

## Seedy Sitka, red deer and the restoration of nature in the Loch Lomond and Trossachs National Park

### Description



Self-seeded Sitka on the north face of Ben Vorlich, made highly visible by the snow and the cloud behind the near skyline. Photo credit Parkswatch reader March 2026

The person who sent parkswatch this photo was taken aback by the number of Sitka spruce they saw below the summit of Ben Vorlich, the Munro south of Loch Earn. Last month, while climbing on Beinn Dothaidh, near Bridge of Orchy, I passed a Sitka sapling on a ledge at over 900m (sorry no photo). It was 2km and over 500m uphill from the nearest seed source.



View east over Glen Ample to the western flank of Ben Vorlich (the snow covered hill on the right) with Loch Earn on the left. The photo note the heavily browsed Sitka in the foreground was taken from the ridge between Sgiath Chlaise and Meall nan Oighreag, Feb 2022.

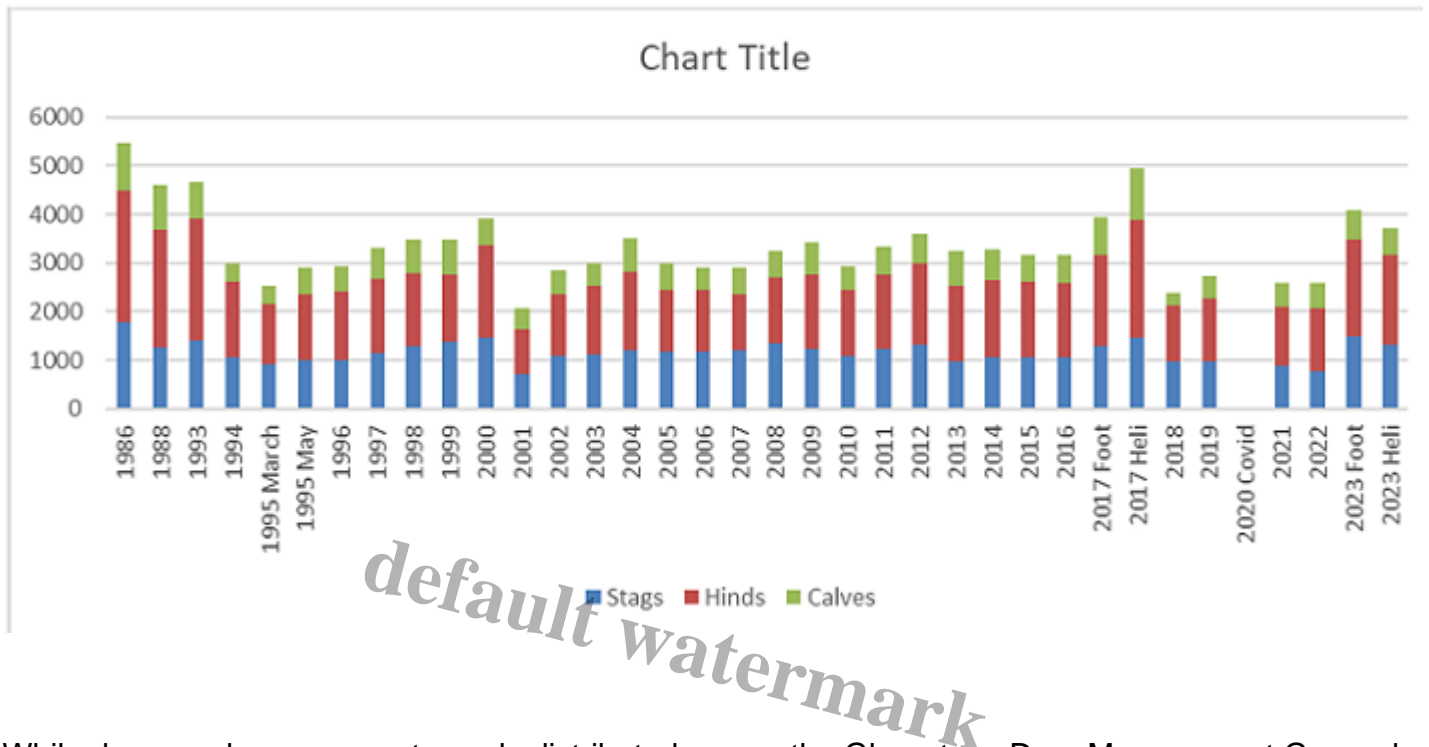
The seeds on the north face of Ben Vorlich had probably been blown up and over from Glen Ample, a minimum distance of 2.5km. If they had been carried on the prevailing wind from the south west, they might have come from further up the glen below the west flank of Stuc a Chroin or even further afield from Strathyre.



Close up of Sitka on the slope. Photo credit Parkwatchreader

Deer numbers in the Glenartney Deer Management Group, which includes the Ardvorlich and Glen Ample Estates, are some of the highest in Scotland despite this area being part of the Loch Lomond and Trossachs National Park. The Glenartney Deer Management Plan 2024-2030 ([see here](#)) reported that “Red deer numbers counted in 2023 show an overall decrease in numbers from a density of 33.1 deer per km<sup>2</sup> to 24.9 deer per km<sup>2</sup> in 2017”. The data actually shows that after a significant drop from 2018 to 2022 deer numbers increased again:

Figure 2: Historic Red Deer Counts 1986 to 2023



While deer numbers were not evenly distributed across the Glenartney Deer Management Group deer density on the Ardvorlich Estate at 21.6 per sq km was more than enough to prevent any natural regeneration of Sitka spruce which is the least palatable of trees:

Table 2: Historic Red Deer Counts 1986 to 2023

	GLENARTNEY DMG ONLY					TOTAL OUT WITH DMG				
	S	H	C	T	D	S	H	C	T	D
	149.55					149.65				
2017	1469	2406	1068	4943	33.1	181	332	105	618	4.1
2023	1313	1866	552	3731	24.9	290	607	214	1111	7.4

	PROPERTIES WITHIN THE DMG																								
	DRUMMOND IN DMG					ARCHULLARIE					ARDVORLICH					DRUMARDOCH					GLENAMPLE				
	80.75					10.35					18.06					9.97					30.41				
	S	H	C	T	D	S	H	C	T	D	S	H	C	T	D	S	H	C	T	D	S	H	C	T	D
2017	883	1939	824	3646	45.2	22	47	21	90	8.7	136	116	53	305	16.9	35	56	25	116	11.6	393	248	145	786	25.8
2023	964	1441	408	2813	34.8	9	51	19	79	7.6	98	218	74	390	21.6	20	41	13	74	7.42	222	115	38	375	12.3
2030	964	1441	408	2813	34.8	9	51	19	79	7.6	98	218	74	390	21.6	20	41	13	74	7.42	222	115	38	375	12.3

My informant said they had seen no self-seeding Sitka on the lower ground â?? an observation which fits with the very high deer numbers â?? and suggested that the steep nature of the ground, together with snow lie over the winter, could explain why they have become established below the summit of Ben Vorlich.

The timing of that colonisation will have been determined by the age of the Sitka plantations in Glen Ample. Sitka normally start to produce seed when around 25 years old and then do so every 4 â?? 8 years ([see here](#)). In upland settings they are now being harvested after approximately 35-40 years. As





Mature trees, middle left, will have after c25 years provided the seed source for the extensive natural regeneration above.

On the Ardchullarie (western) side of the ridge below Sgiath aâ?? Chlaise the deer fence was well above the top of the plantation. Protected from grazing, there had been extensive natural regeneration of Sitka within the open space at the top of the enclosure. Outside the deer fence, Sitka were absent, a consequence of the levels of grazing in this area which meant any seed that sprouted got eaten.



Dead Sitka front left with two heavily grazaed Sitka behind

Further north along the ridge a few Sitka had become established outside the enclosure and showed signs of being very heavily browsed. Why one Sitka gets established in locations like this, close to a seed source, whereas most are browsed to death is probably partly a matter of chance. Once established, however, Sitka can survive amidst high deer populations because as they grow their palatibility to deer and susceptibility to being browsed reduces further.



The number of self-seeded Sitka appeared to increase in an area of eroded peat hags. These Sitka will help dry out the bog still further

Just why more self-seeded Sitka had become established in an area of eroding peat bog was not obvious. While bog vegetation is generally, like Sitka, less palatable to deer, which might deter them from visiting this area to find food, the eroded hags are almost certainly partly a consequence of trampling by deer.



Descending into Glen Ample, the Sitka plantation presented a clean edge, with almost no signs of natural regeneration present, unlike that ridge directly above. That may have been partly a consequence of the age of this plantation. Such “clean edges”, which have such a significant landscape impact, are a common feature of Sitka plantations across Scotland. The explanation probably lies in grazing pressure generally being greater on the lower, more sheltered, ground added to which the cover provided by the trees makes the areas around the forest edge most likely to be browsed.



While Scots Pine grow far more slowly than Sitka and in this example risk being shaded out (particularly those on the right), they also produce seed earlier, when 15-20 years old

Along the bottom of Glen Ample there had been some attempts to soften the clean edges to the Sitka plantations by adding other trees. It has made little difference, just adding small blocks of other species, none of which have been able to regenerate naturally due to high grazing levels. While Scots Pine natural regeneration might have got a head start on the Sitka if grazing levels were lower, there are far too few of them compared to the Sitka to make much difference.



A self-seeded Sitka whose growth form reflects variations in grazing pressure from year to year. Note the more regularly shaped isolated Sitka behind and the blocks of larch and Scots Pine, attempts to screen or diversify the main plantation behind.

Weirdly shaped Sitka are now a common sight across Scotland. In this case the barer area around the middle of the trunk reflects a period of increased grazing, while the clump of new growth below suggests that that grazing pressure then reduced for a time. Such trees help demonstrate how grazing pressure varies over time.



Self-seeded and fairly heavily browsed Sitka with naturally occurring alder along the river. A block of planted birch is visible to the right behind. Grazing levels here are such that other deciduous trees such as birch have no chance of regenerating naturally.

A stony section by the river provided the best example I saw of what happens when the rain of Sitka seeds starts to get established. It starts to take over what was a semi-natural habitat. Of all our native deciduous trees, alder is the least palatable to deer which explains its survival along many river banks and this new Sitka-Alder upland vegetation community.

## **Sitka, natural regeneration and nature restoration**

The expansion of Sitka Spruce out from commercial forestry plantations in Scotland was, until relatively recently, limited by two factors. The first was its short commercial life cycle and the limited occasions plantations would produce seed before felling. The second was the high number of sheep and deer in the uplands which resulted in the seedling of this, the most unpalatable of species, being more often or not eaten as soon as they poked up above the surrounding vegetation.

Those general limitations on Sitka expansion are now changing quite dramatically. First, increasing numbers of Sitka that have managed to get established, despite the high deer population, are now of seed bearing age. Instead of producing two or three cycles of seed, like commercial forestry populations at present, they could now potentially do so for hundreds of years. Second the reduction in the deer population, essential to enable nature to recover, is also lifting the main constraint on Sitka expansion.

Invasive Sitka Spruce now poses the greatest threat to the natural environment of any non-native species in Scotland, occupying an area estimated to be twice the size of Fife, but is exempt from controls on other INNS (Invasive Non-Native Species) ([see here](#)). Our public authorities and the

Scottish Government still appear to have their heads in the sand and are doing nothing to address this threat.

The red and dark green areas in the map above show where Scottish Forestry has been paying the Glen Ample estate in the last few years to re-stock part of the Sitka plantation after felling with native trees. This avoids the real problem: which is that if deer numbers reduce sufficiently in Glen Ample to enable the small areas of planted trees to develop into native woodland, Sitka will also be facilitated to expand over an area many times as large. Scottish Forestry's top priority therefore should be to use its regulatory and grant-making powers to remove invasive Sitka rather than trying to diversify existing plantations by paying for planting. (If grazing levels are low enough, native trees will re-establish naturally with out any need to plant).

The Loch Lomond and Trossachs National Park Authority (LLTNPA), which has failed to reduce the very high numbers of deer in the Glenartney Deer Management Group area since its inception, is almost as bad. There is no mention of Sitka on its INNS webpage ([see here](#)) although the "Future Nature" paper to the March LLTNPA Board meeting ([see here](#)) shows that it now acknowledges the problem and has started to tinker around the edges:

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### Self-seeded exotic conifers

Removal of self-seeded Sitka has been delivered by several Future Nature Partners this year including sapling removal at Tyndrum Community Woodlands by Strathfillan

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Community Development Trust and Wild Strathfillan volunteers, and Sitka spruce regeneration removal from Moin Eich where volunteers cleared approximately eight hectares.

Forestry and Land Scotland have also undertaken works this year to remove Sitka spruce regeneration at West Arklet, Letter, Brenachoile, and Ben A'an. These plants are part of a wider longer term and ongoing Forestry and Land Scotland management plan for The Great Trossachs Forest.

The NPA Ranger Service delivered three sessions at Braeval removing 300 self-seeded Sitka seedlings and saplings.

A planning and delivery approach for self-seeded exotic conifers on strategically important sites will be reviewed as part of the Loch Lomond & The Trossachs Landscape Connections (see section 1.2.6) development phase in 2026/27.

While all about Sitka the heading appears designed to conceal the problem

The LLTNPA, however, has failed to acknowledge the extent of the Sitka problem in the National Park let alone consider how it could be addressed. Professor Chris Spray, the board member who leads on nature restoration, commented at the meeting that the application to the National Lottery to fund work around the North of Loch Lomond is just what the LLTNPA should be doing, trying to restore nature at scale. What he omitted to say is the total area involved in the project only covers a small proportion of

the National Park much of which is blanketed with commercial Sitka plantations owned and managed by Scottish Ministers.

A few Projects, however large, and the use of volunteers are not going to address the problem of invasive Sitka.

### **Category**

1. Loch Lomond and Trossachs

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### **Author**

nickkempe

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