Tatry Biosphere Reserve, Slovakia

Ivana Hudačková

Key Messages/Lessons learnt

- The conservation function of the Tatry Biosphere Reserve remains overall very strong. Conservation management of valuable habitats is impossible at larger scale without involvement of local inhabitants. In this way, conservation and sustainable development in the Tatry BR are interlinked very closely.

Biosphere Reserve description

The territory of the transboundary Tatry Biosphere Reserve covers two national parks on either side of the political boundary between Poland and Slovakia. The Slovak side of the Tatry Biosphere Reserve is made up of the Tatry National Park – Tatranský národný park (TANAP) and the Polish side is made up of the current Tatry National Park – Tatrzański Park Narodowy (TPN).

The selfhood and quaintness of the natural conditions of the Tatry BR lies above all in their high mountain character. This is reflected in the distinctive landscape differentiation, which depends mainly on the orographic layout, massiveness, extent and height of the mountain range. The complex geological development, the extremely rugged surface, and the changing climatic conditions made it possible to preserve the immediately following postglacial processes and condition in the Tatra Mountains on the largest surface today.

The Tatry BR encompasses the three mountain ranges of the region, the High Tatras, the Western Tatras and the Belianske Tatras. It has a special position within a Carpathians Arch due to its outstanding attributes including:

• Unique high mountain relief with distinct features of former glacial activity
• Numerous glacial lakes (tarns)
• Numerous endemic plant and animal species (Carpathian endemics)
• Largest alpine zone in Slovakia
• Outstanding alpine Larix decidua and Pinus cembra forests
• Well preserved natural forests in spruce forest zone.

The manifold color of the territory is enhanced by preserved features of traditional folk culture. The folk culture and folklore of this region have many things in common, but they also differ significantly from neighbouring regions in Poland and Slovakia. These differences are manifested in folk costumes, folk clothing, music, dancing and singing.

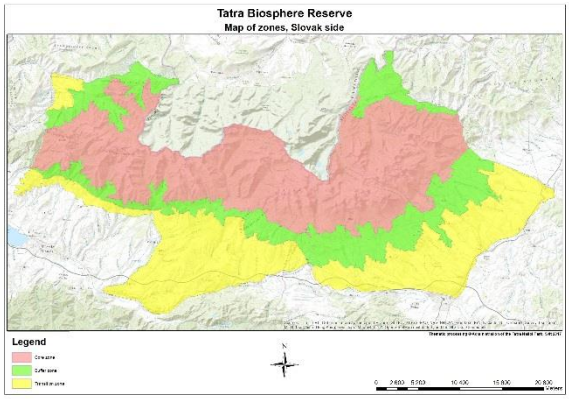

Figure 1: Map of the Tatry Biosphere Reserve, Slovak side

Photo 1: Peaks of Tatry

BR challenges

The vast majority of non-forest habitats in the territory of the Tatry Biosphere Reserve lies above the forest's upper limit, where only limited human activities that do not directly affect the biota occur in the past and nowadays. This territory can be classified as preserved, to a large extent the original and the status of these habitats as favorable. The partial exception is the subalpine stage, where historically there has been an interference with the original expansion of the *Pinus mugo*. In this part of the territory, since the TANAP declaration, grazing has been excluded, which is the acvity that caused the greatest interference, with the biota gradually regenerating and returning to the original state. The habitats of the mountain range – predominantly biotopes of meadows and peat bogs are under the greatest anthropic influence. The meadows have undergone significant changes in the 60s to 80s of the last century during the intensification of agricultural production. The meadows near the forest stands and the forest area were used as wood storage, which negatively reflected on the species composition of these areas. Fens are most negatively affected by gradual ingress and disruption of the water regime.

Remnants of both meadow and fen communities, which were not directly destroyed, are currently threatened mainly by secondary succession due to the absence of extensive management (mowing, grazing).

Initiatives/Actions on SDG XX

Except for others and most explicitly, the Tatry Biosphere Reserve contributes to SDG 15: Life on Land, which aims to protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.

In the basin below the Tatry peaks, conditions favourable for fen formation occur. This specific type of wetland is often to be found in the terrain hollows and around springs. They are characterized by permanently wet environment without access of air, where dead and not entirely decomposed parts of plants are deposited and peat is formed.

Fen exploitation, especially in the last two decades, caused that unspoiled fens are very rare in the Central Europe nowadays and should be protected. This is why in Europe public pressure increases for the restoration of fens, which were heavily damaged by drainage and agricultural pollution.

Most of Tatry fens used to be mowed in the past. This traditional way of management was abandoned after mechanisation was introduced in the 2nd half of the 20th century. Since 1950s, people in the area started to lose interest in the traditional way of management, which caused the fen biotopes to be gradually overgrown by woods, especially by birches and willows, and the reed spread in the area as well.

Mowing is an important management tool, and it has proven successful in maintaining species richness, particularly in fens that have been mowed annually for centuries. At present, mowing is carried out with light, usually small, machinery adapted to the sensitive fen environment, such as pedestrian-driven mowers. Tyres are frequently specifically adapted (low pressure, twinned wheels). Cut biomass is then gathered and removed from the site. This method, particularly the collecting and disposing of material, is very labour intensive.

The use of fertilizers and grazing is not recommended for calcareous fens. If the site is located within a grazed area, the fen should be fenced off. Habitats usually adapt to management. Only extremely wet sites with a dominance of moss communities can cope with lack of management or could be managed infrequently – at intervals of 3 to 5 years, for example. The optimal time for mowing is late summer, when the sites are not as wet as in spring or early summer.

Hand mowing is often a preferred form of management on very small reserves. This is not possible on larger areas. Specially-adapted mowing machines that do not damage the soil are needed.

In the territory of the Tatry Biosphere Reserve there are several localities where active managements to preserve fens are implemented. We could mention Belianske lúky – the largest preserved fen system in Slovakia, as well as localities Mraznica, Švihrová or Medzi Bormi.

Photo 2 and 3: Mowing overgrown fen at locality Belianske lúky

Practical Outcomes/Achievements

Fens are considered in Slovakia to be very rare, endangered and often relic communities represent important biotopes for many unique plant and animal species, especially invertebrates.

Fens act in a number of different ways to regulate the environment. Through the active managements we are able to achieve a favourable condition of unique biodiversity but in addition to this, fen functions include water purification, flood prevention, and carbon storage, which have become increasingly important since the recognition of global warming. Peatlands are one of the major global carbon stores and play a key role in controlling the levels of carbon dioxide in the atmosphere and thereby mitigating climate change.

Photo 4: *Ledum palustre*, a representative species of fen plants, which requires wet and sunny locations. Active management is suitable form to maintain and protect the biotop previous to overshadow and overgrow by woods and shrubs.

References

KOL., 2009: Program starostlivosti o národnú prírodnú rezerváciu Belianske lúky na rok 2009 - 2018, DAPHNE – Inštitút aplikovanej ekológie a Štátna ochrana prírody SR, Správa Tatranského národného parku, Tatranská Štrba, 43 s.

KOL., 2018: Pripravovaný Program starostlivosti o Tatranský národný park na rok 2019 - 2028, Štátna ochrana prírody SR, Správa Tatranského národného parku, Svit, 250 s.

VOLOŠČUK, I. a kol., 1994: Tatranský národný park. Biosférická rezervácia. Vydavateľstvo GRADUS, Martin, 555 s.

VOLOŠČUK, I., 2000a: Trvalo udržateľný rozvoj v Biosférickej rezervácii Tatry. SNK programu UNESCO MAB, vyd. Technická univerzita vo Zvolene, 29 s.

http://daphne.sk/staryweb/mm/manazmentove-modely

Correspondence:

Postal address:
Správa TANAP-u
Ul. kapitána Nálepku 2
059 21 Svit
Slovak Republic

Website:
http://tanap.sopsr.sk/
http://spravatanap.sk/web/index.php

Email:
stanap@sopsr.sk