This is a translation of the article Julian Pijls wrote for Nature Today:

Finding the Right Protection Against Wildlife Damage

2-JUL-2024 - ***Our forest ecosystems are vulnerable. Continuous forest regeneration is an important way to enhance the resilience of forests. However, getting this regeneration off the ground is challenging. The main reason: damage to young trees by wild animals such as deer, roe deer, wild boars, and hares. Finding the right protection against wildlife damage remains a challenge.***

Within the LIFE Climate Forest project, de Bosgroepen and Staatsbosbeheer aim to demonstrate how 'climate-smart forest management' can increase the resilience of forests on sandy soils. This way, the forest can continue to fulfill its crucial role for plants, animals, and humans in the future.

Vulnerable Forest Ecosystems

Especially on sandy soils, vitality and biodiversity are under great pressure due to climate change, nitrogen deposition, acidification, drought, heat, insufficient species variety, age, forest structure, and wildlife pressure. Therefore, it is important that the forest regenerates continuously. Pollination and fertilization of trees of the same species result in new characteristics in the regeneration. Through natural selection, only the best traits remain in the regeneration, allowing the forest to adapt to changing conditions. However, in practice, regeneration is difficult to achieve because most forests in the Netherlands have a high wildlife population.

Forest regeneration in one of the demonstration forests of LIFE Climate Forest (Source: Marrie Hoedelmans)

Comparing Protection Measures

A high wildlife population negatively impacts forest structure, species composition, and forest regeneration. Especially young deciduous trees do not develop. As a result, a few tree and shrub species become dominant in the forest. Therefore, protection measures are needed to prevent wildlife damage. In practice, forest managers apply a variety of protection measures. How this is done depends on the manager.

The LIFE Climate Forest project provides an opportunity to showcase the variety of protection measures against wildlife damage and the associated views of managers in the same forest area. Knowledge sharing and dissemination are the main goals. At the same time, it offers the possibility to monitor the effectiveness of the protection measures. This article provides an overview of the protection measures taken so far in the winter of 2023-2024.

Individual Wildlife Protection with Tubes

Tubes protect against wildlife damage but also improve growth. However, they need to be removed after a few years because they do not biodegrade sufficiently and negatively affect the recreational experience. Past plantings have shown that the positioning and placement of tubes are important for the successful regeneration. At the same time, this seems to be species-dependent, as seen with the Norway maple. This is something the initiators within the LIFE Climate Forest project want to gain more experience with.



These individual wildlife protection methods have already been applied at various demo sites (from left to right): Italian nets, planting tubes, bamboo sticks (Source: Bosgroepen)

Italian Nets as an Alternative

An alternative to tubes are 'Italian nets,' which have been increasingly experimented with in recent years. The advantage is that removal is likely not necessary, as the net naturally weathers. The plant gets enough light, so leaves are retained lower on the trunk for growth, which appears to be a problem with less light-permeable tubes. However, placing Italian nets is labor-intensive, and when using forest planting material taller than 100 centimeters, the top shoot can grow out of the net and be eaten.

Research into Bamboo Sticks

Another alternative to tubes is using bamboo sticks combined with forest planting material taller than 150 centimeters. Bamboo sticks seem to prevent wildlife from rubbing against the trunk, and the larger planting material prevents wildlife from eating the entire plant. The remaining leaves can contribute to growth and successful regeneration. This method has been used by Bosgroep Zuid Nederland for several years. The initial results generally show a higher success rate compared to tubes. Within the LIFE Climate Forest project, more experience is desired with the growth development of forest planting material taller than 150 centimeters. It is also still unclear how long the bamboo sticks remain effective against wildlife damage and how much aftercare is ultimately needed to maintain effectiveness.

Choosing Collective Protection

Tubes, Italian nets, and bamboo sticks are forms of individual plant protection. In practice, plant groups or even entire sections are often protected by means of fencing: a form of collective protection. Within LIFE Climate Forest, fences have been placed ranging from four square meters to as large as nine hectares. These are used for the protection of plantings as well as natural regeneration. It is often seen that black cherry (Prunus serotina) and northern

red oak (Quercus rubra) develop well because these species are less affected by wildlife damage. At the same time, seedlings of native oak (Quercus robur) or sycamore (Acer pseudoplatanus) are occasionally found, showing that more should be possible.

Small fences, for example, four square meters, are less common because the costs are higher compared to individual protection. However, using these fences can be interesting as it reduces the risk of the top shoot growing out of protection, which is often the case with Italian nets, for example.

At the same time, due to moderate usage, little is known about effectiveness. The LIFE Climate Forest project provides an opportunity to monitor this further.

Example of a small fence of two square meters, with five Abies bornmuelleriana (Source: Bosgroepen)

We Learn from Each Other

In a time when forests must be able to adapt to rapidly changing conditions, regeneration has become even more important. To regenerate effectively with the current wildlife population, protection against wildlife damage and the right knowledge are needed, as experience shows. Within the LIFE Climate Forest project, there is now the opportunity to learn from each other and to apply the right protection for successful regeneration. This regeneration seems more important now than previously thought.

In the LIFE Climate Forest project, de Bosgroepen and Staatsbosbeheer work together on climate-smart forest management. LIFE Climate Forest is made possible through funding from the LIFE program of the European Union. Additionally, the provinces of Noord-Brabant, Limburg, Overijssel, Gelderland, and Drenthe are sponsors of the project.

Julian Pijls is involved as a project employee at LIFE Climate Forest. (Source: Marrie Hoedelmans)