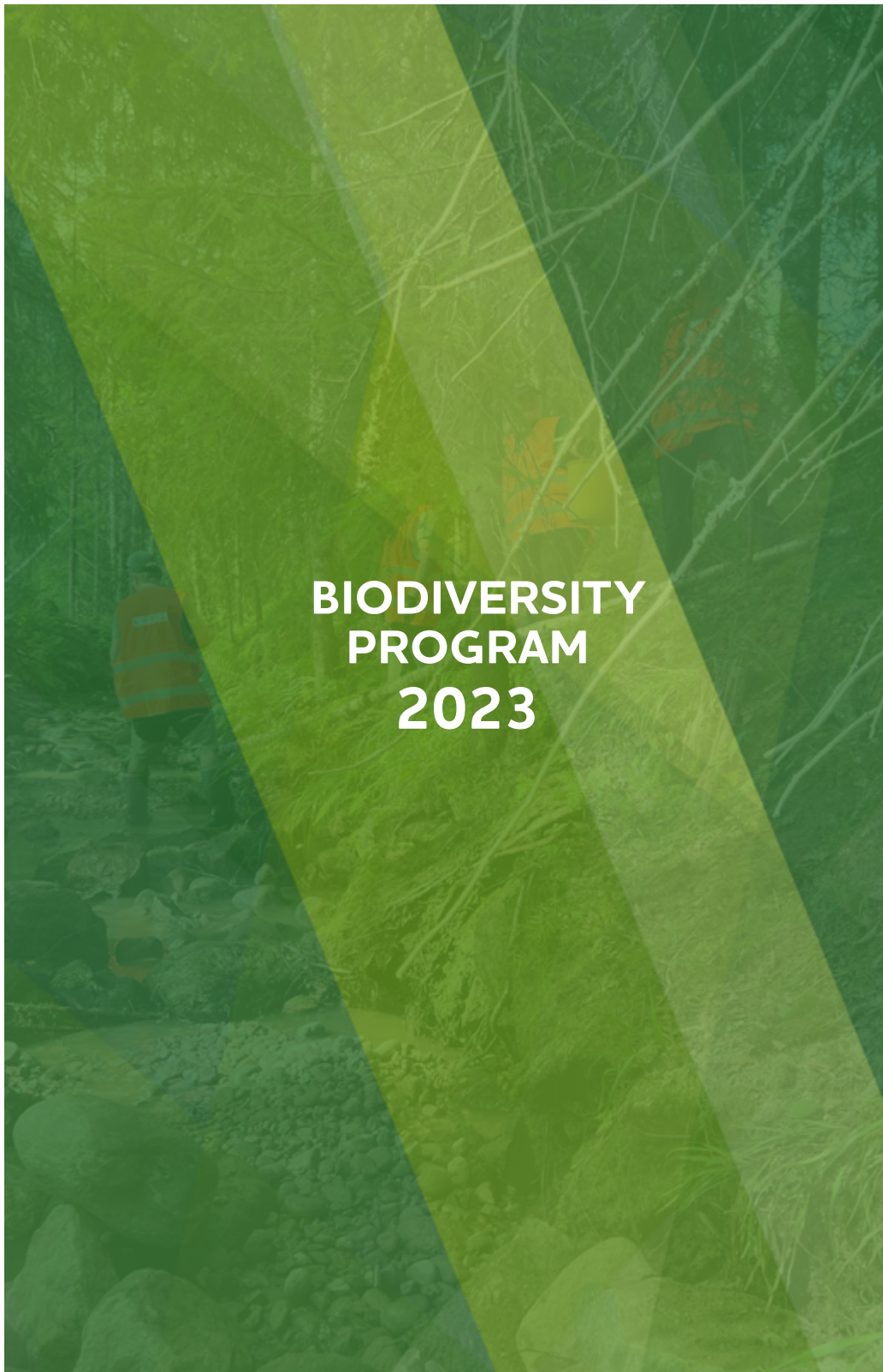


Biodiversity  
2021  2030



Picture: Tornator



## OBJECT OF BIODIVERSITY PROGRAM: ENSURING AND INCREASING BIODIVERSITY OF FORESTS

The purpose of Tornator's 10-year Biodiversity Program is to ensure and increase forest biodiversity by introducing new measures to improve biodiversity. We will increase active nature management in forests, protect valuable areas, continue and develop our successful stakeholder collaboration and monitor the effects our measures have in terms of biodiversity.

Measures under the Biodiversity Program not only improve the status of endangered forest and marshland species and habitats, but also promote ecosystem services, water protection, game management and mitigation of climate change.

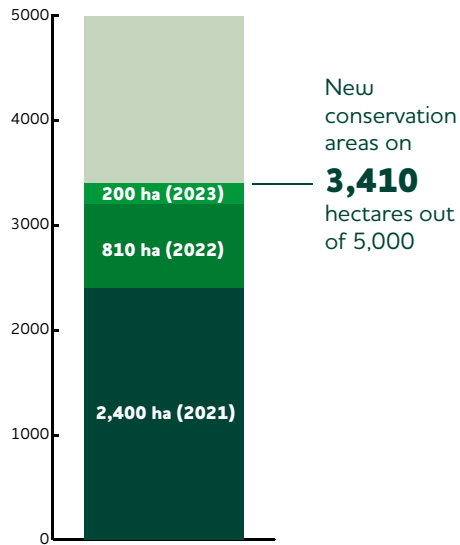
### **Our goals by the end of 2030:**

- to establish 5,000 hectares of nature conservation areas
- to restore at least 3,000 hectares of marshland habitats
- to carry out at least 200 active forest and aquatic environment improvement projects
- to increase the amount of protective thickets in all stages of forest management
- to increase the continuum of decayed wood in our forests
- to increase the amount of continuous-cover forestry and tree species mixing in our forests

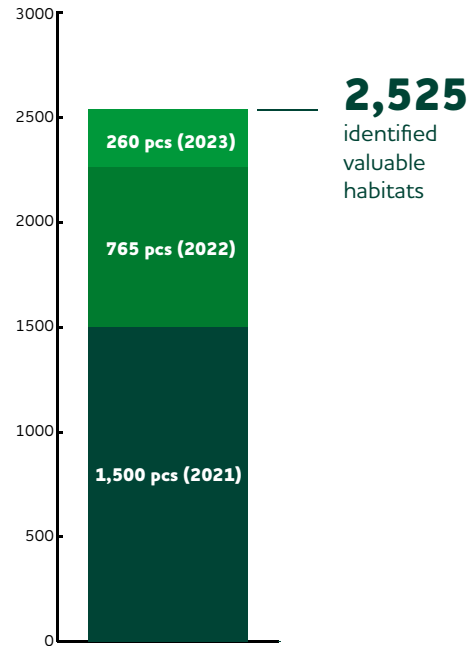


## CONSERVATION

### NATURE CONSERVATION AREAS

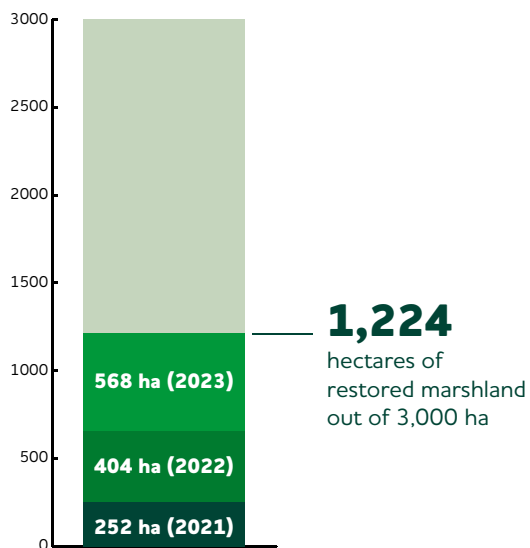


### NEW VALUABLE HABITATS

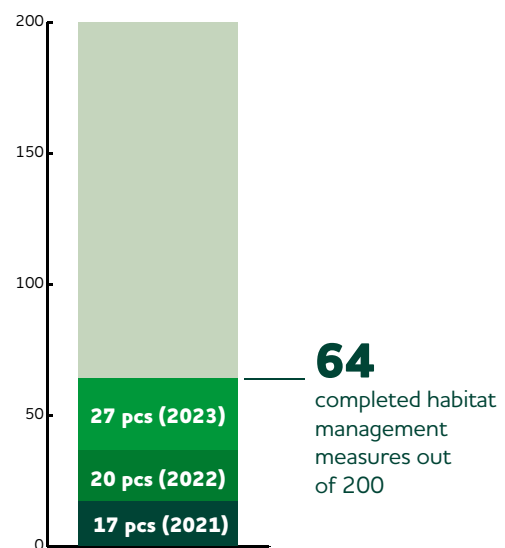


## ACTIVE NATURE MANAGEMENT MEASURES

### MARSHLAND RESTORATION



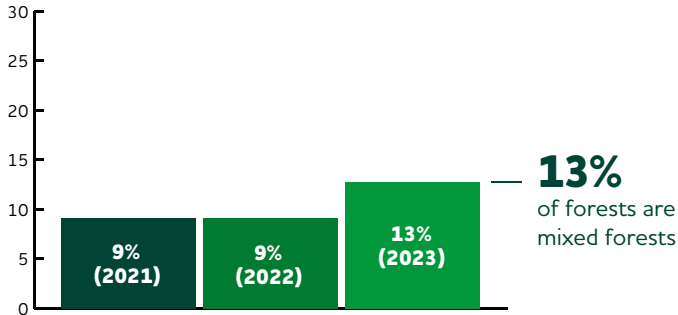
### ACTIVE HABITAT MANAGEMENT



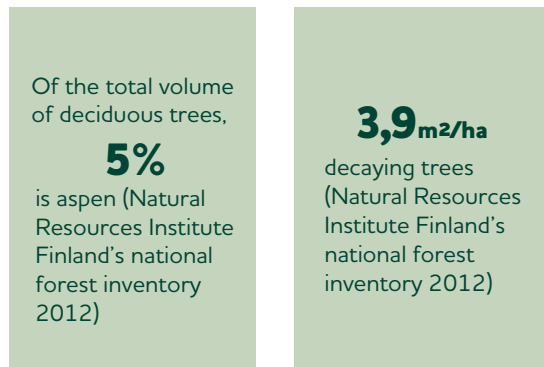


## NATURE MANAGEMENT OF COMMERCIAL FORESTS

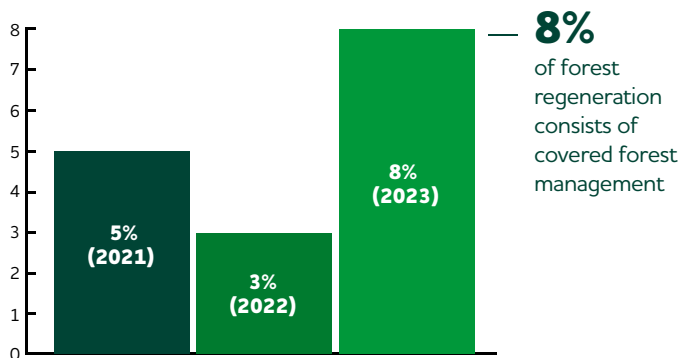
### TREE SPECIES MIXING



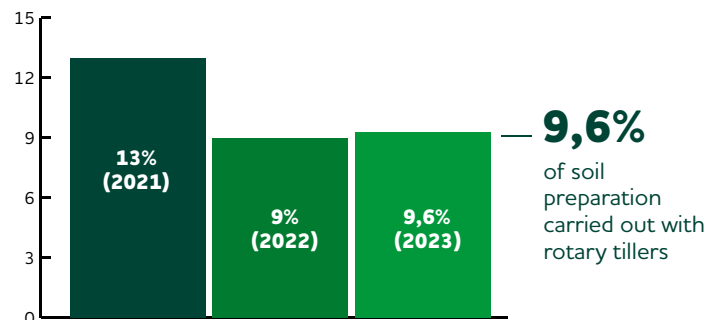
### ASPEN AND DECAYING TREES



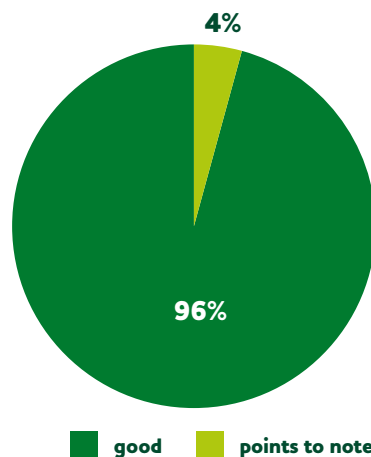
### FOREST STRUCTURE



### SOIL PREPARATION



### NATURE MANAGEMENT QUALITY ASSESSMENT IN 2023 AS PERCENTAGE OF FSC LAND AREA



The assessment is not comparable with those of earlier years.

# ESTABLISHMENT OF 9 NEW NATURE CONSERVATION AREAS, COVERING A TOTAL OF 200 HECTARES



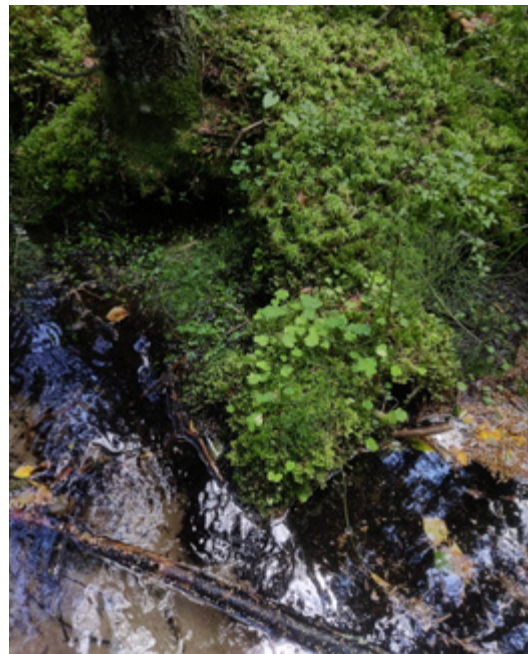
## KINTTUSALMI, SONKAJÄRVI

The 48-hectare conservation area of Kinttusalmensuo in Sonkajärvi, North Savo, consists primarily of medium- and low-nutrient peatland and fens in their natural state as well as mineral soil. The area is part of the regionally valuable, extensive and natural-state Kinttusalmensuo. It is home to typical marshland birds, such as willow grouse, wood sandpiper, greenshank, golden plover, whimbrel and yellow wagtail. The area is protected in cooperation with the North Savo Centre for Economic Development, Transport and the Environment as part of the [Helmi habitat protection programme](#).

Picture: Viivi Lindholm, Ely-keskus

## LÄHDEKORPI, SAVONLINNA

The 7.4-hectare Lähdekorpi nature conservation area is located in Savonlinna. The area was protected in cooperation with the South Savo Centre for Economic Development, Transport and the Environment as part of the Helmi habitat protection programme. The Lähdekorpi area is valuable owing to a variety of spring habitats. The area includes a mosaic of meso-eutrophic seepage areas and grassy spruce mires, at least three open spring basins and brooks running off springs. Lähdekorpi has plenty of decaying trees and old forest, the oldest mostly 150 years old.



Picture: Karelian Kaitafilmi, Hannu Putkuri



## AUKEASUO, KITEE

Aukeasuo in Kesälahti, Kitee, is an extensive remnant of a southern raised bog on an incline with characteristics of a central boreal aapa fen, in its natural state in its western and northern parts. The area has a variety of biotopes. It is clearly bordered by mineral soil and consists of open bogs with barren open bogs dominated by sedges and hare's-tail cottongrass, with the parts in natural state in what is now in the direction of runoff. The edges are dominated by a combination of wetland types, typically with more trees. The area has some important species, such as the near-threatened *Evernia mesomorpha* lichen. The area is 60 hectares and it was protected as part of the [Helmi habitat protection programme](#) together with the North Karelia Centre for Economic Development, Transport and the Environment.

## KALLIOJÄRVEN PAHTA, LIEKSA

The Kalliojärvi Pahta in Lieksa is a 15-hectare conservation area. It consists of old-growth and natural forest that meet the class I criteria of the METSO Programme. The conservation area consists of steep rock faces, small swampy areas and plenty of aspen of different sizes, and an abundance of decayed wood. In the drier and more rocky areas with pine growth, there are dead standing trees and some really old pines, characterised by a wide top. There are also flying squirrel sightings in the new nature conservation area. The area was protected as part of the METSO forest biodiversity programme in cooperation with the North Karelia Centre for Economic Development, Transport and the Environment.

Picture: Tornator



In addition to the above conservation areas, five other conservation areas were established on Tornator land in 2023 in North Savo and North and South Karelia on areas covering about 70 hectares.



# RESTORATION AND NATURE MANAGEMENT IN VARIOUS HABITATS IN 2023

Mire restoration was performed in 2023 on a total of 568 hectares. It was in most cases possible to carry out restoration on the entire area, making it an ecologically high-quality operation.

On certain wetland areas, restoration was carried out in cooperation with adjacent landowners. This enabled us to achieve an even better restoration result beyond property boundaries. The largest restored wetland areas covered tens of hectares. On smaller areas, we also focused on restoration of springs and the benefits achieved through water protection.

Active nature management targets focused on habitats with the richest number of species: mainly brooks and springs, sunny and dry habitats and the management of areas with a high concentration of hard-

wood species. Forest brooks were restored in active cooperation with WWF and Stora Enso, with several cleared beds directed back to their natural channels.

In terms of prescribed burning, it was an active year, considering the varying conditions of the summer. An area of some 30 hectares of prescribed burning consisted of major burning of regeneration cutting areas with plenty of retention trees; separate instances of retention tree group burning; and this year, for the first time, prescribed burning of a forest with growing stock for restoration purposes on a private conservation area owned by Tornator. The prescribed burning for restoration purposes was carried out by Parks & Wildlife Finland of Metsähallitus as part of the Helmi habitat protection programme.



In successful restoration, the water level rises and the surface waters too are directed evenly along the ditch lines to the wetland area. This requires a sufficient number of large dams and blocking of ditches.

Picture: Jussi Kirmanen



Sometimes even small measures can improve the natural state of a wetlands. In the marsh shown, water from a single ditch has been diverted by means of a dam and a new ditch towards the centre of area, in the natural flow direction. Picture: Anna-Riikka Ihantola



Prescribed burning for restoration purposes in Eno in cooperation with Metsähallitus. Picture: Leena Härkönen, Metsähallitus



The water level is rising quickly in a restored spring. Picture: Tornator



Felling in Huuhanrinne in the summer of 2023 before restoration of a sunny and dry habitat. Collecting the logging residue is a key part of managing a sunny and dry slope. Picture: Tornator



## ENVIRONMENTAL MANAGEMENT AREAS

PROJECT	LOCATION	DESCRIPTION
River restoration Lieviskänkoski and Peukalojoki	Puumala	Fishery improvements.
Management of Vehviä herb-rich forest	Ruokolahti	Felling of trees in the forest.
Hardwood tree management in Auvila	Punkaharju Savonlinna	Felling spruce that was stifling the growth of hardwood stands.
Restoration of gravel riverbed	Keyritynjoki Rautavaara	A nature protection society in Nilsjä restored Lehmikoski and Myllykoski rivers and built spawning areas for fish.
Restoration of Palosenjoki river in 2023	Palosenjoki Kuopio	Joint work by WWF, Stora Enso and Tornator volunteers at Palosenjoki, restoring the riverbed and building spawning grounds.
Restoration and cleaning of shore areas	Loviisa	Volunteer work organised by the Finnish Association for Nature Conservation (FANC) to manage shore areas.
Spring restoration	Kataja Kaavi	The water level of a drying spring was increased by building a dam, preventing the water from running into the nearby ditch.
Cleaning and raising level of spring	Kykyrinmäki Imatra	The water level in the spring was raised with a submerged weir in the drainage ditch.
Prevention of invasive species	Muikkula Liekka	Cutting down and eradication of Indian balsam.
Prevention of invasive species	Halola Kontiolahti	Cutting down and eradication of Indian balsam.
Brook restoration	Vaalimaanjoki Miehikkälä	Joint work by WWF, Stora Enso and Tornator volunteers at Vaalimaanjoki river, making spawning areas for fish and removing an unnecessary culvert.
Management of aspens	Laakajärvi lake Leppimäki Sotkamo	Spruce were cut down to allow aspens to grow better.
Rajapuro brook, restoration of normal flow	Nurmes	Rajapuro brook in Kuohatti, Nurmes, was restored from the ditch to run in the original channel.
Restoration of a brook bed, Virstopuro	Juuka	The ditch was guided into its old channel.
Indian balsam control Immalanjärvi lake	Imatra	Cutting down and eradication of Indian balsam that has spread into the urban forest.
Brook restoration	Metsola Juuka	Diverting a forest brook into its original channel with dams.
Brook restoration, Sorveuskoski	Juuka	Joint work by WWF, Stora Enso and Tornator volunteers to restore the riverbed and remove migration barriers.
Spring restoration Ervastinsuo	Oulu	Raising the water level of a spring draining into a forest ditch to its natural height.

PROJECT	LOCATION	DESCRIPTION
Restoration of springs Syrjäjoki	Kaavi	Restoration of springs and drainage ditches, with the North Savo Centre for Economic Development, Transport and the Environment in charge of the operation as part of the Helmi habitat protection programme.
Restoration of stream bed	Suotaipale Tuusniemi	The ditch drying the forest brook was blocked and the water was directed into the original bed.
Water protection project Immalanjärvi	Imatra	A major joint water protection project was completed in 2023.
Restoration of Kurkioja stream	Simo	Restoration of Kurkioja stream of fishery purposes. The Lapland Centre for Economic Development, Transport and the Environment and the Finnish Freshwater Foundation were in charge of the implementation.
Environmental management, prescribed burning (Government Decree on Environmental Protection)	Eno	Restoration prescribed burning of 7.8 hectares together with the Parks & Wildlife Finland of Metsähallitus that was responsible for carrying it out.
Vehviä retention tree groups	Ruokolahti	Burning of retention tree groups, area about one hectare.
Prescribed burning in Parree	Lieksa	Prescribed burning of approx. 10.5 hectares.
Prescribed burning in Palosensalo	Kuopio	Prescribed burning for forest management purposes. The conditions were dry, so only about a hectare was burned, to be continued in the summer of 2024.
Prescribed burning in Katajalammensalo	Liperi	Prescribed burning of approx. 7.5 hectares for forest management purposes.



Picture: Tornator

## **PARTNERSHIPS – IMPORTANT IN TORNATOR’S WORK TO PROMOTE BIODIVERSITY**

*The impact of work to promote biodiversity is improved by active co-operation with various stakeholders and actors. Connecting restoration projects with each other or with similar projects carried out by other actors also increases the ecological impact of biodiversity.*

## INTERNATIONALLY SIGNIFICANT ENVIRONMENTAL MEASURES AT KOITAJOKI RIVER

The Snowchange Cooperative has been active in restoration projects in North Karelia, especially in the drainage area of Koitajoki river. Swamps and marshes owned by Tornator around Koitajoki river form an important ecological area, and the plan is to restore more than 600 hectares of it.

The restoration work of the Snowchange Cooperative is considered an internationally significant environmental act, receiving the Goldman Award, or 'Green Nobel', in 2023, and an environmental award by the Finnish Association for Nature Conservation in 2021.

## RESTORING RUNNING WATERS AS PART OF THE 'METSÄPUROJEN PUOLESTA' PARTNERSHIP TO IMPROVE THE CONDITION OF FOREST BROOKS

During the second year of the 'Metsäpurojen puolesta' running waters partnership, WWF Finland and Stora Enso helped build 30 spawning areas for the endangered trout, and hundreds of metres of running water environments were restored on Tornator lands.

Almost 90 volunteers from all three organisations worked in the projects in Southwest Finland, North Savo and North Karelia. The focus was on the restoration of locally important running water environments, such as the creation of spawning grounds and removal of migration barriers.

## CLIMATE-SMART FOREST MANAGEMENT

Tornator is taking part in the development of climate-smart forest management methods and related communication. One example of this is the Ilmastoviisas metsänhoito (['Climate-smart forest management project'](#)) video by the Finnish Forest Centre, in which we explain how marshland restoration actually takes place in Paltasensuo marsh in Pieksämäki.



Picture: Tornator

On privately owned conservation areas, swamps and marshes and various habitats were restored by Metsähallitus and Centres for Economic Development, Transport and the Environment as part of the Helmi programme. In addition, prescribed burning for restoration purposes on an area of 7.5 hectares was carried out by Parks & Wildlife Finland of Metsähallitus in the Luhtapohja conservation area in Joensuu.

Restoration and nature management was also continued with management associations and other associations in areas with small bodies of water. For example, experimental water protection structures were put in place on Tornator's lands at Immalanjärvi lake in Imatra and Ruokolahti as part of the first period of a water protection project carried out by the Saimaa lake water protection association.



In an ideal situation, continuous-cover forestry ensures that there are different canopy layers immediately after felling.

Picture: Tornator

## CONTINUOUS-COVER FORESTRY INCREASED IN TORNATOR FORESTS

Tornator decided to increase its continuous-cover forestry by 20,000 hectares in its peatland forests. The current practice of periodic forest management will be replaced by continuous-cover forest management particularly in the more barren marshes, in an area ranging from North Karelia to Northern Finland. The change will be reflected in light selection felling, small-scale clearcutting and strip cutting in mature forests. The most barren areas will be restored to allow them to return to their natural state or be excluded from use.

Continuous-cover forest management reduces groundwater level fluctuations caused by felling and keeps water levels closer to those optimal from a climate perspective by reducing carbon dioxide and methane emissions. The absence of ditch cleaning and supplementary ditching and soil preparation will reduce strain on the water system and contribute to biodiversity. The continuous-cover method probably also benefits species that require shade, such as bilberry, and species that coexist with them. Also species that require continuous cover, such as the flying squirrel and certain epiphytic lichens, may benefit.

# MEASUREMENT AND REPORTING OF BIODIVERSITY

Measures carried out in the Biodiversity Program are based on scientific data on what should be done to various habitats to increase their biodiversity. The effects of the measures are quantified and monitored in Tornator's Biodiversity Program. The change process in nature is slow in many cases, but more and more knowledge will help to develop measures to have a greater effect in both the short and long term.

A number of monitoring measures and studies concerning biodiversity were started or completed in 2023.

Some excellent results were discovered in species surveys in Piitsonsuo, Ilomatsi, owned by Tornator and restored by Carbon Market Ltd, showing signs that restoration has got off to a speedy start. The survey listed more than 60 bird species, of which 20 were typical for marshland habitats, and 20 butterfly species, of which 6 were typical for marshland.

Springs and spring brooks will be studied extensively in a doctoral thesis for the University of Jyväskylä, focusing on the effect of forestry and restoration on spring species and the importance of various conservation measures in spring protection. The same research project, collaborating with the Finnish Environment Institute, is looking into ways of identifying species living at the bottom of springs by means of the environmental DNA method. Some 30 of the research sites are located on land owned by Tornator and we are taking an active part in the practical arrangements and spring restoration.



Picture: Tornator

Vegetation and beetle surveys were carried out in 2022 on Huuhanrinne ridge in Ruokolahti on the northern shore of Lake Saimaa on ridge management sites, and beetle surveys were started on ridges set for prescribed burning in 2024. Positive effects were detected on ridge sites managed in 2022 as greater numbers of typical ridge species, such as breckland thyme, catsfoot and rare spring sedge.

A management felling was carried out in the winter of 2023 in the Vehviä herb-rich forest in Ruokolahti to improve the conditions for the trees, and test areas were set up to monitor how plants in particular develop in a way typical for the habitat.

## BIODIVERSITY PROGRAM THEME FOR 2024: SUNNY AND DRY SLOPES

Tornator was active in 2023 in the establishment of a biodiversity roadmap being prepared by the wood processing industry.

A study connected to the roadmap shows that biodiversity has improved by a number of key metrics in our forests, and the positive trend is ongoing. Five major topics were chosen for the roadmap, all of which have been shown to have a significant effect on biodiversity. One of these topics in sunny and dry habitats which are home to about 13 per cent of threatened forest species, a high percentage in proportion to the land area. Measures for these habitats can achieve significant improvements in the status of threatened species.

Tornator will also provide training in 2024 on the better identification and management of sunny and dry habitats as part of the forest environment programme of the forest industry. Concrete measures will also be carried out in sunny and dry habitats owned by Tornator, such as prescribed burning and the removal of shading trees and biomass, as well as soil treatment.

We will also publish results of the species survey of sunny and dry habitats that was started in 2023, and also of the management measures.

## TORNATOR'S BIODIVERSITY EFFORTS WERE FEATURED IN THE MEDIA IN 2023 (ARTICLES IN FINNISH ONLY)

MARSHLAND RESTORATION	
Takaisin luonnontilaan - Tornator ja Stora Enso aloittivat Juuan Leväsuon ennallistamisen	Vaarojen Sanomat 28.3.2023
Opittu kantapään kautta: Ensin soita ojitettiin – nyt oja tukitaan	MTV3, Huomenta Suomi ja MTV uutiset 28.8.2023
Illomantsin Haravasuota ennallistetaan talkoolaisten ja lapioiden voimin – Koitajoen kunnostushanke etenee	Yle 28.8.2023
Tornator käynnisti Jyrkän Kyrönsuon ennallistamisen – Ruukin Tuvan nimikko-suosta lisäkohde Volokin retkeilyssä	Miilu 6.9.2023
ACTIVE NATURE MANAGEMENT	
WWF, Tornator ja Stora Enso kunnostavat taimenen kutu- ja pienpoikasalueita Vepsänjoella	Vaarojen Sanomat 18.9.2023
Kurkioja yritetään kunnostaa taimenille	Lapin Kansa 25.9.2023
Juuan Vepsänjoella kunnostetaan virtavesielinympäristöä Metsäpurojen puolesta -yhteistyötalkoissa jo toistamiseen	Vapaa-ajan kalastaja 26.9.2023
Tornator kulotti Parreessa	Lieksan lehti 23.5.2023
Tornator kulotti metsää Ruokolahdella Kaiturinpäässä – Kuivuus lisäsi varotoimia	Uutisvuoksi 25.5.2023
Luhtapohjan ennallistamispoltto (MH)	Pielisjokiseutu 20.6.2023
Tiistaista alkaen Kuopiossa saattaa näkyä sankkaa savua jopa useita päiviä	Savon Sanomat 19.6.2023
Lamperilan kulutus loppui lyhyeen kuivuuden takia	Savon Sanomat 21.6.2023
Vaalimaajokeen rakennetaan jälleen uusia kutusoraikkoja ja poikaskivikkoja	Yle 10.8.2023
Metsäyhtiöiden työntekijät kunnostavat talkoilla puroja – Stora Enso: ”Osaaminen kasvaa”	Maaseudun Tulevaisuus 11.8.2023
Miehikkälän Muhikossa laitettiin metsäpuro kuntoon talkoilla: ”Jopa taimenen nouseminen puroon on mahdollista”	Kaakonkulma 22.8.2023
Purojen kunnostus vaatii osaamista – ”Toimiva kutusoraikko ei synny kippaamalla kottikärryllinen soraa puroon”	Maaseudun Tulevaisuus 27.8.2023
CONSERVATION AREAS	
Kesälahdelle perustetaan noin 60 hehtaarin suojelualue	Karjalainen 27.9.2023
Kesälahden Aukeasuolle suojelualue	Koti-Karjala 27.9.2023
Sonkajärven Kinttusalmensuon luonnonsuojelualue laajenee	Yle 9.11.2023
Kinttusalmensuolle suojelualue osana Helmi-elinympäristöohjelmaa	Metsätrens 14.11.2023

**TORNATOR'S BIODIVERSITY PROGRAM WAS PRESENTED IN A NUMBER OF PUBLIC EVENTS DURING THE YEAR. THE PROGRAM WAS ALSO COMMUNICATED ABOUT ACTIVELY IN TORNATOR'S SOCIAL MEDIA CHANNELS:**

Instagram, Facebook, LinkedIn, Youtube ja Twitter.