Impacts of coppicing on woodland butterflies

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Motivation

Coppice with standards

Modern high forest
Study area
Successional stages

- Clear cut
- 2nd year
- Fringe
- Shrub
- Wood
Aims

(i) Do butterfly species richness and abundance differ among the five successional stages?
(ii) If so, are there differences between resident and migratory species?
(iii) Which stages are the most important for threatened species?
Sampling design

- 5 study areas
- 37 plots (500 m²); 7–8 plots for each successional stage
- Standardized transect walks (9 walks/plot)
- Habitat quality parameters (e.g. host plants, nectar resources)
- Statistical analysis: GLMM with study area as random factor
Species richness: Resident species ($N = 30$)
Species richness: Migratory species ($N = 6$)
Species richness: Threatened species ($N = 13$)

<table>
<thead>
<tr>
<th>Habitat</th>
<th>No. species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear cut</td>
<td>2</td>
</tr>
<tr>
<td>2nd year</td>
<td>4</td>
</tr>
<tr>
<td>Fringe</td>
<td>2</td>
</tr>
<tr>
<td>Shrub</td>
<td>2</td>
</tr>
<tr>
<td>Wood</td>
<td>1</td>
</tr>
</tbody>
</table>
Abundance: Resident species ($N = 30$)

![Graph showing density (individuals/500 m²) across different habitats: Clear cut, 2nd year, Fringe, Shrub, Wood.](image)
Abundance: Migratory species ($N = 6$)
DCA: Butterfly communities
Take-home message I

- High species number (36), many threatened species (13)

Coppiced woodlands are butterfly diversity hotspots
Take-home message II

- Species richness/abundance decreased from early (clear cut, 2nd year) to late successional stages (wood)
  
  ➡️ Early successional stages are of high conservation concern
  
  ➡️ Warm microclimatic conditions (all groups) together with a high cover of host plants (resident/threatened species) or nectar resources (migratory species)

- Each successional stage has characteristic species
  
  ➡️ All stages are necessary to secure diversity of woodland butterflies
  
  ➡️ Coppicing is a valuable tool to promote woodland butterflies
Thank you for your attention!