Can power line pole bases be used as habitat promotion?

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Power lines

Very common Linear Infrastructure

Negative effects - especially for birds

Wide distribution in agricultural, livestock and semi-natural landscapes

Negligible agricultural or livestock use of the pole bases

To promote habitat patches in the landscape
  • Refuge for plants and animals
  • Feeding habitat for fauna
Study area

South Portugal → High concentration of Linear Infrastructures → Power lines

- Sub-station
- Sub-station (REN)
- Power distribution network
Study aimed

To analyse the potential of power line pythons (pole bases) to become suitable habitat patches according to different management actions:

1. Without intervention: maintenance of cattle grazing
2. Fenced: natural regeneration
3. Fenced and sown: native species promotion
Autumn 2017

5 references - without intervention
5 fenced - to prevent livestock grazing
5 fenced and sown - native seed mixture

Open area without storks
Open area with storks
Montado
Assessment of flora species

- Abundance
- Diversity
- Vegetation structure (height, cover and vegetation overlap)

Before: 2017 Spring

After: 2018 and 2019 Springs
2017 - Before Intervention

- Open area without storks
- Open area with storks
- Montado (with storks)
In general

1\textsuperscript{st} year (2018):
- Fenced: stable or increase
- Fenced and sown: increase
- Reference: stable

2\textsuperscript{nd} year (2019):
- Fenced: decrease or increase
- Fenced and sown: stable or increase
- Reference: stable or increase
### Species richness and stork density

- **High density of stork nests**
- **Lower species richness**
- **Two dominant species:**
  - *Hordeum murinum*
  - *Lolium rigidum*

#### Species richness

<table>
<thead>
<tr>
<th>Stork presence</th>
<th>Species richness</th>
<th>Mean±SE</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>28</td>
<td>24.00±2.00</td>
<td>24.00±2.00</td>
</tr>
</tbody>
</table>

Species richness: KW-H(1;45)=25.0765; P=0.00000
In general

1st year (2018):
- Fenced: stable or increase
- Fenced and sown: increase
- Reference: stable or decrease

2nd year (2019):
- Fenced: stable or decrease
- Fenced and sown: stable or decrease
- Reference: stable or decrease
In general

1st year (2018):
• **Fenced**: increase
• **Fenced and sown**: increase
• **Reference**: variable between groups

2nd year (2019):
• **Fenced**: decrease, but it is higher than in the references
• **Fenced and sown**: decrease, but it is higher than in the references
• **Reference**: variable between groups
Higher vegetation in fenced poles (with or without the sown seed mixture)

More refuge areas for small mammals
Vegetation height and Grazing

Without Grazing (intervened poles)

Higher vegetation

More refuge for wild fauna species

Species height: KW-H(1;45)=25.4118; p=0.00000

Grazing

- Mean
- Mean±SE
- Mean±SD
Upper vegetation cover on poles fenced (with or without the sown seed mixture)

- Less soil erosion
- More resources for wild fauna
Taking Home Ideas

Global evolution considering the 2 years of study:

<table>
<thead>
<tr>
<th>Typology</th>
<th>Species Richness</th>
<th>Species Diversity</th>
<th>Height</th>
<th>Cover</th>
<th>Overlap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference</td>
<td>Medium</td>
<td>Medium</td>
<td>Reduced</td>
<td>Reduced</td>
<td>Reduced</td>
</tr>
<tr>
<td>Fenced</td>
<td>Reduced</td>
<td>Reduced</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Fenced and Sown</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
</table>

These preliminary results suggest that fencing and sowing the pole bases is the most beneficial solution, since simultaneously increases the plant richness and the feeding and refuge habitat for fauna.
In the Spring of 2020...

- Assessment of flora species in the 15 pole bases
- The trends previously registered seem to remain
Thank you for your attention!!

LIFE-LINES (LIFE14 NAT/PT/001081)
Linear Infrastructure Networks with Ecological Solutions
60% co-financed project by the LIFE - Nature and Biodiversity Program of the European Commission

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