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## APPENDIX 4: GLOSSARY

**AFFORESTATION** The creation of new woodland or forest on open land. Defined under the Forestry Act 2014 as the conversion of land to a forest.

**AGE CLASS STRUCTURE** The distribution of defined age categories of trees within a stand. The long term sustainability of that stand will often depend on achieving and maintaining a certain distribution of age classes within it, to ensure the ongoing recruitment of younger trees into the canopy.

**AGRO-FORESTRY** A land use that combines the growing of trees with conventional farming practices. Trees can be planted at wide spacings either singly, in groups or in rows. Where grazing is intended, tree shelters (1.5 m or taller) are used.

**ANCIENT TREE** See VETERAN TREE.

**ANCIENT WOODLAND** An area assessed as having been under woodland cover since 1660, based on the oldest reliable national records such as estate records and the Down and Civil Surveys.

**ANNEX I HABITAT** A natural habitat listed under the Habitats Directive as being of EU Community interest and whose conservation requires the designation of Special Areas of Conservation. Member States are legally obliged to protect Annex I habitats.

**AQUATIC BUFFER ZONE (ABZ)** An area at least 10 metres in width and created alongside a stream, river or lake, within which forestry operations are limited in order to protect water from direct disturbance and the runoff of sediment and nutrients. Within the context of afforestation, the ABZ remains generally undisturbed to allow a protective strip of natural ground vegetation to emerge. The creation of appropriate ABZs is a general requirement attached to licences / approvals issued by the Forest Service for regulated forestry activities. For details in relation to afforestation (in which context, the ABZ is referred to as the 'water setback'), see the Forest Service *Environmental Requirements for Afforestation* (DAFM, 2016).

**AQUATIC ZONE** A permanent or seasonal river, stream or lake shown on an Ordnance Survey 6 inch map.

**BEATING UP** See FILLING-IN.

**BIODIVERSITY** The variety of living organisms, including: the diversity of species; the genetic diversity or variation within the species; and the ecosystems in which the species occur.

**BIRDS DIRECTIVE** Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

**BRASH MAT** A layer of cut branches set down during harvesting and extraction operations in order to prevent or reduce soil damage by forest machinery.

**BRYOPHYTE** A division of the plant kingdom that contains small, rootless, non-vascular plants such as mosses and liverworts.

**CABLING** A method of timber extraction whereby felled tree lengths are removed from the site through the use of cables attached to anchor trees. Although specialised and expensive, cabling may be an option on steep slopes or sensitive sites, where extraction by wheeled or tracked machine is deemed to be impractical or unsuitable.

**CANOPY** The combined crowns of individual trees within a woodland or forest. The composition and condition of the canopy provides foresters with vital information about the overall health and development of the woodland.

**CARBON SEQUESTRATION** The process by which carbon dioxide is removed from the atmosphere and stored as carbon in plant tissue (including wood), soil litter and deadwood.

**CATCHMENT** The area from which a stream, river or lake derives its water.

**CLEARFELL** A form of harvesting whereby the entire stand (typically even-aged) is felled in a single operation. Clearfelling is the most common form of harvesting within Ireland's commercial forest sector.

**CLIMAX VEGETATION** The vegetation that theoretically would exist in any given place, as determined by the climate and soils and without the impact of human activity.

**CLOSE-TO-NATURE SILVICULTURE** An approach to forest management which mimics natural processes such as windthrow and fire, and which utilises natural processes such as natural regeneration, in order to influence age and species diversity within a woodland or forest.

**COILLTE OLD WOODLAND SURVEY** A desk-based survey undertaken by Coillte in 2001, which involved tracing the history of woodland cover on all of its properties by consulting the 1<sup>st</sup> and 3<sup>rd</sup> Edition Ordnance Survey map series. The survey found that c.27,000 ha constituted old woodland sites (also referred to as 'long-established woodland').

**CONSERVATION STATUS (HABITAT)** An assessment of the health of a natural habitat, based on the sum of the influences acting on that habitat and its typical species that may affect its long term natural distribution, structure and functions as well as the long term survival of its typical species. Methods for assessing conservation status were

drawn up by the European Topic Centre for Nature Conservation in conjunction with the Scientific Group of the Habitats Directive. It involves the application of a 'favourable', 'inadequate', 'bad' or 'unknown' assessment to four separate parameters (i.e. range, area, structures and functions, and future prospects) and an assessment of overall status (NPWS, 2013).

**CONTINUOUS COVER FORESTRY (CCF)** A type of low-impact silviculture that involves the use of selective harvesting and natural regeneration to promote uneven-aged stands and a continuous tree cover more typical of natural forests. CCF systems most relevant to native woodland management are selection, shelterwood and coppice. CCF is generally regarded as close-to-nature silviculture.

**CONVERSION** The process of changing a non-native forest to native woodland. Conversion can be carried out through *via* gradual transformation or more abrupt replacement.

**COPPICE** A tree cut just above ground level and allowed to produce new shoots, which are subsequently also cut. Defined under the Forestry Act 2014 as a forest crop raised from shoots produced from the cut stumps of the previous crop.

**COPPICING** A CCF system in which trees are cut just above ground level to encourage the production of multiple stems. These stems are then grown on and subsequently harvested after a number of years (depending on the diameter required for a particular end-use), thereby initiating a repeat of the cycle. Coppicing is an ancient form of woodland management in Ireland.

**COUPE** A small-scale opening within an existing canopy, created to facilitate woodland rejuvenation through natural regeneration and / or planting. In the context of commercial plantations, the term also applies to an area of clearfell.

**CROWN** The foliage-bearing part of a tree, including the branches, foliage and upper stem.

**DEADWOOD** Dead stems, branches and other woody debris standing or lying on the forest floor. As the deadwood breaks down and decays, it provides a range of valuable habitats for a wide variety of organisms.

**DECIDUOUS** A term used to describe species of trees that shed their leaves annually in autumn and replace them the following spring. In Ireland, examples include broadleaves such as sessile oak, silver birch and common beech, and some conifers, such as European larch.

**DORMANT SEASON** The period of the year during which the physiological processes within the tree are at their lowest ebb. Trees should ideally be planted during their dormant season, to minimise planting shock.

**ECOSYSTEM** A dynamic, interacting community of interdependent organisms (plants, animals, fungi, bacteria, etc.) together with the physical environment which they inhabit and upon which they depend.

**ECOSYSTEM SERVICES** Benefits provided by ecosystems that contribute to making

human life both possible and worth living. These include: provisioning services such as food and water; regulating services such as the maintenance of water quality, flood and disease control; cultural services such as spiritual, recreational and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth. The services and goods that an ecosystem provides are often undervalued, as many of them are without market value.

**EMMERGENT** A tree that grows above the main canopy, usually singly and widely-spaced.

**ENVIRONMENTAL GUIDELINES** Operational guidelines compiled by the Forest Service and setting out measures that are mandatory for all regulated (and grant-aided, where relevant) forestry activities, in order to protect various environmental features and sensitivities, e.g. landscape, water, archaeology, biodiversity. Mandatory measures applying to afforestation are set out in the document *Environmental Requirements for Afforestation* (DAFM, 2016).

**ESTABLISHMENT** The point at which a young tree is free-growing, i.e. above the height of competing vegetation. Within the context of early woodland development, it refers to the point at which an adequate number of trees of the desired species are free-growing.

**EUROPEAN COMMUNITIES (BIRDS & NATURAL HABITATS) REGULATIONS 2011 (S.I.477 OF 2011)** The principal instrument transposing the Birds and Habitats Directives into Irish law, with provisions for (*inter alia*): the conservation of natural habitats and habitats of species; activities, plans or projects affecting European sites; appropriate assessment; and the protection of flora and fauna.

**EVERGREEN** A term used to describe species of trees that retain their leaves through the year, shedding and replacing them over a several year cycle. In Ireland, examples include conifers such as Norway spruce, Scots pine and yew, and some broadleaves, such as holly and Holm oak.

**FAVOURABLE CONSERVATION STATUS (HABITAT)** The conservation status of a natural habitat will be taken as favourable when: its natural range and areas it covers within that range are stable or increasing; and the specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future; and the conservation status of its typical species is favourable (NPWS, 2013).

**FELLING LICENCE** A licence permitting the felling of trees, issued by the Minister of Agriculture, Food & the Marine under the Forestry Act 2014, as set out under Forestry Regulations 2017 (S.I.191 of 2017). Applications for Felling Licences are assessed by the Forest Service.

**FELL-TO-RECYCLE** See FELL-TO-WASTE.

**FELL-TO-WASTE** A management option on a thinning or clearfell site, whereby felled trees are not extracted off site, but are instead left onsite, typically *in situ* where felled. This practice foregoes the value of recoverable wood but eliminates the extraction operation, and is therefore a suitable option on sites deemed highly

sensitive, due to existing habitats and species, sensitive soils or steep slope. Also referred to as 'fell-to-recycle', as the entire tree remains onsite as deadwood, with nutrients returned to the soil naturally through decay.

**FERTILISER** A substance used to enrich the soil with particular nutrients, to boost tree establishment and early growth. Slow release formulations should be favoured, applied manually into the planting pit or around the base of the newly planted tree.

**FILLING-IN** A silvicultural operation involving the planting of new trees within an establishing woodland, to replace dead trees and to fill vacant planting positions, and thereby to aid establishment. The operation is normally carried out in the second or third year after initial planting, to ensure that stocking levels are maintained and to avoid gaps in the emerging canopy. Also referred to as 'beating up'.

**FLOODPLAIN** Land adjacent to a stream, river or lake that experiences flooding during periods of high discharge.

**FOREST** Defined under the Forestry Act 2014 as land under trees with a minimum area of 0.1 ha and tree crown cover of more than 20% of the total area (or the potential to achieve this cover at maturity), and includes all species of trees.

**FOREST LAND** A collective term applied to planted and natural forests, as well as temporarily unstocked areas (e.g. recent clearfell sites) and permanently unstocked areas within forest boundaries.

**FOREST REPRODUCTIVE MATERIAL** A collective term used to describe seeds, plants and other propagating material important for forestry purposes, particularly of those species specified in the Forest Reproductive Material Directive (Council Directive 1999/105/EC). Defined under the Forestry Act 2014 as the reproductive material of tree species and artificial hybrids that are important for forestry purposes.

**FOREST REPRODUCTIVE MATERIAL DIRECTIVE** EU Council Directive 1999/105/EC on the marketing of forest reproductive material. It stipulates that forest reproductive material may not be marketed unless it is from one of four specified categories, and that only approved basic material (the trees from which reproductive material is harvested) may be used for its production. The Directive requires the registration of seed collectors and nursery growers, and the development of a chain of custody, from seed collection right through to the eventual planting site.

**FOREST SERVICE** Ireland's national forest authority, responsible for forest policy, the promotion of the forest sector, the administration of forestry grant schemes, felling control, forest protection, and the National Forest Inventory. Part of the Department of Agriculture, Food & the Marine (DAFM) ([www.agriculture.gov.ie/forests-service](http://www.agriculture.gov.ie/forests-service)).

**FORESTRY ACT 2014** An Act to make further and better provision in relation to forestry, to provide for the development and promotion of forestry in a manner that maximises the economic, environmental and social value of forests within the principles of sustainable forest management, to confer power on the Minister for Agriculture, Food & the Marine to make regulations for the effective management of the forestry sector, to make further provision for the giving effect to acts of the institutions of the European Union by regulation made by that Minister in respect of

forestry and forestry-related activities, to repeal the Forestry Act 1946, to amend the Wildlife Act 1976, to amend the Agriculture Appeals Act 2001, to amend the Environment (Miscellaneous Provisions) Act 2011 and to provide for related matters. Forestry Regulations 2017 (S.I.191 of 2017) apply.

**FORESTRY STANDARDS MANUAL** Forest Service publication detailing the operational and administrative procedures and the silvicultural and environmental standards that apply under various forestry grant schemes. The *Forestry Standards Manual* also sets out the environmental referral protocol and the Forest Service Appropriate Assessment Procedure.

**FORMATIVE PRUNING** See SHAPING.

**GALLERY WOODLAND** A type of alluvial woodland comprising tall willows alongside river channels, and occasionally on river islands, where the tree roots are almost continuously submerged.

**GEOGRAPHICAL INFORMATION SYSTEM (GIS)** A multi-layered computer-based system that enables the efficient inputting, storage, analysis and retrieval of geographic and land attribute data.

**GLOBAL POSITIONING SYSTEM (GPS)** A satellite-based system used to determine the latitude and longitude of a receiver device on or near the earth's surface.

**HABITAT** The physical and biotic environment in which an organism or community of organisms lives.

**HABITATS DIRECTIVE** The Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, which aims to promote the maintenance of biodiversity in Europe, taking account of economic, social, cultural and regional requirements. The EU Habitats Directive, together with the Birds Directive, forms the cornerstone of Europe's nature conservation policy, and establishes the EU-wide Natura 2000 ecological network of protected areas. Annex I and Annex II list natural habitats and species (both animal and plant) of community interest whose conservation requires the designation of Special Areas of Conservation by Member States. The Habitats Directive is transposed into Irish law under the European Communities (Birds & Natural Habitats) Regulations 2011 (S.I.477 of 2011).

**HERBICIDE** A chemical formulated to cause plant death. A range of formulations are available, with different modes of action. Their typical use within a woodland context is to manage competing vegetation around the base of young trees, to aid establishment.

**INDIGENOUS SPECIES** See NATIVE SPECIES.

**INVASIVE SPECIES** A species capable of rapid spread and which has a deleterious impact on other species and habitats. Although a few native species may be considered as invasive, the term is more typically applied to non-native species that are injurious to

native species. Within a woodland context, invasive plants such as rhododendron and cherry laurel can suppress natural ground flora and the natural regeneration of woodland trees. Invasive animals include most species of deer (except red deer), which can cause considerable damage by overgrazing and stripping bark from trees.

**INVERT MOUNDING** A form of cultivation used to prepare a site for afforestation, whereby the soil is excavated, inverted and replaced back into its original location, into which the tree is then planted. Inverted mounding involves minimal site disturbance and creates a vegetation-free planting position, thereby reducing competition during the first growing season. This form of cultivation is best suited to mineral soils (as opposed to peat), as the mound disintegrates back into the pit.

**IRISH DEER MANAGEMENT FORUM** A forum established in 2015 to implement a series of actions on deer management and conservation set out in the document *Deer management in Ireland: A framework for action*, compiled following widespread consultation. The Forum itself comprises representatives from the main stakeholder areas such as landowners, forestry, hunting and conservation organisations, as well as representatives from the Department of Agriculture, Food & the Marine and the Department of Arts, Heritage, Regional, Rural & Gaeltacht Affairs.

**LIGHT DEMANDING SPECIES** Species that require high levels of light to survive. This is particularly important during the early years of growth, as species that are light demanding at seedling stage will die off if adequate light is not available.

**LONG-ESTABLISHED WOODLAND** An area that has remained continuously wooded since at least the 1<sup>st</sup> Edition OS maps of the 1830s and 1840s, but for which there is no positive evidence that it had been wooded for longer, or for which there is evidence that the woodland is not ancient. Also referred to as 'old woodland'.

**MAST YEAR** A year during which a tree produces a much higher than average quantity of seed in response to various natural cues.

**MICRO-CLIMATE** The climatic conditions (temperature, humidity, light levels, etc.) within the immediate vicinity of a tree or within an area of woodland.

**MINIMAL INTERVENTION AREA** An identified area within a woodland where the native canopy is allowed to develop naturally into old growth forest and where the trees are allowed to complete their entire life cycle. Minimal intervention areas may still need management input to control unnatural threats to the woodland, e.g. invasive rhododendron. Also referred to as 'refuge area.'

**MULCH** Material added around the base of newly planted trees, to suppress competing ground vegetation and to promote establishment. Mulching may provide an alternative to the application of herbicides for managing vegetation on sensitive sites that are small in scale. A wide variety of organic and inorganic mulches are available.

**NATIONAL FOREST INVENTORY (NFI)** A statistical and multi-resource inventory carried out

on a cyclical basis on the national forest estate by the Forest Service, in order to record and assess the extent and nature of Ireland's forests, both public and private, in a timely, accurate and reproducible manner. The NFI, undertaken initially in 2006 and again in 2009-12, is repeated in order to assess changes in the forest estate over time, to conform with national and international reporting requirements.

Parameters recorded include: area and species composition, growing stock (m<sup>3</sup>), biodiversity, health and vitality, carbon content and soil type, and data on minor tree species and natural regeneration. The 2<sup>nd</sup> NFI also recorded forest area change, volume increment and the latest harvesting volume estimates, thereby allowing the monitoring of aspects of sustainable forest management.

**NATIONAL PARK** An area of land protected for its outstanding scientific (biological, geological, geomorphological) and landscape importance and for its recreational, educational and scientific use, and recognised as such by the International Union for the Conservation of Nature (IUCN). All of Ireland's National Parks fall into the IUCN Category 2 and are owned by the State. Category 2 areas are typically large and conserve a functioning ecosystem, although to be able to achieve this, the protected area may need to be complemented by sympathetic management in surrounding areas.

**NATIONAL PARKS & WILDLIFE SERVICE (NPWS)** The national body charged with the conservation of habitats and species in Ireland. Currently part of the Department of Arts, Heritage, Regional, Rural & Gaeltacht Affairs (see [www.npws.ie](http://www.npws.ie)), but it has been attached to various Government departments over the years.

**NATIONAL SURVEY OF NATIVE WOODLANDS** A national survey of native woodlands undertaken between 2003 and 2008. The survey recorded (*inter alia*) plant species and information on area, location, soils, topography, invasive species, deadwood, grazing and natural regeneration. The data generated were used to produce a new and more comprehensive woodland vegetation classification system. For details, see Perrin *et al.* (2008).

**NATIVE SPECIES** Species of plants and animals that arrived onto the island of Ireland naturally since the end of the last Ice Age. They are of particular biodiversity value, having existed alongside other native flora and fauna over thousands of years. Also referred to as 'indigenous species'.

**NATIVE WOODLAND** Woodland dominated by native species of trees and other native plants.

**NATIVE WOODLAND SCHEME** A support package available under the Forestry Programme 2014-2020 to encourage the appropriate restoration and expansion of native woodlands in Ireland. The package comprises two separate 'elements': the Native Woodland Conservation Scheme and the Native Woodland Establishment Scheme (the latter represented by Grant & Premium Categories 9 and 10 under the general Afforestation Scheme). The package, originally launched in 2001, is implemented by the Forest Service in partnership with Woodlands of Ireland, the National Parks & Wildlife Service, the Heritage Council, Inland Fisheries Ireland and other native woodland stakeholders.

**NATURA 2000 SITE** An encompassing term that applies to Special Areas of



Conservation (SACs) and Special Protection Areas (SPAs). The Natura 2000 Network comprises nature protection areas in the territory of the European Union, established to protect Europe's most valuable and threatened species and habitats, as listed under both the Birds Directive and the Habitats Directive.

**NATURAL HERITAGE AREA (NHA)** An area considered important for the habitats present or which holds species of plants and animals whose habitat needs protection. NHAs are legally protected from damage under the Wildlife Amendment Act (2000). Currently, fully-designated NHAs encompass a number of raised and blanket bogs. Sites containing other habitats have been identified as proposed NHAs (pNHAs), but this is a non-statutory designation. In addition, the Geological Survey of Ireland (GSI) is compiling a list of geological / geomorphological sites in need of protection through NHA designation.

**NATURAL REGENERATION** The establishment of new trees and shrubs, and woodland, from seed arriving naturally (by animals, wind, water, etc.) onto the site from overhead sources within the woodland or from outside sources (typically adjoining or nearby, and occasionally distant). Defined under the Forestry Act 2014 as the generation of trees from natural seed fall.

**NATURAL WOODLAND** Woodland dominated by native tree species and which has developed without human assistance or interference. It is generally held that little, if any, woodland in Ireland is entirely natural, as almost all woodland has been influenced by human activity. The term 'semi-natural woodland' is more often used.

**NATURE RESERVE** An area of high biological importance designated for protection under the Wildlife Act. All nature reserves are also designated as Special Areas of Conservation / proposed Natural Heritage Areas. All woodland nature reserves are on State land.

**NON-VASCULAR PLANT** A plant without a vascular system. Non-vascular plants include mosses, liverworts and lichens.

**OLD GROWTH STAND** A stand that has attained a great age with minimal human disturbance and consequently, exhibits unique ecological features and high biodiversity.

**OLD WOODLAND** See LONG-ESTABLISHED WOODLAND.

**OPPORTUNISTS** See RUDERALS.

**PEOPLE'S MILLENNIUM FORESTS PROJECT** A project undertaken to restore 16 native woodlands throughout Ireland, to mark the new Millennium. As part of the restoration process, a tree was planted for every household in the country. The project, which also included various promotional and educational measures, was sponsored by the AIB Bank and the Forest Service, and managed by Coillte in partnership with Woodlands of Ireland. See [www.millenniumforests.com](http://www.millenniumforests.com) for details.

**PIONEERS** Tree species that are the first to naturally colonise open sites. Examples in Ireland include birch and common alder.

**PLANT HEALTH DIRECTIVE** EU Council Directive 2000/29/EC on protective measures against the introduction into the EU of organisms harmful to plants or plant products and against their spread within the EU. A new Plant Health Regulation (Regulation (EU) 2016/2031 of the European Parliament of the Council) was introduced in 2016, repealing and replacing Council Directive 2000/29/EC. This new Regulation will apply from the end of 2019.

**POLE STAGE** A tree between the size of a sapling and a mature tree. A forest in the early stages of thinning.

**POLLARDING** The practice of cutting a tree to leave a permanent trunk typically 2-4 metres in height and supporting a mass of branches above the reach of browsing animals.

**PRIORITY HABITATS** A subset of those habitats listed in Annex I of the Habitats Directive. Priority habitats are habitats that are in danger of disappearance and whose natural range falls mainly within the territory of the European Union. These habitats are of the highest conservation status and require measures to ensure that their favourable conservation status is maintained. Priority habitats in relation to native woodland in Ireland include bog woodland, residual alluvial forests, yew woods and limestone pavement, which can include scrubby facies comprising (*inter alia*) hazel and ash.

**PROTECTED AREA** A collective term applied to any area of land and / or water legally designated in order to protect and maintain biological diversity and associated natural and cultural resources. Examples include Natura 2000 sites (Special Areas of Conservation and Special Protection Areas), Natural Heritage Areas, Nature Reserves and National Parks.

**PROTECTED HABITATS OR SPECIES** A collective term applied to specific habitats and species of flora and fauna protected by the EU Birds and Habitats Directives, and by relevant national legislation, e.g. Wildlife Acts, Flora Protection Orders.

**PROVENANCE** The location from which seeds or cuttings are collected. The designation of Regions of Provenance under the Forest Reproductive Material Directive is used to help nurseries and growers select suitable material. The term is sometimes confused with 'origin', which is the original natural genetic source.

**REFORESTATION** Defined under the Forestry Act 2014 as the restocking by planting, natural regeneration or coppicing of an area from which trees have been felled or otherwise removed.

**REFUGE AREA** See MINIMAL INTERVENTION AREA.

**REPLACEMENT** The abrupt conversion of a non-native forest to native woodland, through clearfell and subsequent reforestation (*via* replanting and / or natural regeneration) with appropriate native species.

**REPLANT** To deliberately restock with trees an area from which trees have been felled, removed or otherwise destroyed, or to restock such other land as may be agreed with the Minister of Agriculture, Food & the Marine, but does not include restocking by means of natural regeneration (Forestry Act, 2014).

**RESTORATION** The process of assisting the recovery of an ecosystem that has been degraded.

**RESTORING PRIORITY WOODLAND HABITATS IN IRELAND LIFE PROJECT** A 4-year project targeting the restoration of 550 ha of priority woodland types (as per Annex I of the Habitats Directive), which have been impacted in various ways by human activities in the past. The project involved nine sites throughout Ireland, all owned and managed by Coillte. The project was jointly funded by Coillte and the EU LIFE-Nature programme (as LIFE05 NAT/IRL/000182). See [www.woodlandrestoration.ie](http://www.woodlandrestoration.ie) for details.

**RIDELINE** A permanent, unsurfaced strip through a woodland, maintained as open space to facilitate access and management (including deer control). Ridelines also represent important biodiversity features, and this value can be enhanced further through careful positioning, design and management (e.g. the staggered cutting of vegetation within the open habitat).

**RING-BARKING** A silvicultural treatment involving the removal of the bark and vascular tissue (typically using a small axe) from around the entire circumference of a standing tree, for the purpose of killing it *in situ*. Applications within the native woodland context include the elimination of individual or small groups of non-native trees, and the creation of standing deadwood.

**RIPARIAN AREA** Land directly adjacent to the edge of streams, rivers and lakes, representing the intermediate zone between the aquatic and terrestrial environments, and having its own distinctive hydrological characteristics and habitats (e.g. gallery woodland). Riparian areas are generally regarded as the land between the water's edge and the upper level of normal flooding.

**RIPPING** A form of cultivation used to prepare certain sites for afforestation, to break up hardened soil layers for the purpose of improving soil drainage for establishing trees.

**RUDERALS** Species of plants that colonise disturbed ground. They occur locally within woodlands where the soil has been disturbed, such as along freshly-tracked ridelines, on recently felled areas, and around animal excavations. Also referred to as 'opportunists'.

**SAPROXYLIC ORGANISMS** Organisms that depend on dead and decaying wood at some point in their life cycle.

**SCARIFICATION** A type of forestry operation associated with efforts to encourage natural regeneration within a woodland or on a recent clearfell site. It involves lightly breaking through the ground vegetation to expose the soil to the germinating seed of trees and shrubs.

**SCRAPE MOUNDING** A form of cultivation used to prepare a site for afforestation, whereby a small mound of topsoil is piled up, into which the tree is then planted. This creates an adjacent pit, the function of which is to aid drainage. Scrape mounding involves minimal site disturbance and creates a vegetation-free planting position, thereby reducing competition during the first growing season. However,

the pit can collect standing water and can make access dangerous and difficult. This form of cultivation should be avoided on peaty soil and if used, the pit should be as shallow as possible.

**SELECTION** A CCF silvicultural system in which felling and regeneration are distributed over the whole stand and over time, with individual large trees or small groups of trees selected for felling in any single intervention. Its application results in a continuous series of age classes and diameters.

**SEMI-NATURAL WOODLAND** Woodland that resembles natural woodland cover, dominated by native trees and shrubs but considerably altered by human activity. Stands originating from previous planting and / or coppice may be termed 'semi-natural' if they are now regenerating naturally.

**SHADE TOLERANT SPECIES** Species of trees and other plants that are able to survive at low light levels beneath a woodland canopy.

**SHAPING** A silvicultural treatment involving the early pruning of strong side branches and forked leaders, to promote strong leader development in a young broadleaf tree. Typically undertaken to promote stem quality for future wood production. Also referred to as 'formative pruning'.

**SHELTERWOOD** A CCF silvicultural system that aims to secure natural regeneration under the shelter of older trees, which are then removed by successive cuttings to allow the young trees to grow on to maturity.

**SILVICULTURE** The science of establishing and / or managing a woodland or forest to achieve a certain objective or range of objectives. It is based on a detailed knowledge of the current characteristics of the tree population within the woodland, and how these will react over time to various influences, both natural and artificial (e.g. thinning).

**SPECIAL AREA OF CONSERVATION (SAC)** A prime wildlife conservation area considered to be important at a European as well as an Irish level, designated under the Habitats Directive. Also referred to as a 'Natura 2000 site'.

**SPECIAL PROTECTION AREA (SPA)** An area of significance for the conservation of habitats which are important for birds and have been designated under the EU Council Directive 79/409/EEC on the conservation of wild birds (or 'Birds Directive'). Also referred to as a 'Natura 2000 site'.

**SPIRAL GUARD** A device fitted around the base of a newly planted tree, to prevent stem damage from rabbits and hares.

**STAND** A discrete unit of woodland, as distinguished by a common characteristic or range of characteristics such as age or species. Woodlands are commonly divided into stands, for management purposes.

**STEM INJECTION** A method of applying herbicide to control unwanted woody species (e.g. invasives such as rhododendron and cherry laurel), involving the direct injection of the compound into the stem(s) of individual plants. Typically only suitable if treating older growth with larger diameter stems.

**STUMP APPLICATION** A method of applying herbicide to control unwanted woody

species (e.g. invasives such as rhododendron and cherry laurel), involving the direct application of the compound to the freshly-cut stump of individual plants.

**SUSTAINABLE FOREST MANAGEMENT (SFM)** *“The stewardship and use of forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national and global levels, and that does not cause damage to other ecosystems.”* (From the Ministerial Conference on the Protection of Forests in Europe, Helsinki, 1993.)

**THICKET** A close, visually impenetrable stand of young trees and / or shrubs.

**THICKET STAGE** Within a silvicultural context, the stage in the emergence of a new woodland canopy at which the side branches of adjoining trees meet and individual canopies merge.

**THINNING** Defined under the Forestry Act 2014 as the removal from a forest in accordance with good forest practice of excess or diseased trees, or trees of poor quality in order to improve the growth, health and value of the remaining trees. Thinning can also be undertaken to achieve other objectives, such as the promotion of the ground layer or the understorey, to enhance biodiversity.

**TIMBER** A piece of wood, typically a plank or beam, prepared for use in building, carpentry, etc. Defined under the Forestry Act 2014 as the wood produced by a tree, whether or not the tree is standing.

**TOPSOIL** The uppermost layer of the soil, in which most of the nutrient cycling and biological activity takes place.

**TRANSFORMATION** The process of changing from an even-aged stand structure to a multi-aged stand structure, using continuous cover forestry. Within the native woodland context, transformation can be described as the gradual conversion (over a number of years or decades) of a non-native and predominantly even-aged forest to an uneven-aged native woodland, through the use of CCF.

**TRANSPLANT** A tree seedling or cutting that has been transplanted at least once in the nursery.

**TREE** A woody plant, with a single or multiple stems (trunks), that lives for many years and is typically capable of growing to over 5 metres in height (or 4 metres on waterlogged soil). Defined under the Forestry Act 2014 as a free standing woody perennial plant whose species has the potential to have a more or less definite crown and be capable of reaching a minimum height of 5 metres at maturity and includes a sapling and the species of birch and hazel.

**TREE GUARD** See TREE SHELTER.

**TREE SHELTER** A tube placed over individual trees immediately after planting, and secured to a stake. Its purpose is to create a favourable micro-climate to promote establishment and early growth, and / or to protect against grazing (often referred to as a ‘tree guard’ in this context). Within native woodland management, tree shelters are often used when restocking an existing native woodland or to protect

against deer.

**UNDERSTOREY** The layer of vegetation, usually comprising shrubs and / or regenerating trees, growing beneath the canopy of a woodland or forest, but above the field layer. Within a silvicultural context, the term also applies to trees within the lower canopy level.

**UNDERSTOREY PLANTING** The planting of individual or small groups of trees of shade tolerant species beneath small gaps within an existing woodland canopy, for the purpose of rejuvenating the woodland and / or altering its species composition.

**UNITED NATIONS CONVENTION ON BIOLOGICAL DIVERSITY** International convention (1992) on the protection of global biodiversity. Its implementation in Ireland is set out in the National Biodiversity Plan, developed by the Department of Arts, Heritage, Regional, Rural & Gaeltacht Affairs, with cross-sector input.

**VASCULAR PLANT** A plant having a vascular system of conducting tissues, e.g. ferns, conifers and flowering plants.

**VEGETATION MANAGEMENT** The control of competing grasses and herbaceous plants around the base of a young tree, to suppress competition for water, nutrients and light, and to aid establishment.

**VERMICOMPOST** A substance made from organic matter (such as farmyard manure or vegetable waste) that has been broken down by earthworms. When applied at planting, it can promote the uptake by young tree roots of existing nutrients in the soil, through fungal associations, thereby representing a possible alternative to fertiliser inputs on sensitive sites.

**VETERAN TREE** A tree of exceptional age and / or a tree surviving past full maturity, typically exhibiting crown retrenchment. Such trees – whether native or otherwise – are important for forest biodiversity, as they provide a range of habitats for invertebrates, birds and other animals (e.g. deep fissured bark, broken snags, cavities, dead branches). Also, veteran trees are often of cultural and / or landscape value. Also referred to as ‘ancient tree’.

**WATER FRAMEWORK DIRECTIVE (2000/60/EC)** An EU Directive requiring all Member States to protect and improve water quality in all waters so as to achieve ‘Good’ status. It was given legal effect in Ireland by the European Communities (Water Policy) Regulations 2003 (S.I.722 of 2003). The Directive applies to rivers, lakes, groundwater and transitional coastal waters. It requires the preparation of management plans on a river basin basis and specifies a structured method for developing these plans. The Water Framework Directive is linked to a number of other EU directives, including those relating to the protection of biodiversity, primarily the Birds and Habitats Directives. See [www.catchments.ie](http://www.catchments.ie) for details.

**WATER SETBACK** See AQUATIC BUFFER ZONE.

**WILDLIFE ACTS** The Wildlife Act 1976 and the Wildlife (Amendment) Act 2000, together

with the European Communities (Birds & Natural Habitats) Regulations 2011 (S.I.477 of 2011), form the most important legislation underpinning biodiversity and nature conservation in Ireland. Provisions include (*inter alia*): the control of certain activities that may adversely affect wildlife; a mechanism to give statutory protection to Natural Heritage Areas; and measures to enhance the conservation of wildlife species and their habitats. See [www.npws.ie/legislation/irish-law](http://www.npws.ie/legislation/irish-law) for details.

**WINDBLOW** See WINDTHROW.

**WINDROWING** A forestry operation whereby tree tops and branches left behind after clearfell (typically) and extraction are gathered by machine into rows or piles onsite, to facilitate access for reforestation.

**WINDTHROW** A natural process whereby trees are uprooted and blown over by wind. The risk of windthrow can be exacerbated by various factors, e.g. the inappropriate thinning of a mature even-aged crop of Sitka spruce on an exposed peat site. (Related processes include wind rocking and wind snap.) Also referred to as 'windblow'.

**WOOD** The collective term for the hard woody parts of a tree that can be recovered and used for a range of products, including building material and fuel.

**WOODLAND DYNAMICS** The processes in which woodlands and forests develop and expand (or contract) over time, as constituent trees and tree species are influenced by each other, by the physical and climatic factors of the site, and by human intervention.

**WOODLAND GENERALISTS** Species of plants and animals characteristic of woodland habitats but which may also occur outside woodlands.

**WOODLAND SPECIALISTS** Species of plants and animals that are adapted to living in, and requiring the characteristic habitats of, woodland. Some of these species may be unable to live outside woodlands, and others may be confined to ancient woodland.

**WOODLANDS OF IRELAND** A not-for-profit company with charitable status, established in 1998 to promote the conservation, expansion and sustainable development of native woodlands. Funded and supported by the Forest Service, National Parks & Wildlife Service and the Heritage Council. See [www.woodlandsofireland.com](http://www.woodlandsofireland.com) for further information.

**YIELD CLASS** An index used to describe the potential productivity of an even-aged stand of trees. It is based on the maximum mean annual increment of cumulative timber volume achieved by a given species growing on a given site and managed according to a standard management prescription. It is measured in units of cubic metres per hectare per year.

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