

Afforestation - enhancing biodiversity in the Irish countryside

What is biodiversity and why is it important?

- The Convention on Biological Diversity defines biodiversity as the variability among living organisms from all sources including among other things, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.
- At least 40% of the world's economy and 80% of the needs of the poor are derived from biological resources. The richer the diversity of life, the greater the opportunity for medical discoveries, economic development, and adaptive responses to new environmental challenges such as climate change and disease outbreaks (www.cbd.int).
- Diversity within ecosystems provides for quality of life and boosts ecosystem stability.

Forests and biodiversity

- Forests are home to a major portion of global terrestrial biodiversity including more than half of all terrestrial species. In particular, forest canopies are among the most species rich terrestrial habitats supporting about 40% of invertebrate species, of which 10% are considered canopy specialists.
- Historical clearance of indigenous forests and replacement with agricultural land or urban development have greatly reduced biodiversity.
- In Ireland, plantation forests have been established to replace the native forests that were cleared over the centuries. Plantation forests compare favourably with many other intensive land uses in terms of the biodiversity they support, for instance, annual crop agriculture, especially when they replace degraded forest or when they are established on deforested land.
- Research has shown that establishing plantation forests on improved and semi-improved grasslands will be neutral or positive for biodiversity, particularly in landscapes that contain little semi-natural woodland habitat.
- An extensive UK study found that non-native conifer plantations provide suitable habitat for a wide range of native flora and fauna and make a positive contribution to biodiversity conservation.
- While natural forests are rich in biodiversity as they are structurally complex ecosystems, structural diversification in plantations can be improved through management practices.

Habitat creation

- Afforestation allows for forest expansion, and plantations contribute to biodiversity within landscapes through habitat supplementation or complementation, connectivity and buffering effects. Plantations can maintain or create wildlife corridors enhancing connectivity between areas of native ecosystems. Even relatively small forest fragments facilitate biodiversity conservation in human-dominated environments.
- The biodiversity of afforestation sites can be enhanced by the inclusion of supplementary habitats such as deadwood, hedgerows, wet habitat, open space, semi-natural woodland and species rich grasslands.
- Prior to canopy closure, afforestation leads to an increase in the relative abundance of competitive plant species, generalist spiders and some ground nesting birds through the exclusion of grazing livestock, forestry drainage and changes in nutrient management.
- Afforestation increases the amount of forest habitat and forest edge habitat in the landscape and so benefits species affiliated with these habitats and ecological processes related to landscape-scale factors.

- Native riparian woodlands are biodiversity ‘hotspots’ and provide refuge for communities of flora and fauna of high conservation value and act as a source for the expansion of such species to other areas. The creation of riparian woodlands results in an increase in flora and fauna associated with this ecosystem. These woodlands can also reduce fragmentation in the landscape by connecting isolated woodlands.

Species protection

- The scarcity of natural woodlands in Ireland means that plantations have the potential to provide important habitats for populations of some forest species that would otherwise be even scarcer. Managed forests can provide important habitats for a range of native species and may provide habitat for threatened populations of forest specialists including rare plants, animals and fungi.
- Afforestation has buffered the detrimental effects on biodiversity of agricultural intensification by acting as a refuge for a wide range of native forest plants and animals.
- Forests are home to a diversity of birds as well as nationally important populations of some rare or declining species, e.g. Hen Harrier, Nightjar and Merlin and may provide opportunities for other species to colonise Ireland. For example, Ireland does not have a resident population of woodpeckers, but the Great Spotted Woodpecker bred in Ireland in 2008, and the presence of forest specialists, such as crossbills and siskin, as breeders in Ireland is due in large part to increased afforestation in recent times.
- Early successional forests can provide habitat for bird species of scrub and open habitat, including those of conservation concern such as the Grasshopper Warbler, Whinchat and Linnet. Such species would be scarcer in the largely agriculture-dominated landscape of Ireland in the absence of plantations forests.
- Conifer plantations in Ireland provide strongholds for the native red squirrel which is threatened by the grey species.
- Woodland is the primary habitat for pine martens, whose population in Ireland has increased in response to afforestation.
- Lesser Horseshoe Bats in Ireland are dependant on woodland habitats, including plantation forests, for successful foraging.
- The positive value of plantations for groups such as beetles, hoverflies, spiders, moths and butterflies have been substantiated by studies in planted forests.

The future of biodiversity in plantation forests

- Ireland is committed to the principles of Sustainable Forestry Management and inherent to these are the conservation and enhancement of biodiversity in forests through improved planning, training and management practices.
- The Forest Biodiversity Guidelines have been developed to conserve and enhance biodiversity in Irish Forests.
- Ireland’s forest industry has changed from the single goal of timber production to the modern approach of multiple use, which includes a range of wood products, biodiversity value, carbon sequestration and use for leisure activities. Several measures support this diversification including Ireland’s National Biodiversity Plan, Forest Biodiversity Guidelines, the Native Woodland Scheme, and the Forestry Environment Protection (Afforestation) Scheme (FEPS).
- Ireland’s forest estate is largely fragmented; however the government target of expanding the national forest cover from 10% to 17% by 2030 may help reduce this, particularly through careful planning of these newly established forests. The increased planting of native broadleaf species in recent years is likely to enhance overall landscape biodiversity in Ireland’s agriculture-dominated landscape.