Lamb loss between scanning & marking

What is normal and what are the causes?

Caroline Jacobson and Tom Clune

Murdoch University

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

What is “normal”?

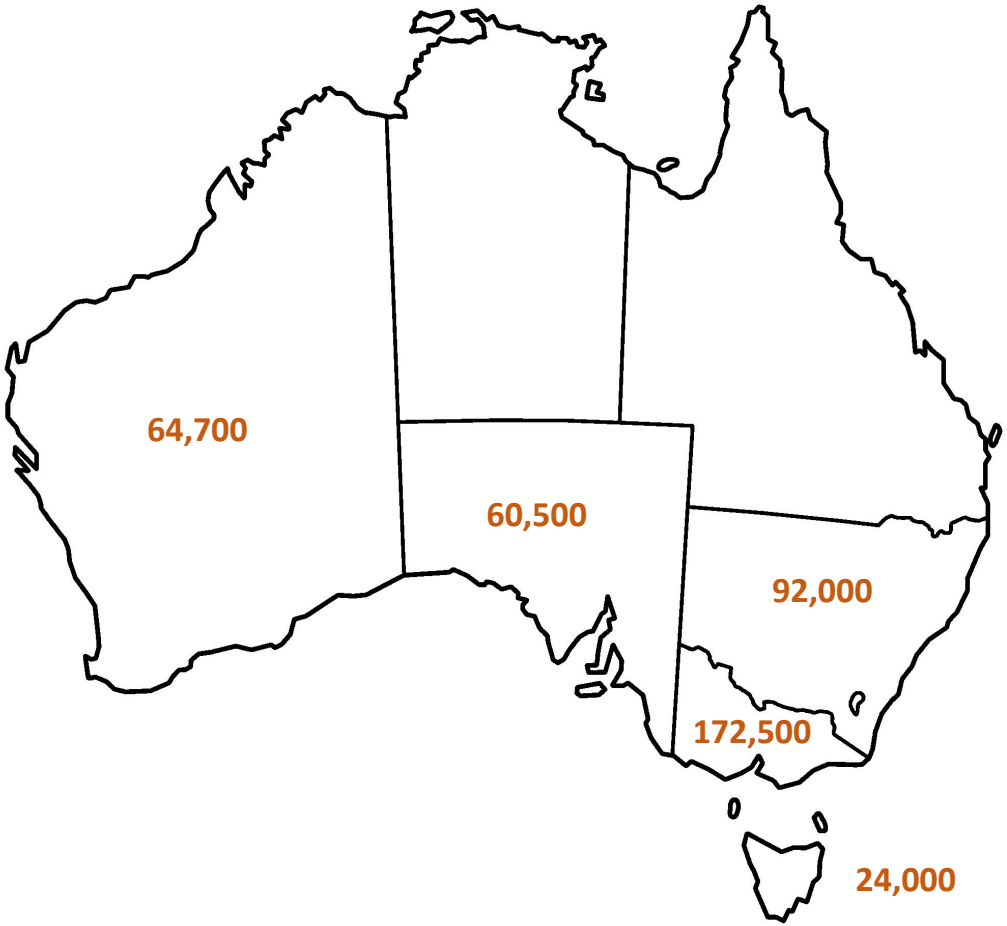
meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

What is “normal”?

- Ewe lambs or maiden 2-year old
- Mature ewes same farm
- 2018 - 2020

- 79 eligible farms
- 413,700 ewes



meatup FORUM

Maiden vs mature ewes

	Reproductive performance (average)		**Age group comparison**	
	Maidens	**Mature**	Difference	Statistical difference?
Non-Merino (ewe lambs)				
Marking rate (%)	74	132	**-58.1**	✓
Reproductive rate (%)	109	159	**-50.5**	✓
Lamb survival (%)	67	83	**-16.0**	✓
Ewe mortality (%)	2.6	2.8	**-0.2**	✗
Merino (maiden 2-year-old)				
Marking rate (%)	80	102	**-22.3**	✓
Reproductive rate (%)	108	132	**-24.4**	✓
Lamb survival (%)	74	78	**-3.4**	✓
Ewe mortality (%)	1.7	2.4	**-0.7**	✓

Lamb survival

	Merino		Non-Merino	
	2-year old maiden	**Mature**	**Ewe lambs**	**Mature**
Top 25%	82% and up	83% and up	75% and up	87% and up
Average	**74%**	**78%**	**67%**	**83%**
Bottom 25%	Below 69%	Below 73%	Below 59%	Below 82%

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Maiden ewes: Single and twin lamb survival

	Merino 2-year old		Non-Merino ewe lambs	
	Single	**Twin**	**Single**	**Twin**
Eligible responses	25	23	20	22
Average lamb survival	**82%**	**61%**	**76%**	**64%**
Industry target	90%	70%	90%	80%

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

% respondents achieving lamb survival targets

	Merino 2-year old		Non-Merino ewe lambs	
	Single	**Twin**	**Single**	**Twin**
Survival ≥50%	100%	87%	100%	95%
Survival ≥60%	96%	65%	100%	68%
Survival ≥70%	92%	**9%**	80%	27%
Survival ≥80%	68%	0%	30%	**0 (0%)**
Survival ≥90%	**20%**	0%	**0%**	0%

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

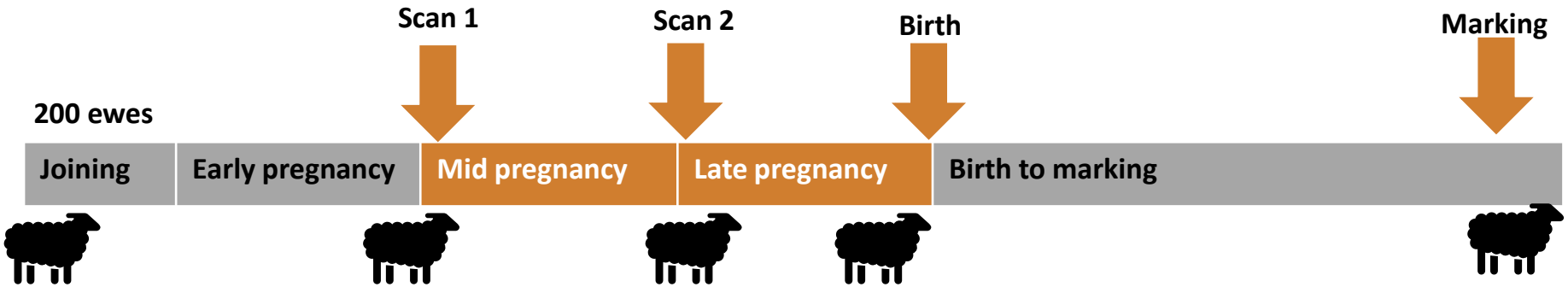
Take home messages

What we found	So what?
Maidens have poorer reproductive (scanning) rate **and** poorer lamb survival	Differentiate repro rate and lamb survival to address disappointing marking rate effectively - **different solutions** required
Lamb survival for maidens is **highly variable** and not well correlated with adults	Benchmarks and strategies should be targeted to **age group** and **pregnancy type** (single, multiples) rather than “more of the same”
Wide variability between ‘best’ and ‘worst’ farms	Opportunity to improve reproductive performance with **targeted** strategies

Lamb mortality research

30 maiden flocks on 28 farms

- WA, SA and VIC
- 19 ewe lamb flocks
- 11 Merino maiden 2-year old



meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

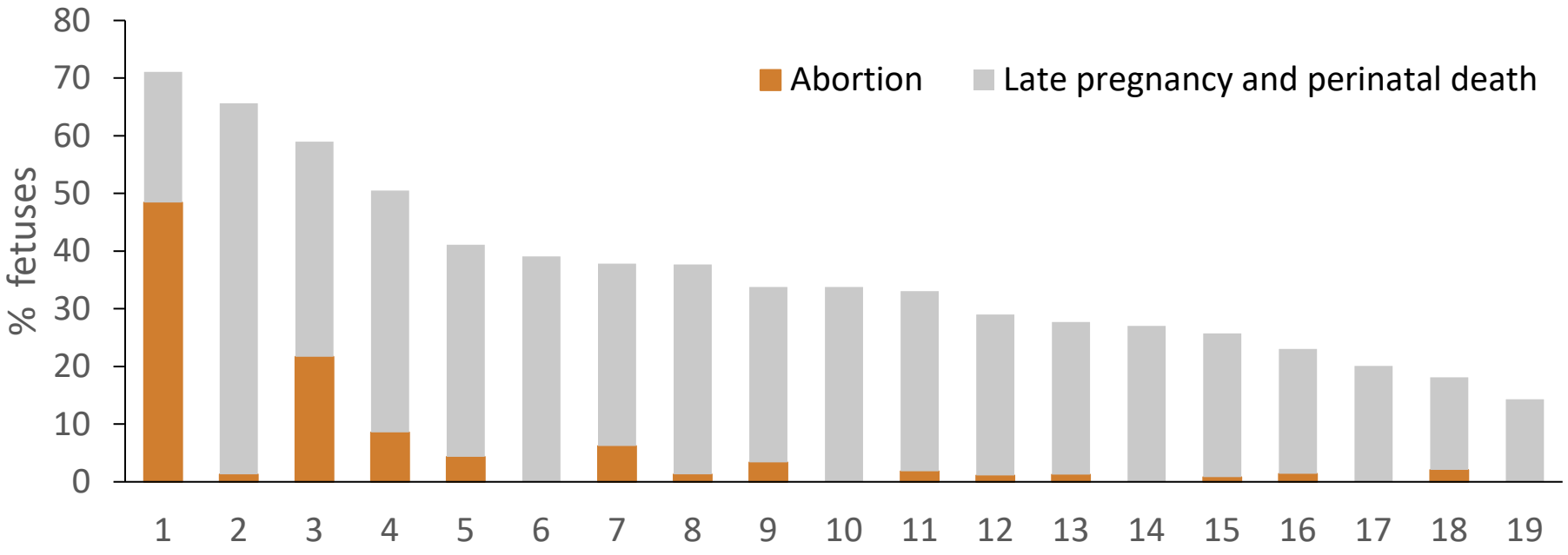
Overall loss scanning to marking: “survival”

	Average wastage	Lowest wastage	Highest wastage
Merino 2-year old maiden	29% fetuses	20%	53%
Ewe lambs	36% fetuses	14%	71%

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

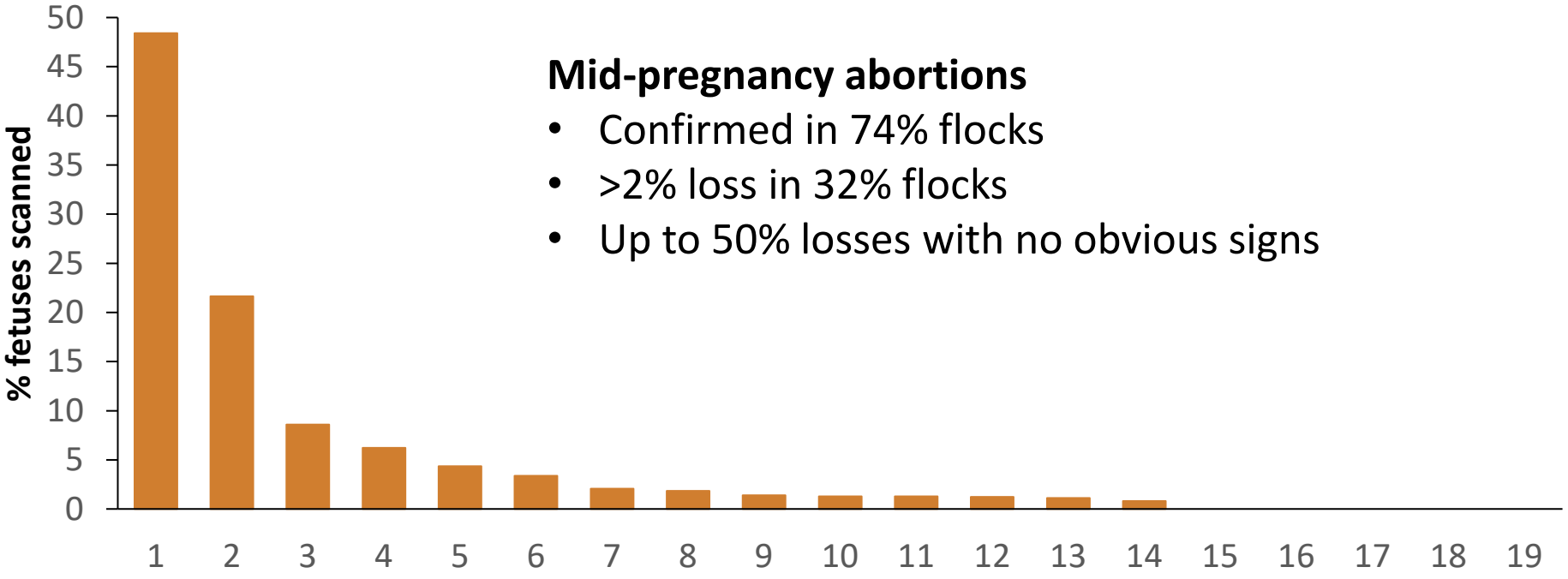
Mid-pregnancy abortion & lamb mortality: ewe lambs



meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Mid-pregnancy abortion in ewe lambs



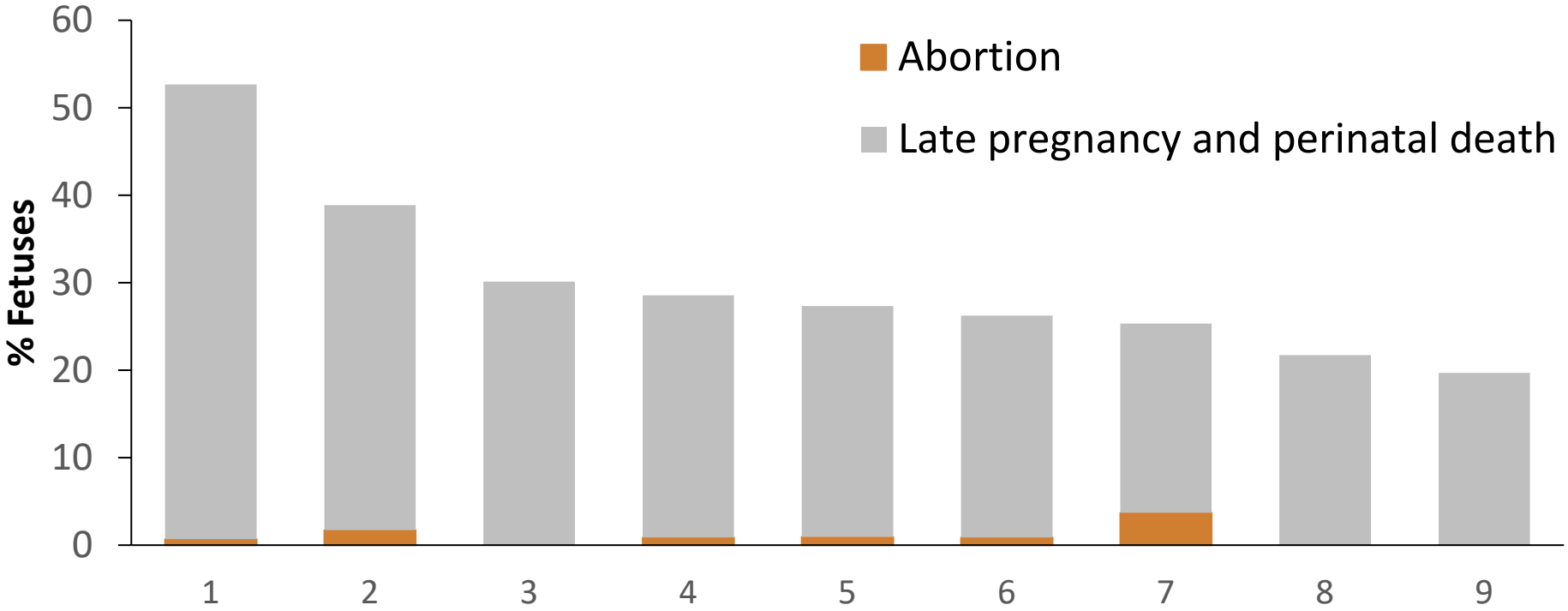
Mid-pregnancy abortions

- Confirmed in 74% flocks
- >2% loss in 32% flocks
- Up to 50% losses with no obvious signs

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Abortion and lamb mortality: Maiden 2-year old



meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Take home messages

What we found	So what?
Mortality during birth and up to marking is the major source of lamb loss for most flocks	Understanding important causes of lamb deaths on your farm informs what strategies are likely to improve survival
Mid-pregnancy abortion are an important source of loss on **some farms in some years**, especially for **ewe lambs**	Consider monitoring ewes to differentiate abortions from deaths occurring at (or soon after) birth **(different solutions)**
One in three ewe lamb flocks have abortion higher than expected, but very rare to find dead lambs even with an 'outbreak'	Abortions will be underestimated with normal monitoring. Collect **any** aborted lambs or membranes for testing rather than "wait and see"

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

What are the causes of losses on WA farms?

meatup FORUM

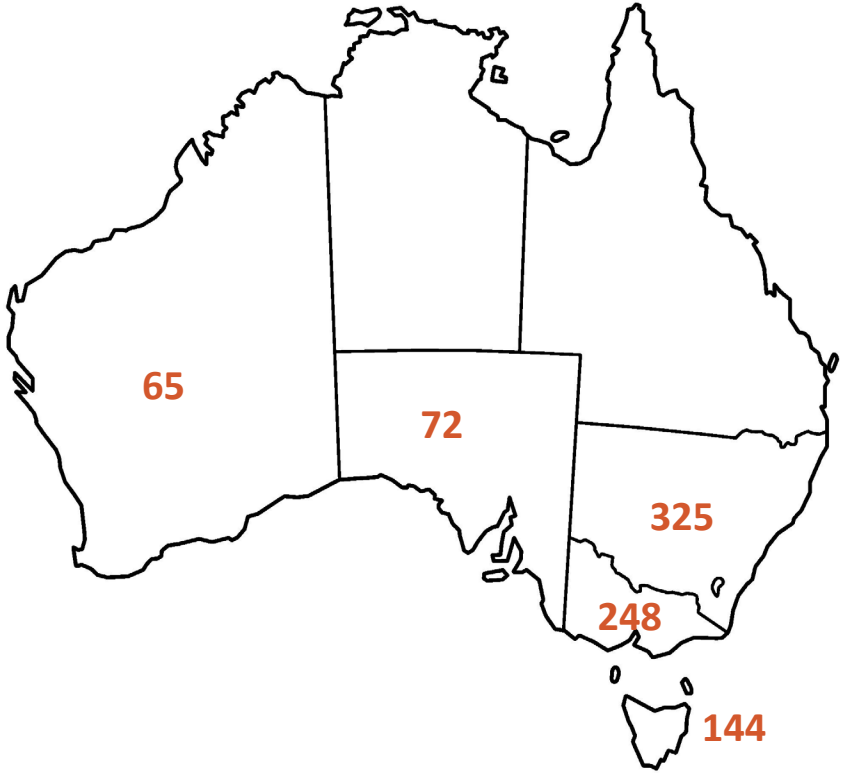
mla MEAT & LIVESTOCK AUSTRALIA

Causes of abortions and stillbirths

Review of submissions to laboratories

854 investigations

Diagnosis made for 49% investigations

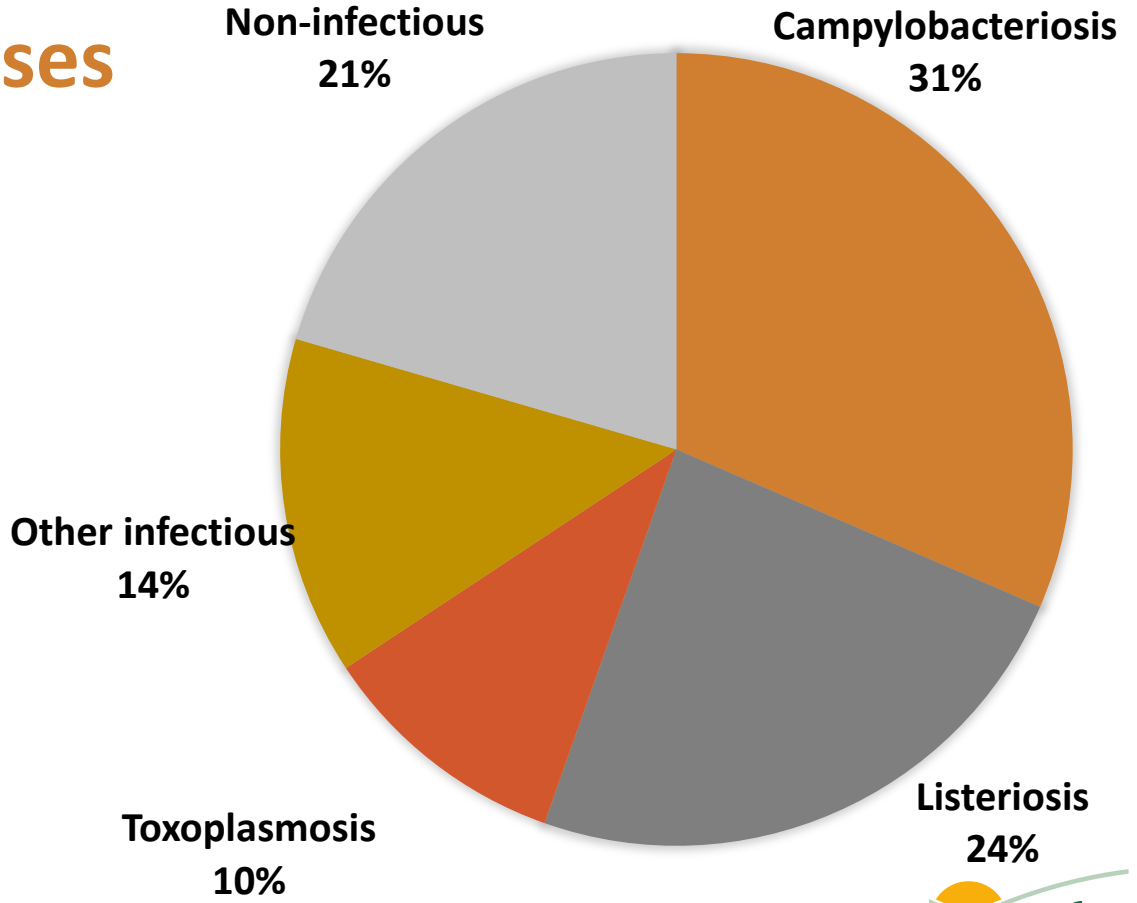


meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Common diagnoses

79% investigations with a diagnosis had an infectious cause

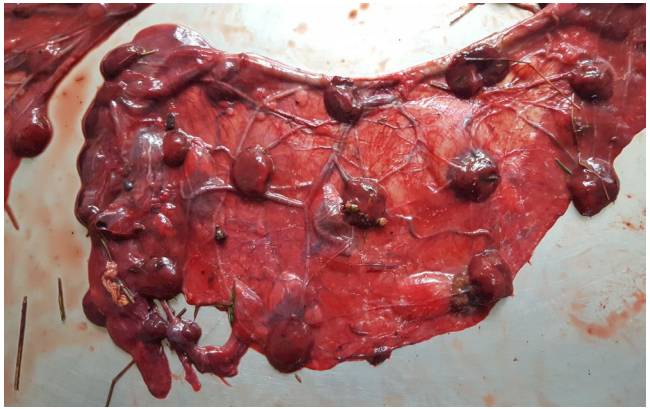


meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Reaching a diagnosis

Inclusion of placenta: over 2 times more likely to reach diagnosis



50% of submissions with autolysis but diagnosis still reached in 57% of these cases

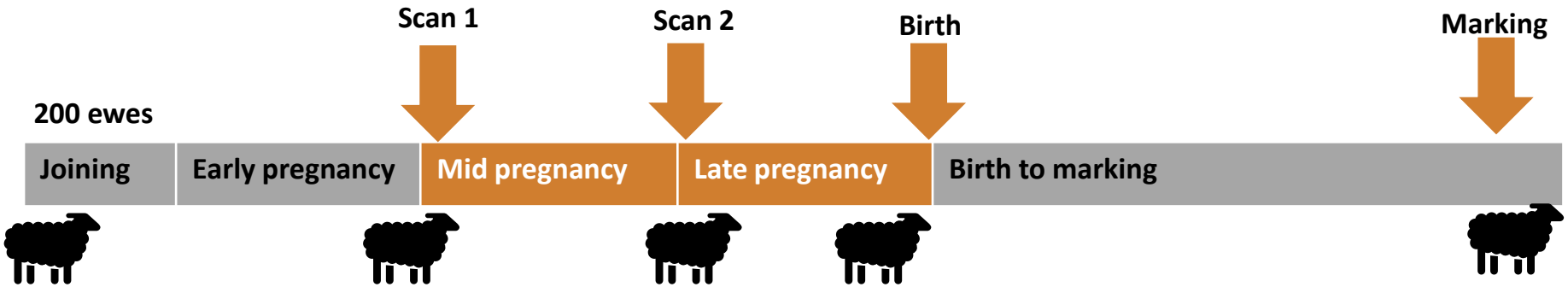
meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Lamb mortality research

30 maiden flocks on 28 farms

- WA, SA and VIC
- 19 ewe lamb flocks
- 11 Merino maiden 2-year old



meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Evidence of exposure to infections

Blood test for 1279 maiden ewes

At least 40 per flock

	Positive ewes
Toxoplasma	1.1%
Neospora	0.2%
Q-fever	0.1%

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Campylobacter: 11 flocks in WA

	C. fetus	*C. jejuni*
'Exposed' flocks - adults	**100%**	**Not tested**
'Exposed' flocks - maidens	**64%**	**100%**
FTR 'exposed' maiden ewes	6%	98%
Reared 'exposed' maiden ewes	6%	97%
'Positive' maiden ewes	**0%**	**62%**

Campylobacter: national findings

- *C. jejuni* antibodies at marking very common - **not** associated with failure to rear
- *C. fetus* 'positive' ewe lambs 2 times more likely to fail to rear (but **uncommon in WA**)
- *C. fetus* antibodies at marking not consistently associated with failure to rear
- Antibodies rise & fall quickly during outbreak – testing at marking (or later) may be unreliable
- **Lamb post-mortems with lab testing are the gold standard**

meatup FORUM

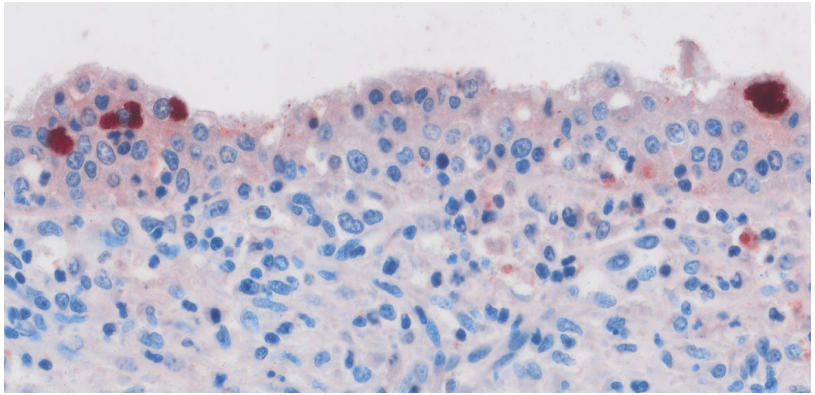
mla MEAT & LIVESTOCK AUSTRALIA

Lab investigation for aborted & stillborn lambs

35 cases from 6 farms in WA

***Chlamydia pecorum* detected:**

- 64% lambs born to ewe lambs
- 8% lambs born to 2-year old maidens
- 5/6 farms



Murdoch/DPIRD

Other common infections ruled out with testing

meatup FORUM

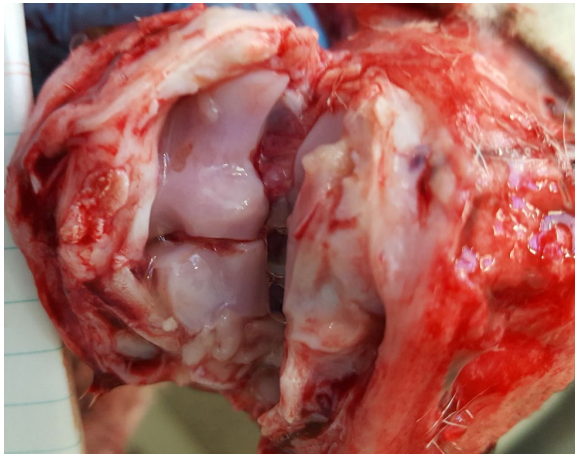
mla MEAT & LIVESTOCK AUSTRALIA

Chlamydia pecorum sequence type 23

Abortions & Stillbirths

Murdoch

Arthritis



Murdoch

Pink eye

NSW DPI

Also in cattle: abortion, sporadic bovine encephalomyelitis

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Risk factors for mid-pregnancy abortion

	Ewe lambs	2-year old maidens
Liveweight	X	X
Liveweight change	X	X
Condition score	X	X
Condition score change	X	X
Birth type (single, twin)	X	1.6% higher in singles

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Take home messages

What we found	So what?
Mid-pregnancy abortions are hard to detect and rarely sampled.	Don't know much about causes of early- and mid-pregnancy abortions
Campylobacter, Listeria and ***Toxoplasma*** most common diagnoses, but wide range of causes	Collect stillborn or aborted lambs, **placenta or membranes** for lab testing.
Campylobacter fetus not common in WA, but outbreaks can occur under the right conditions	Vaccination may reduce losses on some farms in some years, but not a silver bullet for lamb survival. Blood tests need to interpreted carefully.
The 'dangerous strain' of ***Chlamydia*** *pecorum* is common and widespread in ewe lambs	Collect aborted, stillborn or weak lambs for testing. Include placenta or membranes where possible.

Causes of lamb mortality

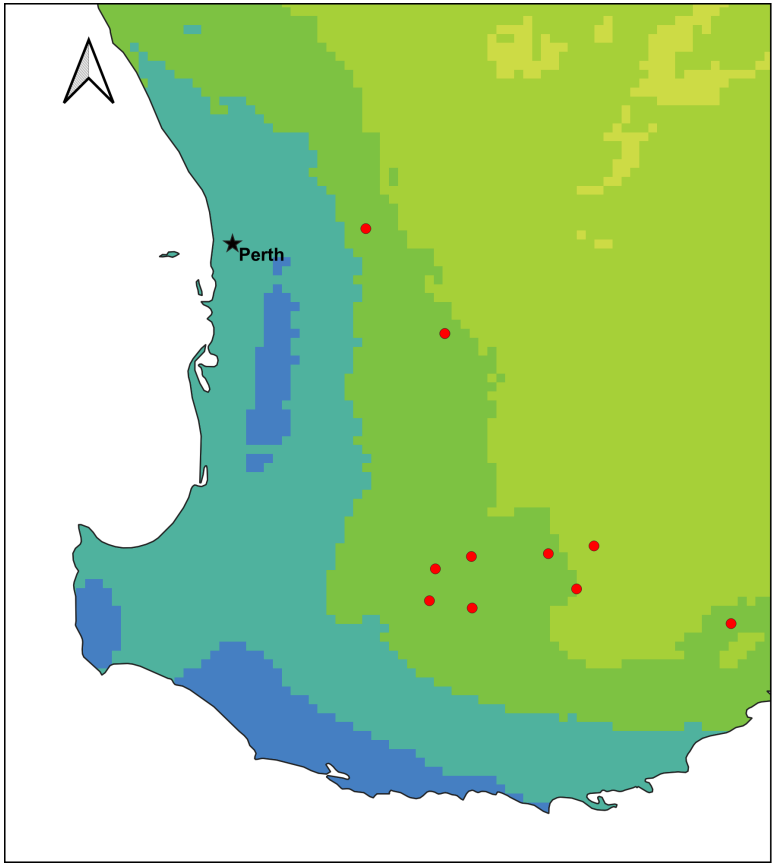
meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Lamb post mortem exams

11 maiden ewe flocks in WA

298 lamb exams



meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

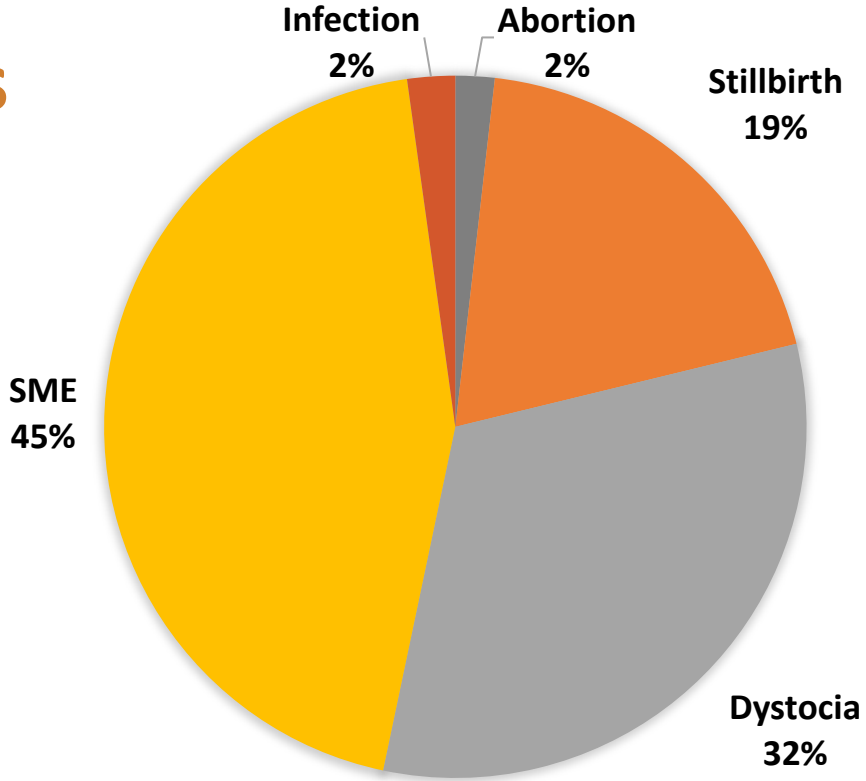
Lamb post-mortem exams

298 lambs

Cause of death determined for 76% lambs

Most common cause of death:

- **Starvation-mismothering-exposure**
- **Dystocia (underestimated)**
- **Stillbirths**



meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Take home messages

What we found	So what?
Lamb post mortems helpful to determine important causes of death	This informs strategies likely to improve survival on your property (**different solutions** required)
Dystocia (lambing difficulty) is important cause of lamb mortality for maidens and mature ewes	Lamb post-mortem exams can show if changes to nutrition, management or genetics warranted
Stillbirths and mis-mothering are important causes of mortality, and maiden ewes are more susceptible to **infectious diseases** that increase risk	Contact vet to discuss submitting aborted, stillborn and weak lambs for subsidised testing under DPIRD Abortion Surveillance Scheme

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA

Take home messages

- Measure reproductive (scanning) rate and lamb survival (especially maidens)
- Abortions are important source of loss for some farms (especially ewe lambs)
- Any signs of abortion warrant investigation – speak to vet
- Disappointing lamb survival?
  - Consider repeat scanning to detect mid-pregnancy abortions in maidens
  - Lamb post-mortems with lab testing

Knowing when losses occur & why = choose the right strategies for your system

meatup FORUM

mla MEAT & LIVESTOCK AUSTRALIA