Modelling the response of soil and litter biodiversity to anthropogenic pressures

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INTRODUCTION

• Human activities, particularly land use change, are a significant driver of biodiversity loss worldwide (Tittensor et al. 2014).
• Soil fauna are significant mediators of the ecosystem services provided by soil (Fig. 1) (Lavelle et al. 2006) but are rarely included in biodiversity models.
• Local diversity richness is substantially lower in most land-use types compared to primary vegetation (Hudson & Newbold et al. 2015).
• Does below-ground biodiversity show the same response?

METHODS

• Using data collated as part of the projecting responses of ecological diversity in changing terrestrial systems (PREDICTS) project (www.predicts.org.uk) (Hudson & Newbold et al. 2015).
• A subset of the database with sources related to soil was extracted, comprising 31 sources, 53 studies and 1640 sites (table 1 & figure 3).

Table 1 sites by land use type and intensity

<table>
<thead>
<tr>
<th></th>
<th>Minimal use</th>
<th>Light use</th>
<th>Intense use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>193</td>
<td>189</td>
<td>18</td>
</tr>
<tr>
<td>Secondary</td>
<td>25</td>
<td>34</td>
<td>11</td>
</tr>
<tr>
<td>Pasture</td>
<td>209</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Cropland</td>
<td>21</td>
<td>9</td>
<td>43</td>
</tr>
</tbody>
</table>

DISCUSSION

• Error bars are large, but responses of soil biodiversity to human pressures are broadly similar to overall biodiversity (Hudson & Newbold et al. 2015).
• Pasture and cropland are unexpectedly similar, may be result of overlap when scoring.
• Disturbance appears to increase richness in primary habitats but this effect is not seen in secondary vegetation.

FURTHER WORK

• More data!
• Project models onto scenarios of future changes
• Develop biome- and clade-specific models

Want to contribute?
If you have suitable data we would love to hear from you! All contributors of data we use will be included as co-authors on an open-access paper updating the database and acknowledged appropriately in all publications.

Please pick up a flyer or email v.burton@nhm.ac.uk

ACKNOWLEDGEMENTS

We thank members of the PREDICTS team and all the many researchers who have made their data available to us.

REFERENCES