Appendix 5.1

North Argyll Forests Strategic Plan DMP Update – Duror LMP

Background

This is an update to the DMP for the North Argyll Strategic Plan area, which has been prepared in support of the Duror LMP revision. The existing Deer Management Plan (DMP) outlines the deer management issues and priorities for Scotland's National Forest Estate in North Argyll, covering Brecklet, Glenachulish, Duror, Bealach, Appin and Creran forests, managed by Forestry and Land Scotland (FLS). The DMP underpins both the Strategic Management Plan for the area and the individual Land Management Plans for each forest block.

Please refer to the Strategic DMP for full information.

Summary

A Deer Population Assessment (faecal count method) undertaken by Strath Caulaidh in 2021 was used to estimate a starting density in 2021 of 24 deer / km^2. The DPA noted that sheep were also present in the forest. A Deer Population Model and proposed cull figures were based on this figure. Subsequently, thermal imaging drone surveys were undertaken in 2023 and 2024, which estimated the population density at just over 10 deer / km^2. Sheep are still present in the forest (estimated 2.7 sheep / km^2).

Although more than 80% of the forested land in the North Argyll Strategic Plan area is under conifers, the area supports many habitats that are more significantly impacted by high numbers of grazing /browsing herbivores, which gives added imperative for reducing deer densities. There are significant areas of Ancient Semi-Natural Woodland (ASNW) much of which is designated as SSSI/SAC (approx. 444.28 ha) that is vulnerable to herbivore browsing and grazing. Also, large areas of plantation on ancient woodland sites (PAWS) (cf. 584 ha) for which FLS has a policy to restore 85% to native woodland, as well as 119 ha between and above the two SSSI areas at Creran that will convert to native broadleaved woodland. Large-scale native woodland creation and restoration schemes are also proposed, covering areas between Appin and Bealach; at Lagnaha (Duror) and on the hillsides above Creran and Glenachulish forests. Various priority open habitats are present, including blanket and raised bogs; minerotrophic and base-rich springs and flushes; calcareous grassland; limestone outcrops and pavements; and montane scrub. FLS commitments to protecting designated sites and biodiversity; expanding native woodland and restoring Scotland's rainforest; promoting natural capital and improving resilience to Climate Change, all rely on a decrease in grazing and browsing pressure for their delivery.

Over the last four years, actual cull figures have been lower than were proposed in the 2021 DMP although culls of more than 450 deer (both species) were achieved in 2023/24 and 2024/25. Proposed

cull targets for the next 10 years are based on the recent thermal drone survey results, with more than 400 deer to be culled annually for the next three years. Total cull figures will reduce thereafter, if supported by thermal drone count or HIA data, but a 40% cull rate will be maintained. Deer densities are projected to reduce to below 5 deer / km^2 by year five and around 2 deer / km^2 by year eight, if immigration estimates are correct. FLS are in the initial stages of a project to look at deer immigration into forests using a range of sites across Scotland, including the North Argyll forests area. This will help inform the implementation and review of the DMP.

New fences are planned for Appin (deer) and Glenachulish / Lagnaha (livestock) march boundaries but other fences elsewhere may be considered, if deer immigration limits the effects of the increased cull. These may include exclosures in Glenachulish to create stands of native broadleaves as seed sources for PAWS restoration and the extension of the deer fence from Creran to Bealach, along the march boundary.

The strategic livestock march fence that will run between Glenachulish and Creran is a high priority, to prevent livestock that currently ingress into several blocks in the WMU; plans for this are being progressed. The deer fence along the Appin march is also a priority.

FLS will seek opportunities to work in partnership with others to manage deer across a wide area and with neighbours with shared objectives, such as NTS.

What are we going to protect?

The DMP area covers approximately 9,700 ha and is characterised by mountain and coastal landscapes of national and international significance, with a range of designated habitats and species with areas of high ecological and heritage value. This includes the Glen Etive and Glen Fyne SPA designated for Golden eagle. The land includes hills (two of them Munros), five glens draining into coastal waters of significant importance, many with international designations, and a range of habitats including sub- alpine plant communities; montane scrub; calcareous grassland; blanket bog; wet flushes, springs and lochs; rivers; conifer plantations and native broadleaved woodland. Priority open habitats, particularly blanket bog, wet flushes, calcareous grassland and montane scrub have been mapped and require protection from high grazing and browsing pressure. However, some of these habitats benefit from grazing, albeit at low levels, so sustainable numbers of deer need to be maintained - as an important element of properly functioning ecosystems.

The individual forests are linked by large extents of open land (more than 62% of the land holding is open ground - mostly hill ground) as well as the road (A828) which is the main arterial route through the area. Forested areas in Appin, Bealach and Duror are contiguous and significant areas suitable for native woodland expansion have been identified.

Some designated sites may be particularly impacted by deer browsing and deer management. Glen Creran supports Ancient Semi- Natural Woodland (ASNW) – acidic oak woodland and mixed deciduous woodland on base rich soils associated with slopes – designated as SSSI / SAC (approx. 444.28 ha).

The DMP will seek to deliver various national and regional objectives, which are outlined in the original DMP document.

Deer Species (and other herbivores / feral pigs)

Red and Roe deer are the most common deer species and Red deer remain at a high density in the wider landscape. Sika deer are thought to be non-resident and only appear as passing vagrants, with none recorded in recent years. There are no feral goat or feral pig sightings in the Strategic Plan area.

What have we done to date?

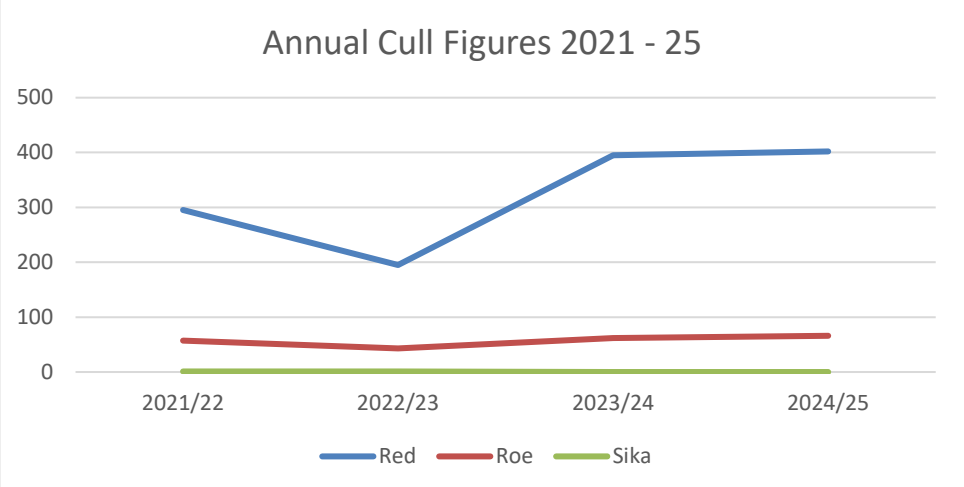
The Deer Population Assessment repeated by Strath Caulaidh in 2021 estimated 24 deer / km^2 (20 Red and 4 Roe) equivalent to 394 Roe and 1,971 Red. Population levels had increased due to immigration from neighbouring ground but that movement appears to have decreased following repairs to the strategic fence. The DMP provides more information on population estimates on neighbouring ground. To note that the Strath Caulaidh DPA was undertaken following a period of increased immigration resulting from a breach in the strategic deer fence at Glen Creran during construction of a road on neighbouring ground; also, there was a period of heavy snow during the 2020/21 winter.

Subsequently, deer populations were assessed using thermal imaging drone surveys in 2023 and 2024 and estimated at 10.15 deer / km^2.

Cull figures have increased since the DMP was prepared in 2021:

Cull figs 2021 - 2025

	Red			Roe			Sika			
Year	**M**	**F**	**Young**	**M**	**F**	**Young**	**M**	**F**	**Young**	**TOTAL**
2021/22	177	76	42	31	21	5	1			353
2022/23	89	64	42	21	15	7	1			239
2023/24	187	114	94	28	18	16				457
2024/25	175	137	90	27	22	17				468



The Plan area lies within the Strategic deer fence that runs from Glen Coe to Glen Creran; deer migrate freely within this fence. The fence does not totally prevent movement of deer into / out of the FLS land as movement is possible from the South and south-east but it is a tool to aid culling effort. Currently, tracts of FLS open ground sit outside the fence. The fence will need to be replaced within the next few years; at that point, the intention is to try to amend the fence line to take in as much of the open hill ground on FLS land as possible.

A new deer fence is planned along the march boundary at Appin, dropping down through Bealach to tie-in to fences at the Salachan river. Also, a new livestock fence will be constructed as close to the march boundary at Glenachulish and Lagnaha as possible, running between the Glenachulish and Creran blocks. This, and the deer fence proposed at Appin, will prevent livestock movement into the forests, which currently amplifies browsing pressure from deer. Further deer fencing - along the Bealach march boundary, running from Appin to Creran - may be considered in future, if herbivore pressure is not reduced following deer culling and the construction of the Appin and Glenachulish march fences.

Geography

The locality is defined by seascapes and rugged or mountainous country inland. The land-holding comprises hills (including two Munros) and five glens, with much of the area characterised as Mountain Massif.

There are many ravines and gorges and some forest blocks have caves and swallow holes. There are extensive areas of blanket bog and peatland, on the open ground outwith the forested areas. ATV access to the open hill is limited across much of the Strategic Plan area. Surrounding land use is sporting estates, upland livestock farms and private sector forests.

The rugged terrain and difficult access constrain opportunities for carcass retrieval from the open hill. Retention of open space within forests will also be essential for deer control.

The A828 and A82 run past the area and all the forests are well used by visitors and residents, which must be accommodated when planning for deer management and control.

The forested areas in Bealach and Duror are contiguous. Planned woodland creation will eventually link native woodland habitat between Appin and Bealach and potentially also, between Duror (at Lagnaha) and Glenachulish. This native woodland expansion will create continuous cover between the forest blocks, which will improve deer habitat and bring more challenges for deer control. Further native woodland expansion is also being considered at Creran. Successful establishment of native broadleaved woodland will be highly dependent on achieving a significant reduction in herbivore pressure in the short – medium term.

Have an evidence based approach

Please refer to the original Strategic Plan DMP for information on the 2021 Deer Population Assessment and evidence of deer impacts.

The thermal imaging drone survey was undertaken in 2023 and 2024 by BH Wildlife Consulting. This involved methodical counting in a continuous timeframe, within 1km circles over the study area using identified take off / landing points. The drone can detect heat sources up to 1.5 km away. Surveys were conducted over three days by two operators, assisted by the FLS Wildlife

Ranger. The large area of woodland and open hill, with challenging mountainous terrain; weather; and access issues proved challenging. In each survey period, some identified areas of woodland were not surveyed due to dense Sitka spruce plantation; access issues (blocked road and landslide) and inability to maintain visual line of sight of the drone always. However, good overlap of flight points was achieved and presence of previously counted animals noted. Where less than 50% ground detection of a compartment could be achieved, this was excluded from the survey and not included in density figures.

A further Nearest Neighbour Assessment was undertaken in Bealach in 2023 in coupes 45694, 45702 and 45703 (see map Bealach Nearest Neighbour 2023). A total of 13.6 ha Sitka spruce planted in 2022 was surveyed; 48.9% suffered deer damage and 6% crop dieback. This indicates ongoing herbivore browsing pressure.

Population modelling and future culls

The Strath Caulaidh (SC) 2021 population estimated 2365 deer (Red and Roe) across the Strategic Plan area and recommended an annual cull of 1,110 deer for 5 years, to achieve a target density of < 5 deer / km^2. This roughly equates to a % cull rate of 55 % Red and 40% Roe for the first 5 years, to achieve densities of < 5 deer / km^2 by 2024, 3.2 deer / km^2 by 2025 and 2.3 deer / km^2 by 2026.

The DPA recommendations were taken as a starting point but further adjustments were required, to take into considerations including professional judgements of maximum deer density, past culls and environmental impacts; local knowledge; recognition of the presence of sporting estates on the periphery and potential deer immigration issues if the cull is too high. Therefore, a cull figure of 35% Red deer and 40% Roe deer was proposed - reaching totals of 833 and 839 deer (all species) culled in years 2 and 3.

These cull figures were not met over the past four years, although cull totals have increased year on year, to reach a maximum of 468 deer in 2024/25.

Thermal imaging drone surveys were conducted for FLS by BH Wildlife Consultancy in March and October 2023 and January and May 2024. The table below shows the average Red deer densities indicated by the surveys:

Drone Survey Date	March ‘23	Oct ‘23	Jan ‘24	May ‘24	Average
Deer Density	7.5/km^2	11.7/km^2	11.8/km^2	9.6/km^2	10.15/km^2
No. of deer counted	615	698	705	735	688.25
Un-surveyable area	1,500	3,775	3,775	2,085	

The drone surveys also found evidence of sheep in the forest (sheep also noted in the Strath Caulaidh reports and have been seen by FLS staff visiting the forest). The surveys estimated

sheep density of 2.7 / km^2. Livestock ingress is a known issue, which is being addressed (see later section - Protection Options).

A revised Deer Population Model has been prepared using the thermal drone survey data:

Red Deer

Duror/Creran Complex

Yr 1 EUD km2 @ 1st April	10.15
Start Yr Population	1000.2825
Area (ha)	9855

Sex Ratio	Female	Male	
	40%	60%	100%

Financial Year (FY)	Population at 1st April (Start FY)	Population at 1st April (Start FY)	Total Population	No per 100ha 1st April	Kid % of pop at 1st April	Recruitment Female	Recruitment Male	Total Recruitment	Est Annual Mortality/Immigration %	Female Immigration/ mortality	Est Annual Mortality/Immigration %	Male Immigration/ mortality
2025	400	600	1000	10.2	62	124	124	248	5	20	10	60
2026	374	540	914	9.3	62	116	116	232	5	19	10	54
2027	331	461	792	8.0	62	103	103	205	5	17	10	46
2028	279	378	657	6.7	62	87	87	173	5	14	10	38
2029	228	301	529	5.4	62	71	71	141	5	11	10	30
2030	186	241	427	4.3	62	58	58	115	5	9	10	24
2031	152	194	345	3.5	62	47	47	94	5	8	10	19
2032	124	156	280	2.8	62	38	38	77	5	6	10	16
2033	101	126	227	2.3	62	31	31	63	5	5	10	13
2034	82	102	184	1.9	62	26	26	51	5	4	10	10

Female pop 31st Aug	Male pop 31st Aug	Population 31st Aug	No per 100ha 31st Aug	Set % Cull	Female Cull	Male Cull	Total Cull	% Cull Achieved	Female Pop at 31st March (End FY)	Male Pop at 31st March (End FY)	Total Pop 31st March
544	784	1328	13.5	31.2	169.77595	244.6771	414	31.2	374	540	914
509	710	1219	12.4	35.0	178	248	427	35.0	331	461	792
450	610	1060	10.8	38.0	171	232	403	38.0	279	378	657
380	502	882	8.9	40.0	152	201	353	40.0	228	301	529
310	402	712	7.2	40.0	124	161	285	40.0	186	241	427
253	323	576	5.8	40.0	101	129	230	40.0	152	194	345
206	260	466	4.7	40.0	82	104	187	40.0	124	156	280
168	210	378	3.8	40.0	67	84	151	40.0	101	126	227
137	170	307	3.1	40.0	55	68	123	40.0	82	102	184
112	138	250	2.5	40.0	45	55	100	40.0	67	83	150

Total Summary

All species

Duror/Creran Complex

Yr 1 EUD km2 @ 1st April	10.35
Start Yr Population 1st April	1019.9925
Area (ha)	9855

Cull Target

Cull Target			
Yr	**Female**	**Male**	**Total**
Yr 1	193	280	**472**
Yr 2	174	241	**415**
Yr 3	167	226	**393**
Yr 4	149	196	**345**
Yr 5	121	157	**278**
Yr 6	99	126	**225**
Yr 7	80	101	**182**
Yr 8	65	82	**147**
Yr 9	53	66	**119**
Yr 10	43	53	**97**

WMU Population

Financial Year (FY)	Population 1st March	Population 1st March	Total Population	No per 100ha 1st April
Yr 1	364	517	881	**8.9**
Yr 2	322	443	765	**7.8**
Yr 3	271	364	635	**6.4**
Yr 4	220	290	510	**5.2**
Yr 5	179	232	411	**4.2**
Yr 6	146	186	332	**3.4**
Yr 7	119	150	268	**2.7**
Yr 8	96	121	217	**2.2**
Yr 9	78	97	176	**1.8**
Yr 10	64	79	142	**1.4**

Species Population	Red	Roe	Sika	Fallow
Yr 1	914	-33	0	0
Yr 2	792	-27	0	0
Yr 3	657	-22	0	0
Yr 4	529	-19	0	0
Yr 5	427	-16	0	0
Yr 6	345	-13	0	0
Yr 7	280	-12	0	0
Yr 8	227	-10	0	0
Yr 9	184	-9	0	0
Yr 10	150	-8	0	0

The model uses the average deer density of 10.15 deer / km^2 as the starting density for Red deer. Roe deer do not appear to be resident within the forest and the starting density for this species was set at 0.2 deer / km^2.

The model includes a reduced percentage cull to begin with, to account for the practicalities of shooting these numbers, in this terrain. Over the next 10 years from 2025, cull percentage will rise from 31.2% in year one, rising to 40% in year four, with just over 400 deer being shot each year for three years. The projected total cull figure will reduce in year four, as overall deer numbers reduce.

Deer densities are projected to reduce to below 5 deer / km^2 by year five and around 2 deer / km^2 by year eight.

The plan is to conduct another thermal drone survey ahead of year four and if the numbers/density have not reduced as expected, then the situation will be reviewed. If required, the cull will be maintained or increased as appropriate and the fence along the Bealach march will be built, to create a continuous march ring fence that runs from the southern end of Appin, across to Creran and around to Brecklet, thus preventing movement from the East and South. As necessary, additional ATV tracks will be requested and built, to improve access in difficult-to-reach places.

Protection Options

Protection options remain as per the original DMP, i.e. to maintain the Strategic Deer Fence that runs from Glen Coe to Glen Creran and to cull deer within the fence, carried out by contractors or direct FLS Wildlife Ranger teams. The fence does not totally prevent migration of deer into /out of the FLS land but it is a tool to aid culling effort.

New livestock fences are also required along the property marches at Glenachulish / Duror (Lagnaha) and a new deer fence along the boundary march at Appin. Some limited internal fencing may be considered where it contributes strategically to tree establishment in key locations, if there is evidence of ongoing herbivore pressure and if the follow-up drone survey does not indicate an adequate reduction in deer numbers. In future, a deer fence along the FLS march at Bealach, running between Appin and Creran, may be considered if immigration prevents the reduction of herbivore impacts to sufficient levels.

The drone survey results and previous cull figures indicate that deer recruitment is consistent, and that there is a stable deer population within the FLS boundary, despite heavy culling. This suggests high rates of immigration, as well as low mortality and high calf recruitment. The proposed new march fence at Appin is an initial priority - to limit deer immigration and to prevent livestock ingress.

The planned livestock fence at Glenachulish / Duror is also a priority, to prevent livestock ingress to Duror and Glenachulish forests, as well as potentially, into Bealach and Creran. The fence will run between Glenachulish and Glen Creran, as close as possible to the march between FLS and the neighbouring livestock farm, the route being subject to agreement with the neighbour.

Ongoing monitoring of deer numbers will be undertaken by thermal imaging drone survey. Herbivore impacts will be monitored via Nearest Neighbour Herbivore Impact Assessments (undertaken on restock sites) and Natural Regeneration surveys, undertaken at year five.

Deer Management Priorities

The Strategic Plan DMP outlines these priorities:

- Longer term, to reduce and maintain deer numbers < 3 deer per km^2 through culling (i.e. < 300 deer across the North Argyll Strategic Plan area). The DMG Plan indicates FLS desired deer densities of <3 deer/km^2
- Maintain the strategic Glen Coe to Glen Creran fence in a deer- proof condition – this fence will require replacement in the near future and the co-operation of neighbours who now own key sections of the fence

- Investigate feasibility of realigning sections of the strategic deer fence closer to the march boundary when the fence is next replaced, to better incorporate priority open habitats on FLS land
- Construct a new deer fence along the march at Appin, taking it down through Bealach and tying it in at the Salachan River – this fence is a priority
- In future, consider extending the deer fence along the Bealach march, tying-in to the fence at Creran – if immigration limits the impact of increased culling so that it is insufficient to reduce deer pressure to required levels
- Construct a new livestock fence as close to the Glenachulish / Lagnaha march as possible, to protect the Glenachulish and Duror forests – this fence is a priority
- Create and maintain open space and glades in the forests to aid deer control
- Retain, repair and improve existing ATV tracks on restock sites - retain and maintain approx. 6 km of essential tracks to enable carcass extraction; create a further 6 km of new tracks
- Complete Nearest Neighbour Surveys, Herbivore Impact Assessments, Stocking Density Assessments and Natural Regeneration Surveys annually to inform deer control and management
- Monitor condition of priority open habitats to ensure that browsing is at a level that maintains these habitats in favourable condition
- Investigate and clarify the need for a deer fence around the three Coires in Glen Creran, to inform the development of a Business Case for deer fencing that helps promote native woodland expansion in the area
- In future, consider limited use of internal exclosure fences at Glenachulish, to promote areas of natural regeneration as a seed source for wider PAWS restoration in the forest, if required
- Focus culling effort on newly restocked and naturally regenerating areas; felled coupes and other sensitive sites to maximise protection of young trees, while also reducing deer numbers to sustainable levels overall. Culling specifications that offer flexibility and which take account of, and support, restocking programmes and woodland creation projects and which target known hot spots areas

These proposed actions remain priorities. In addition to achieving the proposed cull targets, the immediate top priorities are:

- Construction of the livestock fence at the Glenachulish / Duror eastern march
- Construction of the deer fence at the Appin eastern march
- Completion of a further Thermal Imaging drone survey before year 4
- Maintain the strategic deer fence and replace as soon as is required
- Undertake timely HIA and Natural Regeneration surveys, to inform early intervention to protect young restock, if required

Key Actions

These actions were outlined in the original strategic DMP and are still relevant.

Activity	Blocks	Action
Strategic deer fence (combined with culling)	Glen Creran	Investigate feasibility of re-aligning deer fence closer to march boundary to incorporate priority open habitats
		Investigate feasibility / desirability of extending deer fence at southern end of Creran and eventually linking along the Bealach march to Appin
	Plan area	Review strategic deer fence – maintenance / upgrade
Other boundary fencing	Appin Glenachulish	Construct new fences along marches at Appin (deer) and at Glenachulish / Duror (livestock) taking in as much of the open ground within the fence as is practically possible.
Limited internal fencing	Glenachulish Creran	Consider some internal deer fence exclosures to promote natural regeneration (NR) or planted native broadleaves, which will provide seed sources for further native woodland expansion, if NR is insufficient following increased deer culling.
Internal open spaces	Plan area	Review current provision of open space and identify areas where new open space is required – for inclusion at next LMP revision or MTR, with amendments where required.
Access tracks	Plan area	Maintain existing 6 km of ranger access tracks that are essential for carcass extraction and create 6 km of new tracks, to aid deer management, restocking and control of INNS. New tracks programme to include tracks to access open hill. Additional requirements on individual restock sites will be assessed at time of restocking.
Culling (strategic approaches)	Plan area	Align annual deer management work plans closely with restocking and NR programmes and woodland creation projects, with forward planning linked to harvesting programme. Wildlife management contracts should ensure sufficient flexibility to enhance or redirect effort where required.
Monitoring	Plan area	Deer counts – drone surveys Herbivore Impact Assessments; Nearest Neighbour Surveys Natural Regeneration Surveys Stocking Density Assessments Open Habitat HIA surveys PAWS surveys Recruitment and mortality counts Records of stalking / culling effort Fence inspections Records of livestock ingress Security checks – illegal activities, vandalism, unauthorised access etc.