

EAST LOCH SHIEL DEER MANAGEMENT GROUP

Appendix 15

POPULATION MODELS AND TARGETS

Summary information

2022 to 2029/30

ELS Appendix 15 – August 2023 Population model

POPULATION MODELS: - August 2023 issue.

Introduction: -

This 'Populations Model and Targets' is Appendix 15 to the Action Plan – Working Document and supersedes previous issues.

Our Population Models have calculated the East Loch Shiel area red deer density from the FES 2009 deer census and 2010 open range helicopter count with further inputs from the 2016, 2019 and 2022 helicopter counts.

Our forecast density has been accurate at less than 3% margin at the 2016, 2019, and 2022 counts in the Eastern Working Group (EWG).

Population Models

Our models are adaptive, pro-active and reactive. Using count figures and FES deer density figures as the datum, followed by inputs of cull figures, mortality, migration and other losses, plus recruitment allows us to understand our population dynamics, to confirm, and calibrate our forward-looking Population Models with regular updates and re-setting of population and cull targets as appropriate.

Foot Counts: -

Due to remoteness of much of our area foot counts are not considered practical or effective. In the absence of any alternatives aerial counts are considered the only viable method of counting our open hill range.

Helicopter Counts: -

The East Loch Shiel DMG open range members fully funded helicopter counts in 2002, 2010 and 2016. With an estimated >35,000 kg's of GHG emissions and >£45,000 costs per count more frequent helicopter counts are avoided as they are unlikely to provide any new data of consequence.

These were followed at 3-year intervals by NatureScot fully funded helicopter counts of the whole East Loch Shiel DMG area in 2019 and 2022.

The latest helicopter count figures are used as a datum for population modelling.

FES Deer Population Assessment (DPA) - FLS Deer Report: -

FES completed a Deer Population Assessment in Winter 2009 with density figures given to the DMG, which were used as a datum in our population modelling.

FLS presented their 'FLS 2019-20 DPA Report – Ardnamurchan Complex – Draft 040621' to the DMG in June 2021.

Deer Density: -

The February 2022 NS count shows an East Loch Shiel DMG area deer density of 8.4/km².

The overall Group Spring density allowing for deer in the woodlands is \approx 8.9/km².

The WWG open range Spring deer density is \approx 6.2/km².

The EWG Spring deer density is \approx 9.4/km².

Mortality Assessment: -

Refer to the 'FLS 2019-20 DPA Report – Ardnamurchan Complex – Draft 040621' for FLS area mortality.

Going forward we use as the basis of our mortality assessments for 'normal' mortality the standards of 2% for adult red deer and 6% for calves' post winter counts or 4% for stags and 3% for hinds each un-counted year with variation, if applicable, based on the observations of the stalkers/deer managers. These figures can then be applied to the Population Model.

Open range mortality is assessed as being at 'normal' levels during 2022/23.

Recruitment: -

For nett recruitment, we carry out sample recruitment counts late Spring by which time the late winter/spring mortality and other losses will have occurred. This then gives the actual 'post count, post cull, post- mortality' recruitment figure with no need to calculate further. These figures can then be applied to the Population Model.

Open range sample recruitment counts were carried out late spring 2023 which show an open range, post cull, post mortality, recruitment rate of 32.5% of all hinds for 2022/23 indicating a calving rate of >65% of sexually mature hinds.

FLS have assessed their recruitment at 45% of all hinds or 65% of sexually mature hinds indicating a calving rate of >85% of sexually mature hinds.

Migration: -

The population models, evidence on the ground e.g., porous fences, tracking through the fences, stalkers/consultants' observations, etc. all confirm non-targeted migration is occurring between Working Group areas. With the ELSDMG area largely bounded by lochs or fenced land bridges migration to/from the DMG area is minimal.

Other losses/variation: -

Other non-targeted losses may include e.g., Emigration, predation, DVC's, un-reported culls, poaching, neighbour's and crofters taking deer, &etc. with other variations also possible including incorrect mortality assumption, miss-classification of yearling stags as hinds &etc. These, whilst there are few/none identified or reported, by their nature are difficult to quantify but we would be naïve to think that none of these ever occur. It is prudent to make a notional allowance in the modelling.

Other species/ Large herbivores: -

There are small numbers of roe deer present in localised areas and the occasional sika deer. The numbers are considered too small at present to have any relevance to the Population Models and are not included. A shoot on sight policy has been agreed with all members in relation to muntjac, sika deer, and feral pigs/wild boar (subject to the period of maximum dependency, licensing and ethical culling). There are no hares and very few rabbits in ELS and domestic livestock densities are comparatively low.

Herbivore impacts: -

Refer to the ELS Appendix 13 HIA Log which shows overall deer impacts to be within the agreed DMG target. With no hares and very few rabbits in ELS, large herbivore impacts are lower than many other areas in Scotland which have similar or greater deer densities as well as greater livestock, and/or hare and/or rabbit densities.

Deer Condition: -

The condition of the deer was reported as seasonally good to very good.

Availability of Forage and Shelter: -

With our large herbivore densities reduced by 75% over the last 30 – 40 years, and a maintained/reduced deer density forage availability is improved.

There have been no significant changes in availability of forage and shelter since the last season (2022/23) Population Model. Heather is showing mainly low/moderate browsing impacts indicating the deer are not struggling to find winter forage. Heather is able to flower and set seed indicating there is no undue browsing pressure and that deer are not struggling to find sufficient winter forage.

Primary objectives: -

The objectives for the individual landholdings are set out in the East Loch Shiel Deer Management Plan - Background Information - Section 7.

In summary: -

The primary objective for most of the open range landholdings and sporting estates is for deer stalking enterprises with, in some cases agricultural interests.

In the enclosed commercial woodlands, the primary objective is for timber production.

Socio-economic benefits: -

Deer management in the open range areas provides for both primary and secondary employment with deer stalking being a key source of revenue and employment. As well as the obvious income, employment, and food production derived from the stalking and agricultural enterprises on the open range landholdings along with the commercial and amenity woodlands there are many other often less tangible but no less important economic and social benefits both for the local communities and the wider public including estate investment, estate project investment, employee and community housing, social well-being, sense of community, mental and physical well-being, & etc.

Local Economy: -

Many local businesses, enterprises and people are reliant on the income, employment and the diverse benefits generated from and around deer management.

With the sporting estates adding significant value to deer management and generating substantial income for our local area, the constraints imposed by the loss of deer from the open range via migration and other non-targeted losses diminishes the local economy, local employment and housing prospects, as well as the broad spectrum of benefits shown. Local employment is covered in more detail in section 12 of the ELSDMG DMP Background Information 9th Edition 2018 and identifies 8 full time and 9 seasonal or part time jobs plus opportunity for a full time HNC/HND trainee. A further 7 full time and 32 part time people are engaged with and reliant on secondary employment relating to the open range sporting deer management.

The non-targeted emigration and other losses of deer from the open range is having a negative effect on both the local and broader economy. Despite there being a strong demand for deer stalking for sport our open range sporting members are unable to meet the full demand and capacity, often having to turn away stalking guests and their parties due to the lack of sporting stags and hinds/calf's available, leading to a loss for both the local and the broader economy.

Meanwhile, the nett cost of FLS culling operations is significant with a major part of their costs incurred culling deer that have migrated onto the FLS estate, the bill for this being picked up by the taxpayer. The FLS deer management team provide 1.6 FTE jobs in East Loch Shiel. There is little opportunity for additional secondary employment.

Venison production will be the same whichever side of the fence the deer are culled.

Broader Economy: -

In the broader economy, employment and earnings from the open range landholdings deer management are multiplied with e.g., contractor and professional services, equipment suppliers, trade associations, gun shops, garages, trophy preparation, transport, tourism, and so on, all benefiting. Direct taxation is generated for the exchequer by way of Income Tax, National Insurance, VAT, Property/ Business Rates & etc.

The 2022/24 season forward looking Population Model: -

Population Targets: -

Density targets are developed to provide the balance of environmental, economic, and social impacts of our area deer management activity.

Refer to the 'FLS 2019-20 DPA Report – Ardnamurchan Complex – Draft 040621' for FLS area population targets.

The Western Working Group Sporting Stag target is for 20 to 25 stags per annum from the open range estates. The SNH model spreadsheet suggests a deer density of 7.5 to 9.5 deer/km² will provide for this. The deer density from the February 2022 count for the WWG open range was 6.2 deer/km². With almost daily as well as seasonal movement reported between the WWG open range and the FLS WWG woodlands through the porous fences the Sporting Stag cull is achieved from the combined population.

The Eastern Working Group Area Sporting Stag target is for 160 stags per annum but is currently constrained to around 125 due to apparent migration and other losses.

Until the migration issue is resolved the DMG Eastern Working Group population target is to maintain an open range Spring deer density sufficient to support the sustainable estate, deer stalking and secondary business enterprises, providing for the broad spectrum of benefits shown above, albeit constrained by non-targeted losses due to emigration. This is currently calculated at ≈ 9.5 deer/km² $\pm 5\%$ with the cull targets set out below to achieve our density target.

These amount to a group density target of ≈ 9.0 deer/km².

Cull Targets: -

The ELS area cull to achieve the density targets for 2023/24 are: -

Area	Stags	Hinds	Calves	Total
WWG Open range	23	29	10	62
WWG FLS	122	136	64	322
EWG	120	155	50	325

Individual landholding culls are discussed and apportioned collaboratively by the DMG members.

Individual Estates/landholdings will target culls in their areas to address any specific local deer impacts or issues.

Current population models: -

The East Loch Shiel Deer Management Group spreadsheet shown below which projects forward from the 2022 count to 2029/30 calculates for the planned culls, mortality, a notional allowance for other losses, and nett recruitment.

The Western Working Group model spreadsheet projects forward from the 2022 count, to 2029/30 calculates for the planned culls, observed mortality with a notional allowance for other losses, non-targeted migration estimates between Working Group areas, and nett recruitment. Refer also to the 'FLS 2019-20 DPA Report – Ardnamurchan Complex – Draft 040621'.

The Eastern Working Group model spreadsheet projects forward from the 2022 count to 2029/30 calculates for the planned culls, observed mortality with a notional allowance for other losses, non-targeted migration estimates between Working Group areas, and nett recruitment.

Notes: -

Figures are subject to revision when NatureScot issue the requested helicopter count shape files and non-members cull figures to the group.

Scottish Natural Heritage (SNH), incorporating the former Deer Commission for Scotland (DCS) has been re-named as NatureScot (NS) and is the Government agency responsible for implementation of deer policy matters. Any of these names or initials may be used in the Population models and Targets, and other documentation.

ELS Population Models and Targets – August 2023

ELSDMG POPULATION MODEL				Whole group combined			2023/24	
Target Spring Density		9.00						
Management area Km2		454						
Counted February 2022		Stags	Hinds	Calves	Total	Density	Calf:hind	
		1096	2049	682	3827	8.4	36.0	
Year	Population Model	Stags	Hinds	Calves	Density			
Datum	Datum count	1096	2049	682				
		1180	2271	803				
	Post count cull	10	10	5				
	Post count mortality	35	68	72				
	Post count migration	0	0	0				
2022/23	Spring population	1135	2193	726	8.9			
	Summer population	1497	2556	909				
	Cull	329	239	122				
	Mortality + losses	80	102	0				
	Migration	0	0	0				
2023/24	Spring population	1088	2215	788	9.0			
	Summer population	1482	2609	931				
	Cull	265	320	125				
	Mortality + losses	80	104	0				
	Migration	0	0	0				
2024/25	Spring population	1138	2185	776	9.0			
	Summer population	1526	2574	918				
	Cull	267	315	122				
	Mortality + losses	82	102	0				
	Migration	0	0	0				
2025/26	Spring population	1177	2156	765	9.0			
	Summer population	1560	2539	904				
	Cull	269	310	120				
	Mortality	84	101	0				
	Migration	0	0	0				
2026/27	Spring population	1208	2128	755	9.0			
	Summer population	1585	2505	892				
	Cull	271	306	118				
	Mortality + losses	85	100	0				
	Migration	0	0	0				
2027/28	Spring population	1229	2100	745	9.0			
	Summer population	1602	2473	880				
	Cull	274	301	116				
	Mortality + losses	95	111	0				
	Migration	0	0	0				
2029/30	Spring population	1205	2084	769	4058	8.94		
2029/30	Target Population/Density	1330	2025	714	4069	8.96		
	SNH Post winter count Mortality	Annual mortality non count years						
2%	Stag Mortality	4%						
2%	Hind Mortality	3%						
6%	Calf Mortality							
	1:1 Hind/Stag Calving Ratio							
	No immigration/emigration							