Review of Report to Deer Industry New Zealand

Estimation of Deer Population and Productivity Data 1990-2012 – Report #SCL 12/2 written by Jimmy Suttie - June 2012

Reviewed by:

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Contents

Purpose of the report being reviewed

The report addresses the purpose for which it was prepared, namely –

'*Estimating deer population and productivity data 1990-2012*'

Methodology, assumptions and sources used to estimate the data

Methodology

The report applied an objective and scientific approach wherever possible. Much of the methodology had been agreed between MPI and DINZ but insufficiency of some data sources required additional data to be located. In some cases data sources were not available and conclusions were based on logical and sensible reasoning, usually with adequate explanation where this was necessary.

Assumptions

Assumptions were generally well reasoned and founded on best available information.

Information sources

The information was sourced from the scientific literature by use of the DEEResearch publication database, from industry publications (e.g. *Deer Industry News*), from other data sources (e.g. AgResearch, MPI, Statistics New Zealand) and from discussions with farmers, scientists and veterinarians.

Accuracy of the reported data

Data based on slaughter information (provided by MPI) may be considered as being of high quality in terms of indicating trends. Other data are based on surveys and may lack accuracy. Where data have been incomplete or required assumptions to be made, these have been pointed out and the bases for filling in gaps, extrapolations and assumptions have been carefully explained.

In the case of the deer industry some important information is surprisingly poor in quality or quantity. The author has pointed this out and has been justifiably conservative in reaching conclusions based on such data.

Feasibility/practicality/logic of any opinions presented

In all cases a reasoned approach has been used to arrive at a conclusion.

Options of other data sources that have not been identified in the report but may be of use in the future

There may be an opportunity to source reliable data from large-scale farms (e.g. Landcorp) in order to generate better information about live weights and dressing out percentages for the different age-gender classes and crossbreeds in the deer industry. This would improve the usefulness of carcase data for estimating the biomass of deer on New Zealand farms at the time they are consigned for slaughter and would help to determine the biomass of the whole slaughter supply chain.

Assessment of author's recommendations

Executive summary (pages 5-13)

The summary statements in Table 1 appear to be largely correct, although it is not clear where the data for mixed age stag carcase weights were sourced from. Also, the autumn peak for hind slaughter is March to April (see Figure 7) rather than April to May as stated here.

The recommendations as to changes to be captured in a revised Inventory Model (Table 2) appear to be correct and are supported by the explanations. The keynote recommendation (p. 13), that deer require a specific model because they have features that are sufficiently different from those of traditional farm species is justified.

Summary recommendations

3.14 (page 35)

That the Inventory Model takes account of the following findings:

- dressing out is 55%
  - Agree, but paucity of data means that this value is no better than a reasoned guess. 55% probably applies to animals in good body condition; poorer conditioned animals would dress out at a lower value, e.g. 52%.
- timing of and live weights at slaughter are as presented in Table 9
  - Agree

4.7 (page 39)

That the Inventory Model takes account of the following findings:

- hind live weight and stag live weight data are as shown in Table 11
  - Disagree mildly. Carcase data (and assuming a dressing % of 55) from Meat & Wool New Zealand survey data (cited by Thompson *et al.* 2011) suggest cull hind live weights of around 94 kg for 2003-2007 (*cf.* 100-118 kg here). Likewise the survey data for adult stags indicate a live weight of around 180 kg, but the massive seasonal changes make it impossible to make a direct comparison with the data presented here. Overall, I suspect the presented figures may be slightly optimistic, but the paucity of good source data makes it difficult to be sure.

- in particular, June minima and March maxima in terms of stag live weights
  - Agree

- weight loss in stags is linear from March to June
  - Agree

- no stags gain weight from June to September and liveweight-gain in stags is linear from September to March
  - Agree

5.9 (page 44)

That the Inventory Model takes account of the following findings:

- first calving hinds have a 70% weaning rate and older hinds have an 85% weaning rate
  - Agree

- the data used in the model should be 30 November in 1990 and 19-20 November in 2008, with a linear change between these dates
  - Agree This corresponds fairly well with Meat & Wool New Zealand survey data (cited by Thompson *et al.* 2011) which give dates of 25 November and 17 November, respectively.

6.4 (page 48)

That the Inventory Model takes account of the following findings:

- mortality of deer of both sexes less than one year old is 5% annually and for animals of both sexes older than one year is 2% annually
  - Agree

- monthly mortality rates are as specified in Table 15 (not Table 14)
  - Agree

7.6 (page 57)

That the Inventory Model takes account of the following findings:

- the distribution of deer between land of high and low class from 1990 to 2011 is as specified in Table 16
  - Agree
- monthly ME data available to deer from 1990 to 2011 is as specified in Table 18
  - Agree
- ME requirements of deer are seasonal and are in accordance with Table 19
  - Agree

8.4 (page 58)

That the Inventory Model takes account of the following findings:

- hinds lactate for 120 days
  - Agree Assumption of March weaning date is sound.
- hinds produce 1.7 litres of milk daily
  - Agree This is a fairly crude estimate, being simply the yield at mid point of lactation, assuming weaning in March. However, the estimate given here is in accord with similar data from the United Kingdom and Spain. Milk yield is affected by suckling demand (i.e. calf growth rate) and will increase markedly if fast growing calves (e.g. Wapiti crossbreeds) are present or if weaning occurs later than March.

9.5 (page 61)

That the Inventory Model takes account of the following findings:

- that the annual velvet yield per velvetting stag is in accordance with Table 20
  - Agree

Other comments on the report

A minor point is the frequent use of the term 'data' as a singular noun – it is plural.

It is not clear whether a distinction is made between 'Wapiti' and 'Elk' or whether they are treated as equivalent terms.

The point (2.2.2.) that the degree of introgression of Elk/Wapiti into the base Red deer hind herd is not known is correct. This lack of knowledge represents loss of opportunity that the industry might once have had and will forever confound measures of farmed deer performance in New Zealand. Likewise there is a similar lack of information on the

introgression of Eastern European Red deer into the herd and on how much this may have contributed to any increase in hind live weights.

Table 7 has an error. The Feb value for stags over 2 years should be 0.07 (not 0.10). However, what is more disconcerting is that the information that is provided to explain the calculations for this table (as stated in 3.9.7. and 3.9.8.) does not seem to add up. It appears to rely on other assumptions not provided here and thus reinforces the statement (3.9.9) that assumptions 'need to be treated with care'. However, because of uncertainty in how the calculation was performed, this caution should be extended to the data in the table as well.

I believe the conclusion (4.6.1), that stag and hind live weight has increased from 1990 to 2011 (referring to adults – carcase weights of yearlings show little evidence of any positive trend). However, as I have indicated in the previous section (refer to 4.7), there is a lack of empirical information on which to base this conclusion.

Weaning rate, as used here (5.2.2. and 5.9) includes post natal loss (much of which is from misadventure). So it is not necessarily a reflection of purely 'reproductive' loss. However, as mentioned in 5.3.1., embryonic (difficult to ascertain) and fetal loss (scanning to calving loss) are examples of reproductive loss that is emerging as an issue on some farms.

7.4.2.2. – error. Should be Table 16 (not 15).

The statement in 7.5.3.1. that the seasonal pattern of feed intake is obscured in adult hinds due to demands of pregnancy and lactation has been overtaken by recent evidence (Scott *et al*. 2011, 2012) showing, surprisingly, that the autumn-winter decline in feed intake is of identical magnitude in both pregnant and non-pregnant hinds.

References

Scott, I C, Asher, G W, Barrell, G K and Juan, J V (2011) Voluntary food intake of pregnant and non-pregnant red deer hinds during the gestating period. *Proceedings of the New Zealand Society of Animal Production* 71: 53-55.

Scott, I C, Asher, G W, Barrell, G K and Juan, J V (2012) Does nutritional status during the latter stages of pregnancy mediate the effect of conception date on gestation length in red deer hinds? I. Voluntary food intake of hinds during gestation. *Animal Production Science*: submitted.

Thompson, B C, Muir, P D, Davison, R and Clark, H (2011) Review of population models within the national methane inventory (2010). *MAF Technical Paper No. 2011/23.* Ministry of Agriculture and Forestry, Wellington.