

# ANIMAL BEHAVIOUR AND CALF MORTALITIES IN A NORTH QUEENSLAND BREEDING HERD

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## *Summary*

At Meadowbank, cattle are more intensively managed than on many properties in the region. The breeding herd contains 1000 individually identified **cows**. The behaviour of these cattle has been studied and the observations utilized in making more informed management decisions relating to mating, mustering, fencing and watering.

Heifer calves born in November-December were heavier at weaning than June-July born calves. Heifers were mated at two ages (18 and 26 months). In the 18 months heifers, those animals which subsequently became pregnant were heavier at mating than those which did not become pregnant. Of all the cows found pregnant two months after mating, 14.4% did not rear a calf to branding age. Of these losses, 19% were from abortions, 64% from perinatal losses and 17% from death of pregnant cows. Dingo attack appeared to be the main cause of neonatal losses.

## I. INTRODUCTION

After an examination of the rainfall and calf branding figures for seven properties in North West Queensland, Churchward (1965) concluded that 'there was an urgent need for accurate assessment of neonatal mortalities in beef cattle in that area. Branding percentages in Northern Australia range from 46 to 75% in various districts and Donaldson (1962) considered that low branding percentages were largely due to low conception rates. Smith and Alexander (1966) observed 49 births in cows in summer in the Cloncurry district, and recorded a 16% perinatal mortality attributable to accidents at parturition and to excessively high body temperature associated with the hot environment. Losses of 18, 38 and 48% of calves between pregnancy' test and branding were reported in three groups of cattle by Donaldson, Ritson and Copeman (1967).

Improvement in the efficiency of cattle production depends on prior definition of problems by careful and detailed observations on the property, followed by their resolution in the field or by research, in the laboratory. This requires close liaison between grazier and scientist and this paper records observations resulting from such a liaison. The observations relate the performance and behaviour of cows and calves to their environment.

## II. MATERIALS AND METHODS

Meadowbank is situated 40 miles south of Mt. Garnet, 150 miles north-west of Townsville, at latitude 18° 16' south and longitude 144° 58' east. It is 130 sq. miles (337 sq. km) in area and is subdivided into two paddocks of 25,000 acres (10120 ha), one of 7,000, two of 3200, four of 2500, three of 1900, and one of

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640 acres, plus several small paddocks for horses, weaners and holding. It is watered by eight dams, one bore, five wells and three almost permanent springs. The climate, geology, geomorphology, hydrology, soils, vegetations, land use and beef cattle industry of this general area have been described by Perry *et al.* (1964) and Twidale (1966).

These observations are based on ten years practical experience and six years of careful observation and of recording of the behaviour and performance of the Meadowbank herd of about 1000 breeding cows. The cows were of varying grades of Brahman x Shorthorn. They were identified by metal ear tags and a large proportion of them are known by name. The cows were mated twice yearly in February/March and in September/October. Pregnancy tests were made eight weeks after the bulls were removed, and the pregnant cows were placed in a separate paddock. Cows were tested again in the month before the start of calving in 1966 and 1967 to detect abortions between about two and eight months of gestation. Cows were observed frequently and counted during calving. Supplements (Donaldson 1966) were given as necessary to cows late in gestation or suckling young calves. Calves were weighed at weaning, at two years of age and occasionally at other times.

### III. RESULTS AND DISCUSSION

#### (a) *The cow and calf*

The mating periods were chosen to avoid having calves born between January and May. Such calves grow poorly because they must be weaned between May and August to prevent their mothers from dying from the stress of lactating on a sub-maintenance plane of nutrition. The weaning weights for heifers born from 1962 to 1965 were adjusted to 200 days of age for comparison. The mean weight at weaning of 342 heifers born during November-December, of  $138 \pm 1$  kg, was greater ( $P < 0.05$ ) than that of 283 heifers born in June-July,  $128 \pm 1$  kg. These figures may be compared with weaning weights (adjusted to 200 days of age) of Brahman cross calves from a coastal property near Ingham where June and July calves averaged 173 and 168 kg respectively and were heavier than November (163 kg) and December (159 kg) calves (Donaldson and Larkin 1963).

The June and July calves weaned at Christmas on to the good pastures then available, grow faster than the November-December calf drop weaned in June on to dry pastures and fed a supplement when necessary (Hassall, Rankine, and Donaldson 1968). The liveweights of heifers were examined before February-March mating in 1965. Twenty one out of thirty November-December born heifers aged 27 months, but only 8 of 85 twenty-month old heifers born June-July became pregnant. The older heifers were significantly heavier ( $255 \pm 5$  kg) than the younger heifers ( $193 \pm 3$  kg) ( $P < 0.001$ ). The heifers in the younger group which subsequently became pregnant ( $217 \pm 4$  kg) were heavier than those remaining non-pregnant ( $190 \pm 3$  kg) ( $P < 0.01$ ). There was no significant difference in the weight gain during mating between those which became pregnant (24 kg) and those which did not (22 kg).

The cows whose calves are dropped in November and December and weaned in June are always in poor body condition. The 31% of these that become pregnant in the February-March mating are the most severely stressed animals in the

herd. They will not improve on body condition before they calve in November and December and they need to be given good care before and after calving. On the other hand, cows that calve in June and July and become pregnant again in August or September have their calves weaned at Christmas and are fat when they calve again. The 50 cows that died before calving in 1966 from starvation and being trapped in the mud of drying water holes were cows that had reared a calf in 1965-66.

A summary of pregnancy rates and the losses of calves between, two and eight months pregnant and between eight months and branding (at four months) are given in Table 1 for the years 1962-1967. Pregnancy rates range from 7% in a severe drought to 69%, and the percentage of calves lost from pregnant cows (including death of cows) between pregnancy test and branding ranged from 9 to 39%. Between 1962 and 1967, 14.4% of all cows pregnant two months did not rear a calf to branding. Nineteen per cent of these losses were from abortions before the eighth month of pregnancy, 64% from perinatal losses and 17% from death of pregnant cows.

### **(b) Calf losses**

Calving difficulties are rare. Only three still-born calves have been seen in six years and deformities are most unusual. Dingoes are thought to be responsible for the majority of the deaths between calving and branding. In the timbered basalt country of Meadowbank, heat appears to be no problem at all.

TABLE 1  
***Pregnancy rates and losses of calves between pregnancy test (two to three months after end of mating) and branding***

Year	Preg. Test Date	Preg- nancy %	No. Preg. cows	Deaths of Preg. cows	No. calves lost before branding (all causes)	% lost	No. of Abortions*	No. peri- natal losses†
1962	Aug.	69	332		38	11.4	9	29
1963	Jan.	62	136		27	19.8	4	23
1963	June	38	197		22	11.2	20‡	2
1964	Jan.	57	256		32	12.5	8	24
1964	June	58	239		24	10.0	4	20
1965	Jan.	30	122		11	9.0	4	7
1965	June	61	425		36	8.5	0	36
1966	Jan.	51	230		38	16.5	6	32
1966	June	45	180	50	71	29.4	4	17
1967	Jan.	7	37		6	16.2	1	5
all tests			2117	50	305	14.4	59	195

\*From two to eight months of pregnancy.

†From the eighth month of pregnancy till branding at four months of age.

‡An outbreak of brucellosis this year.

Dingoes remain a problem even though poison baits are continually laid around cattle watering points and camps.

The calving paddocks are about four or five square miles in area, and are watered by a mill and tank or dam, or in some cases by a spring. The paddock size is small by district standards. A cow with a baby calf will have to leave it to walk up to two miles to water and must be away for an hour at least. This is the time when many young calves may be found and taken by dingoes. The calves do lie quite still all day and a dingo could pass within ten yards and not detect one.

Contrary to- popular belief, a cow does not really hide her calf. It just flops down anywhere, often as if for concealment in long grass or bushes, but quite often out in the open. Frequently the cow does not **know** exactly where her calf is, but returns to the general area and bellows. Only then will the calf stand up and answer her. This procedure can easily be interfered with by simply disturbing the calf whilst its mother is away. The calf can sometimes become frightened and bolt anywhere, even through a fence. If let alone after it has been disturbed, the calf will stop running and wander around bellowing, eventually returning to somewhere near where it started. The mother will go there too and start bellowing for it. Unless the calf has gone through a fence or been caught by a dingo, they will find each other. Dingoes **have** been observed just watching a cow with a calf, waiting for her to leave it. The cow's manner then appears nervous and she watches the dingo all the time, not leaving the calf for a moment. Usually she will try to take the calf away with her, **by** moving off when it is still hungry. **Brahmin-cross** calves can often travel for four or five miles when only a day old, although they usually do **not** go to water with the cows until they are about a week old. ,

Usually cows go off to calve on their own and a long way from water and other cattle. Occasionally, however, they will calve at a cattle camp near water at midday.' They do not always seek shade, and even little calves often lie **down** at midday out **in** the blazing summer sun. A new born calf generally sucks within an hour of birth. Occasionally; in a very good season; a new mother may have a sore udder and at 'first -kick at the 'calf. After the first long **suck** the calf will lie down and, **unless driven** or **molested** by dingoes, does little but suck 'and sleep for three or four days.

From about **six** weeks old, calves begin to congregate in groups of 20 to 25 usually with **only** one or two cows near them. Usually they do not go to water with the cows. Sometimes a single cow near them gives rise to the 'story of "nursemaid"; certainly **this** cow would chase any dingo **that** appeared but there does not seem to be purposeful behaviour of this **sort**. Dingoes, often lurking around water in the afternoon, try to pick up any straggling calves after the herd has walked out to graze. Often there are a few calves that wake up to find they have been left behind and start **wandering** out after the cows. Left alone, they will walk along bellowing until the mothers come back for them, but in the meantime they are very vulnerable to dingo. attack.

It is surprising how many calves escape after being bitten by dingoes. About as many are bitten and survive as are killed,. As soon as a calf is attacked,, its

terrified cries bring any cattle within hearing, even bullocks, galloping up. It is suspected that this is more out of curiosity than to help, but they frighten off the dingoes. Sometimes calves up to three months old are killed if attacked by two or more fully grown dingoes.

Calves seldom die of starvation in droughts unless their mothers die, and even then some survive. A drought in 1965 was the worst in decades in our district, and 40 cows that calved in June-July died leaving their calves. Twenty of these orphans were killed by dingoes; six with the persistence and tenacity peculiar to Brahman cross cattle, got themselves adopted by cows with calves of their own, -and the other 14 managed to survive. The calves were about three months old when their mothers died and used to eat some urea/grain lick with the cows (Donaldson 1966). When brought in to brand at four months of age, some of them weighed only 59 kg. The non-orphans weighed 93 kg.

Twelve orphans had been bitten by dingoes but survived. Twenty more calves that had mothers were killed by dingoes and about ten others were bitten. These figures support the observation that it is not only the weak or otherwise debilitated calves that are taken by dingoes.

### **(c) Handling cows and calves**

Cows with baby calves are handled as little as possible, so cows are dipped, when this is necessary, just before calving and put in a paddock not recently grazed. They do not then have to be mustered again until calves are some months old. A large **number** of calves can be lost by moving cattle to other paddocks when calves are young. It is sometimes difficult, particularly in fat cows, to tell whether a cow has just calved two or three days ago or is about to calve. One year, about 200 calving cows had to be moved because of a water shortage. During the muster, six cows that obviously had young calves somewhere were allowed back to **find** them. Other cows and calves were not mothering well. Cows and calves were cut out on horseback, pair by pair, until thirty cows were left without calves. Of these, 10 were dry and the others were left in a paddock. Next day, 13 had calves with them, 2 had evidently lost calves, and 5 were yet to calve. This experience illustrates how easily one can upset the natural habits of cattle. Donaldson (1962) has reported calf losses of 4% due to mustering.

In the past six years only about 2% of breeders have died from the effects of the dry season or drought whereas neighbours have lost 25 %. This is due to careful segregation of cattle on the basis of pregnancy, age, and body condition and the feeding of supplement to those that are the weakest.

All in all it seems that success in closely managing breeding cows stems from a careful study of the animal's natural behaviour, and then carrying out procedures least likely to upset that behaviour.

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