Aerial deer survey

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Population survey

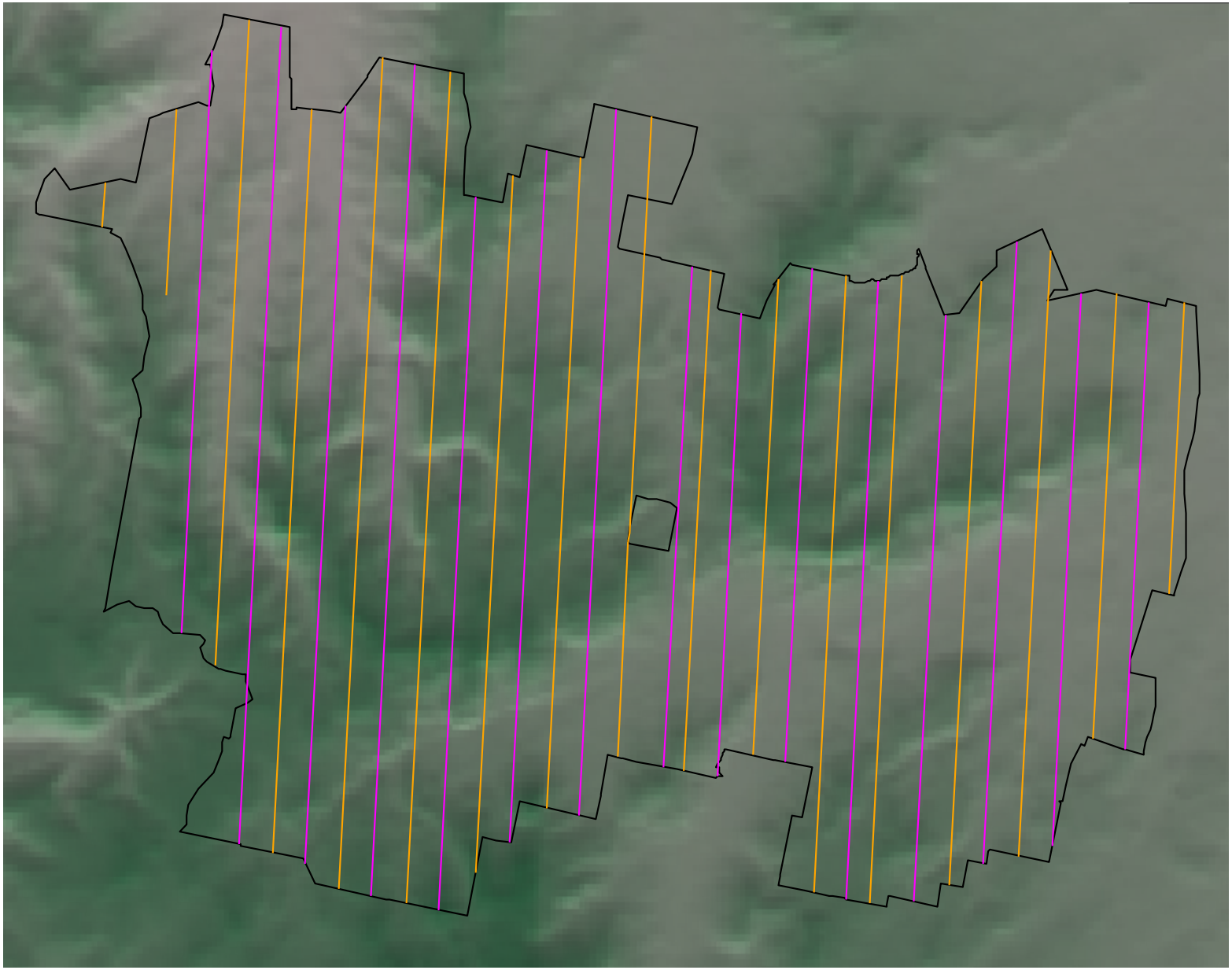
Why:

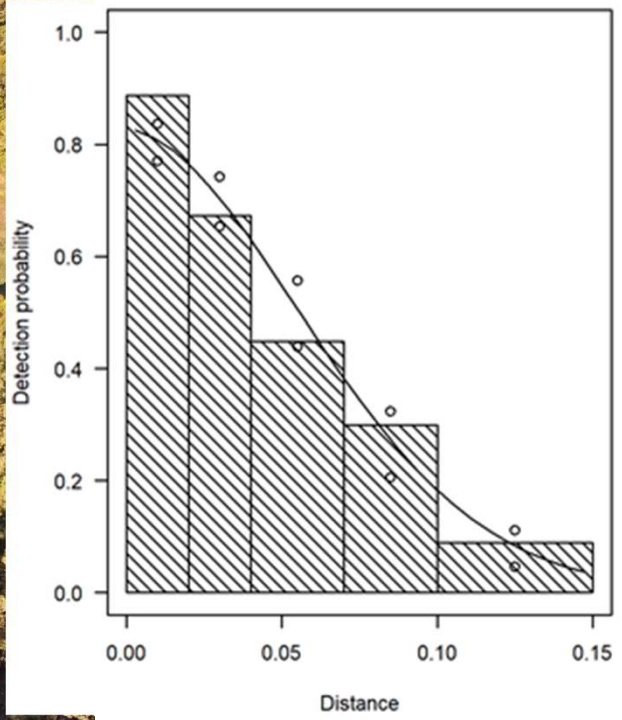
- Estimate effort needed for control
- Adaptive management
- Improve public investment
- Justify ongoing investment

How:

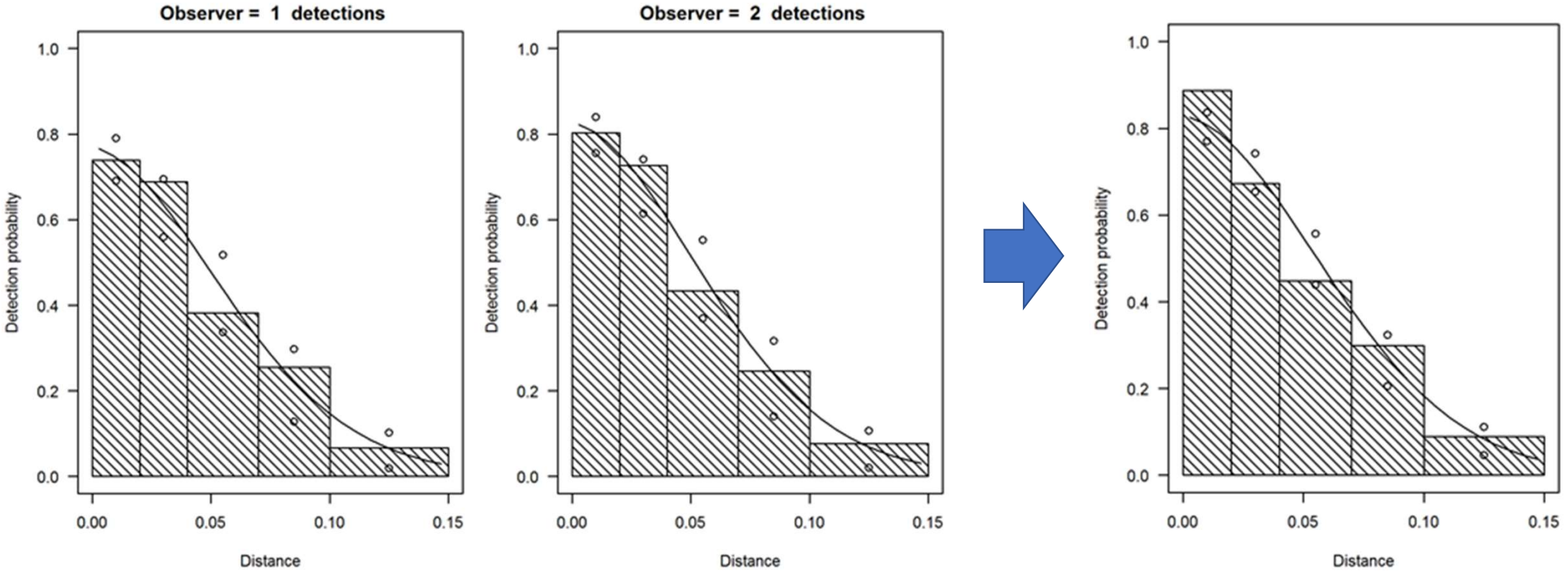
- Visual aerial
- Thermal aerial

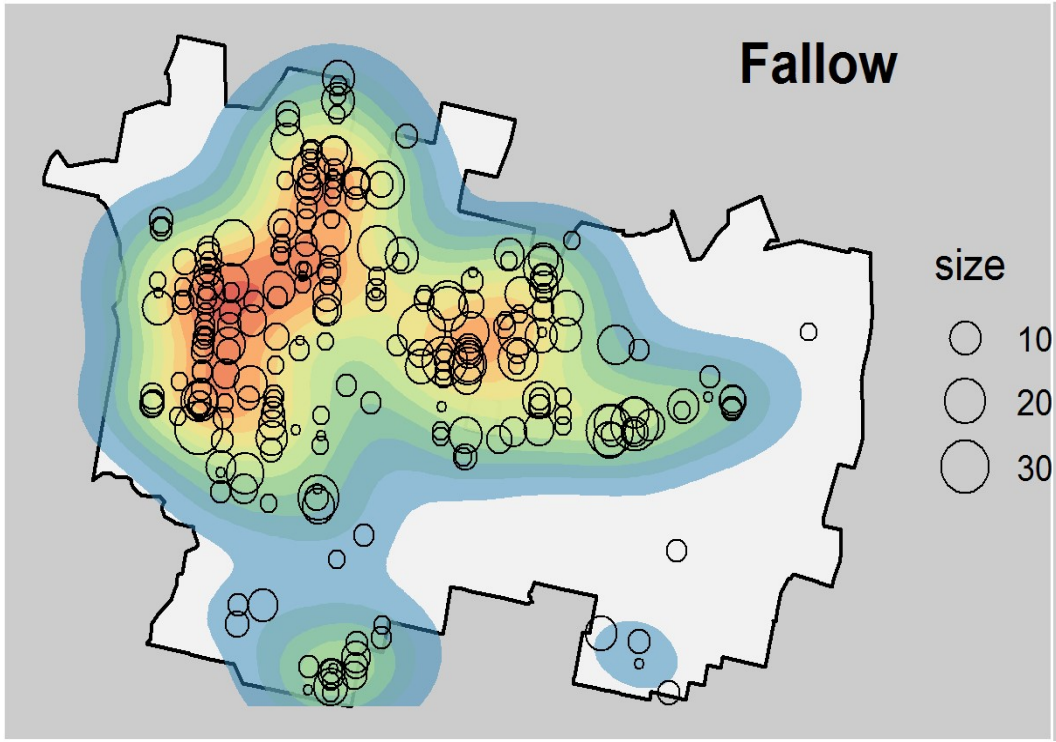
Visual aerial survey



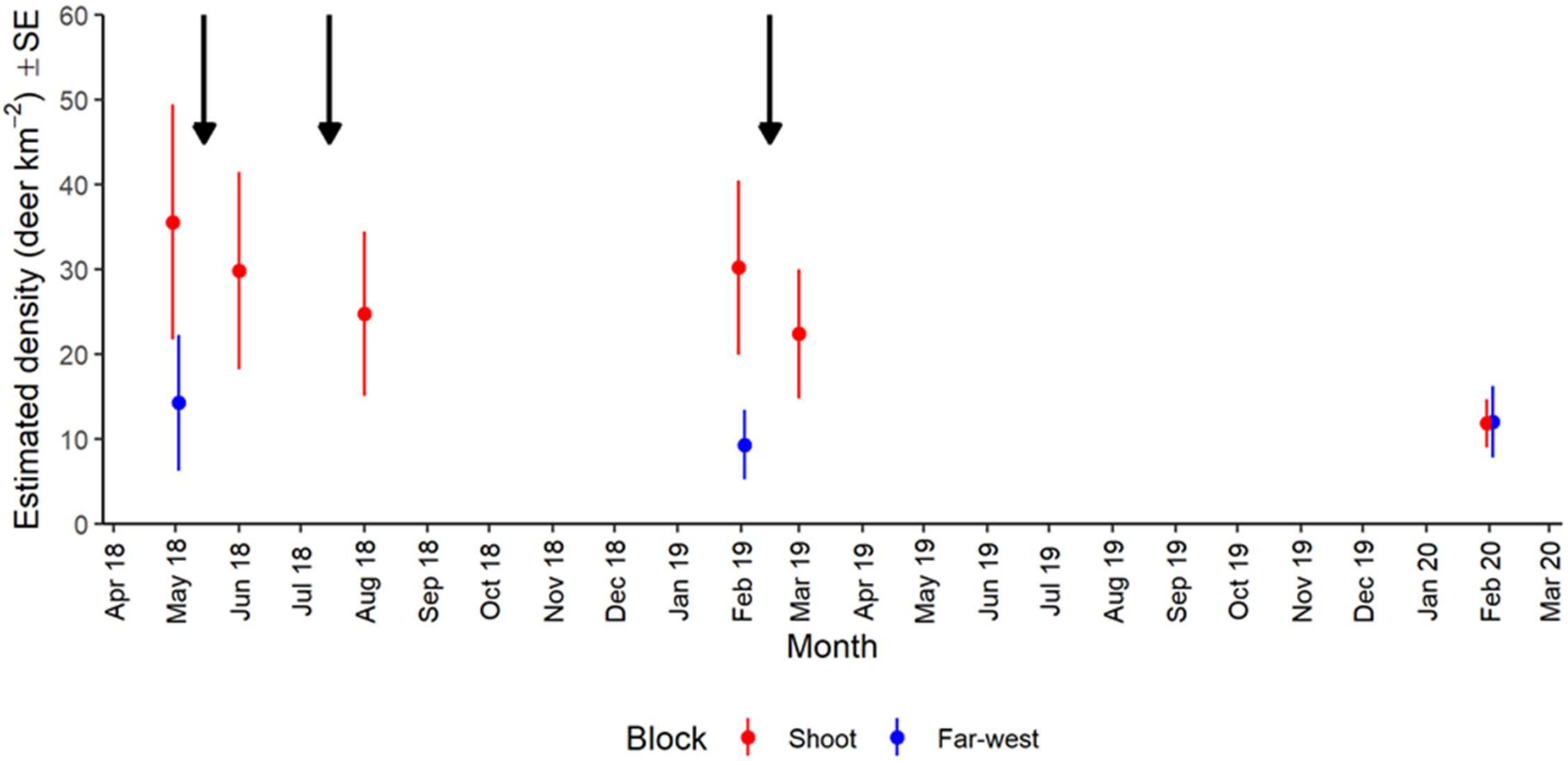

1.0
0.8
0.6
0.4
0.2
0.0
Detection probability
0.00
0.05
0.10
0.15
Distance

Detection isn’t perfect, so we need 2+ observers




Fallow
size
10
20
30


Pigs
size
5
10
15
20


Estimated density (deer km^{-2}) ± SE
60
50
40
30
20
10
0
Apr 18
May 18
Jun 18
Jul 18
Aug 18
Sep 18
Oct 18
Nov 18
Dec 18
Jan 19
Feb 19
Mar 19
Apr 19
May 19
Jun 19
Jul 19
Aug 19
Sep 19
Oct 19
Nov 19
Dec 19
Jan 20
Feb 20
Mar 20
Month
Block
Shoot
Far-west

Visual aerial survey

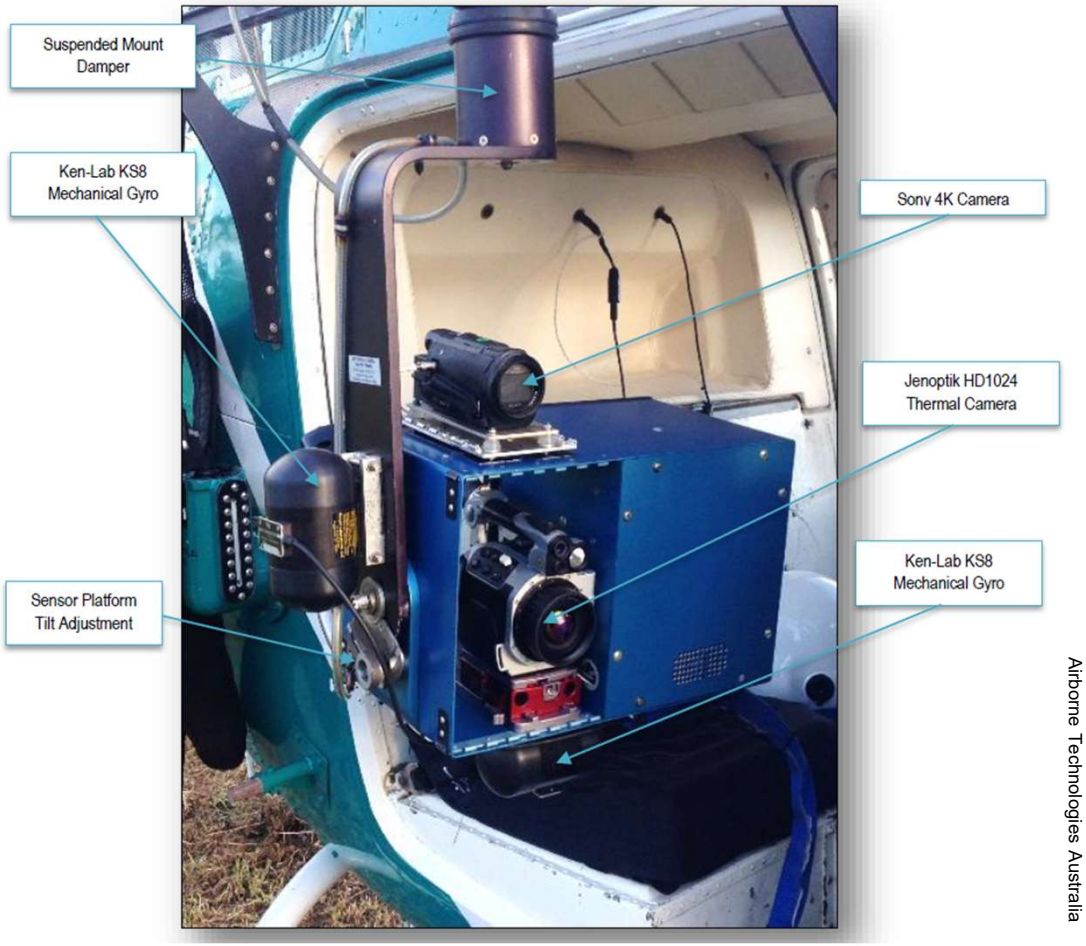
Good

- Fast turnaround
- Cover large areas
- Density and abundance

Meh

- Moderately expensive
- Needs large areas
- Precision can be low
- Needs 60+ samples (but can build over time)

Thermal aerial survey



Airborne Technologies Australia

Heli Surveys


°C
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Max: 12.32°C
Airborne Technologies Australia

Pigs

Deer

Still a lot of work to do…

Thermal aerial survey

Good

- Fast(ish) turnaround
- Cover moderate areas
- Density and abundance?
- Precision *should* be good

Meh

- Expensive
- Precision can be low
- Needs 60+ samples
- (usually) assumes perfect detection
- Product & vendor variability

Shopping list

Distance sampling

2+ observers on the same side

60+ detections

Good site coverage

Raw data provided

Geo-referenced (nice to have)

Proven experience

Estimates are only as good as your data

Good estimates take effort but can be very valuable

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https://andrewbengsen.github.io/Presentations.html