Forestry around the World

By Richard O'Hanlon

Forestry in Ireland: the Reforestation of a Deforested Country

Similar to most of Europe, anthropogenic (human) influences have had an immense effect on the vegetation of Ireland. People may think of Ireland as being a very green country, and they would not be wrong, as vast areas of the country are under agricultural uses. What may surprise the readers of *The Forestry Source* is that only 10 percent of Ireland is under forest cover, and the non-native tree species Sitka spruce composes more than half of the forest stock. The current forest cover situation is vastly different from that expected to occur naturally, which would be dense forests of oak and hazel, with alder being a major component on wetter soils. The situations that led to the conversion of Ireland's native forest to present-day conditions are dealt with briefly below; while the future plans to bring Irish forestry into the 21st century are also mentioned.

The natural vegetation of Ireland is one of temperate woodland, similar to that found in much of western Europe. Ireland's vegetation, however, is species-poor compared to mainland Europe and Britain, due to a combination of factors, such as the country's small size, island isolation, and glacial history. The last ice age in Ireland ended about 18,000 years ago, with the first plants arriving about 14,000 years ago from distant refugia on mainland Europe. Pollen records have shown that the pioneer tree species birch (*Betula*) was the first tree species to arrive, landing about 12,000 years ago. As the climate warmed, birch was nudged aside by shade-tolerant hazel (*Corrylus*), which was subsequently ousted by the climax species oak (*Quercus*), pine (*Pinus*), and elm (*Ulmus*) about 9,000 years ago. The pine and elm later became extinct, the former by anthropogenic influence and the latter by a disease similar to Dutch elm disease. Alder, ash, beech, lime, maple, and willow were all latecomers to the Irish flora, some introduced by man, and were present at least 2,000 years ago.

Causes of Mass Forest Decline

Through the analysis of pollen samples from bogs and examination of historical texts, it is generally accepted that the large-scale deforestation of Ireland's landscape started around 1390, as land was cleared for agriculture and grazing. Rapid expansion of the country's population necessitated that forests be cleared to increase food production. Further areas of woodlands were cleared toward the end of the 16th century, as the exploitation of Irish woods by English settlers began.

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By 1600, it is estimated that only 12 percent of the country was forested. Around this time, English forests were close to exhaustion, and Irish woods were seen as a cheap source of wood to fuel English industries. It followed that many English iron- and glass-working factories were established along the Irish coast, where raw materials could be imported, the abundant wood burned to provide heat, and the finished product exported back to England. As wood in England was more than seven times more expensive at the time, this business plan made economic sense. The wood of Irish oak and beech forests was also used as building material for ships and barrel-making, and the oak bark used for tanning leather. A bonus to the English settlers of removing Irish forest cover was that it also reduced the hiding places for the Irish rebels who fought against English rule.

The overexploitation of Irish forests continued throughout the 18th and 19th centuries, despite several laws passed by the then government meant to protect the remaining forest cover. The end of the 19th century showed a turning point, with the first (albeit small) increases in forest cover in centuries recorded, possibly as a result of planting grants made available at the time by the Royal Dublin Society. The Great Potato Famine reduced the population of Ireland from eight to four million inhabitants from 1845 to 1852, and this eased agricultural pressure on the landscape and possibly freed up land for forestry.

The beginning of the 20th century heralded more positive times for Irish forestry, with the creation of the State Forestry Department and the establishment of a forestry training center in 1903. Some 19 years later, the Irish Free State was created, after breaking free from British rule, and it followed that the Forestry Commission (later known as the Forest Service) was established to acquire lands with a view to planting forest on them and also to acquire and manage Ireland's existing forests. Further developments in the 20th century included the establishment of the Society of Irish Foresters, a significant positive move for the development of Irish forestry, according to a letter of congratulations from the then President of the Society of American Foresters, Henry Schmitz.

Levels of forest cover continued to rise slowly until the late 1980s, when afforestation by private landowners, particularly farmers, was encouraged through generous grants funded by the European Economic Community (later known as European Community). These measures led to levels of private forest planting increasing 15 to 20 fold over the ensuing 20 years. In 1988, Coillte (from the Gaelic, meaning forestry) was established as a state-owned commercial forestry company to manage all state forests. By 1996, it was estimated that more than 460,000 hectares (7 percent) of Ireland was forested.

Growing for the Future

In 1996, the Department of Agriculture, Food and Forestry published an optimistic plan to guide Irish forestry into the near future. The plan, titled, "Growing for the Future—a Strategic Plan for the Development of the Forestry Sector in Ireland," closely scrutinized every aspect of Irish forestry and set out goals to be reached by the industry by 2030. One of the main goals was to increase forest cover from the 464,000 hectares (7 percent of land cover) in 1996 to 1.2 million hectares (17 percent) by 2030. The majority of this increase was to be achieved through a combination of afforestation of agriculturally unsuitable lands (wet mineral soils, cut-away bogs) and through the continued conversion of agricultural lands to forests. The plan also sought to reverse the trend from a largely publically owned forest inventory to a situation whereby the majority of forests were privately owned. The increase in forest area was to result in an estimated fourfold increase in timber production from Irish forests, which in turn would lead to increased wood and wood products exports, and create thousands of jobs.

The planned increases in forest area necessitated that the environmental conditions of this large-scale land use change be considered. The publication of the "Forest Biodiversity Guidelines" in 2000 by the Forest Service ensures that all Irish forests conserve or increase biodiversity, thus adhering to the principles of sustainable forest management. Current biodiversity enhancement rules stipulate that all forests must be of mixed species, mature trees must be retained after harvests, open areas must be allowed within the forest stand, and certain levels of retained coarse woody debris must be present in the forest.

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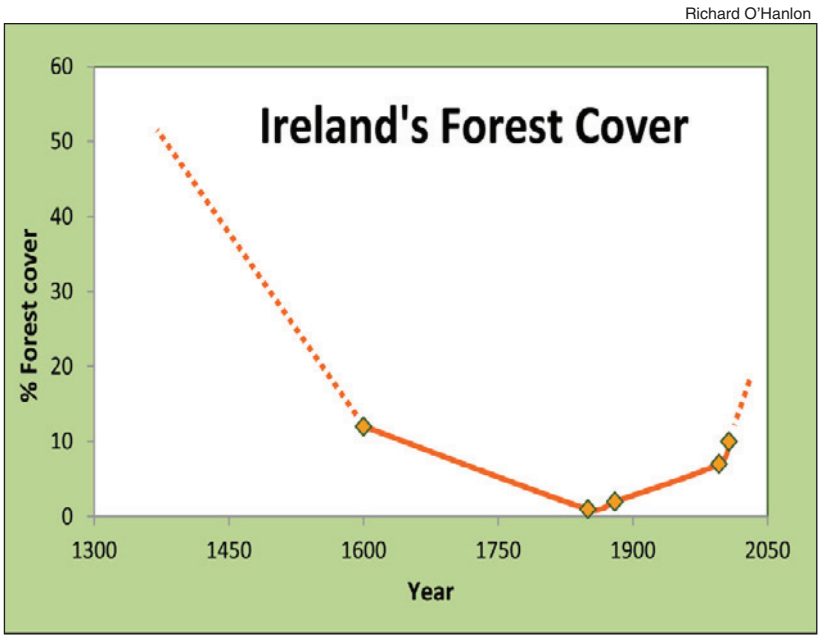

Changes in forest cover in Ireland. The dotted lines are estimated values.

The ability of Irish native and non-native tree species to support the forest biodiversity of many taxonomic groups has received extensive examination in recent years, with much of the work funded by the Council for Forest Research and Development (COFORD see www.coford.ie), the forest research arm of the Irish Department of Agriculture, Food and the Marine.

In 2007, the Irish National Forest Inventory estimated that forests covered more than 650,000 hectares (10 percent of land cover) in Ireland; well below the average of other European Union countries (35 percent of land cover).

Four non-native species make up the bulk of the Irish forest area: Sitka spruce, Norway spruce, lodgepole pine, and Japanese larch, which together represent 60 percent of Irish forest cover. Currently, native tree species comprise less than 25 percent of the forest stock, and levels of semi-natural woodlands are amongst the lowest in Europe at 1 percent of total land cover. The exotic conifer Sitka spruce is particularly well-suited to growth conditions in Ireland, with a national average yield class of 17 cubic meters per hectare per year and a maximum site index (dominant height at 30 years) equal to that found in its native range. Because this fast growth rate has a negative effect on the quality of the wood, Sitka spruce wood (a.k.a., white deal) is mainly used as a structural timber and in pallet and fiberboard production.

Age-wise, the forests of Ireland are mostly young; indeed, more than 60 percent of Irish forests are less than 20 years old. This reflects the large-scale afforestation that was carried out in the late 20th century. Lax planting rules at the time have also led to the alarming situation in which almost half of the current forest stock is monoculture in nature.

Anthropogenic influence on Irish forests has historically been negative. However, in recent times the increasing forest cover and the growing interest in the environmental and biodiversity aspects of forests are a very welcome development. In keeping with Ireland's international green image, sustainable development and increases in Irish forests will provide aesthetic, environmental, and economic benefits for the Irish people. As the Chinese proverb says, "The best time to plant a tree was 20 years ago. The second best time is now." The forest industry in Ireland has certainly followed this advice in recent years, and it seems that the future for Ireland is going to get greener.

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