**CALF-WATCH: Developing tools for research on calf loss in extensive situations.**

Calf loss is a major source of lost income for northern beef producers and it has been estimated that neonatal calf loss costs north Australian cattle producers in excess of $53M annually. While it is often difficult to improve pregnancy rates in harsh northern environments, reducing calf loss has potential to improve weaning rates and profitability. In northern Australia it is not uncommon for calf loss to exceed 30% in first calving heifers and 15% in cows, and halving these losses would provide significant benefits to northern beef producers.

It has been difficult to investigate and improve calf loss using traditional methods as calving females are difficult to find in large paddocks, and close observation during calving disturbs animals alters behaviour and in some cases may even exacerbate the problem. Also calf carcases are difficult to find under extensive conditions and so in many cases it has not been possible to conduct autopsies to determine the cause of calf deaths. If a system could be developed to remotely monitor calving in extensive conditions then it would be a game changer for research into calf loss in northern Australia.

Researchers at the University of Florida have developed a system to remotely monitor calf loss and while this system currently has some limitations in areas without mobile phone coverage, a new project (called Calf Watch) aims to collaborate with Florida researchers to adapt their system for use in northern Australia and to use it to investigate the causes of calf loss. Ultimately this research has the potential to reduce calf loss and improve incomes for northern beef producers.

The ability to be able to monitor calving remotely and locate calf carcases for research in extensive situations will be especially useful for research into the effect of paddock size on calf loss. It is suspected that the incidence of calf loss is increased when calving occurs a long way from water points in large paddocks and that reducing paddock size may reduce calf loss rates. However there is currently little scientific evidence for this, and so it is difficult to justify spending large amounts of money on infrastructure without evidence that it will improve calf loss.

The systems developed in this project are expected to revolutionise research into calf loss in northern Australia. They will enable the time and location of calving to be recorded remotely so that researchers will be better able to locate cow/calf pairs shortly after calving for observation and also collect dead calves in a timely manner to conduct autopsies. The project will use birthing sensors that are currently being used successfully in similar studies by the University of Florida. The birthing sensors are expelled from the birth canal of cows at calving and then emit a signal allowing the time of calving to be recorded. A message with this information is sent to researchers who then locate the calving site, record details. The cows are fitted with GPS tracking collars so that their location is recorded every 15 minutes. This allows researchers to locate them to record observations as they will have GPS coordinates of where they were when the birthing sensor was expelled and their current location.

These systems will enable collection of data that was not previously possible and hence will greatly increase knowledge of calf loss and help identify solutions to reduce it. This study is currently being conducted on Manbulloo station near Katherine NT with 200 cows.