Tracking and identifying causes of calf loss on Florida ranches

Dr. Raoul Boughton

Typical calf survivorship

Why is calf loss important to characterize?

- Producing and raising healthy calves is integral to profitability and success of cow-calf operations
- It has been one of the hardest areas to conduct good research in because of high logistical issues
- Identifying the causes that most affect calf loss in Florida, will focus our resources and research to provide the greatest economic return to producers
- An increase in 1% survival of the Florida state calf herd is equivalent to 6900 calves (What is this worth?)
National Calf Loss (USDA 2007)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>1-49</th>
<th>50-99</th>
<th>100-199</th>
<th>200 or More</th>
<th>All Ops.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Born alive and survived to weaning</td>
<td>93.1</td>
<td>93.0</td>
<td>93.3</td>
<td>94.5</td>
<td>93.6</td>
</tr>
<tr>
<td>Born alive but died before weaning</td>
<td>4.0</td>
<td>4.0</td>
<td>3.5</td>
<td>3.0</td>
<td>3.5</td>
</tr>
<tr>
<td>Born dead</td>
<td>2.9</td>
<td>3.0</td>
<td>3.2</td>
<td>2.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

National Loss Periods

Still born – early abortion

Age at Death or Loss:
- Less than 3 weeks old
- 3 weeks and older

National causes of calf loss

- Digestive problems
- Respiratory problems
- Heart or congenital
- Genetic
- Environmental
- Insects
- Parasites
- Fluid loss
- Genital cause
- Unknown cause

- 4.9% less than 3 weeks old
- 22.6% 3 weeks and older
- 11.6% unknown cause
Florida UF Research Center Losses

- UF research center herds 20 year summary
  - 6% average loss (similar to National average)
  - 12% in first and second time breeders
  - Cause of calf loss not recorded
- Less than many operations in Florida
- Can management of UF herds be replicated in an industry setting?
- What is being done differently at UF?
  - High management level
  - High inputs
  - Lots of activity

Florida Ranch Reported Losses

- 2008 directed calf loss survey
- 46 responses (encompassing 144,000 breeding animals included cows/heifers)
- 28 ranches run over 1,000 cows
- 9 ranches run between 500-1,000 cows
- 9 ranches run between 0-500 cows
- Conducted by Jodie Termine (2007 and 2008)
Florida Ranch Reported Losses

What do you feel your average calf loss is in a year?

- Greater than 1%: 48%
- 1-2%: 10%
- 2-5%: 10%
- 5-10%: 19%
- Greater than 10%: 12%

Florida Ranch Reported Losses

When are your losses noticed?

- 0-5 days: 28%
- 6-10 days: 21%
- 11-20 days: 11%
- 21-30 days: 9%
- 31 days or more: 2%
- None: 1%
- Less than 10 days: 9%

Florida Ranch Reported Losses

Are predators a problem?

- Yes: 49%
- No: 20%
- Minimal: 15%
- Not sure: 16%
Objectives of 2017-2019 study

1. Undertake the most thorough peri- and post-partum calf loss study ever conducted
2. Quantify cause of calf loss from late gestation to weaning
3. Establish the most common causes of calf loss
4. Based on quantified causes of calf loss provide sound advice on how to reduce calf loss to Florida cattleman
5. Define the most important data gaps needed to fix the causes of calf loss in Florida

How can we do it?

• We have to track calf loss from palpation, including birthing events, to weaning
• Using vaginal birthing inserts on known pregnant cows we can track calving time and ascertain survival and allow recording of early calf loss.
• Using VHF ear tags after initial birthing event we can monitor for mortality events and investigate up until weaning
• Logistics and sample size greatest hurdles
Sensor Trial 2016

- The company Medria and John Balbion (US distributor) provided sensors, base station, and network access in kind for a trial study
- 22 sensors deployed 13th September 2016

Expulsion Event
Success!

After Birth VHF transmitter attached to ear tried and true method

Data Logger and Antenna Receivers

Fixed Towers and data loggers in the field to follow cattle birthing sensors and VHF mortality signals, to allow for early responders and establishment of calf loss
Recommendation of panel tests to be conducted on both cows, and calf after calf death.
Will be compared to successful cows-calf pairs

<table>
<thead>
<tr>
<th>Test Category</th>
<th>Test Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBR</td>
<td>X</td>
</tr>
<tr>
<td>BVD</td>
<td>X</td>
</tr>
<tr>
<td>Neospora</td>
<td>X</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>X</td>
</tr>
<tr>
<td>Coxiella</td>
<td>X</td>
</tr>
<tr>
<td>Actinomyces</td>
<td>X</td>
</tr>
<tr>
<td>Ureaplasm/Mycoplasma</td>
<td>X</td>
</tr>
<tr>
<td>Aspergillus</td>
<td>X</td>
</tr>
<tr>
<td>Haemophilus</td>
<td>X</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>X</td>
</tr>
<tr>
<td>Listeria</td>
<td>X</td>
</tr>
<tr>
<td>Salmonella</td>
<td>X</td>
</tr>
<tr>
<td>Anaplasma</td>
<td>X</td>
</tr>
<tr>
<td>Vibrio &amp; Trichomonas</td>
<td>X</td>
</tr>
<tr>
<td>Sarcosystis (microscope analysis)</td>
<td>X</td>
</tr>
<tr>
<td>Micro and micronutrients analysis (selenium, vitamin A, and minerals (blood and/or liver))</td>
<td>X</td>
</tr>
<tr>
<td>Colostrum and milk</td>
<td>X</td>
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</table>

*Necropsies will be undertaken at Bronson Animal Diagnostic laboratory under coordination with collaborating veterinarians and researchers.

Current Activities

- Equipment acquired for three full set-ups to each monitor 110 cow/calf pairs from late pregnancy to weaning
- First set of inserts applied at Big Cypress August 2017
  - 1st calves mid to late October
  - Herd health sampled on random 25 cows
    - Blood and chemistry panel
    - Vaginal Swabs
    - Anaplasmosis test
- Second set to be applied at preg check Longino Ranch October 2017
- Third set to be applied December 2017 at Buck Island Ranch

Collaborative Research and Extension

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Role</th>
<th>Affiliation</th>
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<tbody>
<tr>
<td>Dr. Raoul Boughton</td>
<td>PI</td>
<td>UF/IFAS – Range Cattle REC</td>
</tr>
<tr>
<td>Gene Lollis</td>
<td>Co PI/Manager</td>
<td>MAERC/Buck Island Ranch</td>
</tr>
<tr>
<td>Dr. Liz Steele</td>
<td>Co PI</td>
<td>Ridge Large Animal Veterinary Services</td>
</tr>
<tr>
<td>Dr. John Metzger</td>
<td>Co PI</td>
<td>Ridge Large Animal Veterinary Services</td>
</tr>
<tr>
<td>Alex Johns</td>
<td>Manager</td>
<td>Seminole Beef/ Seminole Tribe of Florida</td>
</tr>
<tr>
<td>Cliff Coddington</td>
<td>Manager</td>
<td>Longino Ranch</td>
</tr>
<tr>
<td>Wes Carlton</td>
<td>Rancher</td>
<td>Fish Branch Ranch</td>
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<tr>
<td>Dr. Dave Onorato</td>
<td>Supporting agency</td>
<td>Florida Wildlife Commission</td>
</tr>
<tr>
<td>Dr. Short &amp; Dr. Reddi</td>
<td>Diagnostics</td>
<td>Florida Wildlife Commission</td>
</tr>
<tr>
<td>Palm Beach County</td>
<td>Program: Extension agents</td>
<td>Florida Wildlife Commission</td>
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<td>Dr. Dean Driver</td>
<td>Supporting agency</td>
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<td>David Blankle</td>
<td>Supporting agency</td>
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