Bird community responses to woodland creation

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Woodland Creation & Ecological Networks

Site-level characteristics more important in influencing woodland bird communities than the surrounding landscape

STUDY OVERVIEW

101 woodlands were surveyed 3 times, using common bird census methods in 2 study areas (Scotland and England) during 2015 (Fig. 1).

8,252 bird records of adult birds comprising 59 species were recorded.

Species were assigned to one of five functional groups based on feeding, breeding and resting habitat requirements (Fig 2).

a)

b)

c)

Fig. 1. Bird surveying (a) Chaffinch – the most commonly detected bird in the study; A. Trepte (b) Pied Flycatcher – a woodland specialist not found in any of our woodlands; D. Chapman (c).

RECOMMENDATIONS & CONCLUSIONS

Improve local habitat quality, specifically:

- As a simple rule of thumb, **woodlands should be above 5 ha** where possible when the aim is to benefit generalist woodland bird communities. Much larger woodlands (i.e. > 30 ha) might be required to benefit woodland specialists.
- Manage woodlands to increase tree species richness and **promote old-growth habitat structure**, e.g. large trees, relatively low tree densities and open canopies.
- Reduce or **remove livestock grazing** pressure.

Improve the surrounding landscape, specifically:

- **Increase woodland connectivity** in the landscape – spatially targeted planting to improve connectivity would particularly benefit species less likely to cross open spaces.

Although some taxa may respond rapidly to habitat creation (i.e. generalists), it could take centuries for specialist communities to fully re-establish. We need to acknowledge the existence of time-lags between conservation actions and biodiversity responses when evaluating the efficacy of conservation efforts.

RESULTS HIGHLIGHTS

All woodland generalist species (*open, mixed or general wood/scrub* functional group) were detected in our woodlands, with seven species in > 40% of woodlands and nine species in > 20% of woodlands.

Only two of the nine woodland specialists (*broadleaf trees/hedgerows* group) were recorded in ≥ 20% of woodlands.

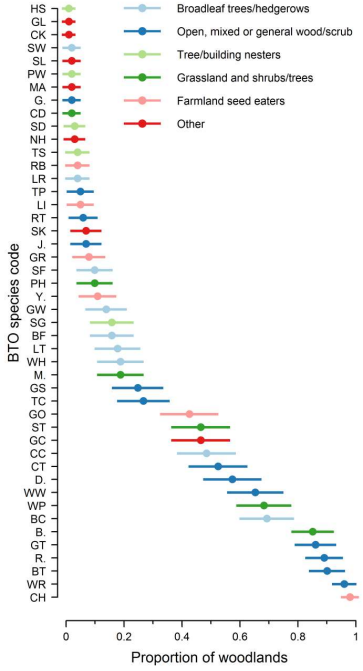

Fig. 2. The proportion of sites each species of five functional groups was detected in.

Structural equation models were used to examine direct and indirect relationships between site-level and landscape variables, hypothesised to influence bird communities (Fig 3).

Woodland size had twice the effect of any other variable: accounting for other variables, larger woodlands have more individuals and species. Older woodlands with larger trees had higher bird abundance and so species richness.

Other results (not shown below) suggest 1) there was little effect of woodland age on woodland specialists; 2) **presence of livestock within woodlands reduced the abundance and diversity** of woodland bird communities.

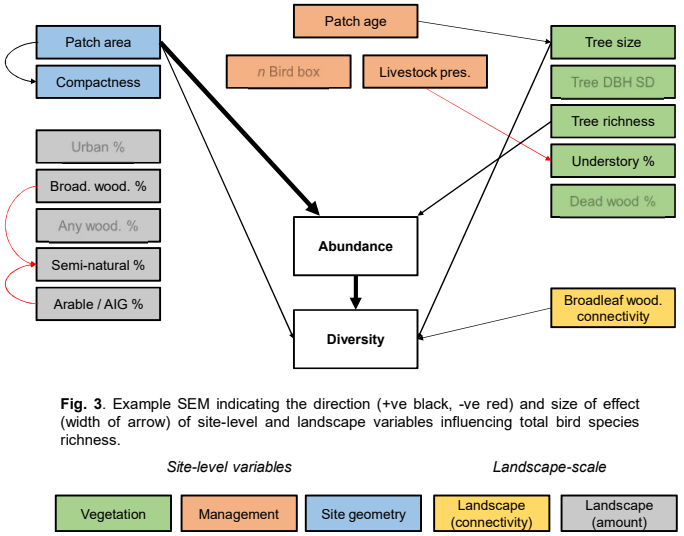

Fig. 3. Example SEM indicating the direction (+ve black, -ve red) and size of effect (width of arrow) of site-level and landscape variables influencing total bird species richness.

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