



RESTORATION AND MANAGEMENT OF WESTERN TAIGA (9010*) HABITAT WITHIN THE GAUJA NATIONAL PARK



Forest Habitat Restoration within the Gauja National Park
LIFE10 NAT/LV/000159 FOR-REST

Overview of habitat's restoration and management programme

Latvian Fund for Nature
2015



Forest habitat restoration within the Gauja National park

The main goal for the project “Forest Habitat Restoration within the Gauja National Park” is to develop long-term solutions for restoration and management of Western Taiga (9010*), Bog woodland (91D0*), Tilio-Acerion forests of slopes, screes and ravines (9180*) and habitat for hermit beetle *Osmoderma eremita* within the Gauja National Park.

To achieve the goal, inventory data on distribution and conservation status of selected habitats has been obtained during field inventories and using remote sensing data. Long term restoration and management programmes have been elaborated and priority sites for habitat restoration selected. Management and restoration measures were used to restore 280–300 ha of Western Taiga, 130–170 ha of Bog woodland and 60–80 ha of *Osmoderma eremita* habitat. The lessons learnt during management planning and habitat’s restoration in the project sites will be applied in further restoration works throughout Gauja National Park.

Project duration: September, 2011 – March, 2016

Project carried out by: Nature Conservation Agency

Project partners: Institute for Environmental Solutions, Latvian Fund for Nature and “ELM MEDIA”

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Habitat type 9010* Western Taiga in Latvia

According to the interpretation manual of Council Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora (The Habitats Directive) habitat type 9010* Western Taiga are natural old coniferous, mixed or deciduous boreal forests and young forest stages of those forests naturally developing after fire (European Commission 2007).

Natural old forests represent climax or late succession stages with slight human impact. The main features of these forests are the considerable amount of dead and decaying wood, old trees from previous generations and the great variation in tree age, length and species composition. Such forests are habitats of many threatened species, especially bryophytes, lichens, fungi, and invertebrates (mostly beetles). Considering the mentioned ecological aspects, it is assumed that this habitat type complies to woodland key habitats (WKH) or potential WKH.

Burned forest areas, and their young succession stages, have been naturally common in this forest type. Due to efficient fire protection and forestry, forest stages naturally developing after fire are extremely rare nowadays and consequently – fire-dependant species are threatened. For that reason the forest stands developed after a fire and have not been disturbed by forestry are considered as this habitat even if they do not comply with (P)WKH.

According to the latest report on the status of habitats of EU importance, Western Taiga has an inadequate conservation status in Latvia (European Commission 2013).

The habitat that once was the most common in Latvia, nowadays occupies less than 0.5% of its territory (European Commission 2013b). Although the habitat’s distribution is quite regular (Fig. 1.), the total coverage and the size of the patches are very small and the structural features of the habitat are negatively affected by forestry, development of road infrastructure and efficient fire protection.

The report highlights the need for urgent restoration measures. It concludes that the most urgent activities are protection of habitat’s fragments outside protected areas and zones with real forest use restrictions, consolidation of habitat fragments to improve the connectivity and improvement of habitat’s structural and functional diversity (especially, necessity to enlarge the amount of dead and decaying wood).



Figure 1. Distribution of Western Taiga 9010* in Latvia (European Commission 2013).

Habitat type 9010* Western Taiga within the Gauja National park

Natura 2000 site Gauja National park is one of the target sites for conservation of Western Taiga in Latvia. The total coverage of the habitat within the park is 1 215 ha, but the size of the patches is very small (3.8 ha in average, but more than half of ones are smaller than 1.6 ha). It is far from the scale as are necessary for the successful existence of umbrella species of the habitat (Angelstam et.al. 2004). That's indicating that reduction of habitat fragmentation is a crucial factor to improve the conservation status of the Western Taiga and dependant species.

More than half of the habitat (57%) is located in nature reserve or strict nature reserve zones. It allows all active habitat restoration measures plan in areas which are already been set aside for nature conservation.

The patches of Western Taiga in the park correspond to several sub-types of the habitat. The drier is the site, the more frequent are fires and their significance is higher. More humid sites, on the other hand, encounter fires more rarely and during the phases in between fires gap dynamics dominate.

The most of the Western Taiga on dry soils are in poor quality. Majority of them are quite young, previously commercially utilised even-aged stands with lack of dead and decaying wood. It is assumed that controlled burning is the most effective way to restore or increase the diversity of such sites. In more humid sites it is advised to increase the structural diversity by other methods – felling, ring-barking, uprooting or other ones that helps to create openings and decaying wood (Montiel et.al. 2010; Simila et.al. 2012).

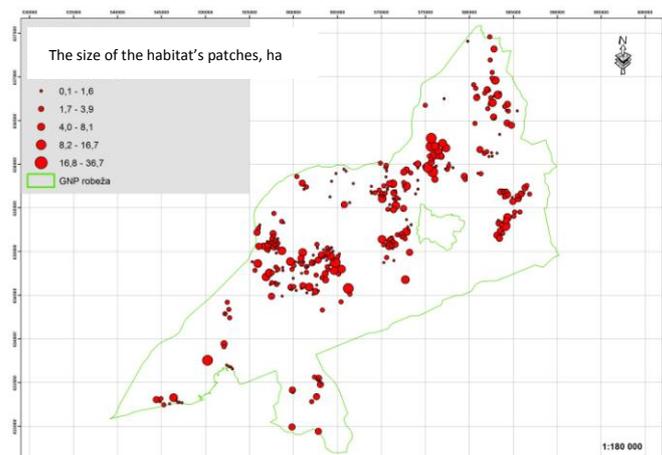


Figure 2. Distribution of 9010* Western taiga in the Gauja National park.

Management and restoration activities

To improve the conservation status of Western Taiga, restoration activities is planned to realize in three terms:

1. Short-term management measures to be implemented by 2015.
2. Mid-term management measures to be implemented by 2020.
3. Long-term management measures to be implemented by 2050.

Selected restoration activities include:

1. Controlled burning and preparation works to ensure safety and control over fire;
2. Measures to increase amounts of habitat's structures, especially, dead woods in different decaying stages and openings that aim to diversify the composition of tree stands in future.

Controlled burning aim to reintroduce fire and its ecological impacts to the dynamics of Scots pine forests on dry mineral soils. By using fire in a controlled manner it is possible to diversify stand structures (to recreate forests with great heterogeneity regarding tree age, diameter, height and species composition), to increase amount of dead wood in different stages of decay (both downed logs and snags), to reduce the soil organic layer and overgrowth with shrubs and young spruces, to activate the soil seed bank and to create the possibilities for the regeneration of pine and deciduous trees (chiefly aspens, which are very important to biodiversity). On the landscape level it is important to ensure long-term fire continuity to provide habitat for fire-dependant species. For that reason the restoration measures by controlled burning methods are planned to realize in 50 year period even in sites included in short-term restoration plan.

The aim for the measures that increase amounts of dead and decaying wood by felling or ring-barking individual trees is to enable the preservation of dead-wood dependant species until decaying wood becomes more abundant due to natural process.

Damaging and felling of individual trees or small groups of trees to create small gaps imitate fine-scale disturbances found in natural forests and create subsequent habitats. Fine scale disturbances are important since they create structural heterogeneity on multiple scales, from micro topography formed by uprooted trees to the deaths of small understory trees, canopy trees or groups of trees. All these phenomena contribute to local tree regeneration and structural diversity.

There is no management planned in sites that correspond to criteria of Woodland Key Habitats. These sites are planned to preserve by non-intervention methods as before.

Short-term restoration measures

The most urgent targets for restoration measures in Gauja National park are continuous areas of young previously commercially utilised Scots pine stands on dry mineral soil located near patches of Western Taiga on state owned land within the nature reserve zones. This will enlarge the total coverage of the habitat and promote the living conditions of rare and threatened organisms' dependant on it.

All such a sites that are chosen for restoration by controlled burning is located in places nearby rivers or lakes to ensure that plenty of water is available to control and extinguish the fire and all of them are delineate with natural or quite easily could be delineate with artificial firebreaks.

In dense stands part of the trees will be removed before burning, to make it easier to control the burning process and to speed up their drying. Additionally 4– 5 up to 200 m² large openings will be created (without removing of felled trees) in each burning site to be sure that in certain places the fire will be intensive enough to open the soil.

Some restoration measures (creation of gaps and decaying wood) will also be carried out in older, even-aged cultivated stands on dry soils where due to previous thinning the range of tree species and sizes is narrow and where amount of dead and decayed wood is much smaller than in stands which are in a natural state.

No restoration measures will be taken in habitats for threatened species and in sites that has a potential to return to a natural state on their own during next 20 to 30 years.

In total 327 ha large area will be restored by the end of 2015. In all selected sites the amount of dead and decaying wood as well as number of openings and small canopy gaps will be increased. Every three years 3 to 20 hectares from these sites are planned to restore by controlled burning methods. In total it is planned that 250 ha large area will be restored by controlled burning in sites selected for short term restoration actions by 2050.

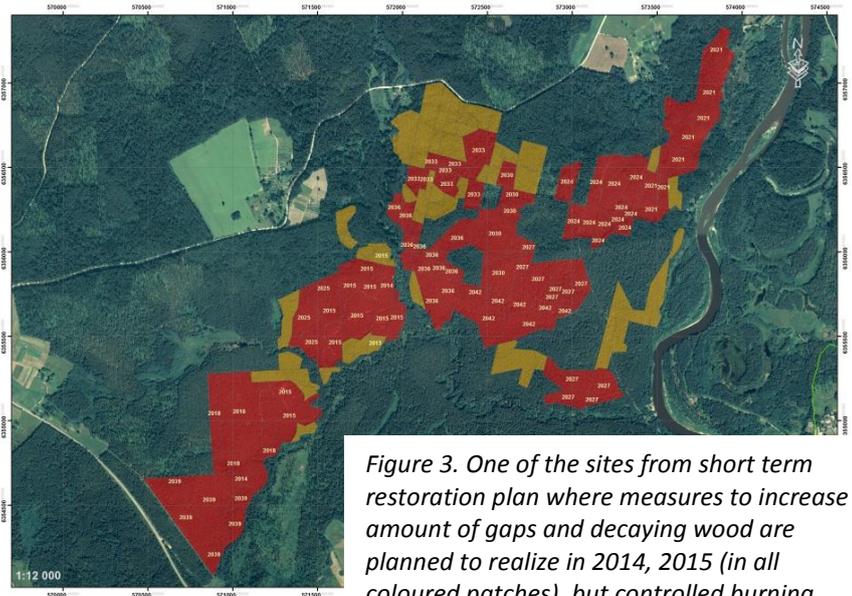


Figure 3. One of the sites from short term restoration plan where measures to increase amount of gaps and decaying wood are planned to realize in 2014, 2015 (in all coloured patches), but controlled burning methods are planned to apply in appropriate patches (red ones) once in 35 year period (by 2050).

Mid and long term restoration measures

During the mid-term period the action plan for management of all sites of Western Taiga on dry mineral soils and for restoration of all appropriate state owned sites among them within nature reserve and strict nature reserve zones must be elaborated and set in motion to the extent as described in the plan of short-term measures. By the date the most appropriate restoration methods and

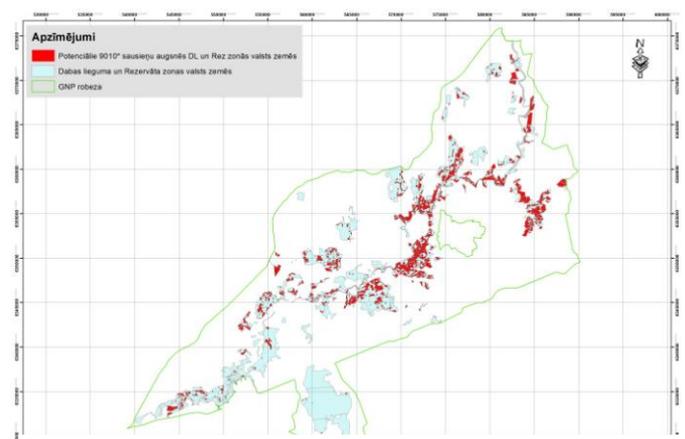


Figure 4. Patches of Western Taiga whose restoration plan should be set till the end of 2020.

time for its application should be selected for each of targeted forest compartment (4180 ha in total (Fig. 4)). Besides, decision on management and restoration needs for private owned habitats and for other sub-types of Western Taiga must be adopted.

During the long-term period all activities indicated in short and mid-term action plans must be introduced and favourable conservation status of Western Taiga within the Gauja National park should be reached.

Impact assessment

To get the data on restoration success in sites where short term restoration measures will be realised, invertebrate monitoring began in 2014 and will continue until 2016. It is advised that the area is monitored for 10 years at least; however the adherence to this advice is dependent on the Nature Conservation Agency.

Lessons learned during management planning

Unfortunately the concept of management and restoration of Western Taiga within the Gauja National park was not possible to launch in planned scale during the project since restoration by controlled burning methods are quite innovative in nature conservation practice of Latvia. The predominant attitude among Latvian society is that such disturbances as fires, storms, and insect outbreaks are exceptional and do not belong to the normal state of forest ecosystem. Consequently, the need to protect forests against such disturbances in both managed forests and protected areas is widely proclaimed.

As part of forest scientists and decision makers also consider that forest habitats do not require restoration and management that imitate natural disturbances, controlled burning measures are postponed to a later date and amount of openings and dead and decaying wood were increased only by logging and ring-barking.

One important lesson learned is that it takes much convincing before a fire programme can be started and it is expected that once started it will demand constant arguing for its continuity. Awareness campaigns realised during the project were not sufficient to resolve the problem. Much more educational and awareness rising initiatives must be realised in future.

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