

Biodiversity & Sustainable Land Management in The Great Trossachs Forest

The Great Trossachs Forest (TGTF) lies at the heart of the Loch Lomond and The Trossachs National Park, and is a landscape scale woodland conservation project covering an area roughly the size of Glasgow. TGTF has a range of habitats (including native ancient woodland, moorland, montane scrub and wetlands), each supporting a wide range of different species. **Watch the 'Wildlife' film for more information.**

Factors affecting biodiversity

Over the past century, the combined human impacts of deforestation (clearing) of the native woodlands, over-grazing, planting of non-native conifer trees and most recently climate change, have threatened the biodiversity of the area.

Land management history

The area covered by TGTF project was once largely native woodland, with trees stretching up to the 'tree line*' of the surrounding mountains. The area reflects the history of much of Highland Scotland in terms of the ways in which people have interacted with and changed their environment.

Many of the remaining ancient woodland areas show signs of past management. From the medieval period, the area would have been home to several hundred people. Small settlements were scattered around the loch shores, with the people surviving on growing crops and grazing cattle, using the woodlands for animal feed and fuel.

By the 1700's most of the woodlands were managed by coppicing, where trees were cut at ground level and left for many stems to grow up again. This was to provide bark for the tanning industry (for the leather belts used in industrial processes) and charcoal for fuel. These land management practices left areas of relatively even-aged* oak-dominated forest that were rich in biodiversity.

During the 18th Century much of the local population were forced to leave as part of the Highland Clearances. Much of the ancient forest was cut down and the grazing of sheep and deer began. The natural regeneration* of trees has been absent in many areas, with sheep and deer eating all the young tree seedlings.



Commercial non-native conifer forests were planted from the 1920's. The transformation of much of the land from ancient native woodland to non-native conifer forests, alongside severe over-grazing of much of the open ground, has led to a dramatic loss of biodiversity, as the ecosystems* that hosted a diverse range of species were destroyed.



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The remaining ancient woodland areas have now become protected sites. These woodland ecosystems* are still very rich in biodiversity, and provide habitats for many different native species, lots of which are rare or of special scientific interest.



Important mammals include otters, red squirrels, pine marten, waster voles and four bat species. Rare invertebrates found in the area include the small pearl-bordered fritillary butterfly, the small chocolate-tip moth and the narrow-headed wood ant.



Eight bird species that have European protection have been identified within the project area, including golden eagle, black grouse and short-eared owl. The two species of greatest local interest are Golden eagle (due to rarity, as there are only 300 breeding pairs in the country) and Black Grouse (due to concern over their current decline). These are the

two species that could be negatively affected by woodland expansion.



TGTF project is carefully designing the woodland expansion to ensure that there are still large areas of open moorland with some trees. This will ensure there will still be high populations of animals like voles which are prey for species such as the Golden eagle.

Deer fences used to help natural regeneration are carefully located to ensure that species such as Black Grouse are not negatively affected.



The woodland also supports a diverse community of mosses and lichens. Many other species make use of the woodland or woodland margins, such as the common lizard and adders, and will benefit greatly from the restoration of the native woodland.

Land Management Plan for The Great Trossachs Forest

Management Plans are developed to help landowners manage their land and its resources. The aim of TGTF land management plan is to use scientific understanding to manage the different ecosystems to protect and enhance biodiversity. The management is designed to allow as many species of wildlife as possible to adapt and move in response to the effects of climate change (see Climate Change and Biodiversity fact sheet for more information).

TGTF project plans to expand the native woodland partly through natural regeneration. Natural regeneration, from seeds scattered by nearby trees or by animals, has lots of biodiversity benefits compared to planting. It creates a natural and irregular forest of mixed ages and species. In some places the trees are all too old to produce seed, but in most of the area natural regeneration is generally good. Sheep love to eat young tree seedlings and so seedling survival has improved since sheep were removed in 2002. Deer numbers have increased following the removal of sheep however, and so deer have to be managed to allow woodland regeneration to occur. This is done by culling* and temporarily restricting access to some areas using deer fencing.



TGTF management plan also involves planting native trees, and by the end of 2013, a million new trees will have been planted (see 'Trees' and 'Planting for the Future' films). It will take around 200 years to become fully mature woodland. Much of the new planting will take place on habitats that have the least biodiversity. Planting trees is faster than natural regeneration and also additional native tree species that are not common in the existing woodland

communities can be planted, therefore increasing the biodiversity of the area.

The project plan involves creating a native woodland habitat network, which will link existing isolated habitats and provide more opportunities for species to move and interact. This will help species survive and adapt to climate change (see Climate Change and Biodiversity fact sheet for more information on habitat networks).

The management plan also involves cutting down the remaining non-native conifers and species such as Rhododendron. The biodiversity of the remaining open ground habitats will also be improved by reducing the grazing pressure. (For more information see the Grazing fact sheet.)

TGTF project is a great example of a landscape scale land management plan that uses ecological understanding to improve habitats and bring significant benefits to biodiversity and the over-all sustainability of the area. However, our understanding of complex ecosystems is limited, and on-going scientific research is needed to further our knowledge and understanding.

There is no doubt however that the restoration and expansion of the native woodland in TGTF will protect biodiversity by improving existing habitats for key species, and connect isolated habitats that will help species to adapt to climate change.

Glossary

- *Culling - the process of killing certain animals from a group to ensure the population doesn't get too big.
- *Ecosystem - a biological environment consisting of all the organisms living in a particular area, as well as all the nonliving, physical components of the environment with which the organisms interact, such as air, soil, water and sunlight.
- *Even aged - a woodland where most of the trees are around the same age
- *Natural regeneration - when trees grow from seed spread naturally
- *Tree line - the line on the hillside above which trees are unable to grow because of conditions like cold temperatures.