Monitoring Standards for Large Carnivores in Germany

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A Basis for Management Concepts for Returning Large Carnivores

Project team

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Content

1. Development of nation-wide monitoring standards
2. Synopsis and evaluation of existing models for damage compensation and prevention
3. Setup of a centre for genetic analysis
4. Habitat suitability analysis for large carnivores in Germany
5. Effect of infrastructure and traffic on habitat suitability and expansion
6. Recommendation for the handling of problem individuals
7. Co-ordination and harmonisation of activities within Germany and with EU and other countries
Monitoring

Monitoring according to habitats directive consists of two parts:

- Data collection
- Data analysis
Data Collection

Pre-analysis: fake or real?

SCALP-Criteria:

C1: hard fact: captured or dead animal, genetic proof, photo, radio tracking

C2: confirmed = sign confirmed by an experienced person (AND documented, when used for occurrence maps)

C3: unconfirmed = all other signs, which could be caused by a LC, especially sightings, undocumented tracks, kills, etc.

false: signs clearly not caused by LC

Experienced person: extensive field experience with the LC species concerned
Data Collection - example

Lynx: Single footprints

... 

C2 – confirmed observation

Footprints qualify as confirmed lynx observation, if

• at least three footprints are recognizable that are typical for lynx.

Documentation

• Field protocol (lynx observation) AND
• Photographs of at least three footprints, with unambiguous size comparison (scale!).
Data Analysis

• spatial: occurrence and distribution
• demographic: population size
• habitat suitability and threats
Data Analysis

occurrence
raster with 10 km * 10 km

When is a raster cell occupied?

\[
\begin{align*}
\geq 1 \times C_1 & \quad \rightarrow \quad \text{green} \\
0 \times C_1 \quad \geq 2 \times C_2 & \quad \rightarrow \quad \text{green} \\
0 \times C_1 \quad 1 \times C_2 & \quad \rightarrow \quad \text{green} \\
0 \times C_1 \quad 0 \times C_2 \quad \geq 1 \times C_3 & \quad \rightarrow \quad \text{green}
\end{align*}
\]
Structures – actual proposal

- Annual meeting of experienced persons
- Experienced persons
- Trained persons
- General public
## Structures - discussion

<table>
<thead>
<tr>
<th>Approach</th>
<th>Description</th>
<th>Passive monitoring</th>
<th>SCALP assessment</th>
<th>Active monitoring</th>
<th>Expansion of monitoring into new areas</th>
<th>Calibration of experienced persons</th>
<th>Consultation and assistance in dealing with problems animals</th>
<th>Assistance and consultation relative to damage prevention</th>
<th>In-depth analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Only trained persons</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Trained persons with contact to experienced persons</td>
<td>Yes</td>
<td>To some extent(^1)</td>
<td>To some extent(^2)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Trained persons, as well as the area’s own experienced persons</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>To some extent(^3)</td>
<td>No</td>
<td>To some extent(^3)</td>
</tr>
<tr>
<td>4</td>
<td>Approach 3, plus annual national meetings</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>To some extent(^3)</td>
<td>No</td>
<td>To some extent(^3)</td>
</tr>
<tr>
<td>5</td>
<td>Monitoring centre</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>To some extent(^3)</td>
<td>To some extent(^3)</td>
<td>To some extent(^3)</td>
</tr>
<tr>
<td>6</td>
<td>Large-carnivore Competence Centre</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
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Problem: no wolves in most of Germany

Two possible ways:
- expert opinion
- extrapolation of scientific results from other areas
Habitat Suitability in Adjacent Countries

Habitat Suitability Models considered:

Poland I: forest cover +, forest fragmentation –, highway density –  (Jedrzejewski et al. 2004. Diversity Distrib. 10: 225-233)


Italy I: forest cover +, game density and diversity +, human infrastructure –  (Massolo & Meriggi. 1998. Ecography 21: 97-107)


(Italy II: alpine only)  (Marucco 2009)
Habitat Suitability in Poland
Habitat Suitability in Germany
Habitat Suitability in Germany
Estimation of Expansion from Poland

- without the effect of highways
- with the effect of highways
Estimation of Expansion from Lausitz without the effect of highways with the effect of highways
Estimation of Expansion
How many wolves can live in Germany?

- 300 km²
- 200 km²
- 150 km²

territory size
Potential Number of Wolf Packs

number of wolf packs

territory size (km²)
Favourable Conservation Status

>= 1000 mature individuals, Germany only

number of wolf packs

territory size (km²)