Conservation Measures for Pseudogaurotina excellens (Cerambycidae) During the Ips typographus Outbreak in Muránska Planina National Park









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The Beetle and Its Host Plant:

Pseudogaurotina excellens

Overall Distribution

Pseudogaurotina excellens is a Carpathian endemic species, occurring in Slovakia, Poland, Ukraine, and Romania. It is very rare and strictly protected in all of these countries. The species is considered to be a preglacial relict.

· Ecology

The Carpathian longhorn beetle typically inhabits forested areas at elevations of 700–1700 m, particularly in valleys and along watercourses where Lonicera nigra occurs in the shrub layer. These shrubs serve as the primary larval host plant. The larvae develop over a period of 2 (occasionally 3) years in the roots or thicker stems of the plant and pupate in chambers beneath the bark. Adults are active in June and July when they can be observed on the host plant. Their presence can also be indicated by emergence holes and feeding marks on Lonicera shrubs with stem diameters of at least 25 mm.

Threats

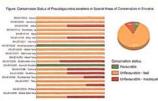
The species is primarily threatened by intensive forest management practices. These include the removal of host plants or their incidental damage during logging operations. Lonicera nigra shrubs are highly sensitive to sudden canopy opening and typically die out after abrupt clear-cutting or logging interventions.

Conservation Status

In the European Union, the species is listed in Annex II of the Habitats Directive, requiring the designation of Special Areas of Conservation under the Natura 2000 network, and also in Annex IV, granting it strict protection. It is classified as Endangered (EN) on the IUCN Red List and as Critically Endangered (CR) on the Slovak national Red List.







Lonicera nigra

Lonicera nigra is a lowgrowing shrub, reaching up to 3 metres in height. It exclusively occurs shaded sites within moderately warm subalpine zones, thriving in lush, moist to moderately dry skeletal soils rich in humus. Typical habitats rocky outcrops, include gullies, ravines, and the understory of acidophilous and species-rich beech and spruce forests.









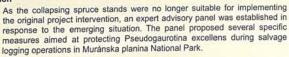


Management Framework, Challenges, and Solutions

One of several management measures proposed under the LIFE-IP NATURA 2000 SVK project (Role of the Natura 2000 network and management of some prioritized habitats in the integrated landscape protection in the Slovak Republic), scheduled for implementation between 2021 and 2030 in the Muránska planina project area, was the selective felling of individual trees or small tree groups, with a maximum area of 0.05 ha. The goal of this measure was to enhance the ecological stability of forest environment and to promote the development of a permanent multi-layered fcrest structure. Additionally, over an area of at least 100 ha, habitats of Pseudogaurotina excellens were to be protected from logging by visible marking or fencing of the sites, in order to prevent damage to the host plant Lonicera nigra



The proposed forestry measure was targeted at even-aged stands with altered tree species composition in favour of Norway spruce (Picea abies). However, following the extremely dry summer of 2022, a mass outbreak of Ips typographus occurred, particularly in these spruce-dominated stands. These stands are located outside the non-intervention Zone A of Muránska planina National Park, within areas where naturally Fir-Beech (Abieto-Fagetum) forest type should occur.





- Conduct detailed pre-harvest mapping of forest stands and clearly mark the locations of Lonicera nigra
- Avoid intervention in stands where Lonicera nigra individuals with stem diameters ≥3 cm are present, or Advisit merver and the state of the state of
- In sites with Lonicera shrubs of ≤2 cm stem diameter, fell trees directionally and extract them in a way
- In sites with Lonicera shrubs of \$\(\) \$\infty\$ Critistem diameter, fell trees directionally and extract them if a way that avoids damaging the shrubs. Alternatively, trees may be retained, delimbed and debarked on site, or the bark surface can be disrupted by mechanical shredding.
 Train forestry workers involved in logging operations to identify Lonicera nigra in the field.
 Preserve natural regeneration of target, preparatory and pioneer tree species within logged stands and ensure that regenerating individuals are not damaged during forestry operations.
 In areas where Lonicera nigra is absent for more than 500 m between known occurrence sites, attempt to create new stepnious-tree behilds by obstition young shrubs.

- to create new stepping-stone habitats by planting young shrubs

Summary

The Carpathian longhorn beetle (Pseudogaurotina excellens) is a species of European importance, a Carpathian endemic and it is critically endangered in Slovakia. Only 6.5% of its monitored localities are in favourable conservation status. The situation in Muránska planina National Park is currently assessed as favourable.

This monophagous beetle is developmentally dependent on host plant Lonicera nigra. It is colonising only mature stems of this shrub (typically over 20-25 years old) within coniferous or mixed forests and often near springs and streams. The host

shrub is highly sensitive to sudden canopy openings and tends to dry out rapidly after intense logging.

Following the extreme drought of 2022, an outbreak of lps typographus occurred, especially in Norway spruce (Picea abies) stands outside the non-intervention Zone A of Muránska planina National Park, within natural Fir-Beech forest zones. These stands were originally intended for the reduction of spruce occurrence and forest structure diversification.

The park administration has identified 111 ha of forest stands

outside the non-intervention zone with either confirmed or potential occurrence of Pseudogaurotina excellens (suitable microclimatic conditions and presence of mature or juvenile individuals of Lonicera nigra).

Despite forestry legislation requiring the felling of beetle-infested trees, the Muránska planina National Park Administration refrains from salvage logging in sites with confirmed beetle presence. In potential habitats, logging is either completely avoided or performed with minimal intervention, without heavy machinery, to prevent damage to Lonicera nigra.

As a future habitat support measure, selective thinning in young, dense spruce stands and planting of Lonicera nigra shrubs is planned in ecological corridors between beetle populations to ensure future availability of suitable host shrubs for larval development.

As a supportive action, training sessions for forestry professionals have been conducted to raise awareness about the species' ecology and protection needs. Logging staff are briefed prior to operations to recognize and protect Lonicera nigra shrubs in the field.

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