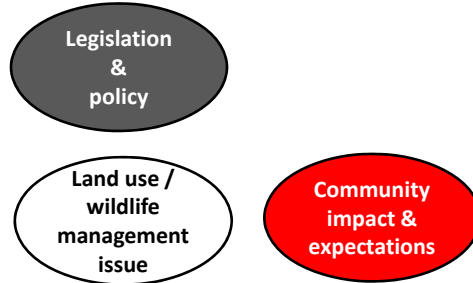
Peggy Eby

Consultant / University of New South Wales



At its core this is a land use / wildlife management issue which must be addressed with consideration to various legislative and policy constraints.

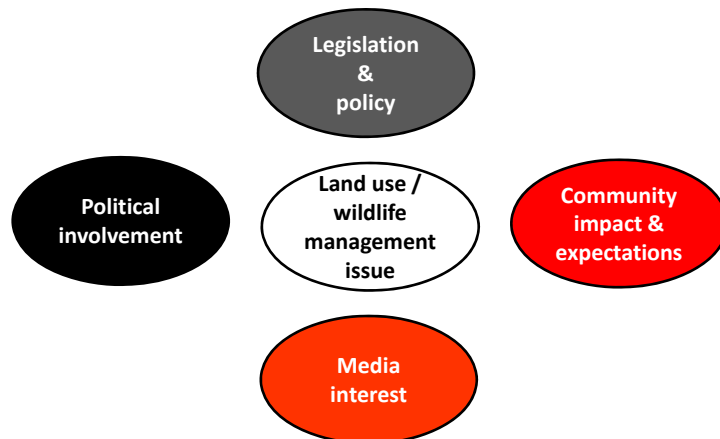
But it's a management nightmare!



HOWEVER...

Neighbours expect that the impacts of flying fox camps can be, and therefore should be, resolved.

But it's a management nightmare!



The frustrations of neighbours can trigger vigorous reactions from the media and politicians. Considered responses to the underlying management issues and sound decision-making are often lost in the uproar.

Neighbours expect a quick fix (dispersal)

Most affected parties expect the animals can be moved quickly.



Outcomes of 17 dispersals – 1990-2013

In general:

1. **animals do not abandon the local area** (100%)
2. **number of flying foxes in a local area is not altered** (94%; 16 of 17)
3. **dispersed animals do not move far** (<600m - 69%)
- new camps are often established (92% - 12 of 13)
4. it is **not possible to pre-determine** where any replacement camps will form (100%)

Outcomes of 17 dispersals – 1990-2013

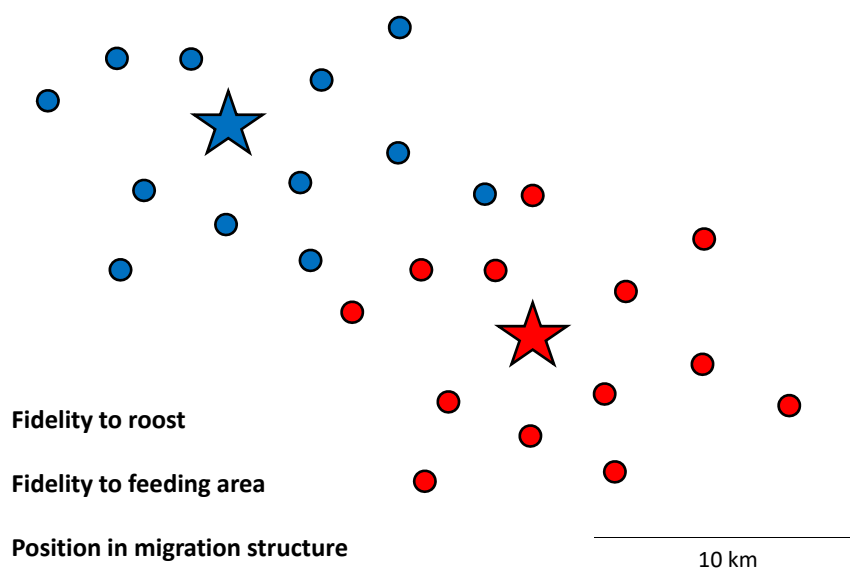
5. **conflict is often resolved for immediate neighbours** (71%), but **not for wider community** (23%)
6. **repeat actions are generally required** (all cases except complete vegetation removal)
7. **financial and social costs are high**

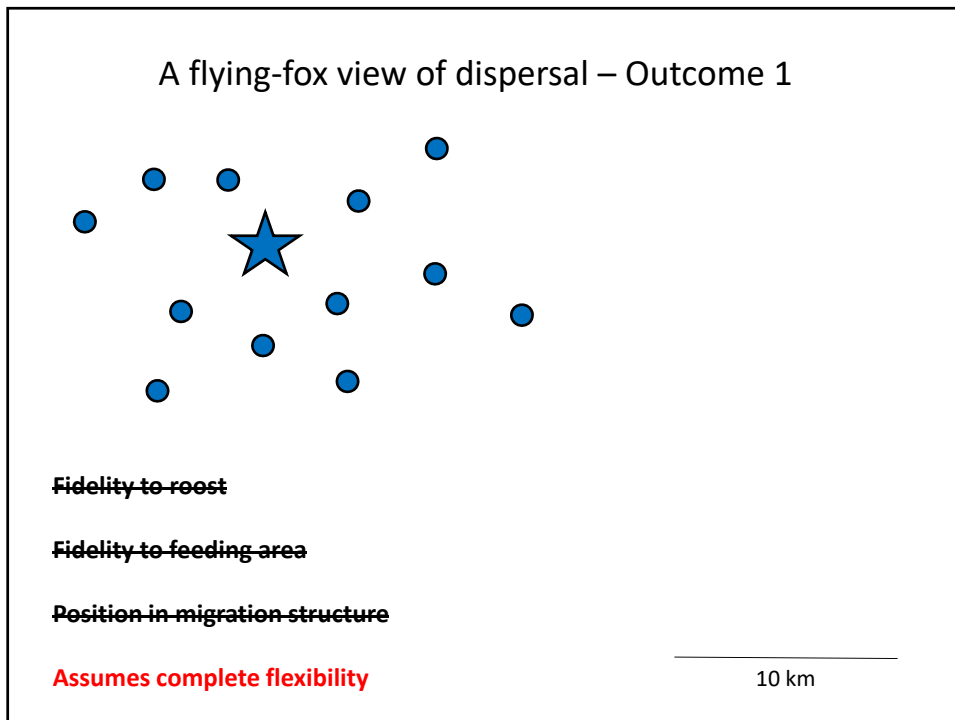
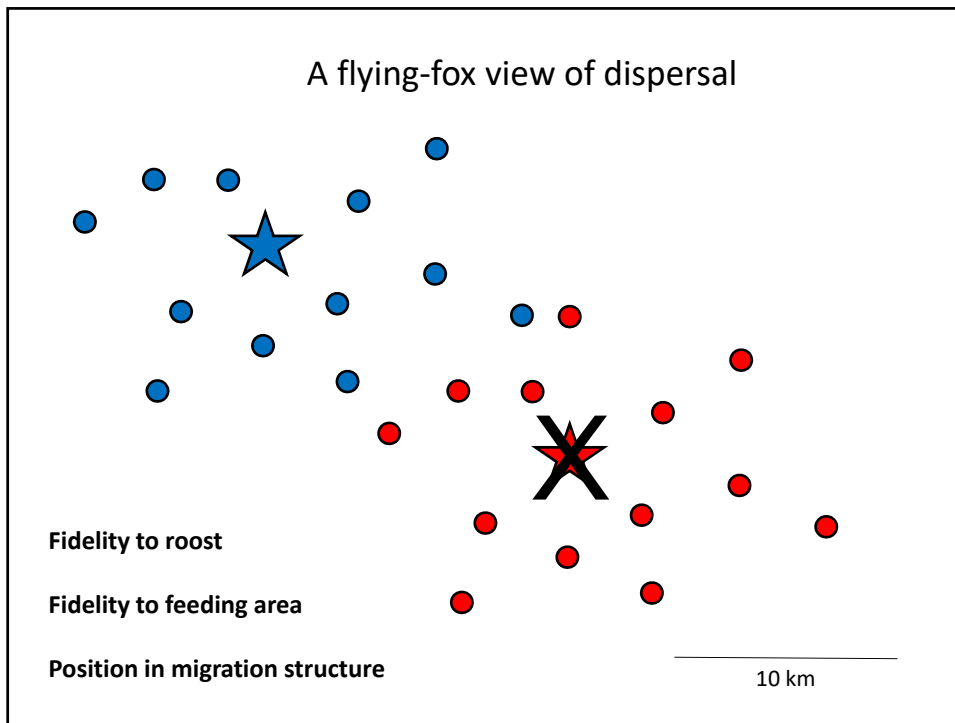
Observation:

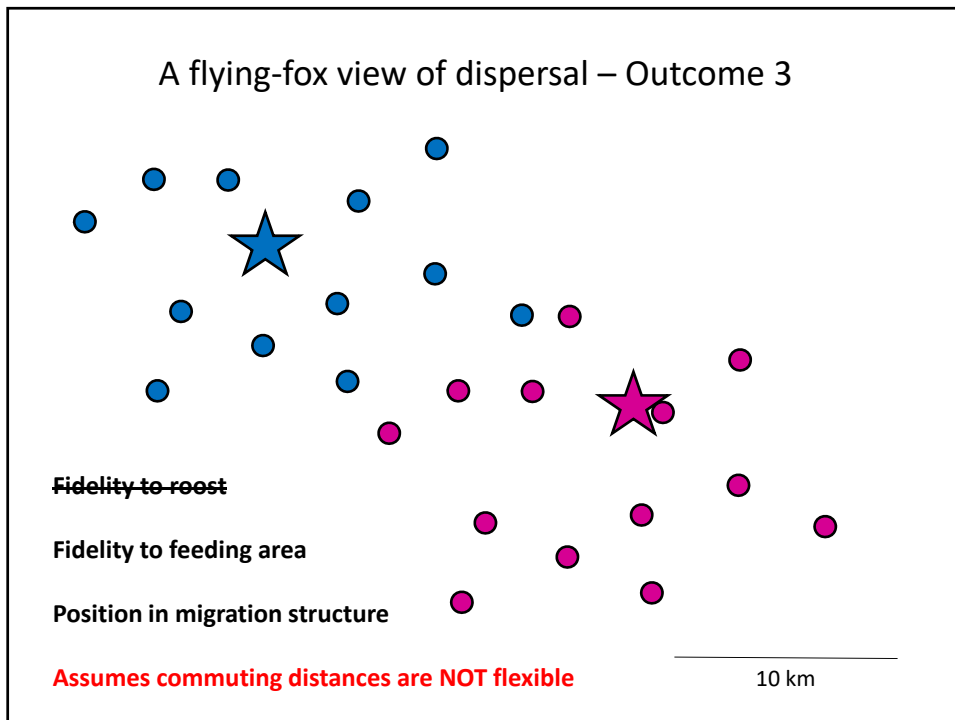
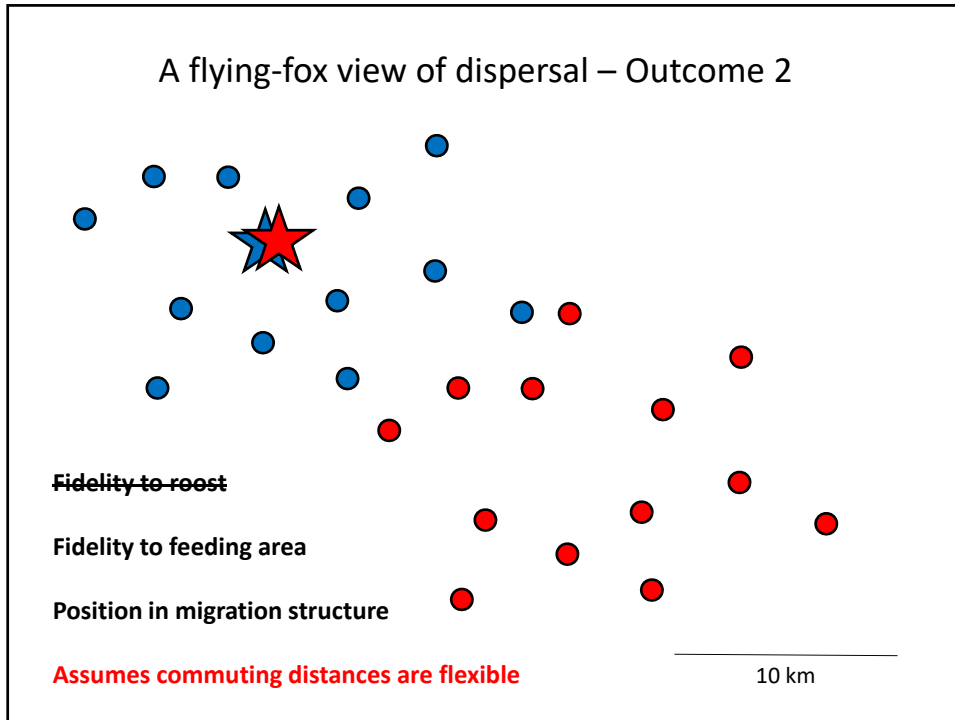
The outcomes of dispersals are often not known for several years.

It is important for lines of responsibility for poor outcomes to be established in advance.

A flying-fox view of dispersal







Outcomes of 17 dispersals – 1990-2013 (an interpretation)

Flying-foxes can be excluded from roosts (in the absence of vegetation removal). However, long-term fidelity to the site is retained within the population.

Migration status of residents is not sufficiently flexible to be altered by dispersals.

Fidelity to local feeding areas is not broken by exclusion from roosts.

Commuting distances between roosts and feeding areas are not as flexible as we had assumed.

Maclean, NSW (a cautionary tale)

Location of Maclean FF camp 1886 - 1998



Roberts *et al.* 2011

Maclean, NSW (a cautionary tale)

High school and TAFE building programs -
1962 - 1997



(West 2002)

Maclean, NSW (a cautionary tale)

Location of Maclean FF camp after multiple dispersals
commencing 1998 (at maximum population)



Maclean, NSW

There has always been a long-term option



The list of contentious camps is growing

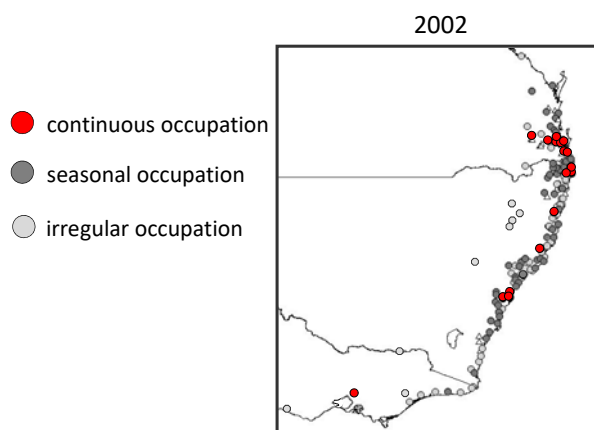


Some observations:

1. The distribution of flying fox camps in subtropical Australia is changing rapidly.
2. These changes are consistent with the behavioural responses of flying foxes to food shortages; and may indicate chronic nutritional/ metabolic stress in some individuals

1.) Evidence of change

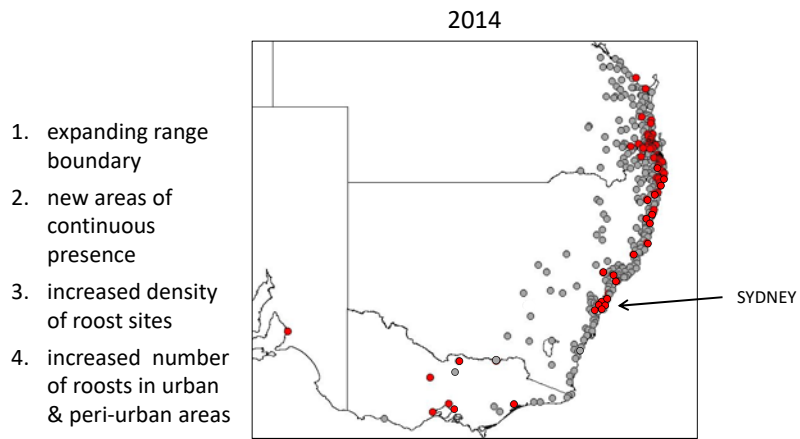
Locations of roost sites used by Black and Grey-headed flying foxes, with indications of their patterns of use



Eby (2003)

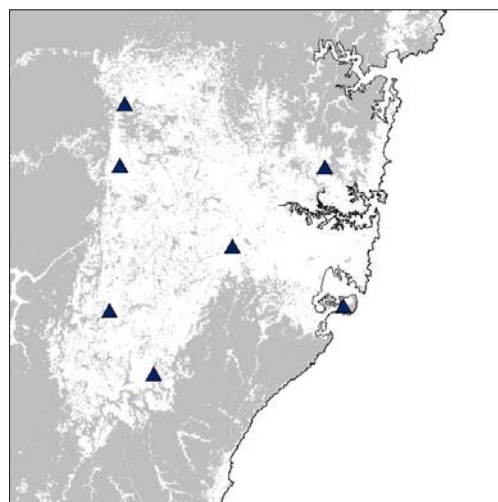
1.) Evidence of change

Locations of roost sites used by Black and Grey-headed flying foxes, with indications of their patterns of use



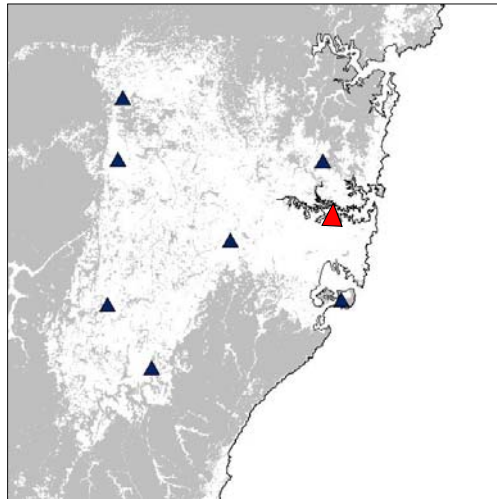
National Flying Fox Monitoring Program; <http://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf>

The distribution of camps is changing camps in Greater Sydney - pre-1989 (n=7)

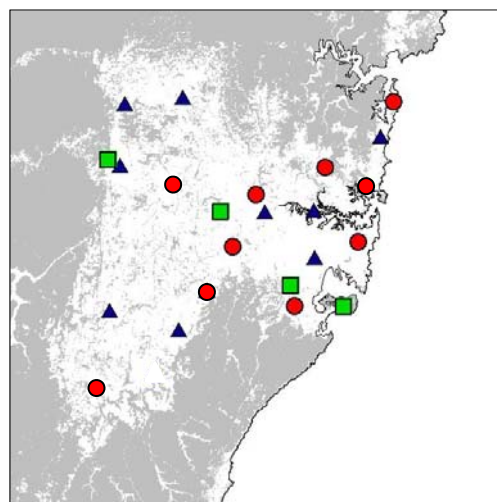


▲ seasonal

The distribution of camps is changing
camps in Greater Sydney – 1989-2003 (n=8)



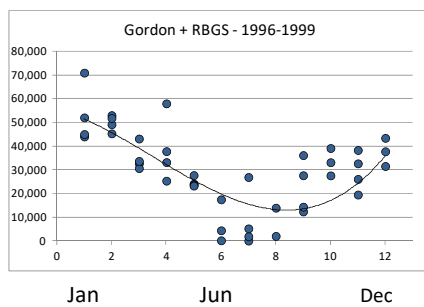
The distribution of camps is changing
camps in Greater Sydney - 2015 (n=22)



● continuous ▲ seasonal ■ irregular

WHY??

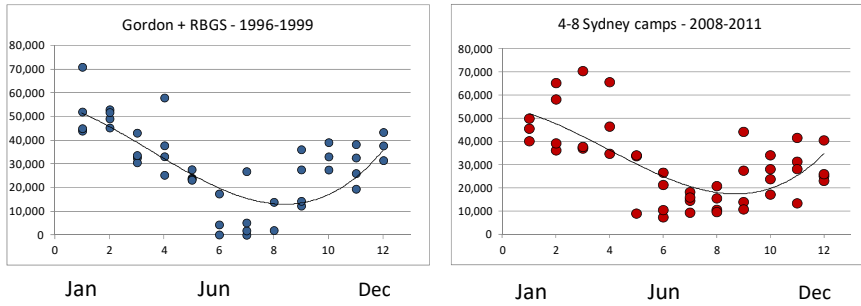
Why more camps?
Increasing number of FFs?
Population estimates – eastern Sydney



Data sources: M Beck (KBCS) , D. Bidwell, J. Martin (RBGDT)

Why more camps? Increasing number of FFs?

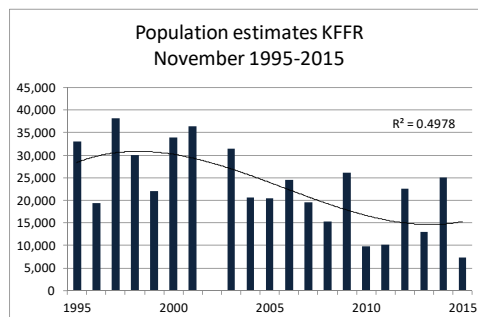
Population estimates – eastern Sydney



Data sources: M Beck (KBCS) , D. Bidwell, J Martin (RBGDT), T. Pearson (Macq U), D. Little (WCPS), A. Divljan (U Syd); Parramatta City Council

Why more camps? Increasing number of FFs?

Population estimates – Ku-ring-gai Flying-fox Reserve



Data sources: M Beck (KBCS) , J Martin (RBGDT)

Change

1. The distribution and patterns of occupation of flying fox roost sites in south east Australia are changing rapidly.
2. These changes are consistent with the behavioural responses of flying foxes to acute food shortages.



Acute food shortages in south-east Australia

not uncommon – 5 in 18 years

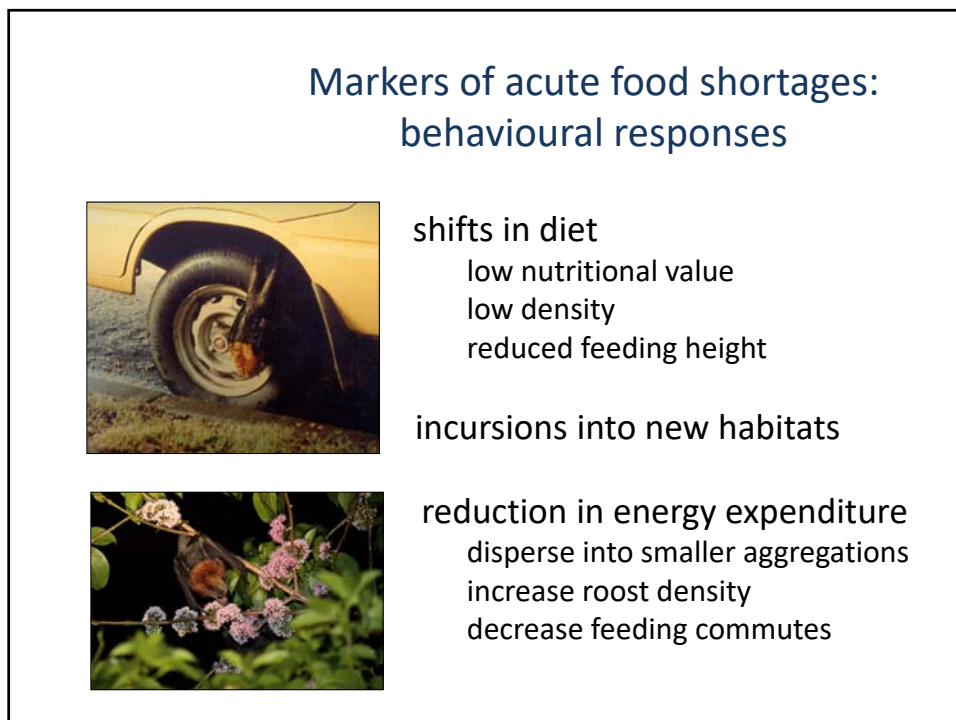
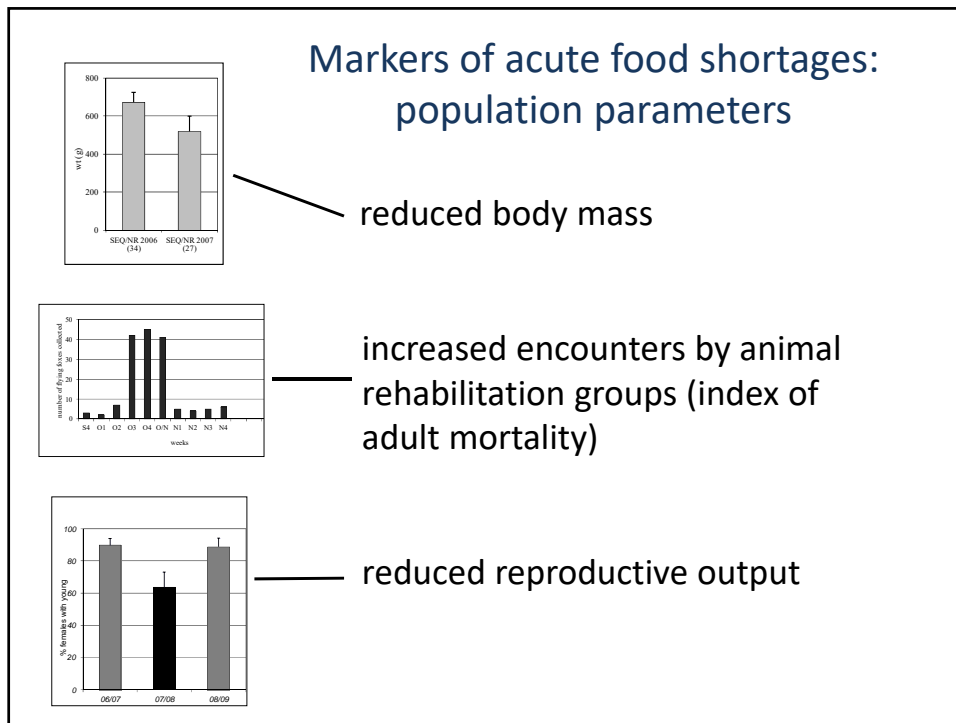


generally of relatively short duration (<6 wks)

occur in winter or spring (limited feeding opportunities)



associated with gap in nectar from key plants



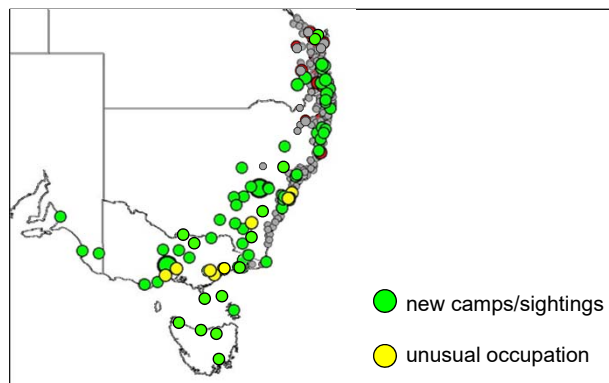
Incursions into new habitats

Flying-fox camps in south-east Australia
pre-2010 food shortage



Incursions into new habitats

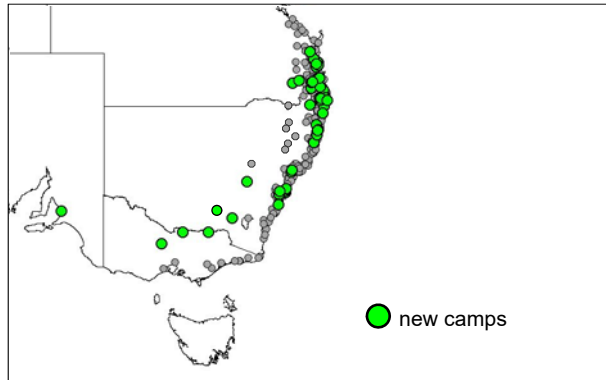
Records of flying-foxes in unexpected locations
March-August 2010



Data sources:
monitoring programs; field ecologists; public reports; media; web surveillance

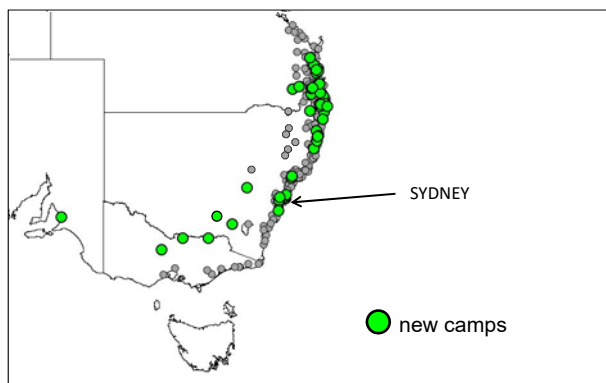
Change in camp distribution

Camps formed in 2010 that persisted



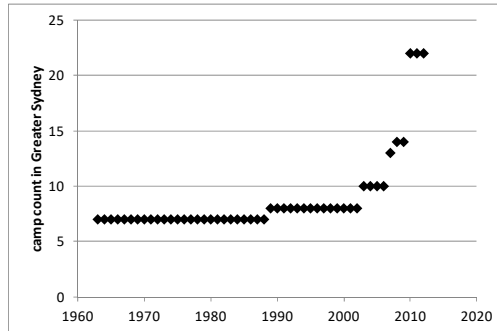
Change in camp distribution

Camps formed in 2010 that persisted



Increased density of roost sites

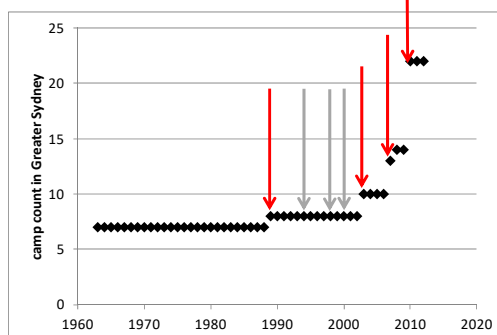
establishment of new camps in Greater Sydney



Eby (2003); Smith (2007); ARCUE (2009); Eby *et al.* unpublished

Increased density of roost sites

establishment of new camps in Greater Sydney relative to the timing of food shortages (arrows)

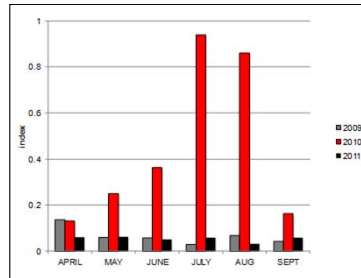


Eby (2003); Smith (2007); ARCUE (2009); Eby *et al.* unpublished

Why more camps? Reduced energy expenditure?



150.718 - male



Monthly counts of flying-foxes encountered by WIRES groups in the inner suburbs of Sydney, weighted by the estimated population size of camps in the area.

16/6 to 18/6/2010



20/6 to 20/7/2010



24/7 to 27/8/2010

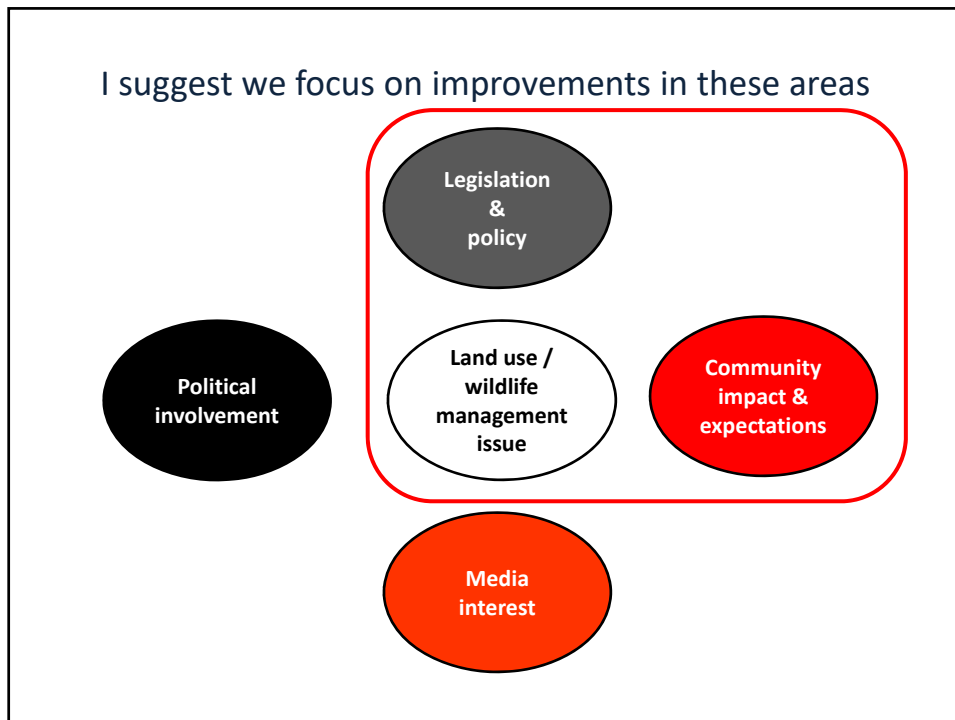


September – November 2010



We are ill-equipped to deal with this.





A wish list

better support for managers

- provide ready access to up-to-date information
- establish systematic monitoring programs with standard methods
- maintain a central repository for information and formal processes for describing and reporting results of actions

better and more diverse management tools /options

- improve on current set (based on experience)
- improve on and expand *in situ* management options
- explore new ideas
- share information

A wish list

change the public conversation about flying-foxes

- adjust understanding of disease, amenity issues, realistic management options
- adjust the public's expectations of camp management options and improve understanding of the risks and possible consequences

better information to feed into public discourse and education

- build better and stronger arguments based on evidence (make material available to managers)
- work toward better informed conversations with the general public, media, politicians and policy makers

A wish list

involve people with different skill sets

- conflict management
- negotiation
- public education
- pertinent technical expertise (e.g. noise mitigation)

consider and monitor the impact of management actions on flying-foxes, particularly long-term impacts on fitness

- reproductive output
- exposure to heat stress

