Density estimations of Eurasian lynx (*Lynx lynx*) from long term camera trap data in the Bohemian Forest Ecosystem

Kirsten Weingarth[1], Christoph Heibl[1], Thorsten Zeppenfeld[1], Ludek Bufka[2], Kristina Daniszova[2], Marco Heurich[1], Jörg Müller[1]

[1] Bavarian Forest National Park, Department of Research and Documentation, Grafenau, Germany
[2] Šumava National Park Administration, Vimperk, Czech Republic.

Keywords

Lynx lynx, monitoring design, camera trap, spatial capture-recapture (SECR), desity estimation

Abstract

Protected areas have to fulfil monitoring standards for conservation status of listed species such as the Eurasian lynx (Annex II, Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora). This data outcome is the basis for national management decisions. Camera traps have been successfully used for population estimates of individually recognisable felids like lynx, thus making themideal candidates for capture-recapture surveys. We first aim to optimize the study design; therefore we focus on finding the adequate session lengthfor monitoring lynx in forest habitats using camera traps.The goal is to deliver a stable amount and quality of datafor robust density estimates.In a second approach, we aim to reveal lynx population density estimates out of long term camera trap dataderived from spatial explicit capture-recapture models (SECR).

We sampled data within the Bavarian forest National Park (BFNP),where we installed two opposing cameras on 60systematically selected sites in a study area of 780 km^2 (BFNP + Šumava National Park) during three successive winters. Additionally, 30 sites were maintained for two successive years on 240 km^2 (BFNP). This sampling revealed a number of at least sixteen independent lynx.

The lynx is an elusive species which is hard to monitor, makinganalysis of population dynamics and demographic parameters challenging. We calculated the demographical closure and the amount of recaptures for the adequate session length using sliding windows over the recorded time frame.

Currently SECR models have moved into focus due to their innovations of incorporating movement and supplying the effective area sampled, which offers a more preferable way for reliable density estimates. Therewith,we aim to analyse three successive winter sessions of the cross border lynx monitoring to revealdensity estimates from long term data.

The combination of standardized camera trap sessions on a regular basis and long term data, offer the information of life histories and population trends. Our results allow implications toimprove future monitoring programs and density estimates requested from protected areas and wildlife managers in Europe.

Contact

Kirsten Weingarth
KirstenWeingarth@gmx.de
cell: +49 151 14571808

Bavarian Forest National Park
Department of Research and Documentation
Freyunger Str. 2
94481 Grafenau
Germany