EUROPARC TRANSPARCNET MEETING

Planning for action: how to plan and react to climate change effects in Protected Areas.

2-5 September 2024

Háldi Transboundary Area

Transboundary Parks
EUROPARC

Reisa National Park

FORSTSTYRELSEN MEAHCIRÁÐÐEHUS METSÄHALLITUS

EUROPARC FEDERATION

(c) Nella Sergejeva

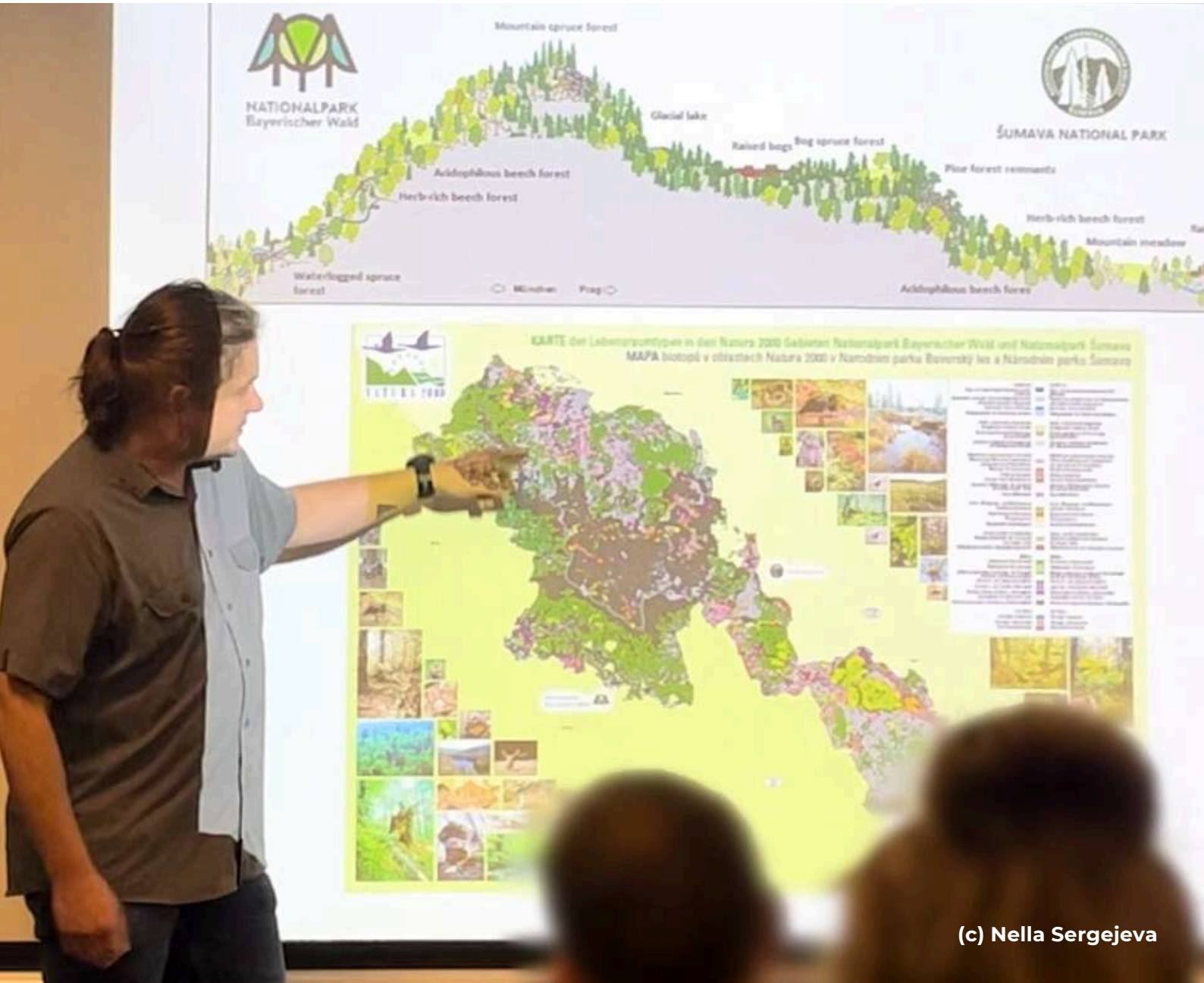
TransParcNet 2024
Where did we meet?

Hosted across Reisa National Park in Norway and Käsivarsi Wilderness Area in Finland, **TransParcNet 2024** brought together experts, policymakers, and conservationists. Their goal was to address the urgent issue of climate change and its impact on **Transboundary Protected Areas**.

Programme Highlights

Field Trips and Sessions: The event featured a balanced programme of field trips, educational sessions, and informal discussions. Participants had the opportunity to explore both Norway and Finland, experiencing the unique environmental challenges and adaptation strategies firsthand.

Expert Insights: Presentations included topics such as the impacts of climate change on local species and ecosystems, large-scale nature restoration efforts, and EU policies supporting cross-border cooperation.



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Networking and Cultural Exchange:
The Meeting also emphasised the importance of networking and cultural exchange. Participants enjoyed local cuisine, cultural events, and had opportunities to build both personal and professional connections within the **Transboundary Parks Network**.

Meeting Highlights:
Insights from presentations

Presentation 1: Climate change impacts on species & ecosystems in the Fennoscandian High North

During the presentation titled "Climate Change Impacts on Species & Ecosystems in the Fennoscandian High North", Rolf A. Ims from the Department of Arctic and Marine Biology at UiT and the Climate-ecological Observatory for Arctic Tundra focused on the significant ways in which climate change is altering ecosystems in the high northern latitudes.

Key Ecosystems Affected:

- Mountain Birch Forest
- Northern Boreal Coniferous Forest
- Sub-/Low-Arctic Tundra

Climate Warming Effects:

- **Carbon Sink to Carbon Source:** Warming increases ecosystem respiration and bio-degradation.
- **Permafrost Thawing:** Rapid warming in Norwegian Low Arctic affecting permafrost stability.

Vegetation Changes:

- **Greening in tundra regions** (dwarf shrubs and grasses increase).
- **Browning in boreal forests** (due to drought, fires, insect outbreaks).

Key Impacts

- **Shrubification**: Expansion of tall shrubs contributing to warming, prevented in areas with high reindeer presence.
- **Boreal Forest Browning:** Caused by drought, fires, and moth infestations.
- **Winter Climate Changes:** Fewer cold days increase pest invasions and ice-related herbivore mortality.

Presentation 2: Planning for a changing climate & the RAD framework

American NPS Climate Change Response Programme

The **American National Park Service (NPS)** Climate Change Response Programme, presented by **Dr. Wylie Carr**, has developed a comprehensive strategy to address the impacts of climate change on national parks, focusing on four core areas:

- **Understanding:** Analyse climate science and its effects on ecosystems.
- **Adapting**: Develop strategies to manage changing conditions.
- **Mitigating:** Implement measures to reduce the causes of climate change.
- **Communicating:** Engage the public and stakeholders in climate adaptation efforts.

Climate Change Adaptation: The RAD Framework

The **Resist-Accept-Direct (RAD) Framework** is central to the NPS's approach to climate adaptation, providing flexible strategies for managing ecological changes in national parks:

- **Resist:** Efforts to maintain or restore historical conditions.
- **Accept:** Acknowledge and manage inevitable changes without intervention.
- **Direct:** Actively guide changes towards desired outcomes.

The RAD Framework helps address non-stationarity—the reality that natural systems are no longer stable due to climate change.

Real-World Application

- **Cuyahoga Valley National Park:** Shifting from resisting invasive species to accepting their presence as a new ecological norm.
- **Adaptive Management:** Parks use the RAD approach to tailor responses to local conditions, choosing when to resist, accept, or direct changes.

Public Engagement

The NPS is actively educating the public about the **RAD Framework** and its role in climate adaptation. Resources on the **NPS website** provide practical guidance on understanding and applying this approach.

Conclusion

The RAD Framework is a **flexible**, **strategic** tool that allows the NPS to navigate the challenges posed by climate change. By balancing resistance, acceptance, and direction, national parks can adapt to **evolving ecosystems** while continuing to preserve their natural and cultural resources.

Presentation 3: LIFE Natur'Adapt project: adapting Protected Areas to climate change & exemplifying large-scale nature restoration practices

The **LIFE Natur'Adapt** project, presented by **Nella Sergejeva from EUROPAC Federation**, was focused on helping **Protected Areas adapt to the impacts of climate change**.

The project had three main goals:

- **Developing a Methodology:** Create a framework for integrating climate change into the management plans and practices of protected areas.
- **Supporting Protected Area Managers:** Provide tools, training, and guidance to help assess climate vulnerabilities and develop effective adaptation strategies.
- **Building a Community:** Foster a network of professionals to share knowledge, experiences, and best practices in climate adaptation.

Useful Post-project Programmes

Feel free to use the LIFE Natur'Adapt project outputs:

- Methodological guide to adapting to climate change
- Climate change adaptation approaches of experimental and test sites
- Climate change adaptation measures

Furthermore, you are invited to join the Natur'Adapt Community, which has over 1400 members, who collectively want to move the adaptation to climate change in Protrcted Areas forward. They do so by exchanging news, information, providing feedback and asking questions. You can register here or by scanning the QR code.

As part of the **NaturADAPT** project, **Jeremy Roberts** from **Cairngorm Connect** discussed the crucial role of large-scale nature restoration in climate adaptation. **Cairngorms Connect**, a partnership of four land managers, is working to restore ecosystems across 600 km² in the heart of Scotland, with a long-term vision spanning 200 years. Jeremy highlighted the importance of their restoration projects, which focus on key ecosystems—**woodlands**, **peatlands**, and **rivers**—that are essential for **carbon storage**, **biodiversity**, and enhancing **climate resilience**. Effective **deer population management** is also a priority, as it supports forest regeneration and helps maintain ecosystem balance, further aiding climate adaptation. Additionally, the project actively involves **local communities** in decision-making, ensuring that the benefits of restoration are understood and supported. Jeremy emphasised that their **collaborative approach** serves as a model for large-scale restoration, demonstrating how resilient ecosystems can be built to adapt to the challenges of climate change. For more information on Jeremy's presentation, please refer to this video.

Credit: "A conversation on climate change CC BY-SA LIFE Natur'Adapt." EUROPARC Federation, 2022.

Presentation 4: EU policies supporting cross-border and regional cooperation for Protected Areas

EU Policies for Cross-Border and Regional Cooperation

The **European Union (EU)** plays a pivotal role in fostering cross-border and regional cooperation, particularly with its neighbouring countries. These efforts are designed to promote **political stability**, **economic growth**, and **security** in regions surrounding the EU, contributing to the broader goal of a **more connected and resilient Europe**. During the **2024 TransParcNet Meeting**, **Stefania Petrosillo**, the EU Consultant, has therefore presented several key policies and financial mechanisms that the EU employs to achieve these aims:

- **European Neighbourhood Policy (ENP)** and **Enlargement Negotiations**: Through the ENP, the EU collaborates with 16 of its closest neighbouring countries, strengthening economic and political ties. The goal is to **create a zone of prosperity and stability at Europe's borders**. The Enlargement process extends similar cooperation, aiming to bring new countries into the EU by aligning their political and economic systems with EU standards. Both the ENP and enlargement processes are crucial in **stabilising neighbouring regions** by **promoting governance reforms**, **economic development**, and enhanced **security cooperation**.

- **Financial Instruments (2021-2027)**: To support cross-border initiatives, the EU has established funding mechanisms such as the **Neighbourhood, Development**, and **International Cooperation Instrument (NDICI – Global Europe)** and **Instrument for Pre-Accession Assistance (IPA III)**. NDICI serves as a comprehensive tool to support global and regional projects, prioritising areas such as **sustainable development**, **climate action**, and **peacebuilding**. IPA III, on the other hand, is specifically targeted at countries in the **EU's enlargement process**, helping them prepare for EU membership through reforms and integration initiatives. These instruments provide vital funding to assist regions in addressing shared challenges, particularly in sectors where **transnational cooperation** is essential.

- **Regional Programmes:** Several regional cooperation programmes are in place to promote collaboration between EU member states and neighbouring countries. For example, the **Kolarctic and Karelia programmes** focus on Northern European regions, strengthening ties between the EU and Russia through environmental and economic projects. The **Italy-Tunisia Programme** enhances Mediterranean cooperation, tackling issues such as migration, sustainable tourism, and economic development. The **Baltic Sea Region Programme** aims to foster collaboration across nine countries, working on joint efforts to improve water quality, economic connectivity, and energy efficiency in the region. These regional initiatives are crucial for addressing both common challenges and opportunities, and they are tailored to the unique needs of each geographic area.

Key Areas for Cooperation and Synergies

Several thematic areas have been identified as crucial for cross-border cooperation, particularly in relation to environmental protection and sustainability. These areas are of **strategic importance to the EU's wider policy goals**, given the increasing urgency of tackling climate change and preserving biodiversity.

- **Environmental Protection and Climate Change Mitigation:** Cooperation on issues such as water protection, plastic pollution, and climate change mitigation is central to the EU's regional strategy. By collaborating across borders, countries can share best practices and technologies, improving resilience to climate impacts and reducing pollution. **Nature-based solutions**, which use ecosystems to address environmental challenges, are gaining prominence in EU policies, as they not only help mitigate climate change but also support biodiversity conservation.

- **Marine Protected Areas (MPAs) and Regional Sea Cooperation:** The management of MPAs is another key focus, particularly given the transboundary nature of marine ecosystems. Regional sea cooperation initiatives aim to ensure that countries bordering shared seas, such as the Baltic and Mediterranean, work together to protect marine biodiversity and manage resources sustainably. Protecting these areas requires coordinated policies to **prevent overfishing**, **reduce marine litter**, and **enhance biodiversity**.

- **Biodiversity Conservation** – **Emerald Network** and **Natura 2000**: Initiatives like the **Emerald Network** and **Natura 2000** were highlighted for their role in safeguarding biodiversity across Europe and neighbouring regions. **Natura 2000** is the largest network of protected areas in the world, ensuring the long-term conservation of Europe's most valuable species and habitats. **The Emerald Network** extends this effort to non-EU countries, promoting the preservation of natural habitats in line with EU environmental laws and policies (EU acquis).

- **Synergies between TransParcNet and Cross-Border Protected Areas:** The potential for synergies between **TransParcNet**—a network of cross-border protected areas—and other protected zones was also emphasised. These networks foster collaboration between regions that share natural resources, ensuring coherent management and protection strategies. Exploring financial tools such as **NDICI**, **IPA**, and **cross-border cooperation (CBC) funding** is essential for securing resources to maintain and expand these conservation efforts.

Transboundary Conservation Specialist Group (TBCSG)

Led by Stefania Petrosillo, the **Transboundary Conservation Specialist Group (TBCSG)** is dedicated to promoting transboundary conservation, fostering peace, and preserving both natural and cultural values across borders.

Key Aims: The group focuses on strengthening **knowledge** through the development of a **global database,** providing technical guidance, and building capacity through training and webinars. These efforts aim to equip stakeholders with the tools and expertise necessary for effective cross-border conservation.

Collaboration with TransParcNet: The group has explored ideas for collaboration with TransParcNet, including joint case studies, knowledge hubs, and shared webinars to enhance cross-border conservation strategies. These initiatives are intended to foster deeper cooperation and improve conservation efforts across national boundaries.

TransParcNet and Global Conservation Networks

Synergies between **TransParcNet** and **other global conservation networks** were emphasised, with potential for collaboration with organisations such as **IUCN**, **UNESCO**, and regional networks like **Dinarides Parks**. **UNESCO's Man and the Biosphere (MAB) Programme** and its regional networks, including **EuroMAB** and **Mediterranean Biosphere Reserves**, were identified as key areas for expanded cross-border collaboration.

Challenges and Political Landscape

The presentation acknowledged the **challenges** posed by the **global political landscape**, including ongoing wars and instability, which may affect EU policies and international cooperation.

Conclusion

The presentation outlined the critical role of **EU policies** and **financial instruments** in fostering cross-border cooperation for Protected Areas. It highlighted the need for **continued cooperation** in addressing challenges like **biodiversity loss** and **climate change** while considering the effects of **political instability**. The synergies between TransParcNet and global conservation networks will be vital for future conservation and collaboration efforts.

Presentation 5: TRANSNATURE project: enhancing transboundary governance for biodiversity protection

Project Overview

The **TRANSNATURE** project, presented by **Nuccio Mazzullo** from the Arctic Centre, University of Lapland, explores governance models for biodiversity protection across European borders. It focuses on improving cross-border management and safeguarding natural resources.

- **Funding:** Supported by the 2021-2022 Joint Call for biodiversity and ecosystem protection. Out of 209 proposals, 36, including TRANSNATURE, were funded.
- **Consortium:** A collaboration of Eurac Research (Italy), Arctic Centre (Finland), Universitat Rovira i Virgili (Spain), and University of Ghent (Belgium).
- **Project Duration:** 36 months (March 2023 – February 2026).

Main Goals

- Study **governance models** for transboundary biodiversity protection, focusing on the actors, interactions, and outcomes.
- Identify **successful conservation models** across borders.
- Improve **governance practices** for biodiversity protection in transboundary areas.

Key Case Studies

The project examines four key transboundary areas across Europe:

Spain-Portugal: ZASNET EGTC and Meseta Ibérica Biosphere Reserve

- The ZASNET EGTC, established in 2010, manages the first Transboundary Biosphere Reserve between Spain and Portugal. It promotes local community participation in governance, showcasing successful bottom-up approaches.

Belgium-Netherlands: Scheldt Estuary

- A critical habitat for water birds and marine life, the Scheldt Estuary balances ecological conservation with economic interests through the Scheldt Estuary Development Scheme.

Italy-Slovenia: Julian Alps (Prealpi Giulie and Triglav National Parks)

- Cooperation between Triglav National Park (Slovenia) and Prealpi Giulie Natural Park (Italy), recognised as a transboundary ecoregion, promotes ecological connectivity and sustainable tourism. The region is certified by the Alpine Convention.

Finland-Norway-Sweden: From Baltic to Barents

- Cooperation across the Lapland borders focuses on managing marine and mountainous habitats. Indigenous Sámi communities play a central role in joint governance of the Háldi Transboundary Cooperation Area.

Research Methods

The project employed a mix of:

- **Empirical Research:** Desk research, mapping, interviews, and focus groups.
- **Stakeholder Engagement:** Meetings, interviews with local actors, and development of policy recommendations.

Key Findings

- **Spain-Portugal (ZASNET): Local community** involvement in governance leads to effective biodiversity protection, demonstrating the value of participatory models.

- **Belgium-Netherlands (Scheldt Estuary):** Bilateral cooperation balances **ecological goals with economic interests**, protecting rare environments while ensuring safety.

- **Italy-Slovenia (Julian Alps):** Cross-border collaboration is a successful model for park management in mountainous regions, boosted by **international recognition.**
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- **Finland-Norway-Sweden (Baltic to Barents): Indigenous knowledge and joint river basin management** showcase successful cross-border governance for ecosystem protection.

Conclusions and Policy Recommendations

The presentation emphasised:

- **Strengthening governance structures** in transboundary areas through **local community** involvement.
- **Balancing conservation with economic development** for sustainable growth.
- **Sharing best practices across Europe** to foster effective transboundary biodiversity protection.
- **Policy integration** to ensure cross-border cooperation supports both biodiversity conservation and local economies.

Presentation 6: The situation in the Bohemian Switzerland National Park after the wildfire in 2022

The situatiion in the **Bohemian Switzerland National Park** was futher explained by **Tomáš Salov.** Located in the Czech Republic and part of a transboundary region with Saxon Switzerland in Germany, the National Park faced severe environmental challenges culminating in a catastrophic **wildfire** in 2022. This event followed significant **landscape changes** from 2018 to 2022, driven by **windy winters**, **prolonged droughts**, and **extensive spruce monocultures**, which made the ecosystem vulnerable to **bark beetle infestations**.

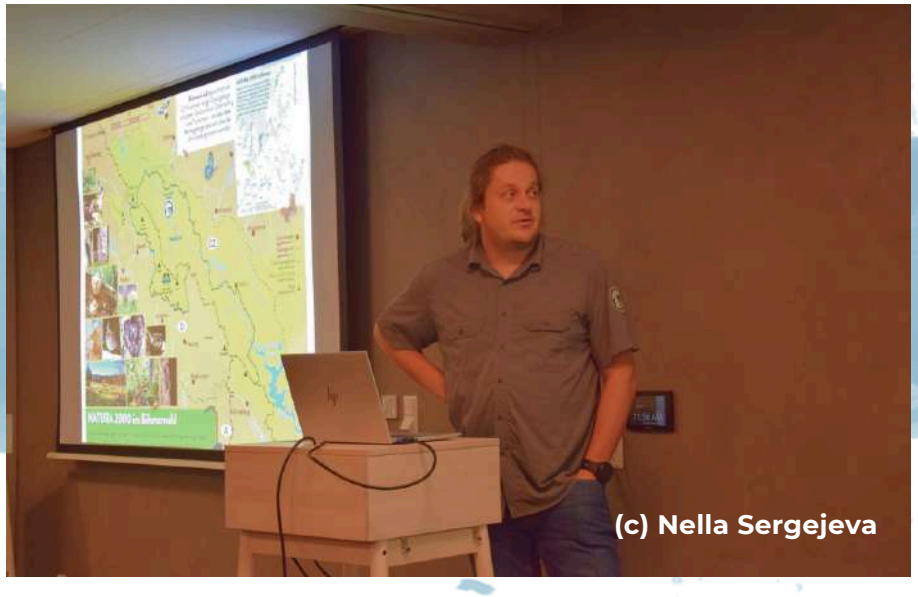
The wildfire began on the night of July 23, 2022, triggered by **human activity** after a drought, affecting 1,060 hectares in the Czech Republic and around 150 hectares in Germany. Various fire types, including **ground and canopy fires**, caused widespread destruction of both natural and man-made areas, altering the landscape and raising safety concerns for nearby communities.

In response, the park administration implemented **fire prevention measures**, including **creating natural firebreaks**, **upgrading infrastructure for firefighting**, and **increasing staffing for better monitoring**. Despite the devastation, early signs of **ecological recovery** were observed by June 2023, with new growth emerging in affected areas. By October 2023, substantial **regrowth** was noted, demonstrating **resilience**.

The wildfire highlighted the growing impact of climate change on local ecosystems, prompting the park to enhance **communication** and **stakeholder engagement** regarding fire risks and ecological adaptation. Overall, while challenges remain, **proactive steps toward forest regeneration and safety measures** offer hope for the park's long-term recovery.

Presentation 7: Transboundary cooperation in the Bohemian Forest – adaptation measures to climate change

The updates on the **Bohemian Forest**, shared between **Šumava National Park** (Czech Republic) and the **Bavarian Forest National Park** (Germany), were presented by **Martin Starý**. The transboundary cooperation between the two National Parks exemplifies successful work in adapting to climate change challenges. This presentation summarised recent **forest management strategies**, **environmental challenges**, and **restoration projects** aimed at mitigating climate impacts and promoting sustainable land management.



On August 24, 2024, a small **wildfire** near Černý Kříž in Šumava National Park burned approximately 1,800 square meters of vegetation. This incident underscored the need for enhanced **fire prevention** and **management strategies** in the park.

Often called the "Roof of Europe," the Bohemian Forest captures significant amounts of water but faces disruptions due to **human activities** that **drain** the landscape. It is home to **Europe's major watershed**, separating rivers flowing into the Nordic and Black Seas. Key hydrological data includes an average runoff of **14.1 m^3/s** and varied temperatures, with record lows reaching **-41.6°C**. Precipitation can be as high as **1,600 mm** annually, and snowfall ranges from **60 to 150 cm**.

The **Bohemian Forest** faces several challenges necessitating cooperation between the parks, including:

- **Political Instability:** Šumava has not yet achieved IUCN Category II status.
- **Ownership Structure:** Fragmented forest land ownership complicates management.
- **Financing:** Over 50% of Šumava's budget relies on logging, hindering conservation.
- **Visitor Management:** Infrastructure and language barriers require careful coordination.
- **Local Involvement:** Engaging local communities is vital for sustainability.
- **Wildlife Conflict:** Managing conflicts between large carnivores and local farmers is essential.

Climate change is altering temperature, precipitation, and species distribution, impacting ecosystems. Key challenges include **rising temperatures**, **erratic snowfall**, and **shifting species**, prompting changes in management strategies to preserve biodiversity.

Significant initiatives include the **LIFE for Mires project** (2018–2024), which aimed to **restore wetlands** across 2,059 hectares with a budget of €6 million. Key outcomes included the **restoration of 47 localities** and **improved water retention** through closed drainage channels. At Pod Skelnou, 42 hectares of spring areas were restored, enhancing groundwater levels and cooling effects.

Stream restoration has also been prioritised, with natural floodplains mitigating flood risks. The **Rybárny stream**, fully restored in January 2022, exemplifies these efforts.

To combat increasing forest fire risks, Šumava National Park has enhanced **fire preparedness**. Measures include **establishing designated water sources** and **maintaining forest roads for quick access by emergency responders**.

In conclusion, Šumava and Bavarian Forest National Parks highlight the **importance of transboundary cooperation** in addressing climate change. Their focus on **hydrological restoration**, **climate adaptation**, and **fire prevention** is crucial for safeguarding the Bohemian Forest's ecosystems and building a resilient future.

Presentation 8: Impact of climate change on the Arctic-Alpine tundra in the Krkonoše Mountains

The presentation of **Jakub Kašpar** focused on the **significant effects of climate change** on the **Arctic-alpine tundra** in the **Krkonoše Mountains**, which straddles the border between Czechia (Krkonošský Národní Park) and Poland (Karkonoski Park Narodowy). Both parks, established in 1963 and 1959 respectively, have been **collaborating closely** to address shared environmental challenges, utilising a common logo since 2013 to signify their partnership.

The Krkonoše Mountains are home to a unique **Arctic-alpine tundra ecosystem** covering 47 square kilometers, with 32 square kilometers located in Czechia and 15 square kilometers in Poland. This area is characterised by a **diverse mix of species** from Scandinavian, Central European, and Alpine regions, housing glacial relics and endemic species that are particularly vulnerable to the impacts of climate change.

The effects of climate change in this fragile environment are becoming increasingly evident. One notable change is the **upward shift of the forest boundary,** which is r**ising at an alarming rate of 43 centimeters** per year due to warming temperatures.

This shift has resulted in a longer growing season for **spruce trees**, leading to **reduced mortality rates among seedlings**. Interestingly, the number of **avalanches** in the region has halved, likely due to altered snow conditions that accompany changing climate patterns. Additionally, certain species, such as the **tick** (Ixodes ricinus), have begun migrating to higher elevations, indicating a significant shift in local biodiversity.

The **drying** of **wetlands** and **peatlands**, crucial components of the tundra ecosystem, is another concerning development. These essential habitats are experiencing drying conditions, which are exacerbated by the phenomenon of **shrubification**, where shrubs are increasingly encroaching upon traditional tundra habitats. This encroachment puts additional pressure on vulnerable plant species. For instance, the **Narcissus anemone** (Anemonastrum narcissiflorum), one of the most endangered species in the region, faces heightened competition from expanding populations of **heather** (Calluna vulgaris) and **blueberry** (Vaccinium myrtillus).

Long-term monitoring at key sites like Studniční hora has shown significant changes in the Arctic-alpine tundra. Research plots established in 2008 have provided **crucial data**, with recent photos highlighting the effects of climate change.

A key discussion point was the debate over **intervention** in national parks. Management must balance necessary actions to protect ecosystems while meeting NATURA 2000 obligations, raising questions about the **level of human intervention** needed to safeguard this unique environment.

The forests of the Krkonoše Mountains have faced **historical deforestation** due to **mining and timber industries** from the 16th to 19th centuries. **Restoration efforts** now aim to convert **commercially planted spruce forests** to more natural states and to **restore drained wetlands** from past human activities.

The **meadows** in the region, shaped by centuries of human activity, require ongoing management. After World War II, traditional practices were disrupted, harming ecosystems. Current management relies on **EU subsidies** and emphasises the role of **small farmers**, but shrubification, particularly from blueberry expansion, threatens biodiversity.

In summary, the Arctic-alpine tundra is experiencing **profound changes** due to climate change, including **shifts in forest boundaries** and **drying wetlands**. While restoration efforts are in progress, **managing tundra areas**—particularly regarding **intervention**—remains a critical challenge. The presentation highlighted the need for **continued research and dialogue** to preserve this fragile ecosystem for future generations.

Presentation 9: Building a climate change adaptation strategy for the Protected Area network in Finland

Developing a **climate change adaptation strategy** for Finland's Protected Area network requires a **multi-layered approach** that addresses where and how climate change will impact habitats and species, thinks **Santtu Kareksela**, a presentor from Parks & Wildlife Finland, Metsähallitus. A key element is the **combination of spatial data models** with **assessments of habitat sensitivity and biodiversity irreplaceability**. This strategy involves three essential components: **understanding the rate of climate change**, **assessing the sensitivity of habitats**, and **evaluating biodiversity irreplaceability** to highlight areas of highest conservation priority.

Finland's approach includes a **spatially explicit climate change rate model** to predict where and how climate will change and affect habitats. This model, created by the Finnish Environment Institute and the Finnish Meteorological Institute, considers six factors—**January and July average temperatures**, **heat sum**, **water and snow precipitation**, and **water balance**. This data helps evaluate which habitats are likely to experience significant shifts outside their current climate envelopes. The use of **Zonation software** further enhances the analysis by assessing Protected Area irreplaceability, taking into account **habitat rarity**, **red list status**, and **species occurrence**. The connectivity of the landscape is also a major focus, ensuring the network's resilience against climate impacts.

A critical part of the adaptation strategy follows the **Resist-Accept-Direct (RAD) framework**, already mentioned in the American National Park Service approach. This flexible tool helps to determine how to react to climate-induced changes at the habitat patch level. Specifically,The RAD framework helps to **categorise areas** based on whether or not they experience climate change and their biodiversity importance. The matrix of outcomes identifies various scenarios: **areas with no change but high importance** (potential climate refugia), **areas with significant changes where intervention might make a difference**, and **areas undergoing too much change where alternative approaches or acceptance may be necessary**. The goal is to allocate resources efficiently by resisting change in the most important areas, directing change where feasible, and accepting unavoidable shifts.

Restoration initiatives are prioritised in Finland, reflecting both national and EU perspectives. However, prioritisation becomes complex due to differences in irreplaceability across scales, highlighting the **need for international collaboration and discussions beyond state borders**. The overarching strategy is to **"think big, act local,"** ensuring that the national Protected Area network remains resilient to climate change and continues to support biodiversity conservation well into the future.

For further information on the **climate and habitat model**, contact **Risto Heikkinen** at risto.heikkinen@syke.fi, and for further details on the **analysis approach**, contact **Santtu Kareksela** at santtu.kareksela@metsa.fi.

Presentation 10: Inventory class report for Northern Lapland habitats remote sensing project

Author: Anna Tammilehto , Parks & Wildlife Finland, Metsähallitus.

The presentation on the **"Inventory Class Report for Northern Lapland Habitats Remote Sensing Project,"** led by **Anna Tammilehto** from Metsähallitus, detailed a project aimed at **mapping** and **inventorying habitat classes** in Northern Lapland using **remote sensing technologies**. Running from 2020 to 2023, the project was funded by the Ministry of the Environment and the Finnish Environment Institute, with an annual budget of €310,000.

The project achieved an impressive **82% accuracy in identifying key habitat types**, including rocky areas, boulder fields, and lichen-moss-dwarf shrub regions. Notably, it **effectively classified habitats listed in the EU Habitats Directive**, such as oligotrophic waters and alpine heaths. The project produced **thematic maps** and **classified habitat data** into about 1.3 million polygons stored in a GIS database, which is accessible as **open data**.

Key findings highlighted the **effectiveness of remote sensing for larger habitats**, while emphasising the continued need for **field data**, especially for smaller or rare habitats. The use of **Sentinel 2 satellite imagery at 10-meter resolution** was instrumental, and it was noted that remote sensing can **enhance the targeting of field inventories**.

The report underscored the threats to these habitats, primarily from **climate change** and **reindeer grazing**, which affect the **regeneration** of **lichens** and **mountain birch forests**. The **thawing of palsa mires** and a**lterations in snow beds** were also significant concerns.

In conclusion, the project showcased how **combining remote sensing with field observations** can lead to **improved habitat classification** and **monitoring** in Northern Lapland. While remote sensing offers advantages for large-scale habitats, it is **crucial to maintain detailed field studies** for smaller and more vulnerable ecosystems.

Presentation 11: Arctic Fox in Fennoscandia

Author: Tuomo Ollila , Parks & Wildlife Finland, Metsähallitus.

The **Arctic Fox (AF)** in Fennoscandia has seen significant fluctuations in its population due to **human activity** and **environmental changes**. Historically, the species was abundant, with several thousand adults in the 19th century, but overhunting in the early 20th century led to a dramatic decline. **Hunting bans** were introduced in Sweden (1928), Norway (1930), and Finland (1940), but by the beginning of the 21st century, only 40-60 adult Arctic Foxes remained in Fennoscandia. Fortunately, **conservation efforts have increased the population** to about 550 adults today, although it **remains critically endangered** in Finland and **endangered** in Sweden and Norway.

Arctic Fox Population in Kola Peninsula

On the Kola Peninsula, inventories over the past two decades suggest a population of a few dozen adult Arctic Foxes. Cooperation in this region, which had started before the war, has since stalled.

Diet and Habitat

Arctic Foxes primarily feed on **lemmings**, and the abundance of lemmings directly influences their reproduction rates. They also consume other small mammals, **birds**, **eggs**, **carrion**, and any other available food sources.

Threats to the Arctic Fox

Climate change poses a significant threat to the Arctic Fox. As temperatures rise, **Red Foxes**, which are better suited to warmer environments, are increasingly encroaching on Arctic Fox territory, especially in high mountains and tundra areas. **Warmer winters also reduce the frequency of lemming population booms**, which are crucial for the Arctic Fox's survival. If global warming continues, Arctic Foxes may be confined to Arctic islands within a hundred years. **Human activity** in the Arctic is also on the rise, providing more food sources for Red Foxes and increasing disturbance in the Arctic Fox’s habitat.

Conservation Actions

Several measures are being taken to conserve the Arctic Fox population:

1. **Red Fox Culling:** Special permits allow the use of snow scooters for culling Red Foxes in areas critical to Arctic Fox survival.
2. **Extra Feeding Stations:** Around 250 feeding stations have been established across Finland, Sweden, and Norway. These stations provide food during bad lemming years, reducing the mortality of Arctic Fox pups, which can reach up to 90% in winters with poor food availability.
3. **Captive Breeding Programme:** Since 2006, 464 Arctic Foxes have been reintroduced into the wild through a captive breeding program in Norway.
4. **Monitoring Programme:** A uniform monitoring programme is in place across the three countries to track Arctic Fox populations.
5. **Public Engagement and Cooperation:** Efforts are made to inform and collaborate with local communities and other stakeholders.

Conservation Results

The conservation efforts have led to a steady increase in the Arctic Fox population, from just a few dozen to 550 individuals over the past 25 years. The long-term goal is to have at least 1,000 adult Arctic Foxes and 250 litters by 2035, with an eventual target of 2,000 adults and 500 litters during good lemming years.

Cooperation between Finland, Sweden, and Norway.

Given the shared population of Arctic Foxes, the **three countries collaborate extensively**. They maintain a **common database (Rovbase),** produce **joint reports**, and implement **coordinated conservation actions**, all underpinned by a **unified management plan**. The transboundary cooperation highlights the importance of long-term efforts to ensure the survival of this iconic Arctic species.

Closing remarks

In conclusion, the **2024 TransParcNet** Meeting highlighted the **critical** and **evolving challenges** faced by Protected Areas across Europe in **adapting to climate change**. Through presentations on topics like **hydrological restoration** in the Bohemian Forest and **habitat shifts** in the Krkonoše Mountains, the event emphasised the **importance of innovative strategies** and **transboundary cooperation**. Finland's **adaptive framework** and **Arctic Fox conservation efforts** further illustrated the role of **science-driven**, **collaborative approaches** to safeguarding biodiversity. **Field trips** also offered valuable insights into local conservation practices, reinforcing the need for **hands-on engagement**. Overall, the event underscored a **collective commitment** to **preserving natural heritage** and **building resilience for future generations**.

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Transboundary Parks
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