

MDMG: ANNUAL DEER MANAGEMENT REPORT

Report prepared by Strath Caulaidh Ltd

31st May 2016

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ACKNOWLEDGEMENTS

This report was prepared by Strath Caulaidh Ltd, Perth, UK with contributions from the following people:

- Drew McFarlane-Slack, chair of the MDMG
- Ralph Smith, secretary of the Monadhliath DMG.
- The owners of land within the Monadhliath DMG.
- The agents, managers and keepers of estates within the Monadhliath DMG.

REPORT PREPARATION

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Draft by / date	Checked / date	Final by / date	Checked / date
DC 15/05/16	MM 24/05/16	DC 28/05/16	MM 31/05/16

Standard caveats

- SCL have exercised reasonable skill, care and diligence in the preparation of this document, in accordance with the standards of a qualified and competent person experienced in carrying out work of a similar scope and complexity to the agreed services and current at the time when the services were performed.
- SCL have performed the agreed services generally in accordance with our proposal document or otherwise according to the clients specification, but have in places added to and varied the scope where it appeared to us necessary and reasonable to do so.
- SCL have taken all reasonable precautions to avoid damage to property belonging to the client and any third party.
- SCL worked with sub-contractors to perform part of the services and we exercised all reasonable care to ensure that they were appropriately skilled and experienced in relation to the work that they were instructed to carry out.
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Specific caveats

- The report in places uses data sets created by other organisations and we cannot be held responsible for their accuracy.

1. EXECUTIVE SUMMARY

This report provides a summary of deer management activity in the MDMG area over the period 1st April 2015 - 31st March 2016. The report forms a briefing for MDMG owners and managers in advance of a meeting to be held on 6th June 2016 to discuss deer management for the 2016-17 season and beyond.

HIND CULLS

In the 2015-16 season the overall red deer hind cull in the RDMA decreased to 1,844 hinds (and 563 calves) from 1,990 hinds (and 738 calves) in 2014-15. The decrease arose mainly due to a reduced cull in the Speanbridge SG although a small reduction also occurred in Speyside. Appendix 2 provides a breakdown of hinds shot on each estate compared to targets and longer-term averages.

STAG CULLS

In the 2015-16 season the reported red deer stag cull in the RDMA remained broadly steady at 1,217 (1,264 in the 2014-15 season). The stag cull remains lower than in 2013-14, the year before the SDMP was implemented, mainly as a result of the Coignafearn 'stags for hinds swap' which meant ~ 100 less stags were culled in 2015-16 than normal. Appendix 2 provides a breakdown of stags shot on each estate compared to targets and longer-term averages.

Many owners who provided a completed questionnaire in May 2016 reported that they had a **good or very good stag season in 2015-16**; four estates reported they struggled for various reasons to achieve their desired sporting stag cull - Aberarder, Culachy, Dalmigavie, Garrogie.

OUT OF SEASON CULLS

In the 2015-16 season, it appears that a markedly smaller proportion of red deer stags were killed Out of Season in the RDMA than in the past decade whereas the proportion of hinds increased (mainly as a result of Coignafearn's stags for hinds swap policy, and the associated OOS licence for hinds agreed with the group).

OTHER CULL INFORMATION

Roe & Sika culls: the information on these culls continues to flow from some estates but not others, and hence there is concern over its completeness and accuracy. The MDMG needs to undertake a review in the next 1-2 years to try and ensure these data are accurately recorded and universally provided by members, because deer activity on the low ground below the RDMA fence is likely to be of major interest to stakeholders (this is where most of the conflicts between people and deer are likely to arise).

Adult sex ratio of the red deer cull: In the 2015-16 season the ratio of hinds in the adult cull changed markedly across the MDMG, particularly in Speyside where it was 1.75: 1 compared to 1.1: 1 in 2013-14 and many of the recent years prior. This change in the structure of the cull will have a significant impact on future population dynamics.

Red deer recruitment: In the 2015-16 season an average of 31 calves were culled per 100 hinds (31%) across the RDMA as a whole (this figure is much lower than that used in the forecasting models originally for the year - 38%). The figures were 33% for the East and 25% for the West showing, as has previously been seen, that the herd appears to produce more calves on average in the East side of the RDMA even during severe winters.

Natural mortality of red deer: In 2015-16 mortality was reported to be extremely low. However, analysis of the records provided retrospectively for 2014-15, along with extrapolation for those estates that failed again to report, suggests that ~ 1,000-1,100 deer¹ died of natural causes in the 2014-15 season. These numbers split down as ~ 600 in the East and ~450 in the West, which reflects more severe mortality in the west (the land area is markedly smaller). Approx. 55% of reported deaths in the 2014-15 season were calves. Approx. 30% of reported deaths were adult stags, with the remaining 15% reported as adult hinds². These results were incorporated into revised population models.

Other mortality of red deer: In the 2014-15 season, it was noted that a considerable number of additional deer were culled by the crofters at Newtonmore. Estimates of the total culled were in the region of 70-90, as reported by various local estates. It is thought that this is one of the few areas where a significant agricultural cull is taken which affects the population in the RDMA (there is only a partial fence at this point in the perimeter). However, in 2015-16 this crofter cull was much lower (reported at 20-30 deer).

POPULATION MODELS

Population models for red deer in the RDMA are presented for the Eastern Monadhliath, Western Monadhliath and overall RDMA to illustrate the likely impact of actual culls (up to 2015-16) and planned future culls on population dynamics (Page 24).

In the **Eastern Monadhliath** it is believed the **hind population has declined markedly** in the last 2 years (combination of deliberately increased culls and heavy natural losses of hind calves in 2014-15 from weather).

It is expected the **hind population** density will **decline markedly further** over the next 3 years due to culls planned under the SDMP. However, **stag densities** are forecast to remain **broadly stable** over the 10-year plan period.

Under the SDMP, the summer deer density is forecasted to fall overall in the Eastern Monadhliath from 14.0 Red deer per km² (June 2013, after calving) to ~ 9.5 per km² (June 2018, after calving); models indicate the June 2016 density after calving will be ~ 12.5 per km², with overall deer abundance having declined by ~ 1,400 animals (~ 10%) between June 2013 and June 2016.

In the **Western Monadhliath** the population is predicted to have **declined somewhat after the heavy losses of 2014-15** – the summer density is likely to have dropped from 17 to 15 per km² (reduction of ~ 10%) in the last 3 years – but then **densities are forecasted to remain broadly stable for the remainder of the plan period** to June 2018.

¹ This is an estimate, based on the actual returns provided by estates and extrapolated estimates for estates that did not report.

² We assume there was also a skew in the juvenile deaths towards male calves although this was not mentioned by estates in their returns explicitly.

Across the RDMA as a whole, the summer deer density is forecasted to fall overall from 15.3 Red deer per km² (June 2013, after calving) to ~ 12.4 per km² (June 2018, after calving); models indicate the June 2016 density after calving will be ~ 13.8 per km², with overall deer abundance having declined by ~ 2,300 animals (~ 10%) between June 2013 and June 2016.

SUPPORTING INFORMATION

This report also contains a summary of comments provided by MDMG estates on a range of issues (Page 47 onwards) including:

- ✓ **Causes for Concern** – several estates are concerned about how neighbours are managing their land, and have asked that these matters are discussed at upcoming meetings. The reports lists these concerns.
- ✓ **Changes in Status** – changes continue in respect of landownership.
- ✓ **Other Changes** – estates continue to amend the way they manage their land, and any significant changes proposed or recently implemented are listed.
- ✓ **News** – several other noteworthy events have taken place in the MDMG area in the past year and these are described.
- ✓ **Recommendations** – the report includes a range of recommendations from SCL about matters arising from the analyses presented herein.

2. INTRODUCTION

2.1. BACKGROUND

The Monadhliath Deer Management Group (MDMG) is one of the largest Deer Management Groups (DMG) in the UK. Situated south of Inverness and north of Spean Bridge in the Scottish Highlands, the group area comprises approximately 150,200ha of land. The majority of the MDMG area comprises upland habitats, managed variously for field sports, agriculture, renewable energy, timber production and nature conservation. The area is also popular for recreation.

The MDMG area includes 95 identifiable landholdings, of which over 30 can be considered major estates. Most of the larger landholdings and some of the smaller landholdings are active members of the MDMG. The MDMG membership meets annually to discuss strategic management of the wild Red deer herd that ranges within the Red Deer Management Area (RDMA). The group is divided into Sub-Groups that meet to discuss local deer management issues more regularly. Topics discussed include deer culls taken, planned deer culls, deer welfare issues and deer distribution/trends in deer numbers. Several sites in the MDMG area are designated for nature conservation and these also form a frequent topic of discussion.

2.2. STRATEGIC PLANNING

The MDMG re-wrote its deer management plan in 2015, and one of the key action points in the new Strategic Deer Management Plan (SDMP) is for the group to meet twice a year, once in April / May and once in August.

The August gathering is for the Annual General Meeting (AGM) at which membership issues and subscriptions are discussed and group votes are taken on office bearers. The April/May meeting is to discuss deer management issues specifically, and in particular to consider how the most recent cull taken by the group fits in with the wider plans detailed in the new SDMP.

2.3. THIS REPORT

In advance of the April/May meeting an Annual Report is to be prepared, using the records supplied by owners or agents in March each year after most of the group cull has been taken. The Annual Report will be issued to the group members for consideration in advance of the meeting. This document comprises the annual report, and includes the following sections:

- ✓ **Deer Counts:** analysis of the most recent helicopter counts
- ✓ **Deer Culls:** a comparison of the most recent season with historic cull trends
- ✓ **Population Parameters:** sex ratios, mortality & recruitment information
- ✓ **Population Models:** past and future trends in deer numbers
- ✓ **Cause for Concern:** issued raised by estates for discussion at the meeting
- ✓ **Changes in Status:** updates on changes in ownership or objectives
- ✓ **News:** news updates in the MDMG area
- ✓ **Recommendations:** a list of agenda items arising from the Annual Report
- ✓ **Appendices:** detailed breakdown of previous count and cull data for the RDMA

3. DEER COUNTS

3.1. HISTORIC TRENDS

Assessment of the helicopter count data for the RDMA shows that the number of deer counted in winter 2004 was 21,484 (17.0 per km²) compared to 18,984 (15.0 per km²) in winter 2013³. This represents an overall numerical decrease of 11.6% in winter deer numbers (Figure 1). When the overall changes are broken down into classes, they show that the overall decline of 2,500 deer comprised 691 stags, 1,616 hinds and 193 calves.

Appendix 1 provides a breakdown of the count data for interested readers.

NB The presence of 6,688ha of concealing woodland habitat (4% of the RDMA) means the number of deer counted within the RDMA by helicopter is likely to be an underestimate.

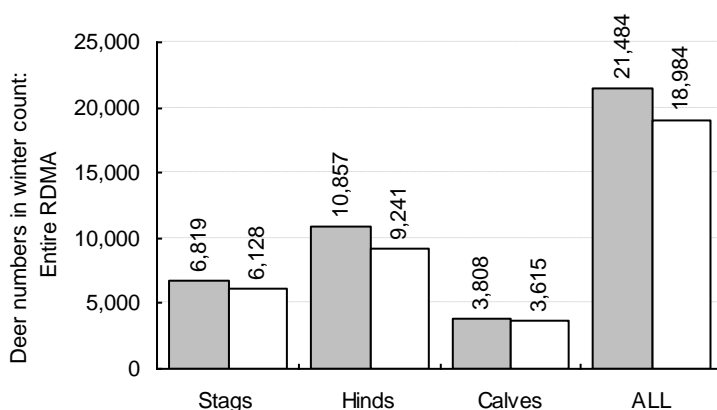


Figure 1 The number of stags, hinds and calves counted in the winter 2004 (grey bars) and winter 2013 (white bars) during aerial counts of the RDMA.

If the aerial count data are broken down into sub-areas we can identify the key regions where most of the measured change has taken place (Figure 2). We see that the composition and size of the Red deer herd in the Western zone is similar in 2013 to 2004, whereas the herd in the Eastern zone appears to have markedly different deer numbers and deer distribution in 2013 when compared with 2004.

It is useful to consider deer density, as well as deer abundance. The analysis presented in Figure 3 takes the winter 2004 and 2013 data and converts it into deer density per km². Previous ground count data, adjusted upwards to allow to likely biases, are also included for reference.

³ Densities calculated using 149,217ha of land within the RDMA excluding the area (ha) of water bodies (total land area is 150,200ha including water bodies).

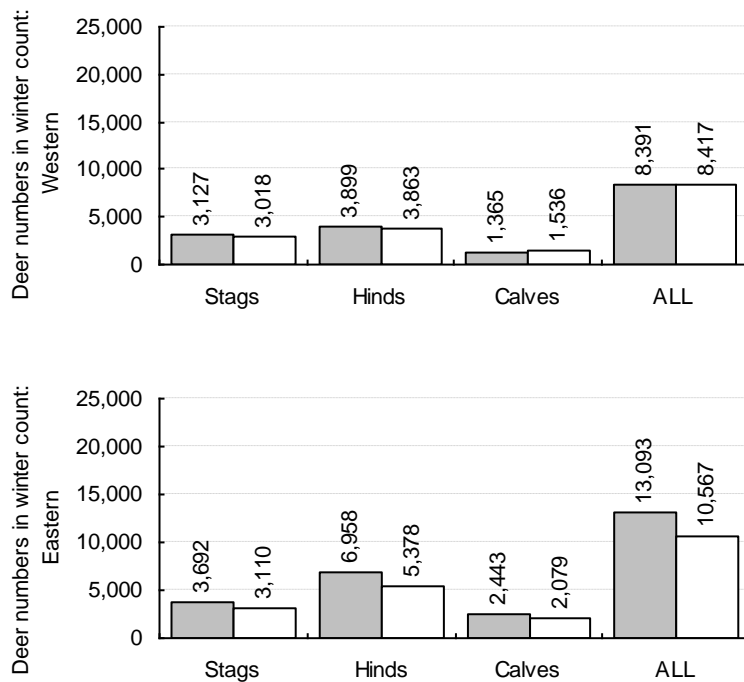


Figure 2 The number of stags, hinds and calves counted in the winter 2004 and winter 2013 aerial counts in the Western zone (upper) and the Eastern zone (lower) of the RDMA.

The top chart in Figure 3 shows the deer density if calculated across the RDMA as a whole. A winter density of c.15-20 per km² across the entire RDMA is apparent over the 20-year period analysed.

However, if the deer density is calculated only for the range in which deer tend to spend most of their time in winter within the RDMA (< 600m altitude) a density of 25-35 per km² is present (Figure 3 middle).

If all deer counted in winter 2013 moved into the summer range in spring then an effective density of 30-40 per km² would have been present (Figure 3 lower). Whilst such an extreme distribution is unlikely to occur for long each summer, if at all, most owners agreed that the majority of their deer moved to high ground. Of course, another consideration is that the winter count does not include calves born in the subsequent spring and this will increase the population density, after the cull is completed, by a considerable margin. On balance, it might be appropriate to assume that deer densities in the general summer range are around the same level as the winter densities in the winter range taking into account the effect of calving and given that the area of land below 600m is c. 30% larger than the area of land above 600m. Of course, the precise number of deer present in the summer range on any one day will be affected by the weather in the lead up to, and during, any count undertaken.

In essence, Red deer present within the RDMA are never spread out evenly across the entire area over the course of the year nor are they evenly distributed at any one point in time. The corollary is that managers should take account of these differences because:

- They determine patterns of deer availability for stalking in each of the key seasons (stags; hinds).
- They drive ecological processes on site in the winter/spring and in the summer periods.

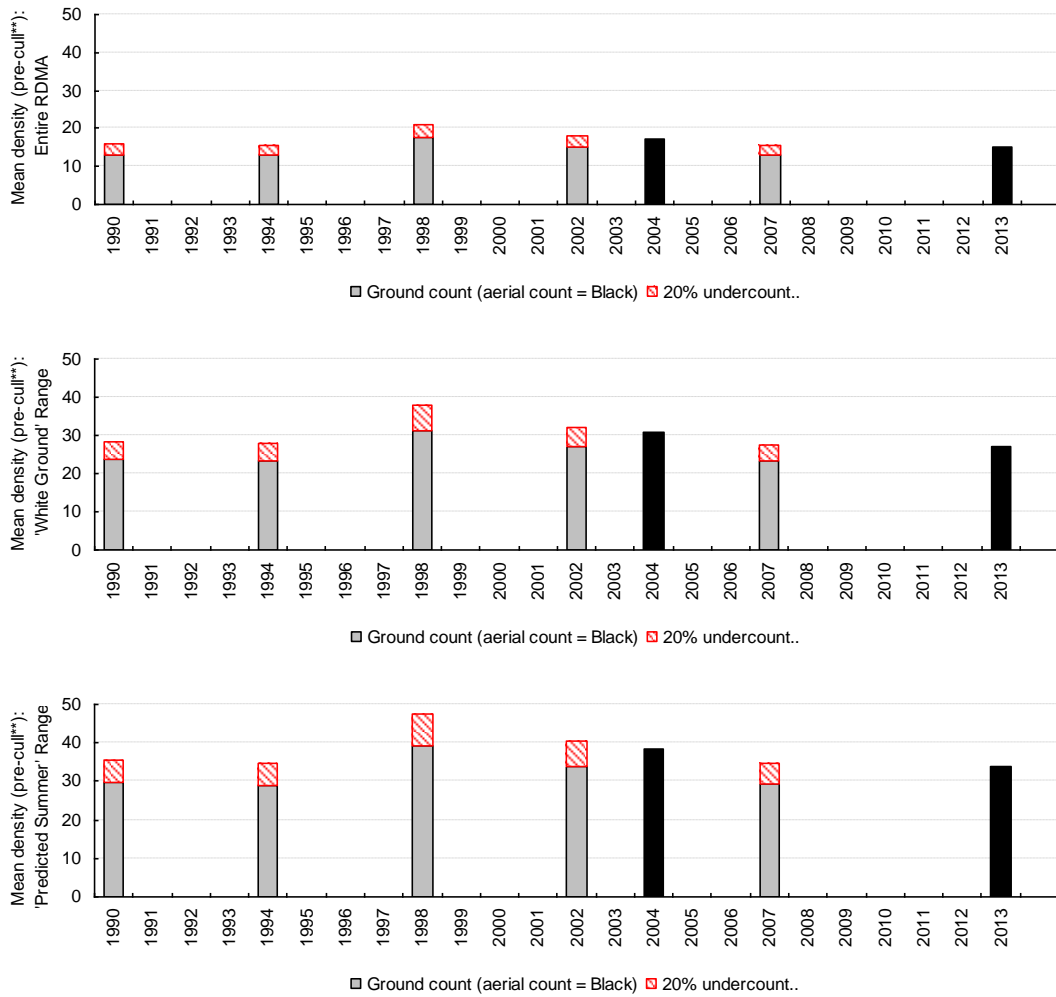


Figure 3 The density of deer counted in the entire RDMA from 1990-2013 (upper), the winter 'white ground' range (middle) and the predicted 'summer' range (lower). The ground counts show the effect of a 20% underestimate. For reference, the Entire RDMA is 149,217ha whereas the 'winter 'white ground' range is 83,001ha and the predicted 'peak summer' range is 66,216ha. NB The density shown on this chart for the summer range does not include the new recruitment that would be present at that time of year⁴.

⁴ The summer range density might be overestimated in the previous chart because it is unlikely all deer would be present in the predicted summer range even at peak times. That said, the previous chart has summer density calculated without taking account of new recruitment. Clearly, the inclusion of new recruitment would add to the densities shown. The two effects may well balance each other out but it is difficult to know for sure because of uncertainty in the precise summer range.

3.2. PLANNED COUNTS

The next planned winter count of the RDMA will be towards the end of the 2017-18 cull season. The SDMP proposes a helicopter count is undertaken for reliability. The SDMP also includes provision for a small research project to try and establish the likely extent of undercount caused by deer being present in woodland. Funding for the winter count is proposed to come 50% from the membership (already covered in the new subscriptions levels proposed within the SDMP) and 50% from SNH.

The SDMP also has a proposal for a summer count of Eastern Monadhliath in 2017 (and perhaps the wider area). It was hoped at the time of writing the SDMP that funding for this would come from SNH, but given the current financial constraints the organisation is under this is probably unlikely.

ACTION: Chairman to remain in touch with SNH on the matter of the next summer and winter counts

4. DEER CULLS

4.1. HISTORIC CULL TRENDS

It is evident that the number of deer culled within the RDMA has varied markedly over time and also between geographic areas (Figure 4). In the area as a whole, culls were relatively low through the 1990's⁵, but from 1998 through to 2009 were markedly higher overall and then have been lower in recent seasons albeit rising gradually in recent years.

When analysed geographically, it is evident that in numerical terms the largest cull consistently comes from the Eastern zone and in turn that the majority of the Eastern zone cull comes consistently from the Strathspey Sub-Group.

If the estates are split up according to their deer management approach in the past decade - into those estates that have 'Changed Objectives'⁶ and those who have broadly maintained the previous 'Status Quo' - we see that much of the overall rise in culls is attributable to the 'Change' areas. All of these areas bar one are in the Eastern zone, which would help to explain the differences in the winter deer counts between 2004 and 2013.

There are a number of reasons why these estates changed their objectives. Several estates (e.g. Clune, Corriegarth, Farr) increased their deer culls markedly because of concerns that the ticks carried by deer were adversely affecting grouse chick survival and also because high levels of grazing pressure were causing a contraction in heather cover which reduced nesting possibilities. Kinveachy and Creag Meagaidh reduced their deer densities primarily to try and improve the condition of native woodlands that at the time were considered to be in poor condition because of a lack of recruitment of new saplings. Coignafearn reduced their

⁵ Jamie Williamson, the ex-DMG chair, comments that culls were even lower before the 1990's, being c. 1500 per annum all through the late 1960's and into the late 1970's. Culls then rose to 3,000 by 1977 then fell back to 2,000 by 1985, then rose back to 2,600 by 1988 when the data sets presented in this report begin.

⁶ These are the key estates where major reductions in deer density have been undertaken in the past 10-15 years to help with grouse management /woodland expansion etc: Clune, Coignafearn, Corriegarth, Creag Meagaidh, Farr and Kinveachy.

deer densities for multiple reasons. Firstly, artificial feeding had been very heavy and widespread along the main river valley leading to concerns being raised about impacts on the river. A related concern was deer welfare and whether the feeding held an artificially high population in place on the estate. In addition, the presence of high numbers of deer was having a marked impact on condition of habitats in the glen and the new owner wished to see a marked general improvement as well as, specifically, strong recovery of the degenerate birchwood remnants situated all along the valley sides.

The absolute number of deer shot is of interest to managers, but the intensity of cull is a much more informative and useful measure (i.e. cull taken per km²) (Figure 5). Using the same data as presented on the previous page, but converting it into the cull intensity, we see a difference in the patterns evident.

The intensity of cull taken across the Eastern and Western zones is in fact very similar over the 25-year period, and the culls in both areas rise and fall at the same times.

When the data are examined at Sub-Group level we see that the intensity of the cull, over the period when it generally rose, was markedly higher in the Strathspey and Strathnairn Sub-Group areas⁷.

The largest difference in culling intensity is evident when estates are split by the long-term consistency of their management objectives. We can see that the intensity of cull taken in the 'Change in Objectives' estates was markedly higher than the Status Quo estates from the late 1990's onwards, although with several distinct peaks apparent.

⁷ The Strathnairn Sub-Group was expected, as part of the new SDMP, to merge with the Strathspey Sub-Group but to date this has not happened.

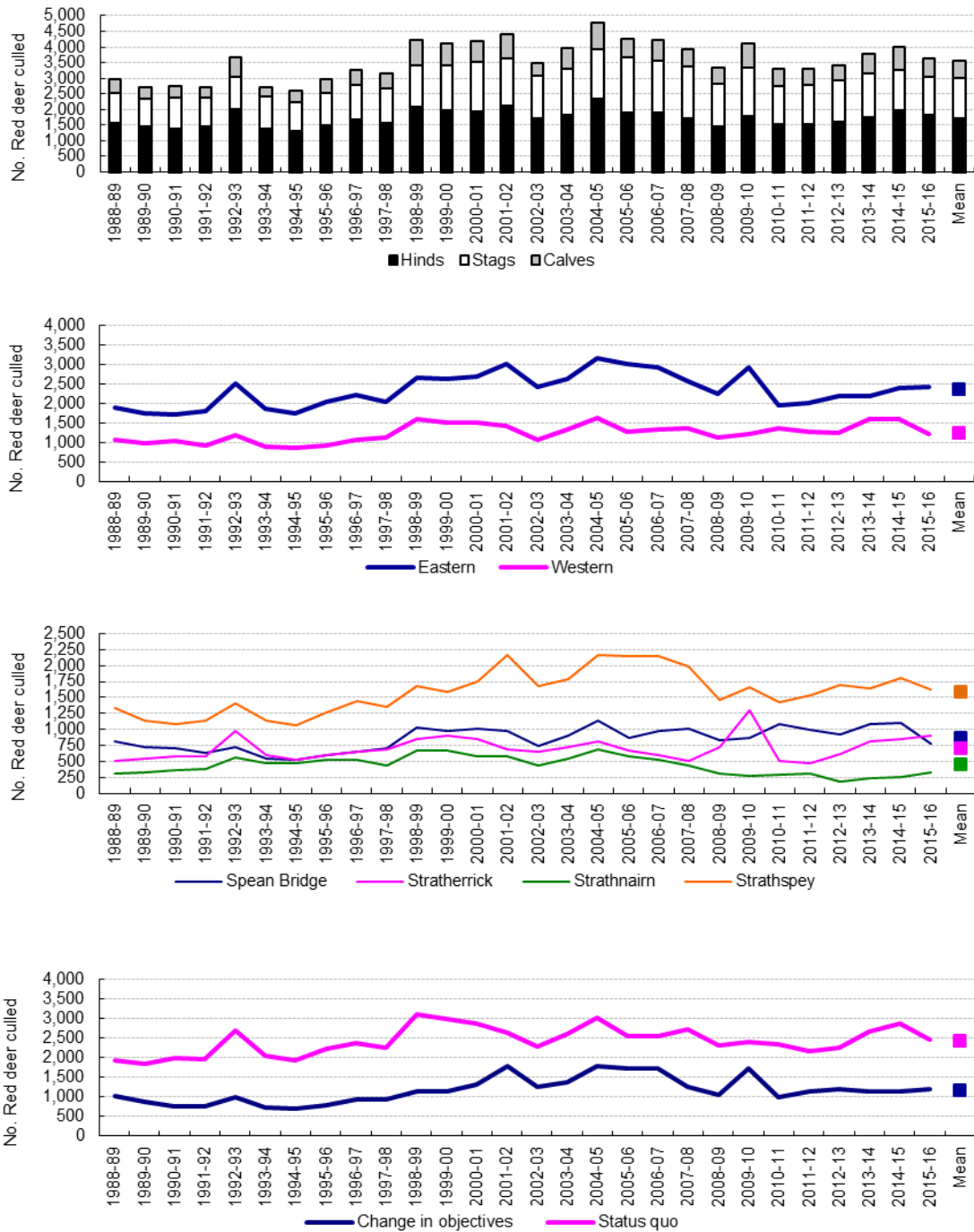


Figure 4 The number of deer culled from 1988-2016 in the entire RDMA (upper), the Eastern and Western zones (upper middle), the Sub-Groups (lower middle) and in estates which 'Changed Objectives' in the past decade⁸ or maintained the Status Quo (lower).

⁸ Main estates: Clune, Coignafearn, Corriearth, Creag Meagaidh, Farr and Kinveachy.

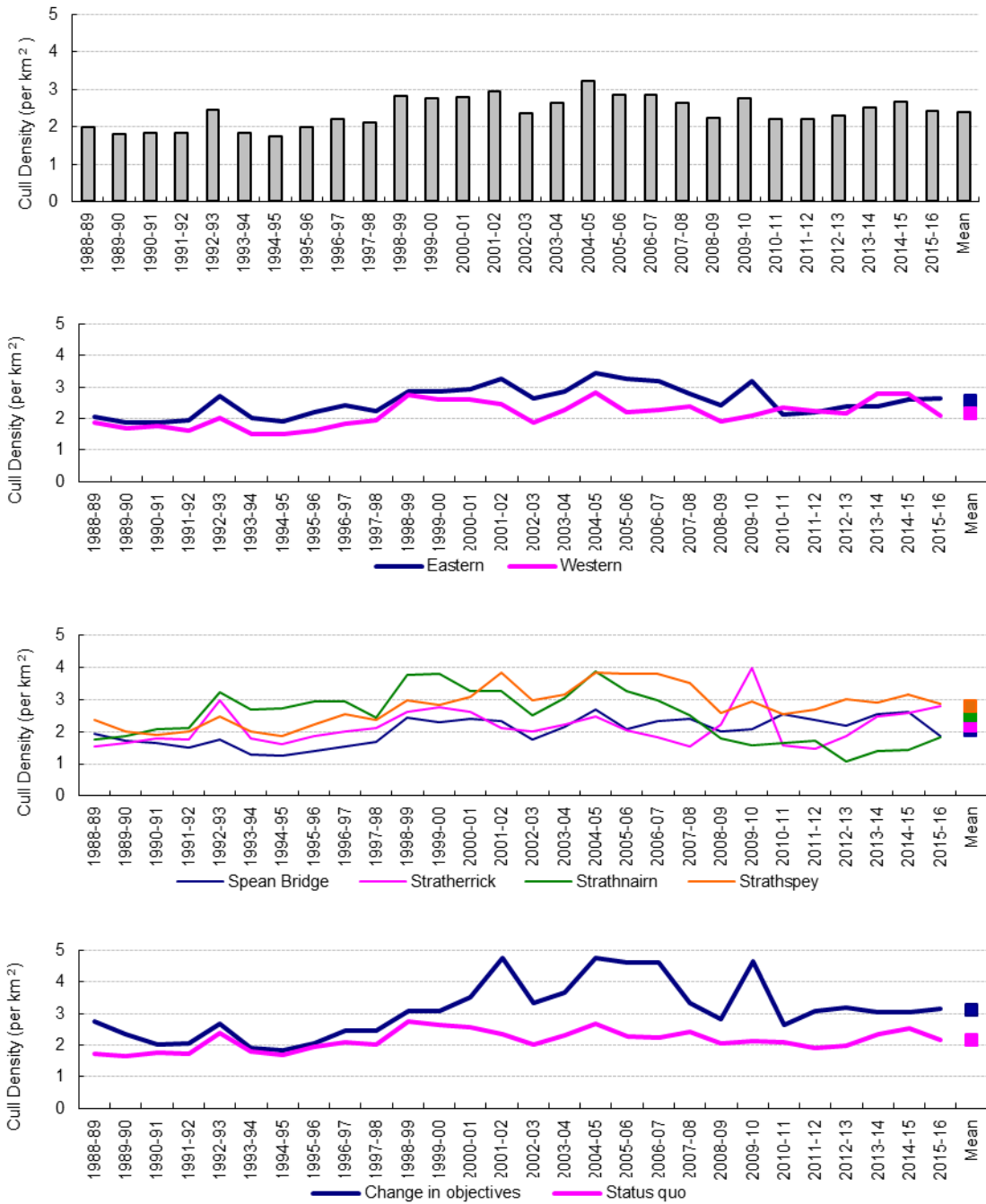


Figure 5 The density of deer culled from 1988-2015 in the entire RDMA (upper), the Eastern and Western zones (upper middle), the Sub-Groups (lower middle) and in estates which 'Changed Objectives' in the past decade⁹ or maintained the Status Quo (lower).

⁹ Main estates: Clune, Coignafearn, Corriearth, Creag Meagaidh, Farr and Kinveachy.

4.2. MOST RECENT SEASON (2015-16)

A detailed breakdown of the cull taken by each MDMG estate in 2015-16, compared to recent culls and cull averages, is included in Appendix 2 to the rear of this report. Several estates have not provide records and these need to be obtained:

ACTION: Chairman to make a final request for records to those estates who have not yet provided them. Aberchalder, Clune, Dunmaglass, Easter Aberchalder, Killin & Kyllachy.

4.2.1. HINDS

In the 2015-16 season the overall hind cull in the RDMA decreased to 1,844 hinds (and 563 calves) from 1,990 hinds (and 738 calves) in 2014-15.

The decrease arose mainly from a reduced cull in the Speanbridge SG (~ 130 fewer hinds) although a small reduction also occurred in Speyside (~ 30 fewer hinds)

4.2.2. STAGS

In the 2015-16 season the reported stag cull in the RDMA remained steady at 1,217 (1,264 in the 2014-15 season). The stag cull remains lower than in 2013-14, in the season before the SDMP was implemented, mainly as a result of the Coignafearn 'stags for hinds swap' which meant ~ 100 less stags being culled therein in 2015-16. Appendix 2 provides a breakdown of stags shot against longer-term averages.

12 MDMG estates (of 45) returned a questionnaire, as requested, to help prepare this Annual Report. The questionnaire includes the request for a short report on their stag season. Many estates reported that they had a good or excellent stag season in 2015-16; the four estates which reported problems with achieving their sporting stag cull were:

- Culachy (warm weather caused problems with deer distribution, but this is not typical¹⁰)
- Dalmigavie (lots of younger stags and fewer mature stags¹¹)
- Garrogie (general shortage of stags¹²)
- Aberarder (shortage of stags, but this is quite common – they have plans to lower the altitude of the hill deer fence, which should help by increasing the range available to hold hinds in the autumn).

The age structure of the stag population, and of the stag cull particularly, remains an important gap in the MDMG's understanding at present. Research is proposed to resolve this uncertainty in the SDMP.

ACTION: Chairman to arrange for this research to be undertaken in 2016

ACTION: Chairman to chase up questionnaires from remaining estates

¹⁰ Although the number of stags culled in 2015-16 was similar to the recent average.

¹¹ Although the number of stags culled in 2015-16 was slightly higher than the recent average.

¹² Even though a markedly larger cull was taken in 2015-16 than in recent years.

4.3. OUT OF SEASON CULLS

In the RDMA as a whole relatively few deer are culled out of season. That said there is a marked difference between the % of stags and hinds/followers culled out of season (16% of the overall stag cull) and hinds (3% of the overall cull) over the past 10 years (Figure 6). It is also evident that there are, in general, more deer culled out of season now than in the past.

If the historic pattern is examined at the estate scale, it is evident that a small number of estates account for the vast majority of the out of season stag culls taken in the past 5 years. The estates culling a high proportion of their stags out of season are those where nature conservation objectives (particularly native woodland expansion) are of prime importance, and otherwise where protection of agricultural land or grouse moors is considered important.

In the 2015-16 season, it appears that a markedly smaller proportion of stags were killed Out of Season than in the past decade whereas the proportion of hinds increased (mainly as a result of Coignafearn’s stags for hinds swap policy, and the associated OOS licence for hinds agreed with the group last year).

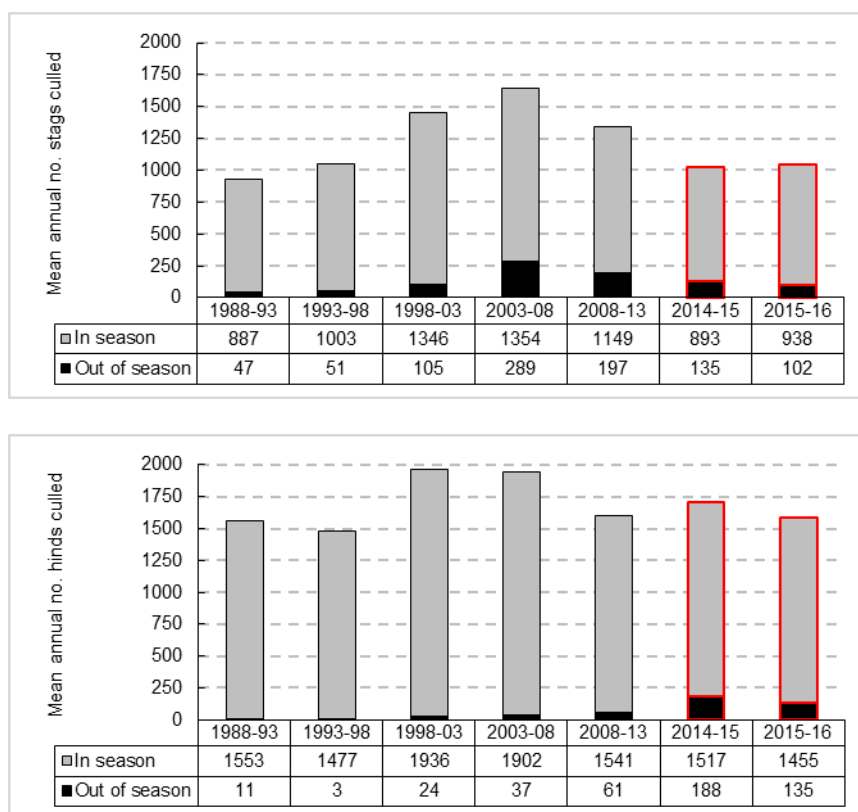


Figure 6 The mean annual cull of stags (upper) and hinds (lower) in season and out of season over a 25-year period based on 5-year averages alongside the most recent cull taken. NB Not all data were supplied in the format required to undertake a full analysis of the 2014-15 or 2015-16 culls (partial data only¹³).

¹³ Proportions of deer taken in and out of season assumed to be representative of 2014-15 and 2015-16 culls generally.

4.4. ROE & SIKA CULLS

For reference the level of Roe and Sika culls in the MDMG area are shown (Figure 7). We see that they comprise a significant number of deer per annum, and must reflect a sizeable population¹⁴ albeit not comparable with the Red deer.

The data returned for 2014-15 (and less so 2015-16) appeared to have a lot of blanks, and it was decided as a result not to present it until next year when it could be validated with the care and attention required.

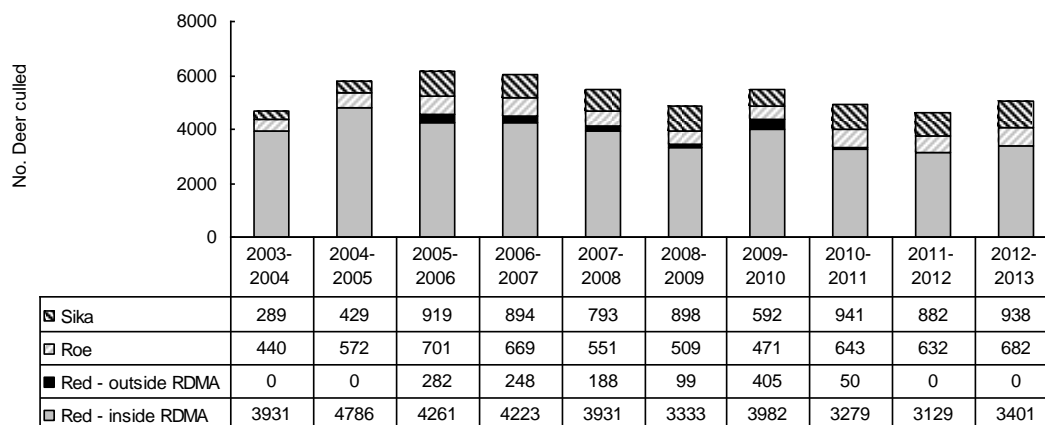


Figure 7 Roe & Sika deer culls in the MDMG area alongside Red deer culls in and out of the RDMA (NB The historic data set supplied for Red deer culls out with the RDMA appears somewhat suspect, with zero data for some years).

ACTION: Chairman to consider how and when to undertake a review of Roe/Sika culls in the wider MDG area, to try and obtain a definitive set of data given its importance to stakeholders.

¹⁴ These deer are currently not formally counted inside or outside of the RDMA but this is an agenda item for discussion at the interim review point in the SDMP (2018).

5. POPULATION DYNAMICS: OTHER CONSIDERATIONS

In addition to considering patterns of culling, managers of deer in the RDMA must consider other sources of mortality when making deer management decisions at the strategic level. In addition, they must take account of rates of recruitment. This section of the report summarises the available evidence on the key factors, other than culling, that Red deer drive population dynamics.

5.1. ADULT SEX RATIO

It is evident from the deer cull records (Figure 8 upper; grey bars) and from the live count data (Figure 8 upper; red dots) that there appears to be a strong overall skew towards hinds in the adult Red deer population within the RDMA.

Differences between the ratio of females: males in the population and in the cull would be expected, with all else equal, to drive the dynamics of the population in the longer-term.

The records supplied show that the culled ratio of adult female: adult male has declined over a 25-year period across the RDMA as a whole and, on average, was somewhat lower than the ratio in the population when the live counts were completed. In essence, the proportion of hinds in the population has risen over 25 years whilst the proportion of hinds in the cull has declined.

However, if this data is split into the Eastern and Western zones we see that the Western zone has a much lower ratio of adult females in the population (red dots) and that the cull ratio (grey bars) closely matches it in the years when counts were undertaken. In the Eastern zone, the ratio of females in the cull is lower than the ratio in the population in the years when the population was counted.

Similar differences are apparent if the data are divided into Sub-Groups (no figure shown). The Spean Bridge and Strathnairn sub-groups have lower ratios (approx. 1 female: 1 male) and a cull that reflects this (i.e. is close to 1: 1 also), whereas the Strathspey and Stratherrick Sub-Groups have a culled ratio that is lower than the population ratio when measured. These differences will have manifested themselves in the structure of the population in the longer-term and hence probably explain some of the local increases in hind density seen within estates in these Sub-Groups.

In the 2015-16 season the ratio of hinds in the adult cull changed markedly across the MDMG, mainly in Speyside where in 2014-15 it was 1.75: 1 compared to 1.1: 1 in 2013-14 (and many of the recent years prior). This change in the structure of the cull is significant for future population dynamics.

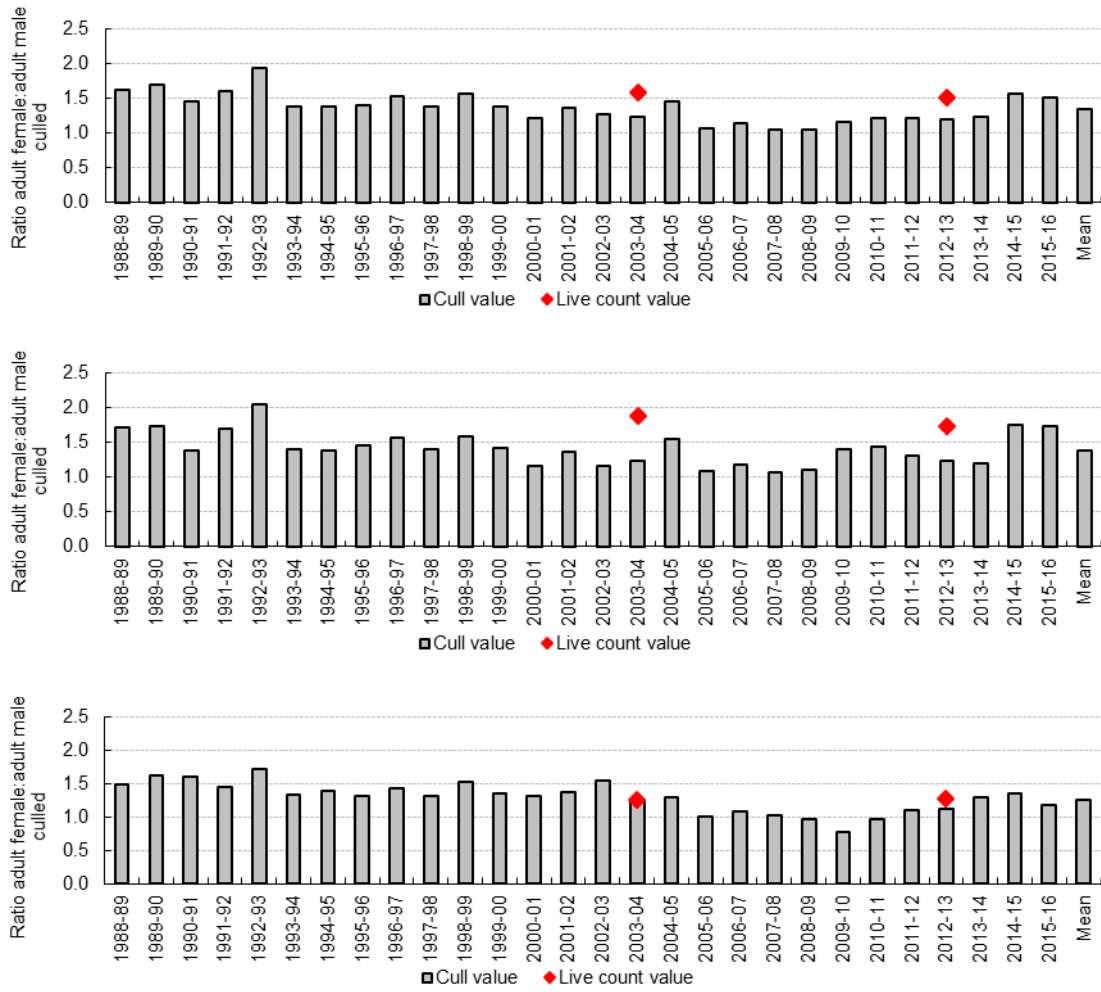


Figure 8 The ratio of adult female: adult male deer culled each year in the entire RDMA (upper), the Eastern zone (middle) and the Western zone (lower). Red dots show the ratios present in aerial counts (2004 and 2013).

5.2. RECRUITMENT

The rates of recruitment into the deer population will also influence population dynamics. The rate of recruitment, as evident through the cull records, appears historically to have varied between 30% and 40% (Figure 9). That is, 30-40 calves per 100 hinds survived to 1 year old and might thence have entered the breeding population. The values from the cull records mirror relatively closely those observed in the winter counts of 2004, but the records from 2013 suggest the % calves culled was somewhat lower than the percentage in the population that year. The significance of this difference depends mainly on the trend in future culls taken, as well as whether this rate of recruitment is sustained.

The data suggest that rates of recruitment may have been slightly lower on average in the early-mid 1990's than in the late 1990's and 2000's. That said, there is relatively little difference in the % calves in the cull between the Eastern and Western zones over the period and the patterns appear fairly synchronous implying prevailing weather patterns are likely to be an important factor.

However, there is a marked and consistent difference in % calves culled between those estates which Changed Objectives and those that maintained the Status Quo. These differences were apparent before the onset of heavy culls and might be explained by differences in cull selection (e.g. skewed selection of calves) or differences in habitat quality for hinds when gestating and lactating.

In the 2015-16 season an average of only 31 calves were culled per 100 hinds (31%) across the RDMA as a whole. This figure was lower than in the original model built for the area, and was a result of the poor weather in the previous spring that caused high mortality of calves. The figures were 33% for the East and 25% for the West, showing as has previously been seen that the herd appears to produce more calves on average in the East side of the RDMA even during severe weather events (the rainfall levels to the west of the MDMG were reported to have been markedly higher in spring 2015 than in the east). These revised figures were applied to the population models when updated to include the actual culls taken in the 2015-16 season.

5.3. NATURAL MORTALITY

During the process of preparing the SDMP, estates provided general information on the levels of natural mortality they believed occurred in typical years and during exceptional winters. In general, owners felt that levels of adult mortality were very low (0-2%) other than in severe winters when some owners felt that, typically, 5-10% of adult deer might be found dead from natural causes. Of course it is commonly observed that adult male deer die more frequently than females, as do male calves. For this reason, we would expect the rates of natural mortality to be somewhat skewed between the sexes.

In the 2014-15 season a large number of estates returning questionnaires reported that very high levels of mortality were seen that year due to severe winter and spring weather. The estates noticing serious losses, many of which were reportedly calves, included Garrogie, Glenshero and Glenbanchor. Unfortunately, many estates failed to return their questionnaires that year hence it was not possible at the time to propose a robust alternative figure to the 38% recruitment rate used for modelling (see later section). However, in March 2016 estates were asked to report their mortality figures for spring 2015

as well as 2016. It was clear from responses that a major natural mortality event had occurred in the MDMG area in spring 2015 whereas few natural deaths were reported for spring 2016.

Analysis of the records provided, along with extrapolation for those estates that failed again to report, suggests that ~ 1,000-1,100 deer¹⁵ died of natural causes in the 2014-15 season. These numbers were split broadly equally between East (~ 600) and West (~450), reflecting the fact that the mortality appeared to be more severe in the west (as the land area is markedly smaller).

Approx. 55% of reported deaths in the 2014-15 season were calves. Approx. 30% of reported deaths were adult stags, with the remaining 15% reported as adult hinds¹⁶. These results were incorporated into revised population models (see later section).

ACTION: Chairman to re-inforce to members the crucial importance of returning questionnaires so that accurate models can be built to aid decision-making

5.4. OTHER FORMS OF MORTALITY

The estates provided general information on the levels of mortality that might arise from poaching and road traffic accidents, as part of the process of SDMP preparation in 2014. These levels were typically reported as negligible across most of the RDMA because public roads only intersect the site at a few points (e.g. at Creag Meagaidh and at Glendoe) and also because most of the land being managed is located well within estate boundaries where illegal activities are much less likely. That said, there were a few areas where poaching was considered to be significant (e.g. Tulloch). Therefore, it would be appropriate to assume very small amounts of other mortality occur. Overall, the view was that c. 0.1% of deer might be lost to RTA's and 0.5-1% to poaching.

There is currently no official information provided on culls taken on farm and croft land. However, many consultees confirmed that deer are taken on such land – these are likely in the main to be reported to SNH but perhaps not always.

In the 2014-15 season, it was noted that a considerable number of deer were culled by the crofters at Newtonmore. Estimates of the total culled were in the region of 70-90 as suggested by various local estates. It is thought that this is one of the few areas where a significant agricultural cull is taken that affects the population in the RDMA (there is only a partial fence at this point in the perimeter). However, **in the 2015-16 season** this number was reportedly much lower (20-30 deer maximum). Moreover, discussions are currently underway to erect a final section of fence to close this area off from the RDMA.

¹⁵ This is an estimate, based on the actual returns provided by estates and extrapolated estimates for estates that did not report.

¹⁶ We assume there was also a skew in the juvenile deaths towards male calves although this was not mentioned by estates in their returns explicitly.

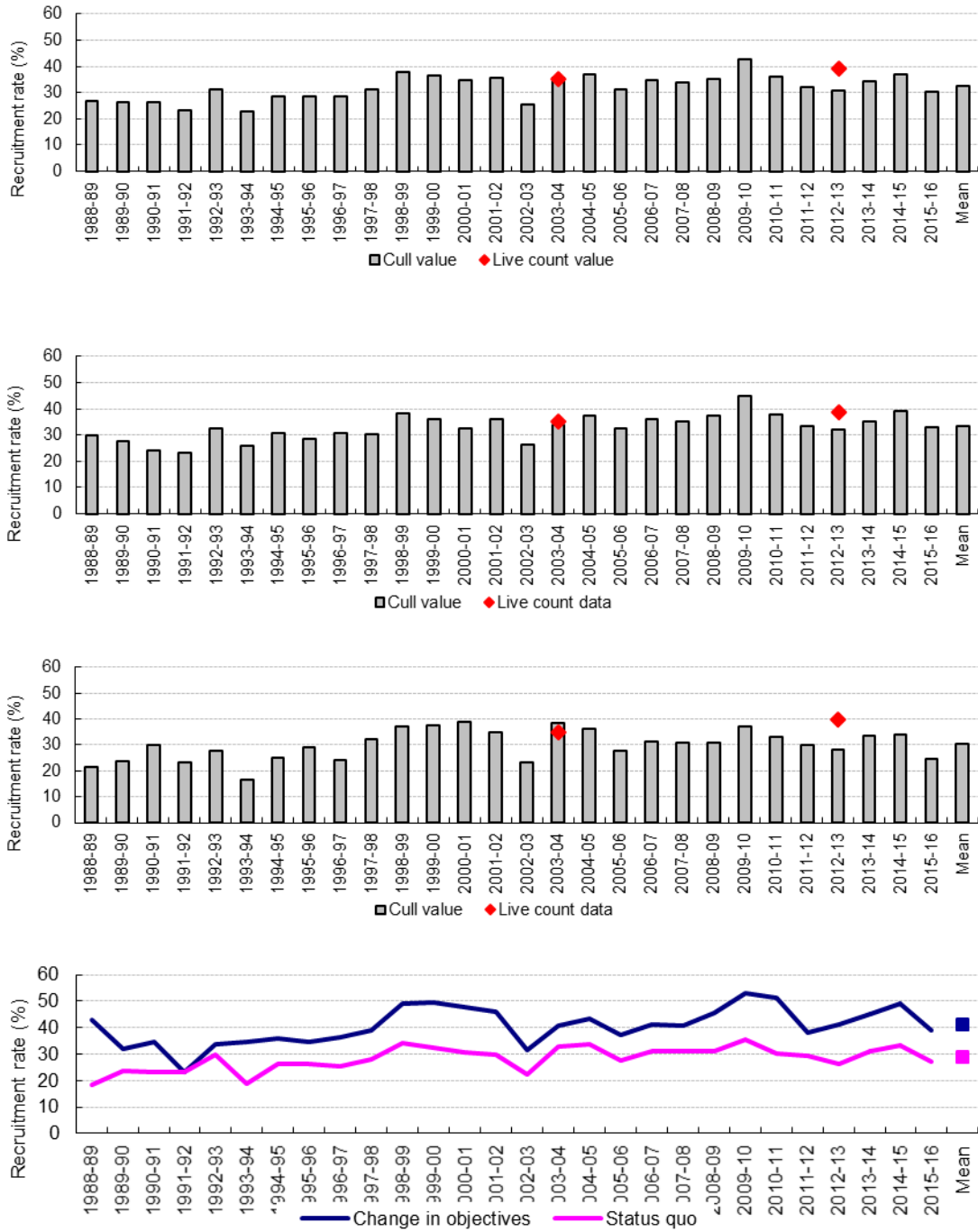


Figure 9 The recruitment rate (% calves per 100 hinds) each year in the entire RDMA (upper), the Eastern zone (upper middle), the Western zone (lower middle) and the Change Estates/Status Quo estates (lower). Red dots show the ratios present in aerial counts (2004 and 2013).

6. POPULATION DYNAMICS: MODELLING TRENDS

In order to gain a good understanding of the dynamics of the Red deer population within the RDMA it is necessary to understand how all key contributory factors interact. Population models are an objective way of helping to understand the likely effects of recorded culls, other forms of mortality and annual recruitment on patterns of deer abundance over time. In this section, we present population models for two periods (i) 1988 to 2013 and (ii) 2013 to 2024 to help develop a clear understanding of how the Red deer population in the RDMA, and in sub areas, has changed over time and might change in the future.

6.1. RETROSPECTIVE MODELS (1988-2013)

A model was built to quantify the likely trajectory of the overall Red deer population within the RDMA over the period 1988-2013.

The model had 3 separate strands representing the sex-age classes: stags (>1yr old), hinds (> 1yr old) and calves (< 1yr old). The model used the following information provided by SNH and the MDMG: (i) the most recent count data available (2013) and interim count data (2004), (ii) cull data for the period 1988-2013. Further parameters were agreed with owners and otherwise estimated by the SCL project team in 2013 as part of the process of preparing the SDMP.

The key assumptions made in the model were as follows:

- Adult sex ratios at the outset of the model period in 1988 were as per the closest dated ground count (37.5% stags, 50% hinds and 17.5% calves in the population).
- Juvenile sex ratios at birth were 1: 1 (no data was available to determine whether a skewed ratio was evident).
- Recruitment was set at 35 calves per 100 hinds surviving to 1 year old.
- Natural mortality in a normal year was set at 1% for adult males, 0.5% for adult females, 2% for male calves (after the time when recruitment is officially measured in counts; January or February) and 1% for female calves.
- Natural mortality in a severe winter (1994-95, 2009-10, 2010-11, 2012-13) was set at 2% for adult males, 1% for adult females, 10% for male calves (after January / February) and 5% for female calves.
- The background level of deaths from RTA's was estimated to be 20 deer (10 hinds, 4 calves and 6 stags).
- The background level of deer removed by poaching was estimated to be 100 (50 hinds, 15 calves and 35 stags).
- The level of deer marauding on agricultural land / croft land and being shot but not recorded was estimated to be 130 (45 hinds, 15 calves and 80 stags).

The model was set to predict trends for the count data as supplied, along with counts being underestimated by 2% and overestimated by 2% - this allowed for a degree of error in model outputs arising because of deer being underestimated in woodland or double counted etc.

Once parameterised as described, iterations of the start population for the model were run through until such times as the predicted trend for each sex-age group passed through the known data points (and suggested a gentle rise then gentle decline in deer numbers very similar to that manifest in the corrected ground and aerial counts over the period (Figure 10). However, the same model suggested that numbers of stags should have been building

rapidly over time using the standard parameters. In reality the live aerial counts did not show this. The model was examined to establish how the trend in stags could be made to 'fit' what was observed in the 2013 count. The model was found to require an additional 300 stags (equivalent to c. 20-30% of the current stag cull) to be removed each year to balance it by the time of the 2013 count, whether that was 300 extra stags dying, being culled or leaving the system by emigration each year. However, this adjustment did not lead to trends in stag numbers in the middle of the model period matching with count data implying that 'losses' of stags may in fact have been even higher early in the modelled period (1990's).

Three hundred stags is arguably a relatively small number to add into the model, given the large area being modelled and the moderate uncertainty in some of the parameters employed. Indeed, some of this discrepancy is likely to arise from missing cull records alone – some small estates do not provide returns in the Spean Bridge area (e.g. most notably Upper Glenfintaig and Ghlas Doire); we can see from count maps that these areas are predominantly stag dominated. It is also entirely plausible that more male deer are dying naturally than was estimated, given the strong skew towards male deaths that is documented as occurring in many Scottish populations on open range because of stresses caused by a lack of resources or lack of shelter. It is also entirely plausible that young male deer are emigrating, notably to the South West where the RDMA has no perimeter fence and movements of deer are reported by stalkers. Male deer generally might be lost into forest plantations through leaking fences – certainly, the FC cull record often shows a skew towards young adult males and is generally assumed to arise from minor break-ins in the winter months. Another possibility is that stags are under-declared in the cull records by some estates. The ex-Chair of the DMG (Jamie Williamson) confirms that this is possible because the subscriptions to the DMG were until recently based on culls taken and the payment contribution for stags is higher than that for hinds. A related issue is that there are reports of stags being shot by some estate staff but not declared. A final reason is that the apportionment of stags between the RDMA and the wider estates is for some reason inaccurate in the records the project team was sent.

Irrespective, with 300 extra stags per annum removed from the model, it predicts that the estimated size of the starting population in 1988 was c. 19,890 Red deer. The ground count of 1990 produced 19,663 Red deer which tallies well, allowing for any variation in the intervening period and possible errors in the counts.

Over the period, the model predicts that the starting population including recruitment was 23,100 deer (16.1 per km² in the 149,300ha of the RDMA) rising to a peak of 30,600 deer in 1998-99 (20.5 deer per km²) then falling gradually to 21,660 deer (14.5 per km²) at the start of the 2014-15 cull season (including estimated recruitment for June 2014).

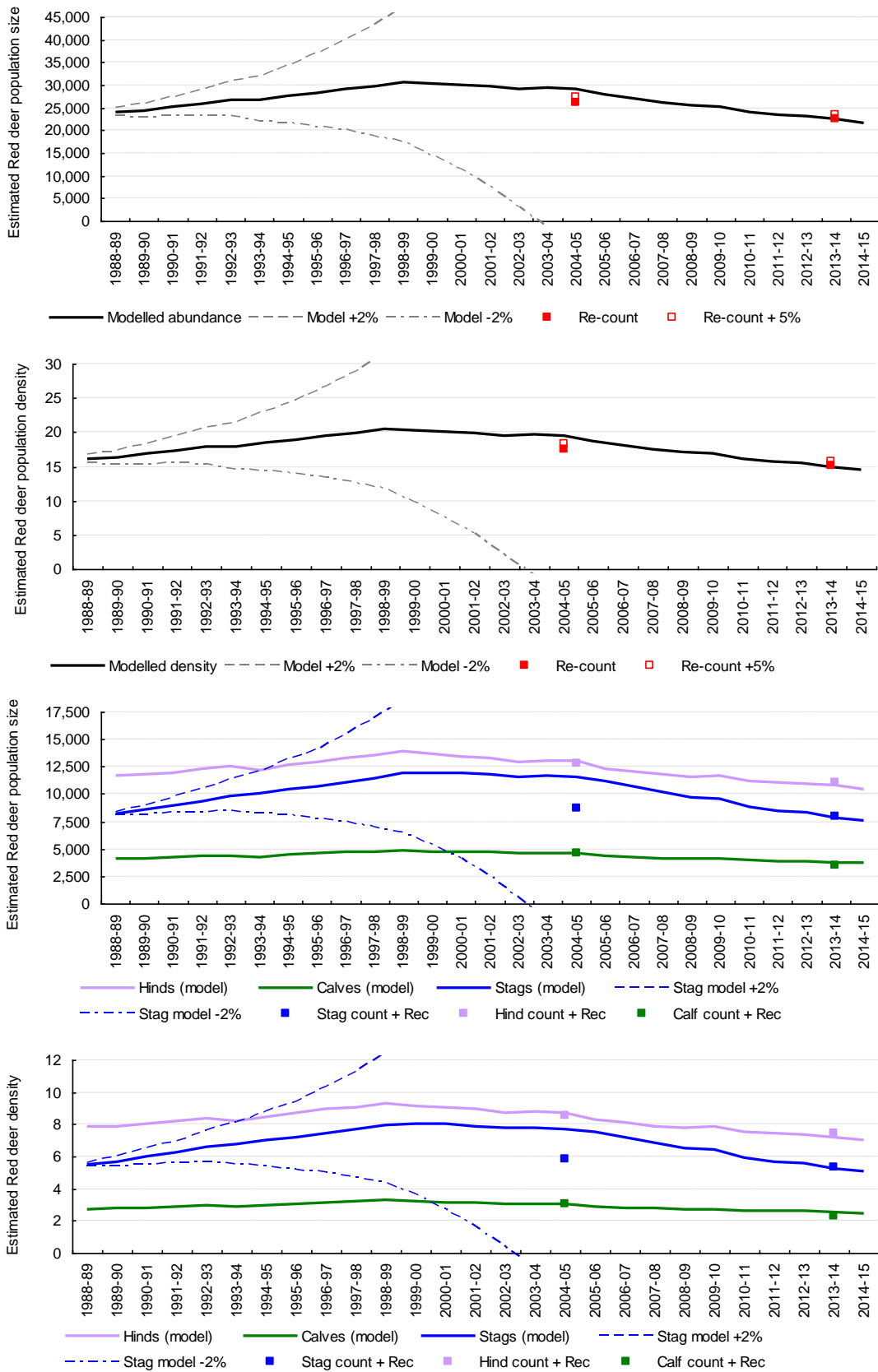


Figure 10 The predicted trend in summer deer population size and density in the Entire RDMA since 1988. Lines show predicted trends (with recruitment added each year) and dots show aerial count data (also with recruitment added). Dotted lines show the results of running the start population for stags with a +/- 2% error and confirm the model is very sensitive to the size of the starting population input.

The retrospective model for the entire RDMA was then sub-divided in two ways:

- In one split, the main RDMA model was sub-divided into the Eastern zone and the Western zone, with parameterisation adjusted slightly in each to allow for local differences (e.g. more poaching reported in the Western zone, so a higher than average proportion of the estimated 100 poached deer were allocated to this area) (Figure 11).
- In another split, the main RDMA model was sub-divided into those estates that 'Changed Objectives' and those estates that broadly managed according to the 'Status Quo' (Figure 12).

The outputs of the Eastern-Western models show that both population trends looked fairly similar to the main model, implying that the models are still fairly 'balanced' at this spatial scale hence the populations of deer in these areas seem to behave relatively independently of each other. This is relevant when considering how to manage deer across the RDMA. The one notable exception is that the imbalance in stag numbers was more evident in the Eastern zone rather than the Western model. It is therefore possible that more of the stag numbers being 'lost from the system' are occurring somewhere in the Eastern zone rather than the Western zone (as suggested earlier) although the large degree of reported stag movement across the RDMA generally makes it hard to be sure of the precise source.

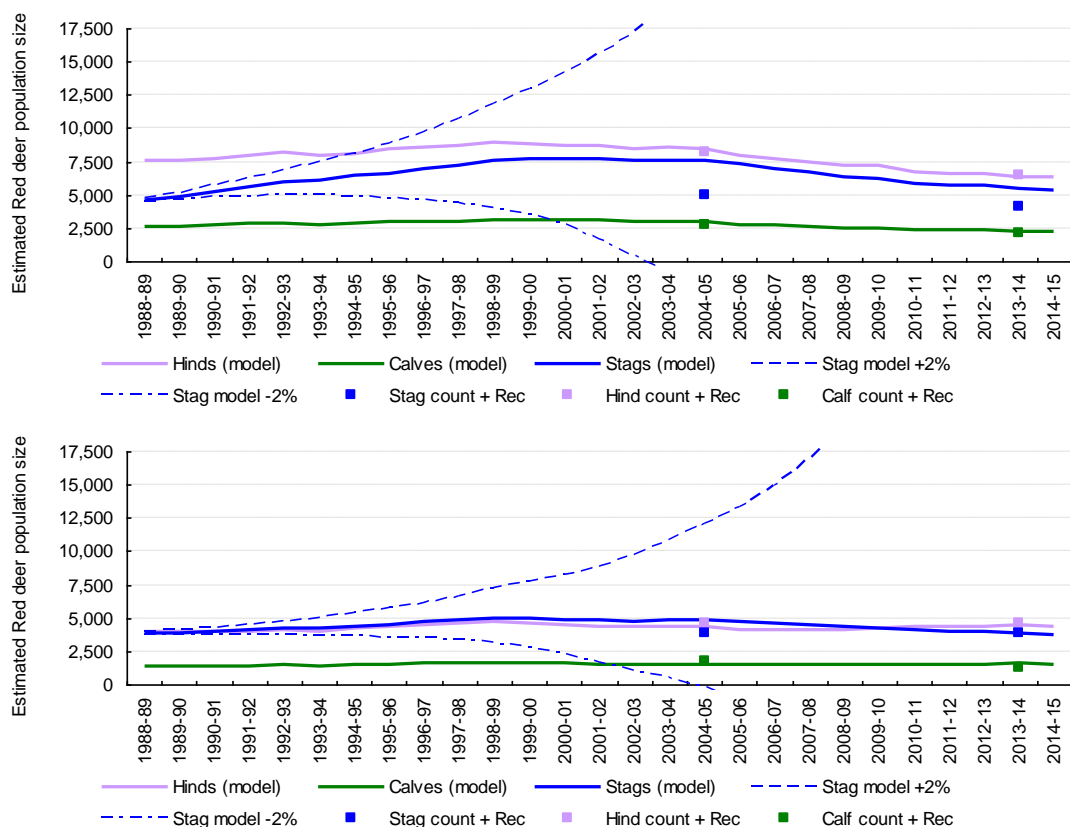


Figure 11 The predicted trend in summer deer population size for the Eastern zone (upper) and Western zones (lower) since 1988. Lines show predicted trends (with recruitment added each year) and dots show aerial count data (also with recruitment added). Dotted lines show the results of running the start population for stags with a +/- 2% error and confirm the model is very sensitive to the size of the starting population input.

On the other hand, the results of the Change-Status Quo sub-models confirm that deer populations on the 'Change Estates' should have rapidly declined to zero in the early 2000's, after the onset of heavy culling, whereas deer abundance in the Status Quo areas should have increased markedly over the period from 2000 onwards had they not been ecologically linked to the Change Estates. These predictions suggest that the Change Estates acted as net importers of deer, with the Status Quo estates acting as net exporters.

This phenomenon is often seen by SCL in forest plantations studied, especially if forests at low density are surrounded by open range land where deer densities are much higher; a strong gradient in relative culling pressure causes more deer to be culled in one area than in another, and deer flow into the lower density areas. These pressures are likely to be strongest when a marked ecological gradient is present. Such a gradient is perhaps most obvious when land being culled heavily comprises fertile habitat and/or woodland which is preferred for shelter and the land being culled less heavily, which is often at a higher deer density, comprises lower quality open range land devoid of significant tree cover.

What the models cannot show in a spatially explicit way is that there are likely to be strong local gradients present, whereby Status Quo estates closest to Change Estates are likely to experience this pressure more.

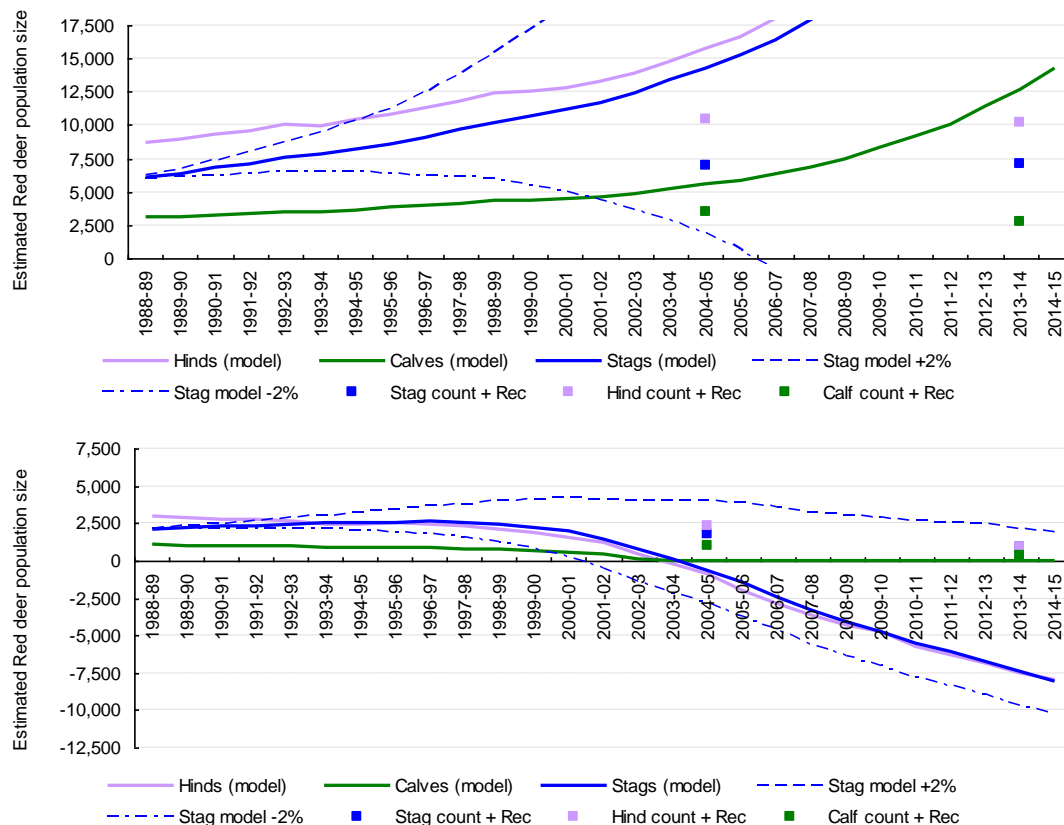


Figure 12 The predicted trend in summer deer population size and density for the Status Quo and Change in Objectives estates since 1988. Lines show predicted trends (with recruitment added each year) and dots show aerial count data (also with recruitment added). Dotted lines show the results of running the start population for stags with a +/- 2% error and confirm the model is very sensitive to the size of the starting population input.

It is evident from the outputs of the population models that the net level of deer movement between the Eastern zone and the Western zone is probably relatively low even though some will be inevitable. On the other hand, the net level of movement locally between estates can be high where strong gradients in culling intensity exist – in these circumstances deer move ‘permanently’ from one area to another as a result of the differential pressure and the increased likelihood they will be culled on one side of a ‘march’ versus another. This needs to be taken into account when cull planning during the SDMP planning period.

NB A more detailed analysis of this aspect of cull planning was undertaken as part of the Review of Deer Management (report provided to owners in summer 2014).

6.2. PROSPECTIVE MODEL – EASTERN MONADHLIATH

In order to predict the likely future trend in deer numbers within the entire RDMA, the ‘retrospective model’ was re-configured into a ‘prospective’ model to predict future abundance using the 2013 winter count data as the starting point; a separate version of the model was prepared for the Eastern Monadhliath and for the Western Monadhliath, then the results were combined into a single output to present to members. The models built include to date the *actual culls* taken for 2013-14, 2014-15 and 2015-16. Beyond that, from 2016-17, the culls are as proposed within Appendix 5-7 of the SDMP (Pages 103-118).

The first table below confirms the 5-year averages for 2004-09 and 2009-2014 for each estate in the Eastern Monadhliath, as well as the 10-year average and the ideal number of sporting stags each estate would like to take annually. The table is divided into two zones: (i) estates taking mainly a sporting cull and (ii) estates taking mainly a reduction cull, to try and keep deer densities low.

Estate	2004-09: 5 year average		2009-14: 5 year average		2004-14: 10 year average		Ideal Sporting stags
	Stags	Hinds	Stags	Hinds	Stags	Hinds	
Aberarder and Flichity	31	22	14	8	23	15	15
Alvie and Dalraddy	33	44	27	32	30	38	40
Balavil	30	16	29	26	30	21	30
Cluny	69	74	61	90	65	82	55
Coull and Blaragie	41	34	53	53	47	43	35
Craig Dhu and Biallaid	9	18	5	15	7	17	7
Dalmagarry	13	16	8	3	10	10	10
Dalmigavie	42	41	17	88	29	65	15
Dunachton and Kinraig	34	34	26	17	30	26	30
Dunmaglass	22	33	14	27	18	30	12
Easter Aberchalder	2	7	2	2	2	4	3
Garrogie	47	78	42	83	45	80	50
Gaskbeg	7	17	12	10	9	14	0
Glen Banchor and Strone	33	72	38	72	36	72	40
Glenmazeran	35	105	26	55	30	80	30
Killin	10	11	9	17	9	14	12
Kinrara	37	58	22	15	30	36	40
Kyllachy	11	8	6	6	8	7	12
Pitmain	26	16	20	10	23	13	20
Sub total (Sporting cull)	531	704	432	618	482	661	456
Clune	41	39	22	20	31	30	0
Coignafearn	180	250	173	188	177	219	100
C'garth, W A'chalder & Mig	56	30	43	114	50	72	20
Farr and Glen Kyllachy	45	79	23	29	34	54	15
Kinveachy	207	161	108	72	157	116	0
Sub total (Reduction cull)	529	559	369	423	449	491	135
TOTAL (East MDMG)	1060	1263	801	1041	930	1152	591

The table below confirms the cull taken in 2013-14 for each estate in the Eastern Monadhliath, before any changes were proposed as part of the SDMP. It also shows the proposed culls for 2014-15, with changes highlighted in various colours (associated notes at base of table) and the *actual* culls achieved.

NB The culls proposed for 2015-16 were slightly different for estates in Area 7 and also at Coignefearn because of a shortfall in hinds culled in 2014-15. The culls for 2016-17 are still under discussion, because of a shortfall again in 2015-16.

Estate	2013/14				2014-15			
	Stags	Hinds	Calves	Total	Stags	Hinds	Calves	Total
Aberarder and Flichity	8	12	2	22	8	12	2	22
Alvie and Dalraddy	29	32	10	71	29	32	10	71
Balavil	30	33	10	73	30	33	10	73
Cluny	55	100	33	188	55	150	55	260
Coull and Blaragie	39	27	20	86	39	84	31	154
Craig Dhu and Biallaid	3	23	5	31	3	26	9	38
Dalmagarry	7	1	0	8	7	1	0	8
Dalmigavie	8	87	26	121	8	102	32	142
Dunachton and Kinraig	29	18	6	53	29	18	6	53
Dunmaglass	14	34	11	59	14	34	11	59
Easter Aberchalder	0	2	0	2	0	2	0	2
Garrogie***	44	59	10	113	44	99	25	168
Gaskbeg	7	4	1	12	7	13	4	24
Glen Banchor and Strone	40	92	26	158	40	168	62	270
Glenmazeran	26	66	12	104	26	106	27	159
Killin	8	11	9	28	8	11	9	28
Kinrara	32	32	13	77	32	32	13	77
Kyllachy	5	10	2	17	5	10	2	17
Pitmain	32	18	8	58	32	18	8	58
Sub total (Sporting cull)	416	661	204	1241	416	951	316	1683
Clune	5	15	2	22	5	15	2	22
Coignefearn	252	200	80	532	125	325	114	564
C'garth, W A'chalder & Mig	43	68	34	145	43	68	34	145
Farr and Glen Kyllachy	10	20	4	34	10	20	4	34
Kinveachy	103	32	25	160	103	32	25	160
Sub total (Reduction cull)	413	335	145	893	286	460	179	925
TOTAL (East MDMG)	829	996	349	2,134	702	1,411	495	2,608

	Area 7 estates asked to increase their hind culls as part of the SDMP
	Dalmigavie (15 for 3 yrs) & Glenmazeran (40 for 3 years) voluntary hind increase
	Area 6 estates (Garrogie largest) asked to increase their hind culls (pending)
	Coignefearn asked to undertake a 'stags for hinds' swap
	Other estates where negotiations will focus on reducing stag culls if possible (pendi

*** Other estates associated with Garrogie: Killin / Dell / Knockie (but only Killin significant; others have v. limited RDMA land)

There are a number of reasons the changes in cull were proposed in the Eastern Monadhliath as part of the SDMP:

- Area 7 estates were asked to markedly reduce their hind (and follower) densities as there is a high likelihood that the high population densities of hinds being held will be having adverse effects on stag population performance - these are: Coull/Blaragie, Gaskbeg, Craig Dhu, Cluny and Glenbanchor¹⁷.
- Area 6 estates were asked to reduce slightly their hind (and follower) densities for the same reason as Area 7. There are 4 estates in Area 6 (Garrogie-Stronelairg, Killin, Dell and Knockie) but Garrogie-Stronelairg is by far the largest owner in respect of the overall range and the winter range (<600m)¹⁸.
- Dalmigavie and Glenmazeran proposed their own increases in culls when interviewed in 2014 for the Review.
- Coignafearn, in consultation with SCL, agreed with its neighbours to reduce its stag cull by 125 in return for (i) increasing its hind cull by 125 and (ii) its key neighbours to the south also agreeing to reduce their hind densities (i.e. Area 7). The arrangement will ideally last for up to 5 years, but is renewable on an annual basis subject to neighbours undertaking the agreed hind culls. Of course, the hope is that the arrangement will continue, to achieve the maximum benefits (including benefits for sport and the benefit of ecological restoration for those estates that seek to achieve it) for all parties.
- There are two other key estates (Kinveachy and Corriegarth) which SCL had hoped might be willing to moderate their stag culls. Negotiations to date have yielded little, but the MDMG Chair remains committed to seeing if a way can be found to reduce the cull of stags on each estate, in return for increased co-operation from their neighbours and by deploying changes in management approach as appropriate.

The anticipated outcome of the increased culls is that local densities of hinds will be markedly reduced in the Eastern Monadhliath, and the adult sex ratio manipulated over time to become 1: 1, producing benefits for estates focused on stag stalking. In tandem, the same local reductions of hinds will benefit those estates focused on nature conservation or grouse production, both on their land and on their marches, because overall deer densities will decline and local densities decline markedly.

The amended culls will only remain in place for a period of 5 years, beyond which, at present, it is anticipated that a new 'maintenance cull' would be taken because at this point the population in the Eastern Monadhliath will have reduced in size and changed composition so markedly.

To help illustrate to the estates the likely outcome of all the proposed changes to stag and hind culls, a new population model was built for the Eastern Monadhliath in 2014. It showed the predicted combined effect of (i) a 'business as usual' cull being taken on most

¹⁷ Pitmain has been asked where feasible to help GB achieve its cull because of the interconnected nature of the deer population on their marches.

¹⁸ Knockie and Dell have only a very small area of the winter range for hinds & followers hence cannot be expected to help significantly with any proposed increase in the hind cull. Killin sits entirely within the Garrogie Estate and is small in land area.

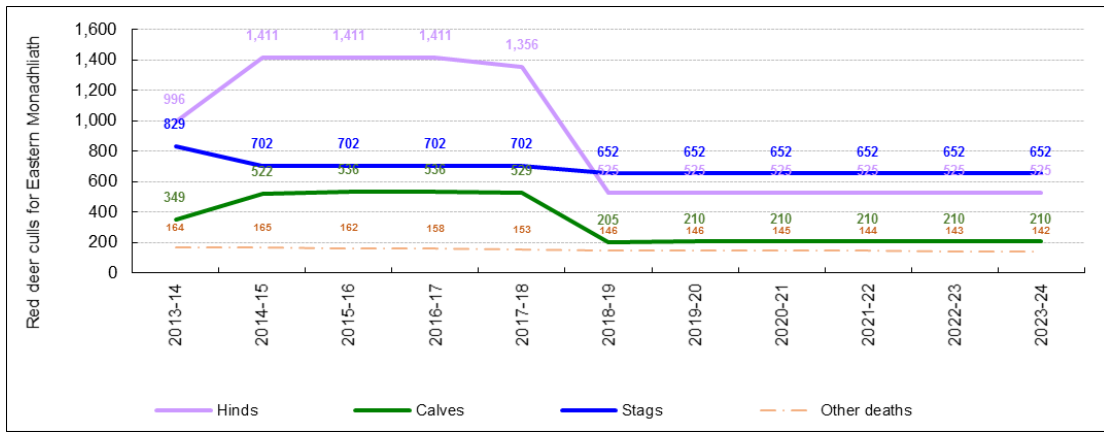
estates in line with the cull taken in 2013-14, (ii) the elevated culls proposed as part of the SDMP in 2014.

The model outputs are shown in the pages overleaf. The model assumes that the starting population was as per the winter count of 2013 and the reported culls in 2013-14 and 2014-15 were accurate. It also assumes that average recruitment rates rise from 37% to 40% over the 10 year period, and the proportion of male calves rises from 50% to 55% over 10 years. A background level of 'other mortality' is also assumed to arise from road traffic collisions, illegal taking, natural mortality and unrecorded culls by estates and other minor landowners and tenants, albeit that natural mortality in male deer is expected to decline somewhat.

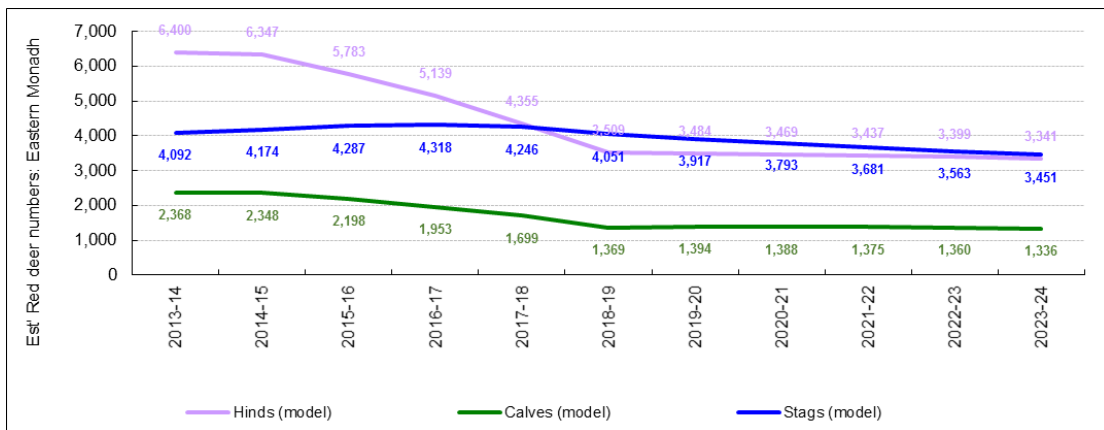
There are 5 charts presented:

- ✓ In the 1st chart, the size of culls to be taken in the 'reduction phase' and the 'maintenance phase' is shown.
- ✓ The 2nd and 3rd charts illustrate the predicted changes in deer abundance for (i) stags, hinds & calves and (ii) overall. The primary strategic aim is to produce an adult sex ratio of 1:1 overall, whilst maintaining an appropriate number of stags for sport.
- ✓ The 4th and 5th charts show the predicted changes in deer density for (i) stags, hinds & calves and (ii) overall.

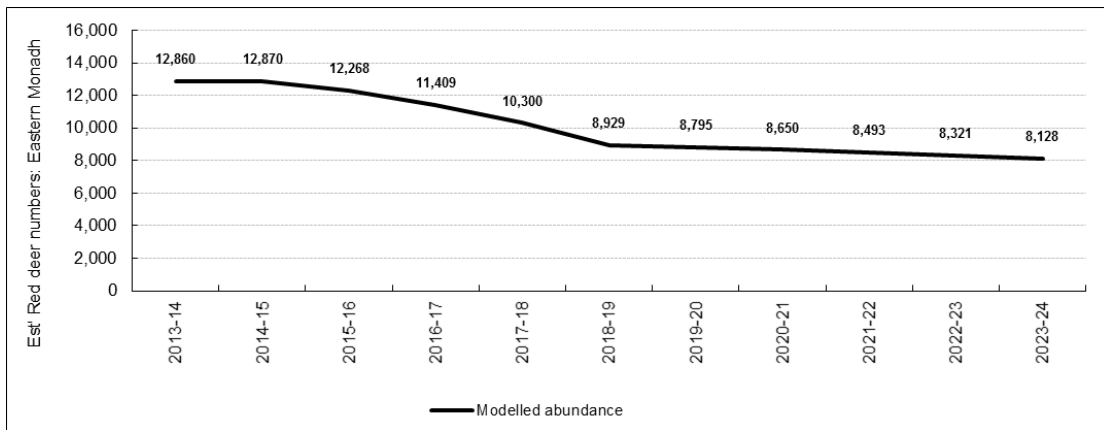
The trend lines all have their data values shown, so that readers can clearly see and examine the exact numbers produced by the models. The figures shown in the abundance/density charts include recruitment each year (i.e. show the maximum population present at the outset of each cull season).



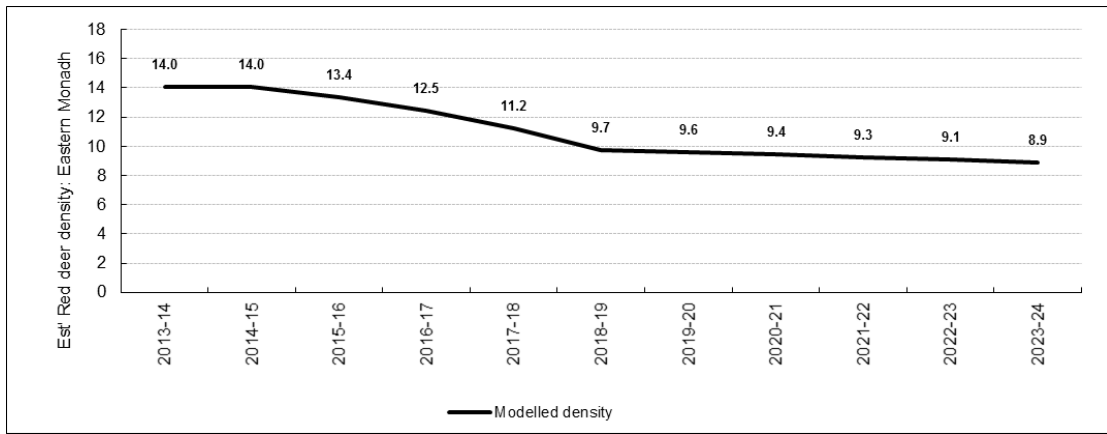
Proposed numbers of deer to cull – Eastern Monadhliath



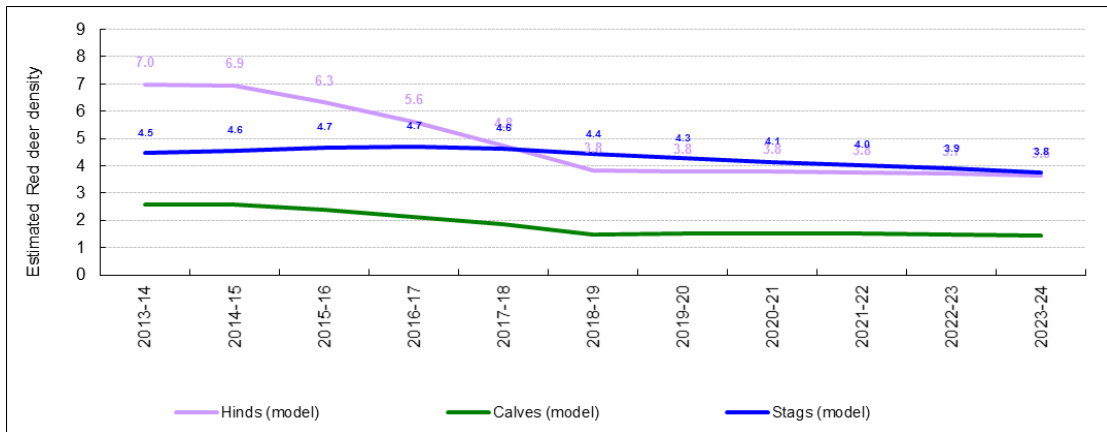
Predicted change in numbers of stags, hinds and calves – Eastern Monadhliath



Predicted change in overall deer numbers – Eastern Monadhliath



Predicted change in densities of stags, hinds and calves – Eastern Monadhliath



Predicted change in overall deer densities – Eastern Monadhliath

Since the creation of these models, in 2014, two cull seasons have passed: 2014-15 and 2015-16. The models have been updated to reflect these culls. The cull data, and questionnaire returns, for these two seasons can also be analysed and used to produce a robust measure of actual likely recruitment and natural mortality for the models.

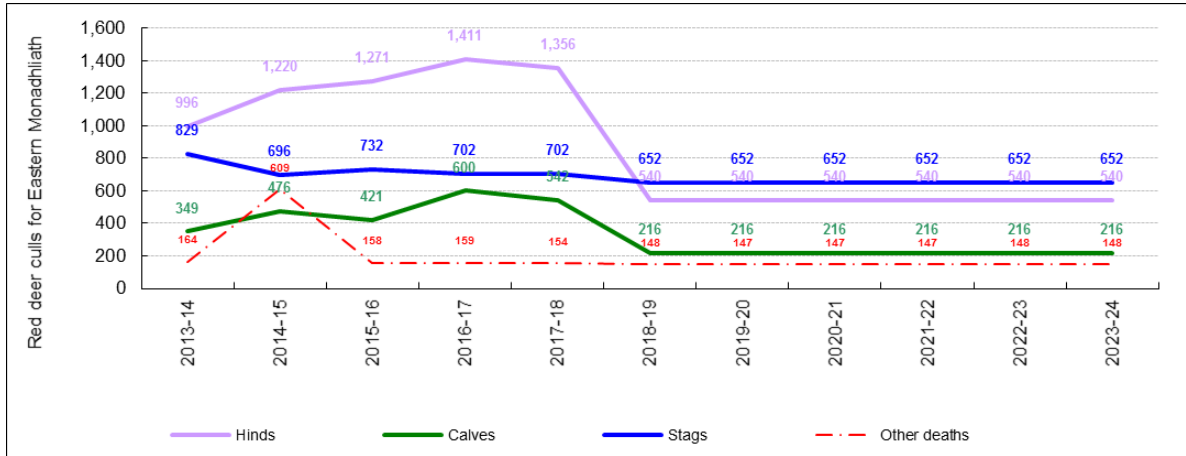
The outputs of the revised model for the Eastern Monadhliath are shown in the charts overleaf, presented in the same order on the page as the original model outputs (previous pages) for comparison.

The key points to note are as follows:

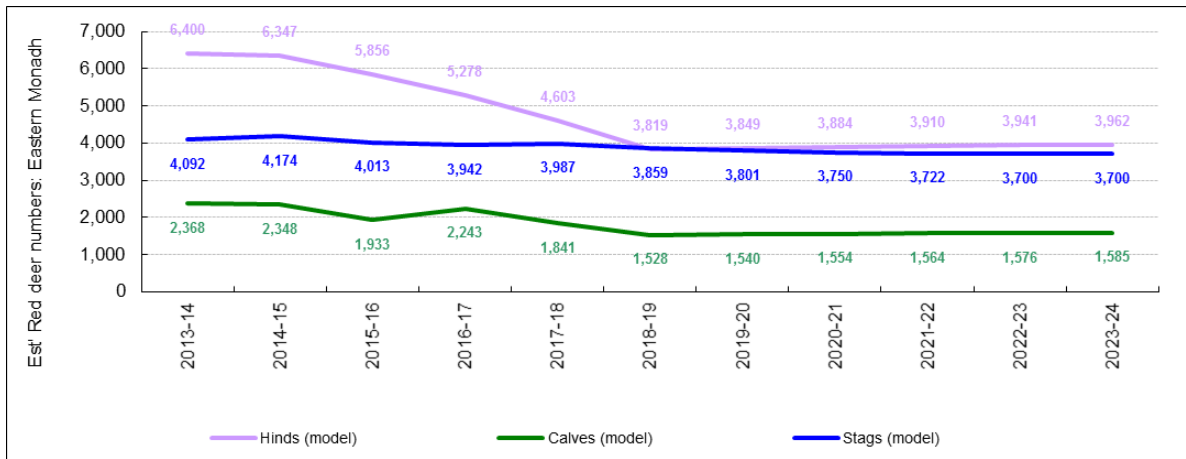
- The stag cull was markedly lower in 2014-15 and 2015-16 as expected, mainly as a result of the stags for hinds swap with Coignafearn but also due to other estates shooting fewer stags (e.g. Kinveachy in 2015-16).
- The hind cull rose substantially in 2014-15 and 2015-16, compared to 2013-14, albeit there was a shortfall of ~ 150-200 each year relative to the target levels set. Many estates achieved the target (or close to it) as requested, whereas some failed to achieve their target by some margin (see Appendix 2).
- The shortfall in hinds culled appeared, in large part, to be compensated for by the major natural mortality event on 2014-15 plus the consequential change in animals entering the breeding population the following year.
- The changes predicted by the model to have taken place in the population over the period June 2013 – June 2016 (after calving) are as follows:
 - Stags – reduction of ~ 4% (population in June 2016 predicted to be ~ 3940)
 - Hinds – reduction of ~ 18% (population in June 2016 predicted to be ~ 5280)
 - Overall numbers – reduction of ~ 10% (June 2016 population of ~ 11,460)
- If the original cull targets for 2016-17 and 2017-18 are achieved, as agreed under the SDMP, the model currently predicts that a population of ~ 9,200 deer will be present compared with a target of 8,930 (~ 3,800 hinds compared to a target of ~ 3,500 hinds; 3860 stags compared to a target population of 4,050).
- Meetings with the estates involved in the hind reduction culls are planned for the period June-August 2016 in order to discuss how best to formulate and then achieve the target culls for the next 2 years – this will undoubtedly involve a high degree of collaborative culling because of the difficulties experienced by some estates in trying to deliver individual cull targets¹⁹.

ACTION: Chairman to ensure a robust collaborative hind culling plan is in place by the end of August, and ensure it is then delivered on the ground

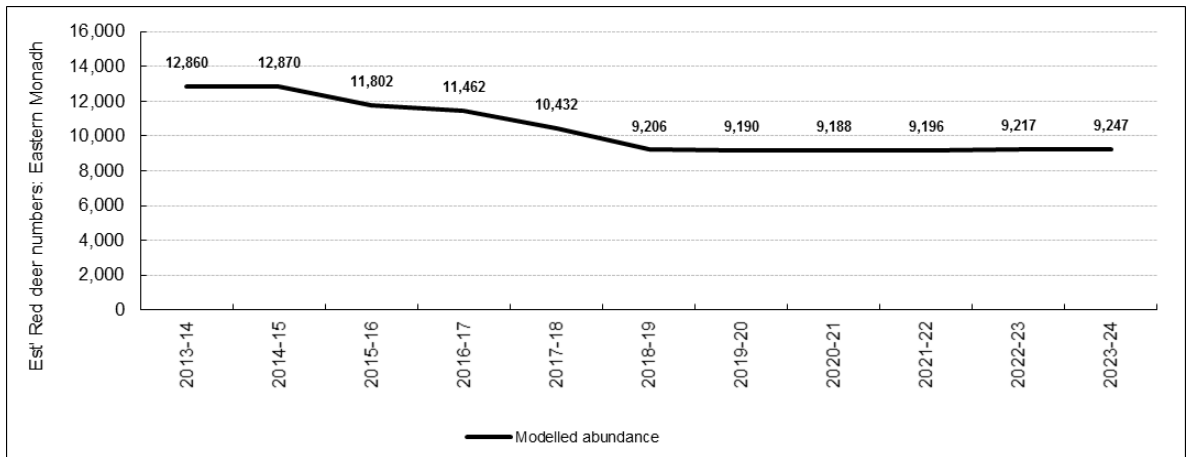
¹⁹ SCL warned of this problem in 2014, because of the high levels of deer movement that arise, but estates at the time insisted they wanted to try individual cull targets first.



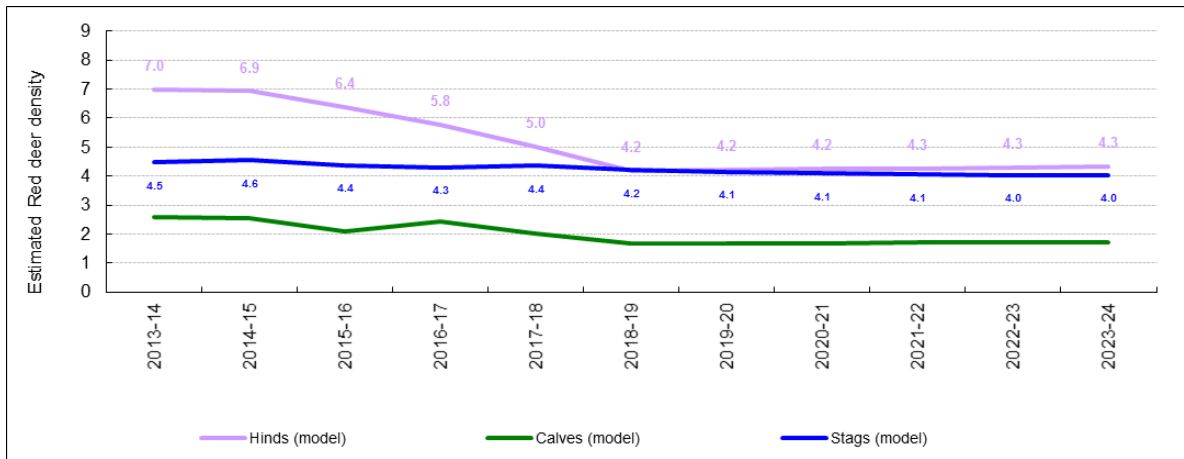
Actual cull taken from 2013-14 to 2015-16, with original proposed SDMP culls thereafter – Eastern Monadhliath



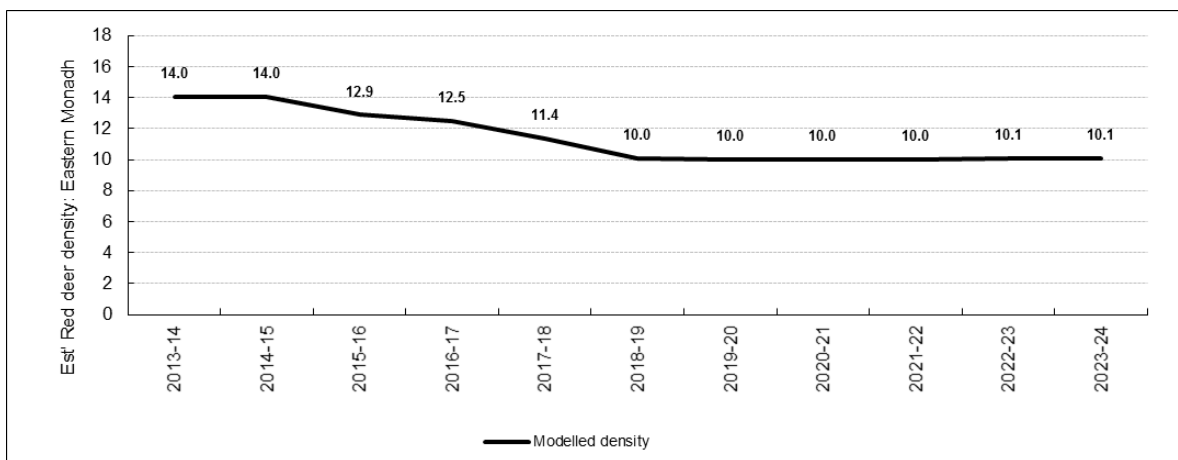
Likely effects on stag, hind and calf numbers arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Eastern Monadhliath



Likely effects on overall deer numbers arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Eastern Monadhliath



Likely effects on stag, hind and calf densities arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Eastern Monadhliath



Likely effects on overall deer densities arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Eastern Monadhliath

6.3. PROSPECTIVE MODEL – WESTERN MONADHLIATH

Appendix 2 of this report confirms the actual size of culls (2013-14 - 2016), plus the predicted size of culls thereafter, for the Western Monadhliath over a 10-year period to 2024, and confirms the likely impact of these on the population.

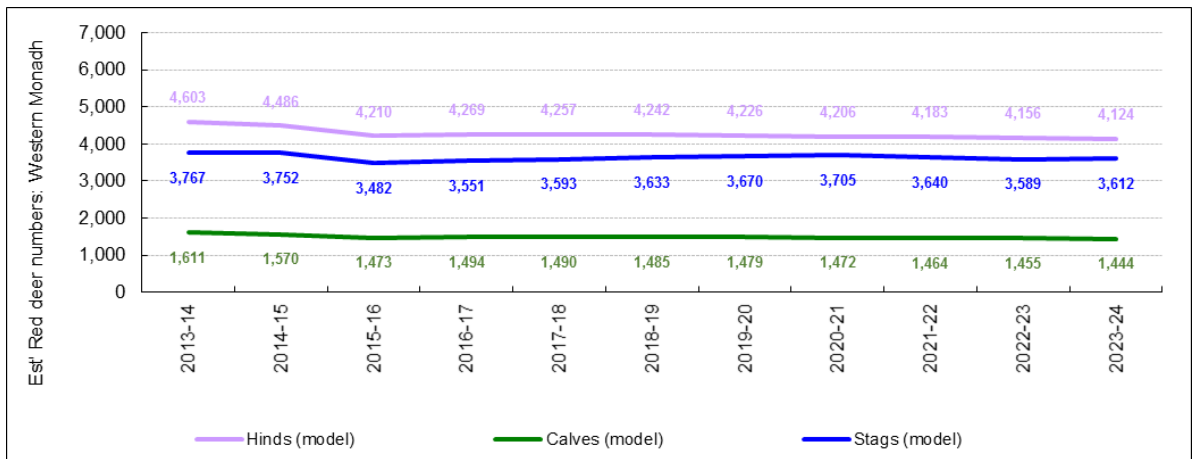
Only a small number of estates at the time of writing the SDMP were planning to reduce hind numbers from the level counted in winter 2013. These were as follows:

- ✓ Braeroy: plan to cull 50 extra hinds per annum, from 2013-14, until such times as the overall density on the estate reaches 10 per km² (winter count in 2013 was 14 per km²). This equates roughly with a reduction in hind numbers of 280 compared to the 2013 count (if taking into account the associated reduction in calves at foot this change would result in).
- ✓ Culachy: plan to cull approx. 160 hinds per annum for 3 years (2013-14, 2014-15 and 2015-16) then change back to standard cull of 80.
- ✓ Glenshero: plan to reduce their winter 2013 hind count by a further 100 hinds maximum.

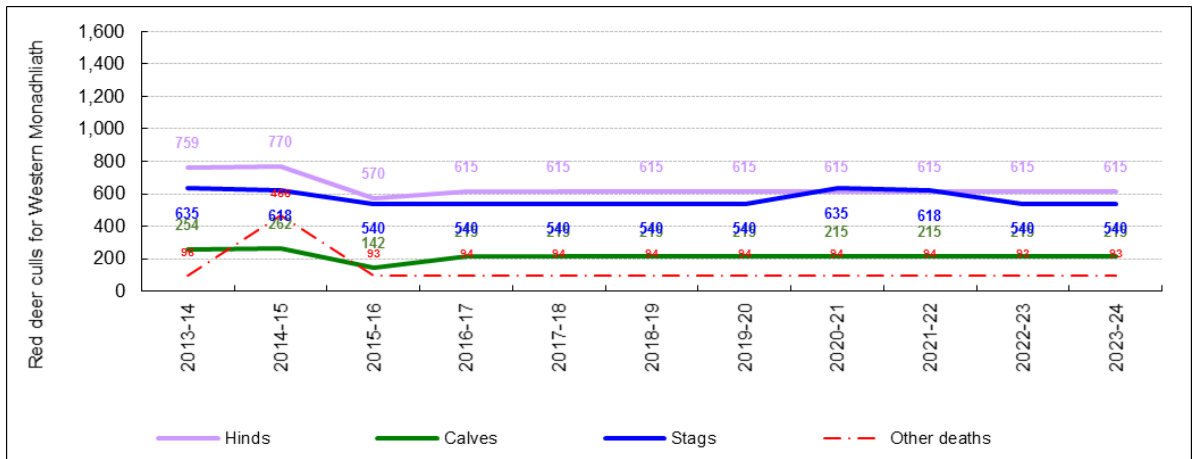
There are 5 charts presented overleaf, which provide an overview of the deer population and its likely composition over the next 10 years based on the culls that were predicted at the outset of the SDMP:

- ✓ Chart 1: the size of culls to be taken in the 'reduction phase' and the 'maintenance phase' is shown. We assume the Braeroy cull will remain elevated for 6 years (including 2013-14), the Culachy cull will be elevated for 3 years (including 2013-14) and the Glenshero cull will also be taken over 5 years (from 2013-14).
- ✓ Charts 2 & 3: illustrate the predicted changes in deer abundance for (i) stags, hinds & calves and (ii) overall. The primary strategic aim is to produce an adult sex ratio of 1:1 overall, whilst maintaining an appropriate number of stags for sport. The model assumptions are described in Appendix 5.
- ✓ Charts 4 & 5: show the predicted changes in deer density for (i) stags, hinds & calves and (ii) overall.

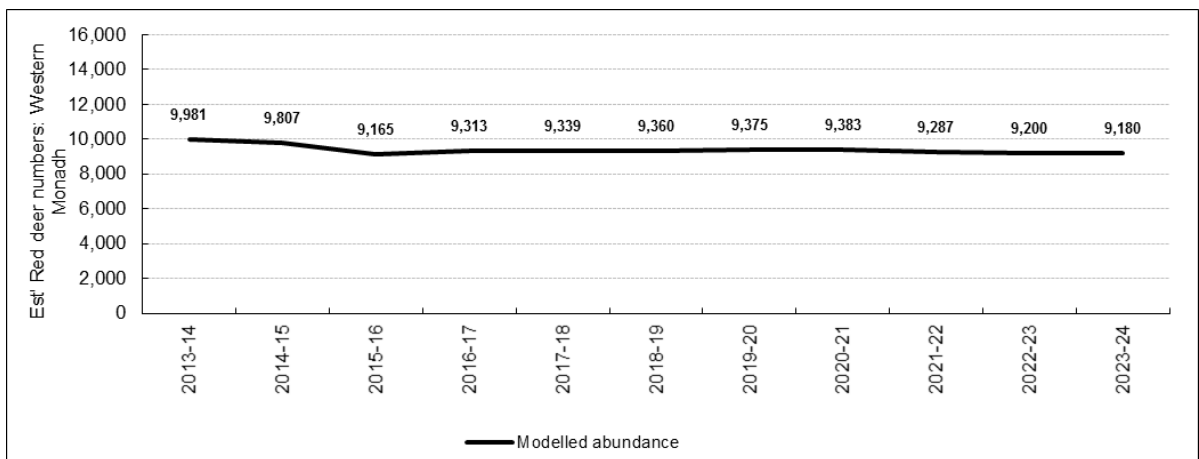
The trend lines all have their data values shown, so that readers can clearly see and examine the exact numbers produced by the models. The figures shown in the abundance/density charts include recruitment each year (i.e. show the maximum population present at the outset of each cull season).



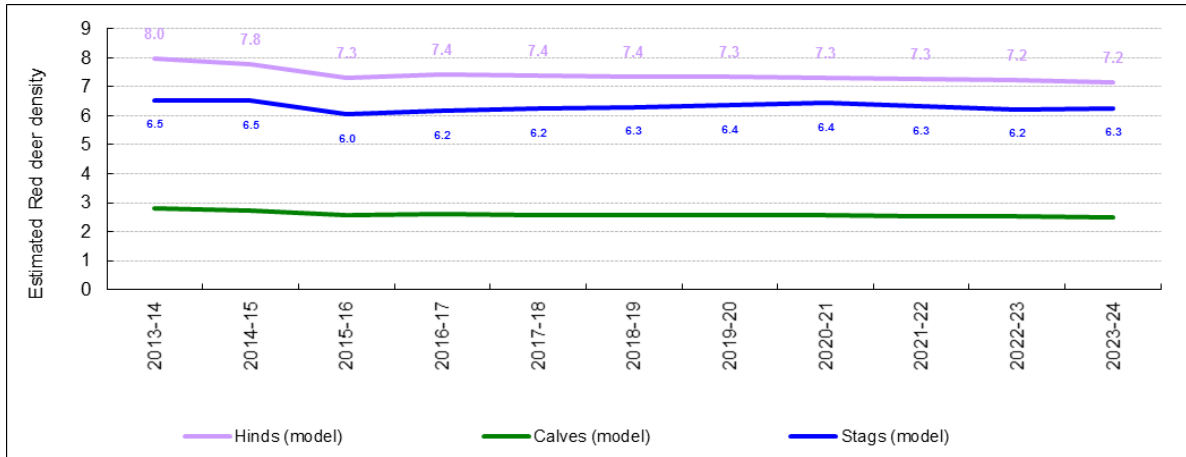
Proposed numbers of deer to cull – Western Monadhliath



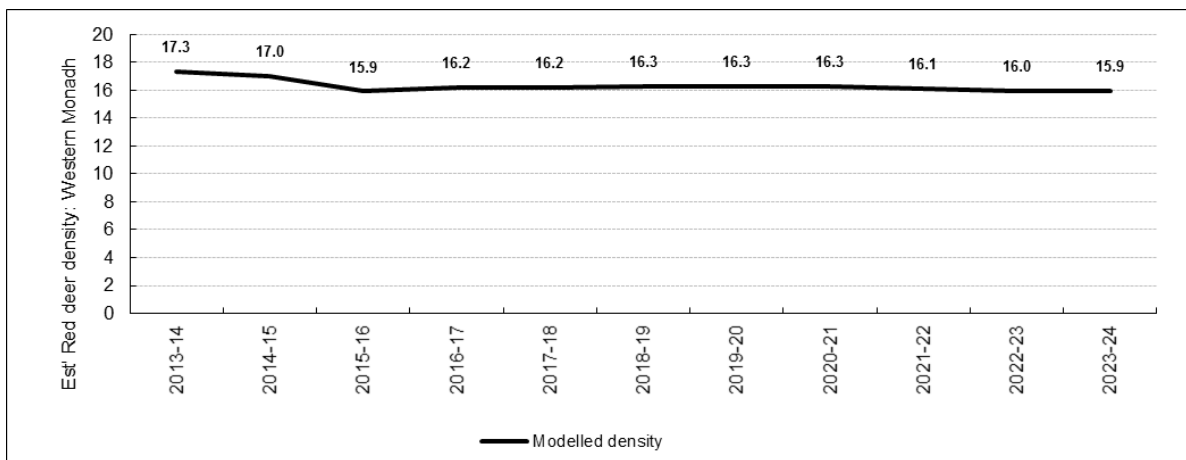
Predicted change in numbers of stags, hinds and calves – Western Monadhliath



Predicted change in overall deer numbers – Western Monadhliath



Predicted change in densities of stags, hinds and calves – Western Monadhliath



Predicted change in overall deer densities – Western Monadhliath

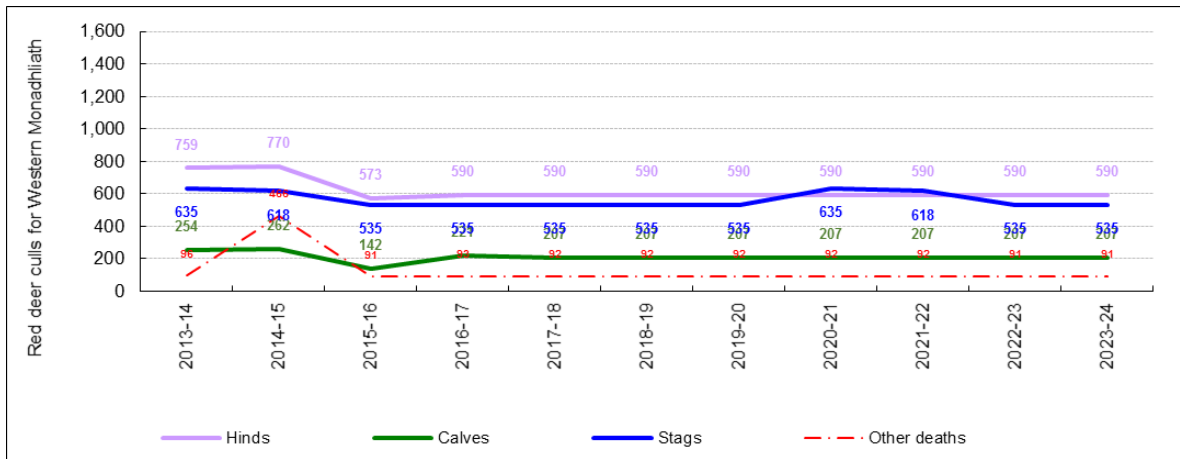
Since the creation of these models, in 2014, two cull seasons have passed: 2014-15 and 2015-16. The models have been updated to reflect these culls. The cull data, and questionnaire returns, for these two seasons can also be analysed and used to produce a robust measure of actual likely recruitment and natural mortality for the models.

The outputs of the revised model for the Western Monadhliath are shown in the charts overleaf, presented in the same order on the page as the original model outputs (previous pages) for comparison.

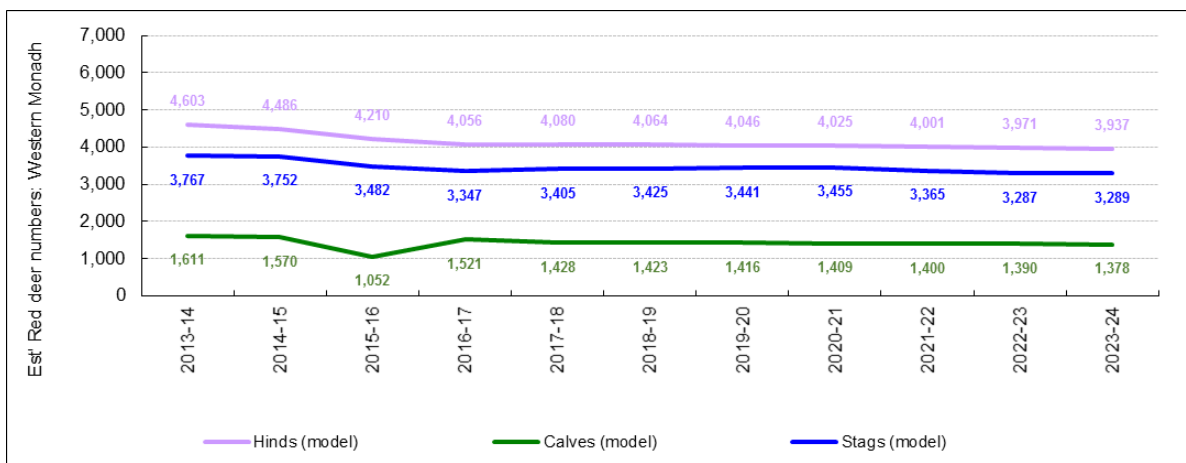
The key points to note are as follows:

- The stag cull was markedly lower in 2015-16, with several estates showing declines of 5 to 10 stags each – Creag Meagaidh showed the most notable decline (~ 40 less stags shot).
- The hind cull dropped very markedly in 2015-16 - see Appendix 2 for details.
- The changes predicted by the model to have taken place in the population over the period June 2013 – June 2016 (after calving) are as follows:
 - Stags – reduction of ~ 11% (population in June 2016 predicted to be ~ 3350)
 - Hinds – reduction of ~ 12% (population in June 2016 predicted to be ~ 4060)
 - Overall numbers – reduction of ~ 10% (June 2016 population of ~ 8920)
- If the original culls proposed for 2016-17 and 2017-18 are taken, as proposed under the SDMP, the model currently predicts that the population will move to a slightly lower overall density (15 per km² compared to 16 per km²) but with a change in the adult sex ratio; the population appears likely to become more female biased.
- Estates should meet and decide whether this current predicted trajectory is what they wish to see, and if not how to amend culls to effect the desired change. The general advice given in the SDMP in 2014 was that estates should only carry the deer they think they need to provide their sporting stags – any downwards adjustment to the hind population should be made where possible, because of the general environmental benefit likely to accrue.

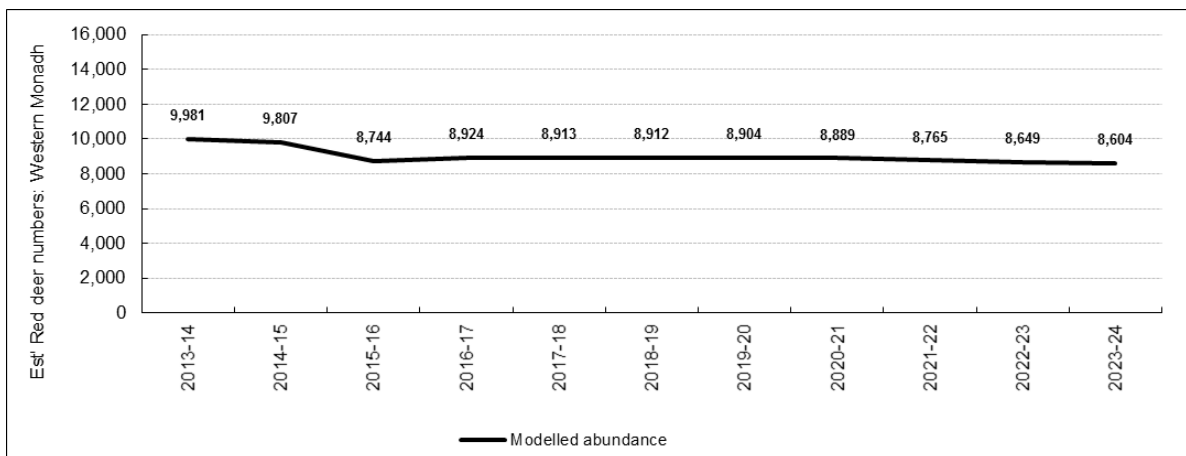
ACTION: Chairman to ensure the Spean Bridge and Stratherrick Sub Groups report back on how they plan to react to the predicted reduction in densities after the major mortality event – will they leave densities as they are now or allow them to rise back to the previous level?



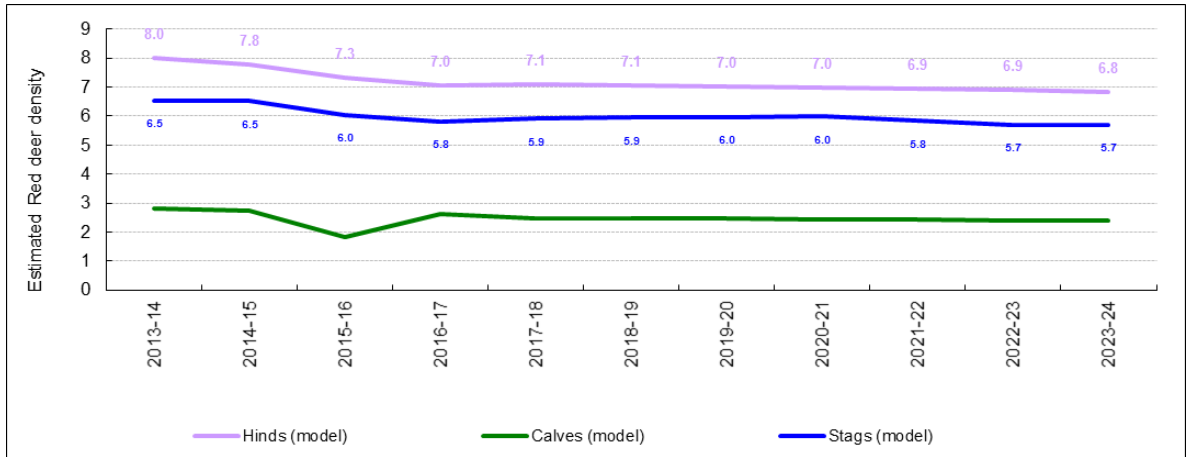
Actual cull taken from 2013-14 to 2015-16, with original proposed SDMP culls thereafter – Western Monadhliath



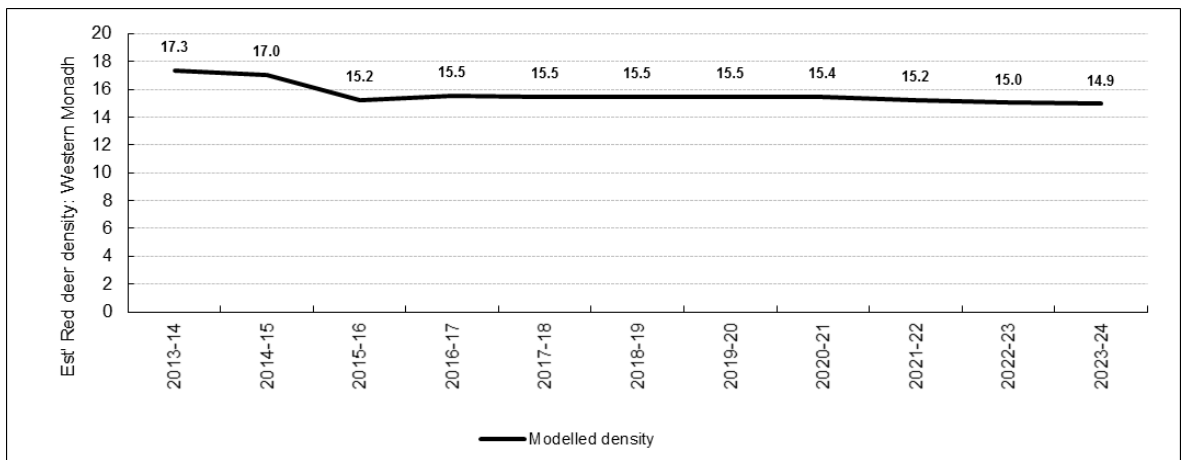
Likely effects on stag, hind and calf numbers arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Western Monadhliath



Likely effects on overall deer numbers arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Western Monadhliath



Likely effects on stag, hind and calf densities arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Western Monadhliath



Likely effects on overall deer densities arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Western Monadhliath

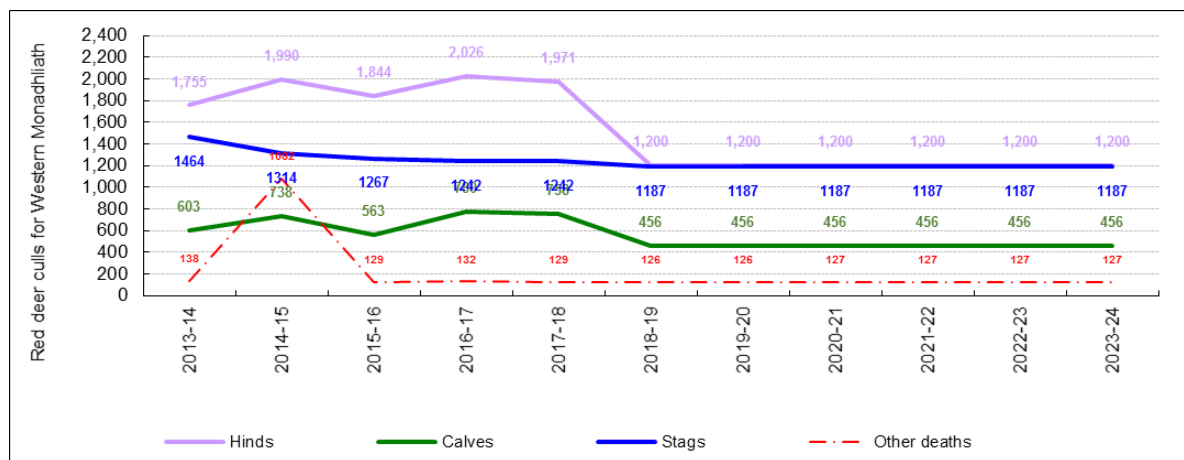
PROSPECTIVE MODEL – ENTIRE RDMA

This Appendix shows the combined likely effects on the overall RDMA population given the size of culls taken from 2013-14 through to 2015-16.

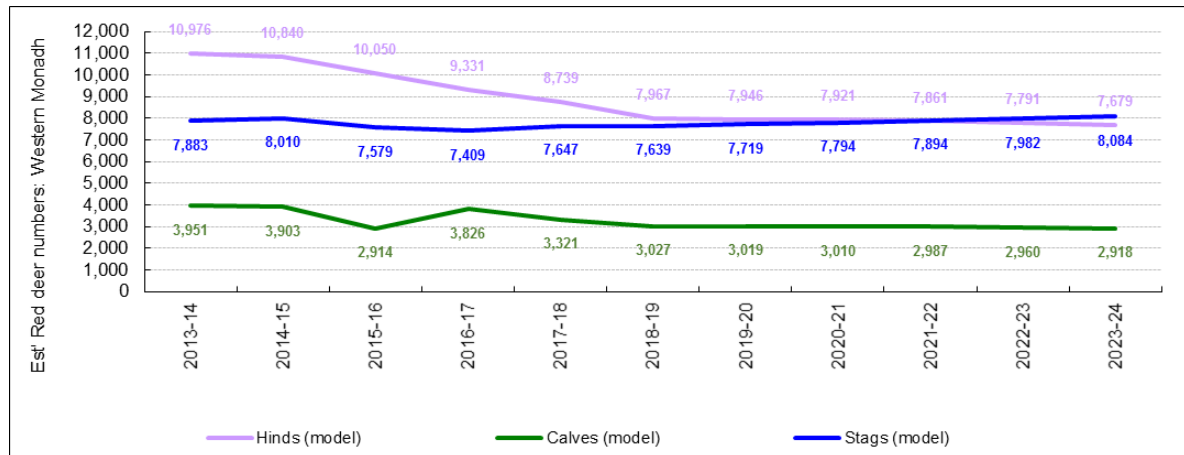
The changes predicted by the model to have taken place in the population over the period June 2013 – June 2016 (after calving) are as follows:

- Stags – reduction of ~ 6% (population in June 2016 predicted to be ~ 9330)
- Hinds – reduction of ~ 15% (population in June 2016 predicted to be ~ 7410)
- Overall numbers – reduction of ~ 10% (June 2016 population of ~ 20,570)

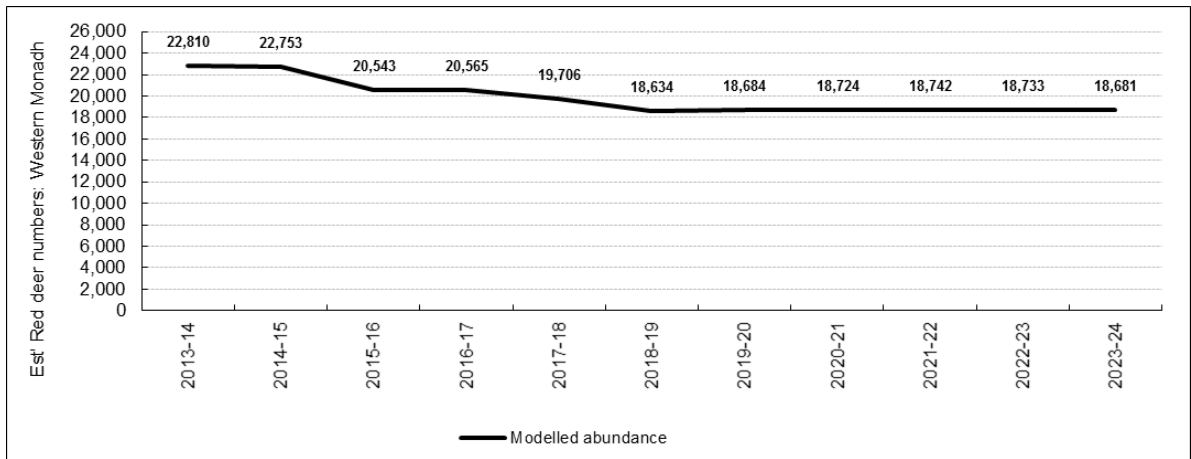
It also shows the predicted effects for subsequent years if the original target culls are achieved.



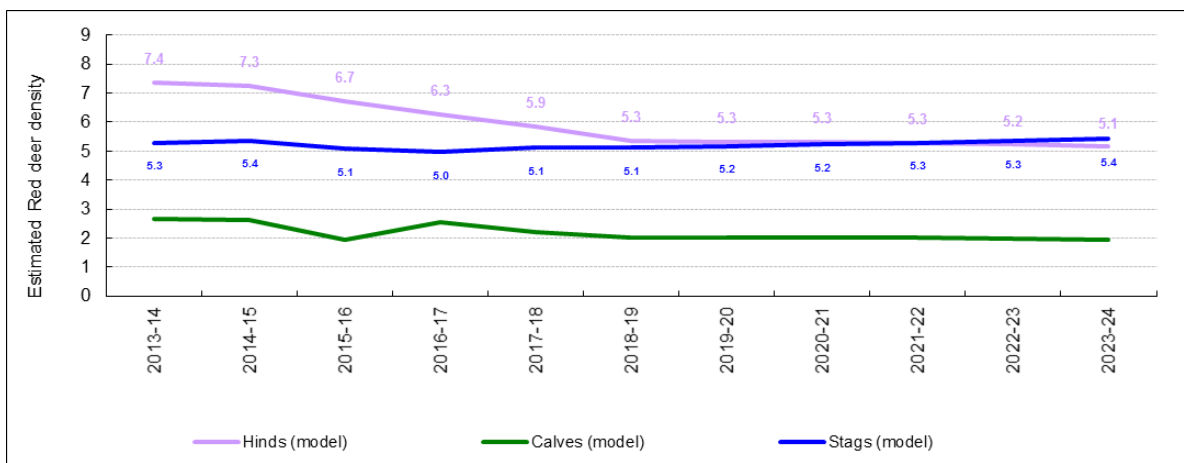
Actuals cull taken from 2013-14 to 2015-16, with original proposed SDMP culls thereafter – Monadhliath RDMA



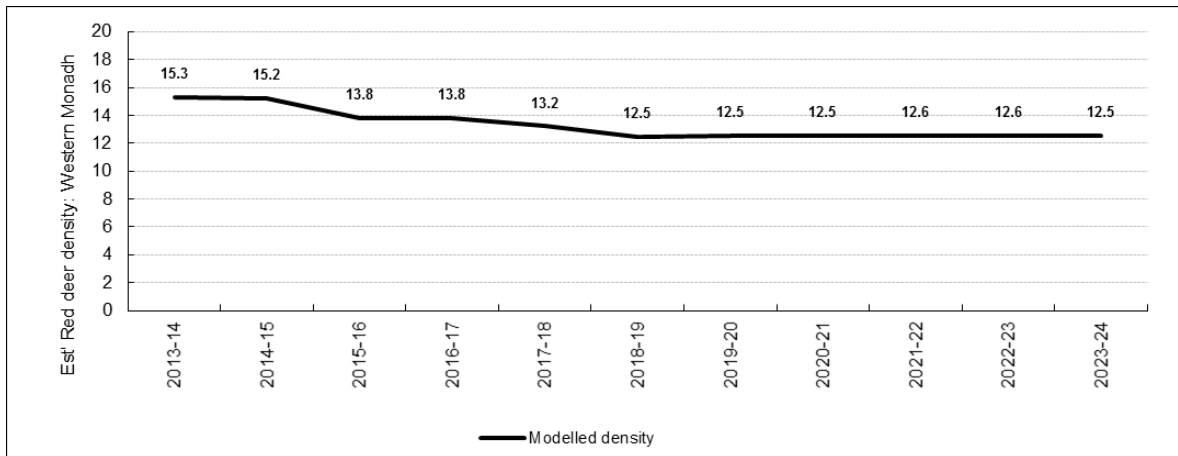
Likely effects on stag, hind and calf numbers arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Monadhliath RDMA



Likely effects on overall deer numbers arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Monadhliath RDMA



Likely effects on stag, hind and calf densities arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Monadhliath RDMA



Likely effects on overall deer densities arising from culls taken up to 2015-16, and predicted effects thereafter if original targets are achieved – Monadhliath RDMA

7. 'CAUSE FOR CONCERN'

'Causes for Concern' noted in the 2015-16 annual report questionnaires, returned by estates at the end of May 2016, were as follows:

- ✓ **Aberarder** notes the change in management approach of some neighbour's causes them concern, but their own proposed changes to the line of the hill fence may help them to retain more hinds and hence bring in stags during the rut (see next section).
- ✓ **Coignafearn** wishes to note its disappointment that the Cluny hind cull did not apparently start until December.
- ✓ **Culachy** wants to note the crucial importance of estates ensuring any changes they make to their management activities are discussed with neighbours first, to retain confidence in the deer management planning process.
- ✓ **Garrogie** wishes to note that Coignafearn's significant de-stocking is impairing their ability to find appropriate beasts to cull to meet targets.
- ✓ **Garrogie** fears the large natural mortality event of 2014-15 coupled to Coignafearn's activities have diminished the legitimacy of the proposed SDMP cull targets. They wish this to be an agenda item at the next meeting.

These 'Causes for Concern' will be taken up by the Chairman and either resolved in advance of the next DMG meeting on 6th June 2016, or included as an agenda item for the meeting as appropriate.

Other items that estates requested were put on the agenda for discussion in June 2016, or at the AGM in August (as judged appropriate) were as follows:

- ✓ **Easter Aberchalder** wishes to discuss the issue of RDMA fence maintenance at the next DMG meeting.
- ✓ **Creag Meagaidh** notes there has not been a Speanbridge Sub Group meeting for a quite a while and would be keen to help organise one.

ACTION: Chairman to ensure agendas for each meeting include the necessary items raised

8. CHANGES OF STATUS

8.1. CHANGES OF OWNERSHIP IN 2015-16

The reported changes in ownership reported by estates at the end of May 2016 were as follows:

- ✓ **Balavil** changed hands in May 2015, and they plan to improve many aspects of the hill. They note they currently have excellent relations with their neighbours and hope these continue to develop.

8.2. CHANGES OF OBJECTIVE IN 2015-16

No 'Changes of Objective' were noted in the 2016 questionnaires returned by estates.

8.3. OTHER NOTEWORTHY CHANGES IN 2015-16

Other changes notified in the questionnaires returned by estates at the end of May 2016 were as follows:

- ✓ **Aberarder** notes they are re-aligning their section of the RDMA fence to lower down the hill, to allow deer access to small woodlands and the improved grazing therein. They hope this may help to increase the number of hefted hinds.
- ✓ **Ardverikie** notes they have a new estate manager now, in place of the previous factor.
- ✓ **Clune** are now renting a large section of Kinveachy's open range for the purposes of grouse management.
- ✓ **Clune** have written to the Chair confirming they no longer wish to be a part of the DMG, as they do not see its relevance to them given their management objectives. Subscriptions were therefore not paid.
- ✓ **Creag Meagaidh** notes there were fewer stags on their ground probably as a result of low hind densities during the rut (they avoid shooting stags during the rut to help their neighbours).
- ✓ **Culachy** notes they have made a significant reduction to their hind stocking density, as stated in the SDMP.
- ✓ **Dalmigavie** notes they have had no wintering sheep in the past year.
- ✓ **Easter Aberchaldar** notes they have increased the number of sheep on the hill between May and June. Also, they have a windfarm and hydro scheme planned.

ACTION: Chairman to speak with Clune as a matter of urgency given its importance

9. OTHER NEWS

- ✓ Land Reform Bill passed in the Scottish Parliament, with potentially wide ranging implications for deer managers.
- ✓ Graeme Taylor of SNH plans to re-assess the DMG against the benchmarks in the next few months, as part of the reporting process to the Minister due later in the year.
- ✓ A number of windfarms have gained consent or otherwise are being scoped along the south side of Loch Ness – these developments will need to take account of deer, under the guidance of SNH, which can be found using the link in the next section.

<http://www.snh.gov.uk/docs/A1187660.pdf>. Construction of some sites is ongoing or will begin soon.

- ✓ SCL has been continuing work on the trial research site at Coignafearn on the Monadhliath plateau. A range of scientific instruments were set up & monitored in 2015 as part of an extension to the trial funded by SNH. It was clear even from the first year of detailed monitoring that there is a lot of peat moving across the surface and downslope, on the bare peat areas. It might be possible to arrange a site visit in summer 2016, if any MDMG members are interested... contact SCL and we can enquire with SNH and Coignafearn. An updated report on this study was prepared by SCL and sent to SNH for review last month – it should be published sometime soon. The most recent news on this study is that only a very small amount of money has been made available to continue it for this summer, which will restrict severely the information flowing from it just at the point it is starting to yield considerable insights – it might be worth the MDMG considering whether it would like to make a contribution, to allow the original scope of work to be undertaken?

10. RECOMMENDATIONS

SCL makes the following observations in respect of the first MDMG Annual Report:

- ✓ Many of the estates in the Eastern Monadhliath should be congratulated on the marked increase in the hind cull achieved in 2014-15 and 2015-16 – an excellent outcome. That said, more work remains to be done because some estates have failed to meet their cull targets by a large margin. All estates must now work jointly for the next 3 years to try and achieve the targets set, with a much greater level of effort being applied to the areas with the largest shortfalls.
- ✓ The large natural mortality event of winter and spring 2014-15 has helped to offset the shortfalls in hind culls over the last 2 years, but this is not a situation that would ideally be repeated. The death of so many deer is regrettable and all efforts should now be made to reduce local stocking levels as planned, as well as improve wintering habitat wherever possible, to help the herd maintain a better level of condition during the crucial months of winter and spring.
- ✓ Coignafearn should be thanked for their willingness to try the stags for hinds swap in the 2014-15 season and to have maintained it in 2015-16 (the change in approach is appreciated by many of their neighbours) despite a shortfall in the required hind culls from their neighbours. We recommend that Coignafearn keep in place their stags for hinds swap for at least another 3 years, as we believe it will have the desired effect for all parties if the agreement is maintained. The precise size of the swap is less important, albeit it the fewer stags shot for protection the better.
- ✓ Protection culls of stags remained high at Kinveachy in 2014-15 but reduced somewhat in 2015-16. Hind culls have also been higher in the past 2 seasons. We recommend that Kinveachy continues, with the support of the MDM, to try and reach an agreement with its neighbours to find a long-term compromise on stag protection culls, albeit we appreciate this is a difficult problem to resolve.

- ✓ Protection culls of stags still remained high at Creag Meagaidh in 2014-15 but were lower in 2015-16. We recommend that Creag Meagaidh consults with its neighbours in summer 2016 to ensure that all are happy with this situation continuing, before applying for a new OOS licence. If any change is requested, Creag Meagaidh should work with its neighbours to find a compromise on stag protection culls if they can, albeit we appreciate this is a difficult problem to resolve.
- ✓ Protection culls of stags remained high at Corriegarh in 2014-15 and again in 2015-16. Corriegarh also erected a fence last year without, as far as we are aware, full consent of its neighbour. We recommend that Corriegarh consults with its neighbours in summer 2016 to try and find a long-term compromise if they can, albeit we appreciate this is a difficult problem to resolve.
- ✓ The responses to the questionnaire received in May 2016 from some estates were excellent and much useful information was provided. However, many owners did not provide a return (almost 75%). Owners are urged to try and complete a questionnaire for the 2015-16 cull season, for the benefit of the MDMG as a whole. The information provided is very valuable, and it does not take long to fill in the form (5-10mins maximum). It devalues the process for those who do fill them in when others do not. For example, many were concerned about the high levels of calf losses last year but we did not have enough data in from estates to be able to analyse the effect at the time – if good evidence is presented, then adjustments can be made to population models to compensate and this, in turn, might reduce hind cull targets for example.
- ✓ In the same vein, prompt supply of cull data next year would also be appreciated by Strutt & Parker, as late submission makes it hard to compile the data in time for the Annual Report. Again, several estates have still not sent in data despite being asked multiple times. This means the report is issued late, and owners then have less time to digest it before they meet – the result can be a less well informed and less productive meeting.

ACTION: Chairman to chase up missing cull data from remaining estates

- ✓ The news that Clune wishes to leave the DMG is concerning, given the current focus on estates as a result of the RACCE and planned re-assessment of deer management groups effectiveness later this year. We recommend the Chair discusses this issue with Clune as a matter of urgency.
- ✓ We hope that the MDMG meetings of June 2016 and August 2016 can be used to discuss the issues raised within this report by estates, and that satisfactory resolutions can be found to them in due course. We recommend the Chairman includes sufficient time in the agendas of each meeting to discuss these matters.

APPENDIX 1 - RECENT AERIAL COUNTS OF THE RMDA

Estate	2004				2013			
	SNH Live count				SNH Live count			
	Stags	Hinds	Calves	Total	Stags	Hinds	Calves	Total
Alltruadh					63	1	1	65
Ardverikie	139	239	83	461	39	118	38	195
Braeroy	305	676	236	1,217	252	731	284	1,267
Coire Neurlain	59	7	3	69	78	0	0	78
Cranachan and Keppoch	59	93	33	185	15	12	7	34
Creag Meagaidh	71	15	5	91	50	77	30	157
FCS - Glen Roy	32	3	1	36	77	59	3	139
FCS - South Laggan					14	3	3	20
Glas Dhoire Plantation								
Glen Gloy	145	34	12	191	347	23	7	377
Glen Roy	62	48	17	127	70	0	0	70
Glenshero	1,279	1,176	412	2,867	1,163	815	286	2,264
Glenspean	119	25	9	153	194	173	85	452
Tulloch - Open Range	65	180	63	308	19	61	34	114
Upper Glenfintaig	90	0	0	90	45	0	0	45
SPEAN BRIDGE SUB -TOTAL	2,425	2,496	874	5,795	2,426	2,073	778	5,277

Estate	2004				2013			
	SNH Live count				SNH Live count			
	Stags	Hinds	Calves	Total	Stags	Hinds	Calves	Total
Aberchalder & Glenbuck	34	143	50	227	42	496	212	750
Corriegarth, W. Aber. & Mig.	180	400	140	720	103	164	78	345
Culachy	147	292	102	541	178	511	219	908
Dell	67	1	1	69	21	68	31	120
Easter Aberchalder	4	28	10	42	4	4	2	10
Garrogie	247	673	235	1,155	397	563	231	1,191
Glendoe	433	824	288	1,545	337	546	231	1,114
Killin	24	112	39	175	46	48	14	108
Knockie	21	143	50	214	14	169	65	248
STRATHERRICK SUB -TOTAL	1,157	2,616	915	4,688	1,142	2,569	1,083	4,794

Estate	2004				2013			
	SNH Live count				SNH Live count			
	Stags	Hinds	Calves	Total	Stags	Hinds	Calves	Total
Aberarder and Flichity	434	90	31	555	222	57	16	295
Dalmagarry	36	136	48	220	7	14	7	28
Dunmaglass	80	190	66	336	128	150	48	326
Farr and Glen Kyllachy	97	132	46	275	9	1	1	11
Glenmazeran	371	556	195	1,122	307	348	119	774
Kyllachy	19	94	33	146	6	85	41	132
STRATHNAIRN SUB -TOTAL	1,037	1,198	419	2,654	679	655	232	1,566

Estate	2004				2013			
	SNH Live count				SNH Live count			
	Stags	Hinds	Calves	Total	Stags	Hinds	Calves	Total
Alvie and Dalraddy	246	508	182	936	111	379	166	656
Balavil	58	99	35	192	128	51	27	206
Clune	333	254	88	675	0	2	2	4
Cluny	125	640	224	989	179	852	286	1,317
Coignafearn	341	745	261	1,347	381	358	134	873
Coull and Blaragie	222	217	74	513	131	212	80	423
Craig Dhu and Biallaid	10	58	23	91	4	73	22	99
Dalmigavie	188	161	56	405	326	302	121	749
Dunachton & Kinraig	101	441	156	698	110	512	231	853
Gaskbeg					24	0	0	24
Glen Banchor and Strone	63	369	129	561	42	598	206	846
Kinrara	73	478	169	720	46	294	139	479
Kinveachy	361	444	156	961	197	98	32	327
Kinveachy (Craigellachie)								
Pitmain	79	133	47	259	202	213	76	491
STRATHSPEY SUB -TOTAL	2,200	4,547	1,600	8,347	1,881	3,944	1,522	7,347

Sub group	2004				2013			
	SNH Live count				SNH Live count			
	Stags	Hinds	Calves	Total	Stags	Hinds	Calves	Total
SPEAN BRIDGE SUB -TOTAL	2,425	2,496	874	5,795	2,426	2,073	778	5,277
STRATHERRICK SUB -TOTAL	1,157	2,616	915	4,688	1,142	2,569	1,083	4,794
STRATHNAIRN SUB -TOTAL	1,037	1,198	419	2,654	679	655	232	1,566
STRATHSPEY SUB -TOTAL	2,200	4,547	1,600	8,347	1,881	3,944	1,522	7,347
MDMG TOTAL	6,819	10,857	3,808	21,484	6,128	9,241	3,615	18,984

APPENDIX 2 – BREAKDOWN OF CULLS IN THE RMDA

The tables below show (i) the 5-year average cull in the RDMA in the run up to the new SDMP (2008-13), (ii) the actual culls taken in 2013-14, 2014-15 and 2015-16 and (iii) the 'ideal' size of sporting stag cull mentioned during estate interviews in 2014.

Estate	Zone	Ideal no. sporting Stags	2008-13 5 year average			2013-14 Annual cull			2014-15 Target **			2014-15 Actual Annual cull			2015-16 Target ***			2015-16 Actual Annual cull			2015-16 Actual Source
			Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	
Alltrudh	Western	-																			
Ardverikie	Western	20	24	41	10	15	19	5	15	19	7	19	31	14	15	19	7	17	13	1	S&P
Braeroy	Western	65	43	84	33	60	141	38	60	141	54	61	135	42	60	141	54	50	120	25	S&P
Coire Neurlain	Western																				
Cranachan and Keppoch	Western	18	13	10	1	18	12	4	18	12	5	11	12	0	18	12	5	12	6	2	S&P
Creag Meagaidh	Western	0	107	83	45	104	84	45	104	84	32	111	115	81	104	84	32	59	33	22	S&P
FCS - Glen Roy	Western	0	17	7	0	48	20	8	48	20	8	40	11	8	48	20	8	29	9	3	S&P
FCS - South Laggan *	Western																				
Glas Dhoire Plantation	Western																	0	0	0	
Glen Gloy	Western	30	23	13	2	33	25	6	33	25	10	31	6	0	33	25	10	25	11	0	S&P
Glen Roy	Western	0	5	5	1	5	4	3	5	4	2	5	10	6	5	4	2	2	0	0	S&P
Glenshero	Western	100	143	117	28	116	126	30	116	146	55	120	118	44	116	146	55	112	120	30	S&P
Glenspean	Western	16	14	13	6	15	18	17	15	18	7	12	5	2	15	18	7	6	5	2	S&P
Tulloch - Open Range	Western	30	25	22	6	25	26	7	25	26	10	14	28	6	25	26	10	34	26	7	S&P
Upper Glenfintaig	Western																				
SPEAN BRIDGE SUB -TOTAL		279	413	395	132	439	475	163	439	495	188	424	471	203	439	495	188	346	343	92	
Red text = estates not in contact with the group; * Most of South Laggan lies below the RDMA deer fence so cull data not included in this analysis									DIFF	-15	-24	15	DIFF	-93	-152	-96					

Estates in red have not historically provided data – part of the SDMP involves trying to get them more involved. Estates in yellow have not provided 2015-16 data.

Estate	Zone	Ideal no. sporting Stags	2008-13 5 year average			2013-14 Annual cull			2014-15 Target ** Annual cull			2014-15 Actual Annual cull			2015-16 Target *** Annual cull			2015-16 Actual Annual cull			2015-16 Actual Source
			Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	
Aberchalder & Glenbuck	Western	30	17	19	4	20	15	5	20	15	6	25	26	8	20	15	6	25	26	8	Est
Corriegarth, W. Aber. & Mig.	Eastern	20	51	115	51	43	68	34	43	68	26	50	50	15	43	68	26	61	152	88	S&P
Culachy	Western	50	46	44	12	51	171	62	51	171	65	48	150	23	51	171	65	50	86	22	S&P
Dell (Area 6)	Western	15	16	20	4	15	15	2	15	15	6	13	23	0	15	15	6	9	18	6	S&P
Easter Aberchalder	Eastern	3	4	2	0	0	2	0	0	2	1	0	0	0	0	2	1	0	0	0	Est
Garrogie (Area 6)	Eastern	50	43	97	32	44	59	10	44	99	38	46	112	41	44	99	38	59	75	24	S&P
Glendoe	Western	40	39	51	15	47	81	21	47	81	31	43	80	20	47	81	31	42	80	6	S&P
Killin (Area 6)	Eastern	12	9	17	3	8	11	9	8	11	4	8	11	4	8	11	4	8	11	9	Est
Knockie (Area 6)	Western	10	9	0	0	13	2	1	13	2	1	15	20	8	13	2	1	13	20	8	S&P
STRATHERRICK SUB -TOTAL		230	234	367	122	241	424	144	241	464	176	248	472	119	241	464	176	267	468	171	
										DIFF		7	8	-57			DIFF	26	4	-5	

Estate	Zone	Ideal no. sporting Stags	2008-13 5 year average			2013-14 Annual cull			2014-15 Target ** Annual cull			2014-15 Actual Annual cull			2015-16 Target *** Annual cull			2015-16 Actual Annual cull			2015-16 Actual Source
			Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	
Aberarder and Flichity	Eastern	15	17	9	5	8	12	2	8	12	5	1	5	1	8	12	5	3	10	3	S&P
Dalmagarry	Eastern	10	9	3	0	7	1	0	7	1	0	9	8	3	7	1	0	9	7	2	S&P
Dunmaglass	Eastern	12	16	27	9	14	34	11	14	34	13	16	24	15	14	34	13	16	24	15	Est
Farr and Glen Kyllachy	Eastern	15	24	29	6	10	20	4	10	20	8	10	6	0	10	20	8	48	28	6	S&P
Glenmazeran	Eastern	30	26	59	19	26	66	12	26	106	40	26	95	24	26	106	40	25	88	26	S&P
Kyllachy	Eastern	12	6	6	1	5	10	2	5	10	4	5	3	3	5	10	4	5	3	3	Est
STRATHNAIRN SUB -TOTAL		94	99	133	41	70	143	31	70	183	70	67	141	46	70	183	70	106	160	55	
										DIFF		-3	-42	-24			DIFF	36	-23	-15	

Estate	Zone	Ideal no. sporting Stags	2008-13 5 year average			2013-14 Annual cull			2014-15 Target ** Annual cull			2014-15 Actual Annual cull			2015-16 Target *** Annual cull			2015-16 Actual Annual cull			2015-16 Actual Source
			Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	
Alvie and Dalraddy	Eastern	40	27	35	11	29	32	10	29	32	12	25	34	8	29	32	12	26	38	9	S&P
Balavil	Eastern	30	28	23	6	30	33	10	30	33	13	25	22	7	30	33	13	26	29	6	S&P
Clune	Eastern	0	32	31	12	5	15	2	5	15	6	8	3	4	5	15	6	8	3	4	Est
Cluny	Eastern	55	64	84	30	55	100	33	55	150	57	55	96	44	55	225	86	40	113	37	S&P
Coignafeam	Eastern	100	148	170	69	252	200	80	125	325	124	125	263	104	150	385	146	154	290	65	S&P
Coull and Blaragie (Area 7)	Eastern	35	29	29	13	39	27	20	39	84	32	26	53	34	39	127	48	27	43	10	S&P
Craig Dhu and Biallaid (Area 7)	Eastern	7	5	14	2	3	23	5	3	26	10	4	29	15	3	26	10	1	7	2	S&P
Dalmigavie	Eastern	15	17	71	20	8	87	26	8	102	39	23	112	36	8	102	39	22	55	10	S&P
Dunachton & Kinraig	Eastern	30	28	18	3	29	18	6	29	18	7	27	26	3	29	18	7	35	24	4	S&P
Gaskbeg (Area 7)	Eastern	0	12	14	7	7	4	1	7	13	5	8	17	7	7	13	5	1	13	4	S&P
Glen Banchor and Strone (Area 7)	Eastern	40	37	67	23	40	92	26	40	168	64	38	160	60	40	177	67	40	166	54	S&P
Kinrara	Eastern	40	21	17	3	32	32	13	32	32	12	28	30	10	32	32	12	29	32	6	S&P
Kinveachy	Eastern	0	111	76	51	103	32	25	103	32	12	98	51	35	103	32	12	76	48	30	S&P
Kinveachy (Craigellachie)	Eastern																				
Pitmain ****	Eastern	20	19	9	3	32	18	8	32	18	7	19	9	7	32	18	7	13	12	4	S&P
STRATHSPEY SUB -TOTAL		412	578	657	254	664	713	265	537	1,048	398	509	905	374	562	1,235	469	498	873	245	
										DIFF		-28	-143	-24		DIFF		-64	-362	-224	

Sub group	Zone	Ideal no. sporting Stags	2008-13 5 year average			2013-14 Annual cull			2014-15 Target ** Annual cull			2014-15 Actual Annual cull			2015-16 Target *** Annual cull			2015-16 Actual Annual cull		
			Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves
N/A	Eastern	591	783	1,021	381	829	996	349	702	1,411	536	680	1,219	480	727	1,598	607	732	1,271	421
N/A	Western	424	541	531	168	585	759	254	585	779	296	568	770	262	585	779	296	485	573	142
MDMG TOTAL		1,015	1,323	1,551	549	1,414	1,755	603	1,287	2,190	832	1,248	1,989	742	1,312	2,377	903	1,217	1,844	563
										DIFF		-39	-201	-90			DIFF	-95	-533	-340

Sub group	Zone	Ideal no. sporting Stags	2008-13 5 year average			2013-14 Annual cull			2014-15 Target ** Annual cull			2014-15 Actual Annual cull			2015-16 Target *** Annual cull			2015-16 Actual Annual cull		
			Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves	Stags	Hinds	Calves
SPEAN BRIDGE SUB -TOTAL	N/A	279	413	395	132	439	475	163	439	495	188	424	471	203	439	495	188	346	343	92
STRATHERRICK SUB -TOTAL	N/A	230	234	367	122	241	424	144	241	464	176	248	472	119	241	464	176	267	468	171
STRATHNAIRN SUB -TOTAL	N/A	94	99	133	41	70	143	31	70	183	70	67	141	46	70	183	70	106	160	55
STRATHSPEY SUB -TOTAL	N/A	412	578	657	254	664	713	265	537	1,048	398	509	905	374	562	1,235	469	498	873	245
MDMG TOTAL		1,015	1,323	1,551	549	1,414	1,755	603	1,287	2,190	832	1,248	1,989	742	1,312	2,377	903	1,217	1,844	563
										DIFF		-39	-201	-90			DIFF	-95	-533	-340