The return of wolves to the Bohemian forest ecosystem
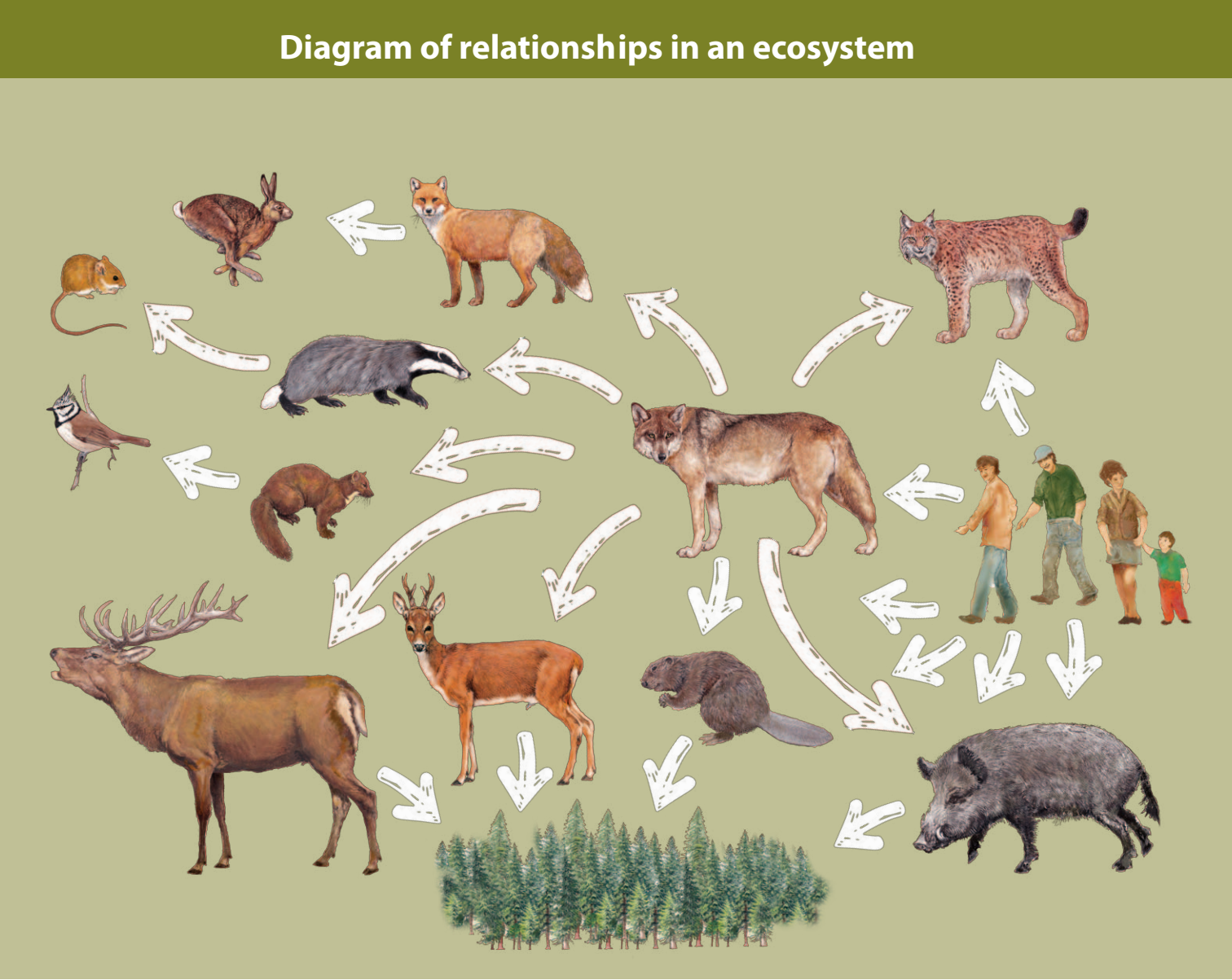
Diagram of relationships in an ecosystem

Project Background

Wolves were part of the European ecosystem until they were heavily persecuted in the 19th century. Now, wolves are naturally returning to their former habitats, including the Bohemian Forest ecosystem, after more than 150 years of absence. The presence of wolves can affect the landscape by contributing to a reduction in prey populations and influencing the behaviour and spatial use of prey animals. This can trigger cascading effects in the ecosystem, as the behaviour and distribution of ungulates also influence browsing and thus forest regeneration.

Wolf

Ungulates — Forest-regeneration
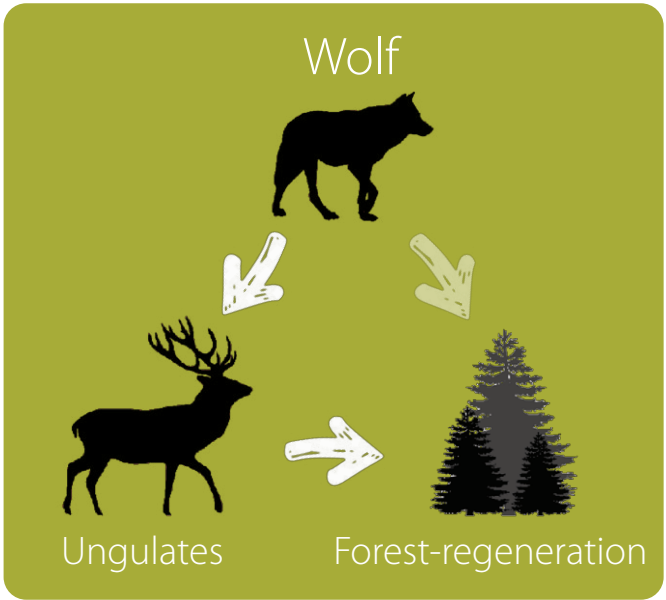
The aim of the Czech-Bavarian project *Ecological Impact of the Return of Wolves on the Šumava/Bavarian Forest Ecosystem* is to investigate the relationships between the three trophic levels of predator, prey and forest regeneration. The aim is to develop a strategy for the management of ungulates in the Šumava and Bavarian Forest national parks, taking into account the return of wolves.

Insights into the future management of the protected areas

The aim of the project is to study the interaction between predators, prey, and forest vegetation in the Bohemian Forest ecosystem in the heart of Europe. This is particularly important now that wolves have naturally repopulated the area, and wolves, their main prey – red deer – and forest vegetation are closely interlinked.

Based on the results of this project, a joint strategy for wildlife management in both national parks will be developed. The project pursues the national parks' goal of creating a large natural area with as little human intervention as possible. This is based on adaptive wildlife management that takes into account the returning predators, the red deer population and forest regeneration.

Did you know that a similar project was carried out in Yellowstone National Park in the USA?

➜ Wolves were reintroduced to the area where they were exterminated seven decades ago.
➜ Their return had a significant impact on reducing the excessive elk population.
➜ This also reduced browsing and thereby increasing tree regeneration, which had far-reaching effects on other parts of the ecosystem, from beavers to rivers.

Wolves

The wolf population in the Bohemian Forest ecosystem has been growing since its natural return began in 2015. While only one wolf territory was established in the 2017/2018 monitoring year, six years later, in the 2023/2024 monitoring year, seven territories were recorded. Some of these territories are occupied by large wolf packs, others by wolf pairs or solitary animals. The latest monitoring results revealed a special category of wolves: the so-called 'floaters'. These are individuals that do not have their own territory, but move across a large area which also includes the territories of other wolves. They benefit from the existence of other packs (e.g. by eating prey caught by them). Some of them are waiting for an opportunity to join an existing pack or to form their own new pack.

Did you know that wolves don't just hunt land animals?

➜ Wolves mainly hunt wild ungulates. Red deer and roe deer are their main prey in the Bavarian Forest and Šumava.
➜ In recent years, the proportion of European beavers in the wolves' diet has increased significantly.

Red Deer

Red deer are the most common ungulate species in the Bohemian Forest ecosystem and play an important role in this habitat. Their feeding habits are highly adaptable, as they select grasses, shrubs, trees and other plants according to their nutritional value depending on the season. In addition, red deer are important seed dispersers and contribute to the regeneration of various plant species. These animals undertake seasonal migrations, moving to higher altitudes in summer and descending to lower altitudes in winter. The red deer population is controlled by both regulated hunting and natural predators such as wolves and lynx.

Through ongoing research, we are observing changes in the density and behaviour of red deer under the influence of wolves. Understanding these dynamics is crucial for adapted wildlife management and nature conservation.

Did you know that red deer are not picky eaters?

➜ Depending on the quality and availability during the growing season, red deer either eat grasses or tree buds/leaves.
➜ If the grass is rich in nutrients, they feed on grass, while in winter they also feed on trees and shrubs.
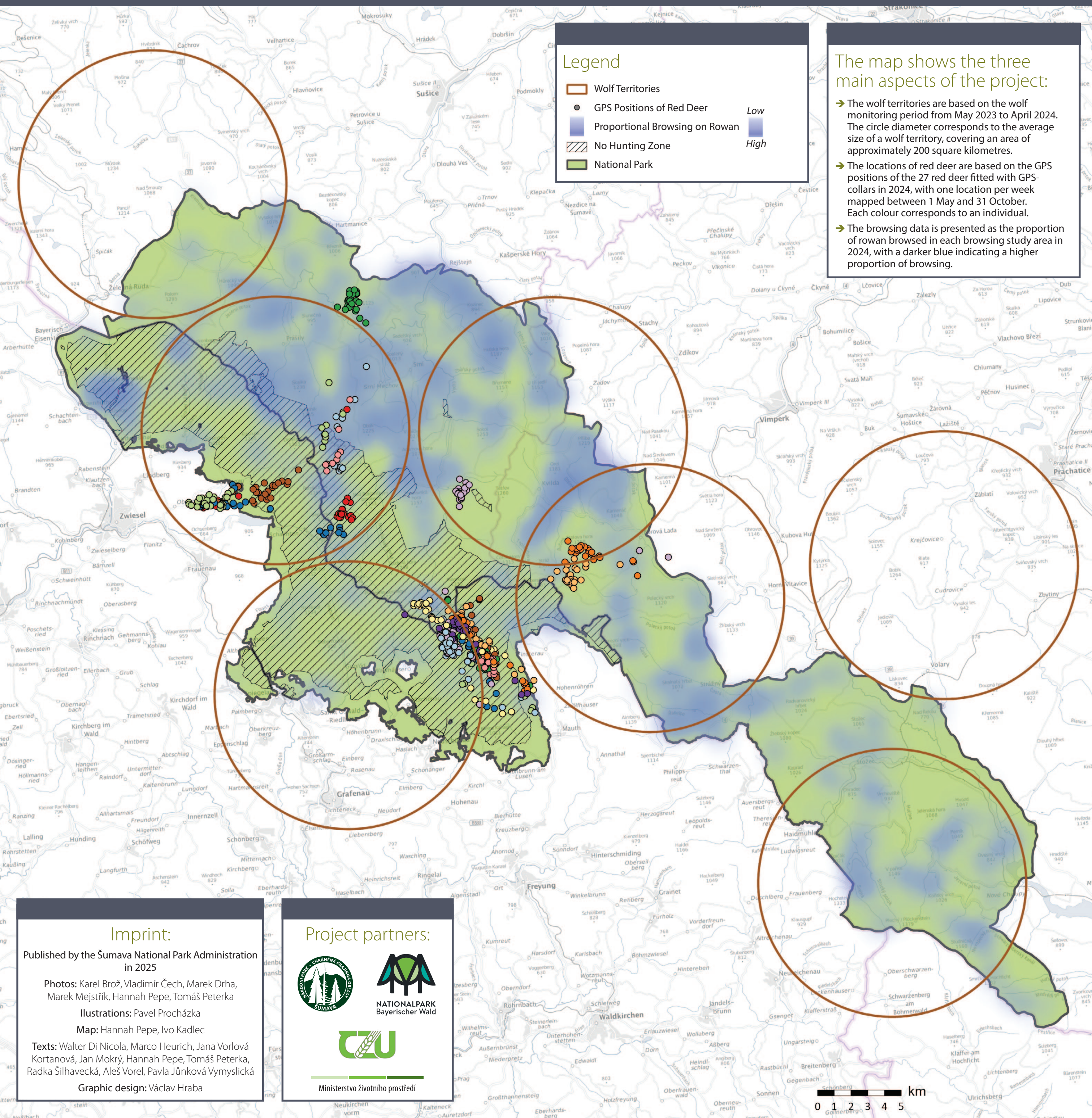
Browsing Monitoring

Browsing refers to the impact that animals have on vegetation by eating leaves, shoots, stems or bark. Browsing on shoots has a strong influence on the growth and survival rate of young trees. Measuring browsing intensity therefore offers a way of assessing the impact of ungulates on forest regeneration. By comparing browsing intensity over time, it is possible to identify the potential effects of the return of wolves on the growth and composition of the forest. The project aims to investigate the possible influence of wolves on browsing and forest regeneration in the Bohemian Forest ecosystem.

Did you know that the tree species most popular with red deer are deciduous trees and fir trees?

➜ In contrast, spruce trees are rarely eaten.
➜ The most popular tree species as a favourite food source for deer in the Bohemian Forest is the rowan.

Ecological impact of the return of wolves on the Šumava/Bavarian Forest ecosystem

Legend

- ▭ Wolf Territories
- ● GPS Positions of Red Deer
- Proportional Browsing on Rowan — Low / High
- ▨ No Hunting Zone
- National Park

The map shows the three main aspects of the project:

→ The wolf territories are based on the wolf monitoring period from May 2023 to April 2024. The circle diameter corresponds to the average size of a wolf territory, covering an area of approximately 200 square kilometres.

→ The locations of red deer are based on the GPS positions of the 27 red deer fitted with GPS-collars in 2024, with one location per week mapped between 1 May and 31 October. Each colour corresponds to an individual.

→ The browsing data is presented as the proportion of rowan browsed in each browsing study area in 2024, with a darker blue indicating a higher proportion of browsing.

Project partners:

NÁRODNÍ PARK · CHRÁNĚNÁ KRAJINNÁ OBLAST · ŠUMAVA

NATIONALPARK Bayerischer Wald

ČZU

Ministerstvo životního prostředí

km
0 1 2 3 4 5