EAST LOCH SHIEL DEER MANAGEMENT GROUP

Appendix 15

POPULATION MODELS AND TARGETS

Summary information

2022 to 2030

ELS Appendix 15 – June 2025 Population model

POPULATION MODELS: - JUNE 2025.

Introduction: -

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

Deer Management Priority Area

At the 2024 ADMG AGM, a slide identified the ELSDMG area as one of several Deer Management Priority areas. Despite no prior notification or further details being received at the time or since B. McKeown, the NatureScot WMO explained at our April 2024 meeting that this designation recognizes the significant positive work already being done in habitat preservation and restoration within the ELSDMG area, which forms part of an Atlantic Rainforest cluster, and this acknowledgement can be seen as a positive endorsement of our ongoing efforts.

Sunart Rainforest Project

The Sunart Rainforest Project, still in its early stages, is expected to influence our deer populations and the associated model. Since no decisions have been made yet, nor have any timelines been set for its development, this Population Model has been prepared using the same basis and objectives as in previous years.

Population Models: -

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 FLS 2019 deer census, and the 2016, 2019, and 2022 helicopter counts.

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

Our models are adaptive, proactive 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, 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 the 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 >40,000 kg of GHG emissions and >£65,000 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 group wide helicopter counts of the whole East Loch Shiel DMG area in 2019 and 2022.

The NS WMO confirms that with the next full count not yet required there are no plans for a group wide aerial count this year. The latest helicopter count figures are used as a datum for population modelling.

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

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.

Carbon and cost considerations prevent more frequent Woodland Deer Population Assessments.

Deer Density: -

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

The overall Group 2022 Spring density allowing for deer in the woodlands is ≈ 8.9/km².

The WWG open range 2022 Spring deer density is ≈ 6.2/km².

The EWG 2022 Spring deer density is ≈ 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 2024/25.

Recruitment: -

For nett recruitment, we carry out sample recruitment counts in 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 in late spring 2025 which showed an open range, post cull, post mortality, recruitment rate of 33% of all hinds for 2024/25 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 combined area of the ELSDMG and the neighbouring NSWG DMG is largely bounded by lochs or fenced land bridges from which migration to or from is minimal.

The population models, evidence on the ground e.g., porous fences, tracking through the fences, stalkers and consultants' observations, etc. all confirm that non-targeted migration does occur between Working Group areas.

Reports indicate that an unusually high number of deer have been culled in the neighbouring NSWG DMG area over the past two years. This increase may be due to a greater culling effort targeting resident deer, migration from the ELSDMG open range through breaches in deteriorating NSWG forestry fences, or a combination of both. If migration is a key factor, this could impact the accuracy of our population model. In the absence of further information, the model has been prepared using the same basis and objectives as in previous years.

Other losses/variation: -

Other non-targeted losses may include e.g., Emigration, predation, DVCs, un-reported culls, poaching, neighbours and crofters taking deer, &etc. with other variations also possible including incorrect mortality assumptions, miss-classification of yearling stags as hinds &etc. These, whilst there are few 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, as well as the occasional sika deer and feral pig. The numbers are considered too small to have any relevance to the Population Models and are not included. A shoot-on-sight policy has been agreed upon with all members in relation to muntjac, sika deer, and feral pigs/wild boar (subject to close

seasons, the period of maximum dependency, licensing and ethical culling). There are no hares or beavers, and very few rabbits in ELS.

While some domestic livestock continues to be grazed on the open hill, their numbers have been significantly reduced since the 19th-century peak and with more recent management changes over the past 40 years or so further reducing the overall impact of large herbivores. Specifically, more than 13,170 sheep and their followers, along with over 350 cows and their followers, have been removed from the ELS open range during this latter period, resulting in a further 75% reduction in large herbivore density.

Herbivore impacts: -

Refer to the ELS Appendix 13 HIA Log which shows overall deer impacts are within the agreed DMG target. With no hares, beavers and very few rabbits in ELS, large herbivore impacts are lower than in many other areas in Scotland which have similar or greater deer densities as well as greater livestock, and/or hare and/or beaver 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 the availability of forage and shelter since the last season (2024/25) Population Model. Heather is showing mainly low/moderate browsing impacts indicating the deer are not struggling to find winter forage. Heather is flowering and setting seed indicating that 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 and the FLS Drimnatorran and Glenhurich Land Management Plans which can be found here.
https://forestryandland.gov.scot/what-we-do/planning/active/

In summary: -

Whilst being environmentally sound, economically viable, and socially responsible a primary objective for most of the open-range landholdings and sporting estates is for sustainable deer stalking enterprises with, in some cases agricultural, woodland, or forestry interests.

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

Environmental: -

Over several decades, we have achieved landscape-scale habitat and environmental benefits through measures such as reducing domestic livestock, creating livestock and deer

exclosures, and planting woodlands. Our ongoing efforts include additional woodland protection, creation, and regeneration projects securing designated features. NatureScot has recognized and acknowledged the significant positive work in habitat restoration within the ELSDMG area, which forms part of an Atlantic Rainforest cluster. This acknowledgement serves as a positive endorsement of our continued commitment.

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 rely 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 diminish 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 an 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 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 impacts on the FLS forestry and the cost of FLS culling operations are significant with a major part of their impacts and 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 on 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 2025/26 season forward-looking Population Model: -

Population Targets: -

Density targets are developed to provide a balance between the environmental, economic, and social aspects 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 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.

Reports indicate that an unusually high number of deer have been culled in the neighbouring NSWG DMG area over the past two years. This increase may be due to a greater culling effort targeting resident deer, migration from the ELSDMG open range through breaches in deteriorating NSWG forestry fences, or a combination of both. If migration is a key factor, this could impact the accuracy of our population model. In the absence of further information, the model has been prepared using the same basis and objectives as in previous years.

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

Until the migration issues are resolved, the DMG Eastern Working Group aims to maintain an open-range spring deer density that supports sustainable estate management, deer stalking, and secondary business enterprises. Despite non-targeted losses due to emigration, this density—currently calculated at approximately 9.5 deer/km² (with a margin of ±5%)—provides a range of benefits. The cull targets outlined below are designed to achieve our density goal.

Cull Targets: -

The ELS area cull to achieve the density targets for 2025/26 are: -

Area	Stags	Hinds	Calves	Total
WWG	150	175	79	404
EWG	125	165	54	344

Reports indicate that an unusually high number of deer have been culled in the neighbouring NSWG DMG area over the past two years. This increase may be due to a greater culling effort targeting resident deer, migration from the ELSDMG open range through breaches in deteriorating NSWG forestry fences, or a combination of both. If migration is a key factor, this could impact the accuracy of our population model. In the absence of further information, the model has been prepared using the same basis and objectives as in previous years. If migration is a key factor, this may significantly reduce the culling potential, particularly in the ELS WWG.

Individual landholding culls are discussed and apportioned collaboratively by the DMG members who may target culls in their areas to address 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 2030 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 2030 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 2030 and 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 as other information becomes available including non-members cull figures &etc. which are currently estimated in the population models.

	ELSDMG POPULATION MODEL			**Whole group combined**			**2025**
	Target Spring Density	8.95		**NOTES: -**			
				Starts 2022 using NatureScot Febrary count data less			
	Management area Km2	454		post count cull and mortality.			
				Assumes no change to fencing status, or FLS			
				cull policy			

	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		8.4	
		1180	2271	803			
	Post count cull	10	10	5			
	Post count mortality	35	68	72			
	Post count migration	0	0	0			
2022	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	Spring population	1088	2215	788		9.0	
	Summer population	1482	2609	931			
	Cull	335	318	153			
	Mortality + losses	80	104	0			
	Migration	0	0	0			
2024	Spring population	1068	2187	782		8.9	
	Summer population	1459	2578	925			
	Cull	325	268	116			
	Mortality + losses	79	102	0			
	Migration	0	0	0			
2025	Spring population	1055	2208	794		8.9	
	Summer population	1452	2605	940			
	Cull	275	340	132			
	Mortality	64	86	0			
	Migration	0	0	0			
2026	Spring population	1113	2179	782		9.0	
	Summer population	1504	2570	925			
	Cull	277	335	130			
	Mortality + losses	66	85	0			
	Migration	0	0	0			
2027	Spring population	1161	2150	769		9.0	
	Summer population	1546	2535	910			
	Cull	279	330	128			
	Mortality + losses	68	84	0			
	Migration	0	0	0			
2028	Spring population	1199	2122	758		9.0	
	Summer population	1577	2501	896			
	Cull	282	325	54			
	Mortality + losses	69	83	0			
	Migration	0	0	0			
2029	Spring population	1226	2093	746		9.0	
	Summer population	1599	2466	882			
	Cull	285	320	54			
	Mortality + losses	70	81	0			
	Migration	0	0	0			
	Spring population	1244	2065	735	4044	8.91	
2030	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	