Response: We gratefully thank both reviewers for their careful and through reviews of our manuscript, with many positive and constructive comments. We have endeavoured to address the comments as follows:

1) comments from Referees, (2) author's response, (3) author's changes in manuscript.

Response to Referee #1 R. Thompson

General comments

2 Many thanks for the extremely useful background information - as you state, it is a big challenge, and a difficult balance as to what to include or leave out in the manuscript with so much change going on in the pinewoods. We agree with all the general comments and have attempted to add additional background information, however we are conscious the focus should be on the dataset in the first instance, and therefore feel that we should keep additional analysis to a minimum – the aim is to highlight and encourage further use of the data. We very much agree there are a great many avenues to explore in detail – in particular the impacts of deer browsing in more depth, and issues surrounding ground flora species richness.

Specific Comments

1 Line ~109 I suggest that you put here ', formerly Forest Enterprise Scotland and before that, the Forestry Commission.' **2 Amended as suggested**

1 Line ~110 As this paragraph seems to be about state forestry, do you mean Abernethy here? **2 Thank you for picking this up – we have removed the reference to Abernethy.**

1 Line 120 Suggest change to 'and pinewood restoration' rather than 'and management as the latter begs the question what management? **2 Amended as suggested**

1 Line 125 This paragraph seems rather mixed geographically, hopping from Rannoch to Amat. I am not sure which pinewood the last sentence is referring to. **2 Have clarified information refers to Amat.**

1 Line 135 I can see that you are setting the scene here but I think the reference to Doanld McVean's work needs to be simplified. **2 Have simplified by deleting line 141**

1 Line 145 Could you maybe say 'each of these have affected … since the 1970's ' to connect the following sections with the last para and the section title? **2 Amended as suggested**

1 Line 146 would say 'particularly in the west, with extensive planting of Scots pine around other pinewoods - often in the Central and Eastern Highlands. **2 Amended as suggested**

1 Line 155 I don't think you need this section. It doesn't fit well with the rest which is about policy. **2 Deleted as suggested**

1 Line 175 **2 Deleted 'are home to a unique ground flora'**

1 Line 174 This species is fairly ubiquitous in many Scots pine plantations outwith the Caledonian pinewoods**. 2 But is rare nationally? And with outlying populations gradually being lost?** https://plantatlas2020.org/atlas/2cd4p9h.573

1 Line 190 the then current…? This paragraph hops about between different time periods. **2 Amended as suggested**

1 Line 195 Actually, FLS manages 27%. What about other public ownership? NatureScot owns Beinn Eighe and I think, part of Glen Feshie and Rothimurchus. Ian Sargent will have the details. It would be useful to know the % split between 'private' and eNGO **2. We have based our information here on the information we had for gaining access permission for survey. It is a bit tricky to determine exactly, as some sites are owned by more than one entity, and the the proportion of surveyed plots located in each type of ownership may not equate to ownership by area. 3. We have rephrased the sentence to make the situation clearer, and clarified the situation with sites under other public ownership.**

1 Line 250 See comment below. I am assuming this section is about trees only, not saplings. I would include the definition of trees here in brackets. **2. It includes all stem types here. 3. We have added definitions of trees, saplings and shrubs as suggested.**

1 Line 295 There have been a number of studies clearly demonstrating that there is no relationship between diameter at breast height and age in Caledonian pinewoods. I would at least express caution about the assumption that trees <20cm dbh equate to trees < or equal to 50 years **2 Yes – this is tricky to predict but we wanted to try and give some measure of young vs mature trees. 3 Sentence amended to express uncertainty.**

1 Line 312 A decrease in browsing and grazing impacts? **2 Amended as suggested**

1 Figure 7 Does 'Other conifers' include non-natives? I would remove non-natives from this analysis to aide clarity and stick to native species only in this section. **2. Thank you – good suggestion to remove**. **3. Figure 7 amended to remove non-natives**

1 Line 324 Did you record an effect on species composition of that regeneration? i.e. were palatable species preferentially reduced? Did low palatability species predominate? Figure 7 suggests not - i.e. that palatable rowan had the biggest increase. Maybe this was in sites with good deer control though. Or most likely, it was saplings repeatedly browsed. I would be very surprised not to see a selective browsing pressure in sites with high deer numbers. It would be really helpful to show an equivalent table to figure 7 for trees dbh 5cm to 10cm if this is reasonably straightforward to do . I suspect that a comparison between tables would show strong evidence for selective browsing on palatable rowan and more of a difference than for birch and Scots pine. Further analysis looking at birch in the east and Scots pine in the west would be fascinating to see if there is a similar relationship to that observed by Rainey in the CPR 'birch effect'. **2. We agree that it would be an excellent idea to undertake further analysis with the CPR data and there is probably a whole paper in itself on this subject, as the situation is complicated in terms of the deer impacts and the interactions with other drivers of change. In the interests of brevity, we think this is outside the scope of this paper, for which the main focus is the data. It would be useful to be able to supplement any analysis of this nature with more detailed deer management and presence/concentration information at a detailed level to examine the issue fully. There are many references to build upon, such as:**

S.C.F. Palmer, J.E. Broadhead, I. Ross, D.E. Smith, Long-term habitat use and browsing by deer in a Caledonian pinewood, Forest Ecology and Management, Volume 242, Issues 2–3, 2007, Pages 273-280,ISSN 0378-1127, https://doi.org/10.1016/j.foreco.2007.01.061.

S.C.F Palmer, A.-M Truscott,Browsing by deer on naturally regenerating Scots pine (Pinus sylvestris L.) and its effects on sapling growth,Forest Ecology and Management,Volume 182, Issues 1–3,2003,Pages 31-47,ISSN 0378-1127,https://doi.org/10.1016/S0378-1127(03)00026-4.

S.C.F Palmer, A.-M Truscott,Seasonal habitat use and browsing by deer in Caledonian pinewoods,Forest Ecology and Management,Volume 174, Issues 1–3, 2003,Pages 149-166,ISSN 0378-1127,https://doi.org/10.1016/S0378-1127(02)00032-4.

Julianne M. O'Reilly-Wapstra, Ben D. Moore, Mark Brewer, Joan Beaton, David Sim, Natasha L. Wiggins, Glenn R. Iason,Pinus sylvestris sapling growth and recovery from mammalian browsing,Forest Ecology and Management,Volume 325,2014,Pages 18-25, ISSN 0378-1127,https://doi.org/10.1016/j.foreco.2014.03.038.

3. We have reanalysed some of the data at a more detailed plot level and rewritten the section as well as expressing the complexity the data present in terms of understanding this issue.

1 Line 325 To add further about my call for more on selective browsing! Table S1 in the supplementary data clearly shows a decline in highly palatable willow, aspen and rowan trees. I suspect this will be due to old trees dying naturally through old age but also being bark stripped. It shows a lack of recruitment despite the abundant regeneration of rowan shown in figure 7. **2. Comments as above.**

1 Line 332 I would start the first part of this statement 'Over all sites, …' due to the contrasting way that sites have been managed - or not, since the 1971 survey. **2 Amended as suggested**

1 Can you add blaeberry to table 2? **2. Yes –we have added it to the table however the data is inconclusive 3. Table 2 amended and text amended to suggest further work, as situation is complex.**

1 Line 337 Why do you think there has been any loss of grasses in sites with increased signs of deer**? 2. We have inserted a sentence here to express that fewer deer are likely to allow increased shady species (trees and shrubs) to grow, which then reduce the amount of shade intolerant grass species. However, other factors will also play a part, such as local management factors, and which species are able to thrive once browsing is reduced – this complicates the issue further in terms of grasses thriving or not. 3. 'As grasses tend to be shade intolerant, you would expect more shade overall with fewer deer allowing the trees and shrubs to thrive, and therefore fewer grass species.'**

1 Table 2. Should this say 'Mean change in cover of heather species per site'? 2**.We have reanlysed this so the data is showing change in % cover across plots. 3. Have amended captions in Table 2 to reflect the change.**

1 Line 352 Do you mean plants associated with bogs and wet heaths? I tend to think of Phragmites australis when I see wetlands. **2 Yes – amended as suggested**

1 Line 337 Is it not also parasitic on grasses? **2. Melapyrum pratense has been shown to be decreasing across the country in other data too, including the GB Countryside Survey Plant diversity and occurrence over 40 years and the GB Bunce Broadleaved Woodland Survey (https://doi.org/10.5285/42c203c8-44de-40e2-a694-b1e8cbd4c8e1) so the change isn't restricted to the pinewoods. There has also been a major decline shown by plant atlas 2020 https://plantatlas2020.org/atlas/2cd4p9h.yrz . They indicate that its large seeds are ant dispersed and so it is likely to have suffered from reduced dispersal opportunities if conditions in the understorey have become cooler and more shaded and reduced ant populations.**

3. Amended l ~385 . 'This species appears to be in decline overall based on other national surveys such as the GB Countryside Survey (UKCEH Countryside Survey, 2026) and the GB Broadleaved Woodland Survey (Smart et al., 2024). It is hemi-parasitic on the roots of other plants, including trees, ericaceous dwarf shrubs and Bog myrtle (Myrica gale). Reasons for its decline could be complex and would be worth investigating further in relation to a range of drivers. There has also been a major decline shown by plant atlas 2020 https://plantatlas2020.org/atlas/2cd4p9h.yrz . They indicate that its large seeds are ant

dispersed and so it is likely to have suffered from reduced dispersal opportunities if conditions in the understorey have become cooler and more shaded and reduced ant populations.'.

1 Line 369 Given that you have referred to non-native removal for the Garry and Arkaig, I think you have to mention it here as well - i.e. that despite the extensive removal of non-natives in Glenmore, Guisachan and Cougie, richness declined. I wonder if this is due to sampling within dense native stem exclusion where light levels are lower - certainly plenty of this at Cougie and Guisachan? Deer levels are higher at the Garry so could be related to herbivory maintaining more open sward? **2 Amended as suggested**

1 Line 380 I would guarantee that this is due to selective browsing. **2 Amended as suggested**

1 Line 395 This is interesting. Any idea why? I would also point out the increase in pH in Deeside which looks significant - and a long way from pollutants in the central belt. **2. Yes, both interesting points and would be worth investigating further in relation to a number of external drivers, for example local management effects. 3. We have amended the text to reflect this.**

1 Line 397 Is it worth mentioning this? It seems so variable. **2 Deleted as suggested**

1 Line 420 Figure 12 These are almost certainly lodgepole pines. See bark. DNB this extensive is almost invariably on lodgepole pine **2 Amended caption to 'pines'**

1 Line 432 Most of this seems to be about methodology comparisons with other pinewood surveys. I think it is worth exploring the Bunce results in comparison with the CPR more - maybe simply in terms of overall conclusions - i.e. the CPR results suggesting a less assured future for the pinewoods without a considerable resurgence of effort to consolidate previous restoration management. **2. Yes, we very much agree that much more joint analysis could be undertaken with the two datasets. There is a wide range of questions which could be addressed however in the interests of brevity we feel this would be outside the scope of this paper and consider it appropriate to focus on the methods and understanding the data at this point.**

1 Line 470 I would change this to 'possible' **2 Amended as suggested**

1 Line 472 I would change this to 'although unlikely in sites with signs of significant deer impacts' **2 Amended as suggested**

1 Line 475 This is no surprise for Black Mount which is a traditional deer estate. But for Glen Affric and Glen Feshie (two of the most successful examples of native pinewood restoration), this is highly counter-intuitive. Could the decline in DBH be due to recruitment of younger ages classes, thereby reducing the mean? **2. It is likely that the recruitment of smaller age classes is reducing the mean, and Table S1 does show an increase in Scots Pine saplings at both of these sites. We have amended the text to reflect this.**

1 Line 485 This is an emphatic statement. Do you know deer numbers had declined for certain or is this based on signs of a decline in deer numbers/impacts? **2 Yes – based on recorded signs. 3 Amended.**

1 Line 485 Mean increase, mean decrease? **2/3 Amended to decrease**

1 Line 493 I would express caution about any possible impacts of climate change on vascular plant diversity due to the huge amount of management change that has taken place to the pinewoods since 1971. **2 Amended**

1 Line 494 I would remove the word 'Whilst' at the beginning of this sentence and make it two sentences at habitat, / the Bunce. **2 Amended as suggested**

1 Table S3 Does this include non-native species? **2. Yes it does. 3. Amended caption to clarify 'ground flora' species**

1 Figure S1 I presume this is for trees rather than saplings? Could you show an equivalent chart for non-native saplings? **2/3. This is a good idea. We have amended S1 and S2 to show the sapling figures separately (the initial table was trees, sapling and shrubs).**

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Response to Referee #2

General comments

1. The paper is well written and structured. However, it has a large focus on comparing the old and new data, whereas, the dataset itself consists of the newly sampled values. While the comparison of both datasets is definitely valuable, as a potential dataset user, I would appreciate more information on the dataset itself, including visualizations specifically describing the new dataset. Given that this is a data description paper, I would recommend shifting the focus more strongly toward the dataset itself, similar to the ESSD paper of Wood and Bunce (2016).

Furthermore, it only became clear to me at the very end of the paper, in the data availability statement, that the reference Wood and Bunce (2016) in the text is not only describing the study methods and the 1971 situation, but that it actually includes the dataset of the 1971 study. This should be clarified much earlier in the manuscript.

2. As the paper is to be read in conjunction with a partner paper, Wood and Bunce (2016), we are aware of striking a balance in providing enough information in this new paper, whilst also avoiding duplication. We are happy to take further guidance from the editor on whether we should duplicate information further but have so far endeavoured to keep this to a minimum.

We accept your point regarding the importance of emphasising the availability of the 1971 data and have made edits throughout to improve the clarity of this, for example, in line 56.

Specific comments

1 Line 27 – Clicking the link of the dataset leads to a wrong URL **2. I'm not sure what the issue is here – it looks correct to us in the submitted word version**

1 Figure 1: Including site names or IDs (as used in the dataset and text) would improve clarity. Adding latitude and longitude axes would also help locate the sites **2. We have added the lat/long to the map but haven't added the site IDs because we didn't want to duplicate the map provided in Wood and Bunce 2016 (see comment above).**

1 Line 154 – The abbreviation SSSI is not defined **2 Amended**

1 Paragraph 2 – Data Collected. A table listing all plot coordinates, along with information on how precisely the original plots were relocated, would be helpful. **2. We think a table containing all of the plots (over 450) would be too large to have in the body of the text. A table with the sites and locations is given in the Bunce and Wood 2016 paper – so again, we are reluctant to duplicate this (but are happy to take advice on whether it would be appropriate). We have inserted some text into lines 208 + regarding plot relocation issues 3. lines 208 + 'It is not possible to go back**

in time and understand fully how precisely the plots have been refound and therefore some plot finding error is inevitable given the nature of the information available and the nature of the original maps. However, work was undertaken in 2001 to understand the precision of plot relocation in the partner survey to this one, the Bunce Broadleaved Woodland survey of Great Britain, which used exactly the same methods of relocation. Analysis of the 1648 plot records taken in 1971 and 2001 described fully in Kirby et al. (2005) demonstrated that the records may be treated as paired data (i.e. relocation error was not significant). In summary, the principal of autocorrelation (whereby plots near to each other are more similar than those further away) may be used to quantify the error in attempting to relocate the same vegetation plots'.

1 A figure illustrating the nested design and quadrats could improve understanding of the study design **2. Again, this figure is given in the Bunce and Wood 2016 paper – so again, we are reluctant to duplicate this (but are happy to take advice on whether it would be appropriate)**.

1 Line 225 – The soil moisture was determined, but it is not part of the dataset, is that correct? Please clarify why. **2. Soil moisture was measured as a by-product of the Loss on Ignition analysis, and was not part of the original project deliverables. The moisture data have not been fully quality checked or processed at this stage. It is likely it is something that we will consider publishing in the future but we have deleted the mention of soil moisture at this point.**

1 Lines 255f – The text states: "willows (Salix spp.) and rowan (Sorbus aucuparia) have declined markedly across all sites, willows by a mean of 6 stems and rowan by a mean of 14 stems" – in Table S1, the mean for willows is -13.3 – please clarify this discrepancy **2. Many thanks for picking up this discrepancy. The values have been double checked and now match the values in the table.**

1 Figure 3 – A logarithmic scale on the y-axis might help to visualize species with stems <250 **2. We have considered this suggestion however we are keen to convey the message that shows clearly how rare some of broadleaved trees are, and believe that using a log scale would distort this message and make it somewhat misleading. A key issue in the pinewoods is maintaining healthy populations of Scots Pine so transforming the data would make it less clear that there's been a small but significant increase in the Scots Pine trees.**

1 Table S2 – *Picea albies* should be corrected to *Picea abies* **2 Amended**

1 Line 296 - *UK tree age calculator (Felling UK, 2025)* – The link in the references is not accessible and the website says "felling.uk is for sale". Having a look at another calculator (https://virginiatreecare.com/tree-age-calculator/), *Pinus sylvestris* of 20 cm dbh is said to be 38 to 60 years depending on growing conditions. As also that is only an estimate, the authors could give an age range here instead of a single number **2 Amended as per comment and also reviewer 1. Thank you for the new link.**

1 Figure 7 - A logarithmic scale on the y-axis might help to visualize species with counts <40 **2. See comment above**

1 Line 347 – Please clarify whether the increase in wetness refers to a trend over time or a direct comparison between the years 1971 and 2022. **2. The increases in temperature and rainfall refer to a direct comparisons between the 2 years. 3. Clarified in the text and added a reference confirming the long-term trends.**

1 Line 385 – To what extent could the change also be a result of different instruments used in the 1970's and today? **2. The Bunce Pinewood survey is one a family of long-term surveys undertaken by the UK Centre for Ecology & Hydrology and predecessors since the 1970s. Much work has been done over the years to ensure that consistent methods have been used, for example in the Kirby et al, 2005 Bunce Woodland Report and the GB Countryside Survey**

(Black, H. I. J.; Garnett, J. S.; Ainsworth, G.; Coward, P. A.; Creamer, R.; Ellwood, S.; Horne, J.; Hornung, M.; Kennedy, V. H.; Monson, F.; Raine, L.; Osborn, D.; Parekh, N. R.; Parrington, J.; Poskitt, J.; Potter, E.; Reeves, N.; Rowland, A. P.; Self, P.; Turner, S.; Watkins, J.; Woods, C.; Wright, J.. 2002 MASQ: Monitoring And Assessing Soil Quality in Great Britain. Survey Model 6: Soils and Pollution. Bristol, Environment Agency, 200pp. (CEH Project Number: C01229, R&D Technical Report E1-063/TR https://nora.nerc.ac.uk/id/eprint/4297/2/SE1-063-TR-e-p.pdf) 3. We have clarified line 412 with 'with repeat measurements following the same methods'.

1 397ff – This topic is quite isolated here. Additional context on Loss on Ignition (LOI), even if not directly comparable to the original survey, would be helpful. **2 Deleted as suggested by reviewer 1.**

DATASET:

General comments

The dataset is presented in CSV files, which facilitates the reuse, and organized in thematically structured files. The dataset is accompanied by useful metadata in the file data_documentation_pinewoods_2023_eip.docx.

However, several aspects of the data presentation and metadata could be improved to further enhance clarity, usability, and consistency.

Downloading "Supporting Documents" and "Download" (=all data) currently produces ZIP files with the same name but different contents. Would it be possible to assign distinct file names to these downloads? This would help differentiate them and avoid confusion. 2**. We have no control over this, but can make a suggestion to the Data Centre.**

The data are provided as CSV files, while the column description is given in as separate word-Table. It might be better to provide an additional CSV for each data-table in which the columns are described. This would make it easier to work with the data in scripting environments.

The naming of "Site ID" or "Site Number" should be consistent between all tables

Sampling dates are provided in a supporting document but should also be included directly in at least the file *scots_pine_2022_sites.csv*

We are reluctant to amend the actual data deposit for a number of reasons. Firstly and most importantly, timescales and resources are limited to be able to do this. Additionally, we know that data users are already using the currently assigned DOI. As there has been no actual error identified, rather suggested improvements, we have concentrated on improving the supporting information supplied with the dataset to address the issues raised.

Specific comments

Ground Flora data:

- The description for NEST_1_COV states Null = not present. How should empty cells be interpreted? 2. **Empty cells mean the species was not present in nest one, but a later nest 2-5. We have clarified this.**

- Are BRC numbers searchable in an external reference? Some values (e.g., bare ground) are not listed in the field book tables. 2. **Yes – they are available via the UK Biological |record Centre**

PlantAtt https://www.brc.ac.uk/biblio/plantatt-attributes-british-and-irish-plants-spreadsheet . **However, the codes refer to the plant species only – therefore attributes such as Bare Ground do not have a numeric code relating to the BRC. We have added the PlantATT reference.**

Site Info data:

- Abbreviations in the comments should be written out (e.g., "Gld.3–12m mxd.", "Stnd.dead <10cm"). **2. We have clarified these in the supporting document, but it must be noted that the field handbook must also be referred to.**

- What does an aspect value of −154 degrees represent for Site 7 (Glen Feshie), Plot 15?

We suspect the surveyor recorded the value 'backwards' and therefore can be read as 206º.

Sites data

- Providing coordinates in WGS84 decimal degrees would improve usability.

2. We have updated the table with the WGS84 lat/long information

Soil Data

- LOI values are reported with nine decimal places. Please confirm whether this level of precision is meaningful; if not, rounding would be appropriate.

Tree Data

- Some trees have IDs while others do not—please clarify why. **2. Only trees with multiple stems have a Tree ID.**

- Please clarify the reason for the different formats of ID, eg *A* vs *606b4232-43da-4550-8a93-1811b1fbcb7b* **2. This was solely down to a slight difference in recording methodology and isn't significant.**

- Tree IDs do not appear to be unique (e.g., multiple "A" entries across sites). Please confirm whether this is intended. **2. They are only unique within plots. We have clarified this.**