

APPENDIX A

GLOSSARY OF TERMS

Advance Regeneration (Reproduction): Seedlings or saplings that develop or are present in the understory in advance of rotation.

Afforestation: The practice of planting trees with the intent of creating a forest on presently non-forested land.

Artificial Regeneration: The establishment of young trees through planting seedlings or seed.

Basal Area: 1) The cross-sectional area of a single stem, including the bark, measured at breast height. 2) The cross-sectional area of all stems in a stand expressed per unit of land area.

Biological Diversity (Biodiversity): The spectrum of life forms and ecological processes that support and sustain them. Biological diversity occurs at four interacting levels: genetic, species, community, and ecosystem.

Biological Legacy: An organism, a reproductive portion of an organism, or a biologically derived structure or pattern inherited from a previous ecosystem. Biological legacies often include large trees, snags, and down logs left after harvesting to provide refugia and to structurally enrich the new stand.

Board Foot: The amount of wood contained in an unfinished board 1 in thick, 12 in long, and 12 in wide.

Canopy (Crown) Closure: The point at which the crown perimeters within a canopy touch.

Canopy (Crown) Cover: The ground area covered by the crowns of trees or woody vegetation as delimited by the vertical projection of crown perimeters and commonly expressed as a percent of total ground area.

Cavity (Den) Tree: A (partially) hollow tree potentially used by wildlife (e.g. shelter).

Cleaning: A release treatment made in an age class not past the sapling stage to free the favored trees from less desirable individuals of the same age class that overtop them or are likely to do so.

Clearcut: The removal in one operation of essentially all the trees in a stand.

Clearcut Regeneration Method: A silvicultural method designed to naturally regenerate a stand by the removal of most or all woody vegetation during harvest creating a completely open area leading to the establishment of an even-aged stand. Regeneration can be from natural seeding from adjacent stands or from trees cut in the harvest operation. Regeneration is established during or following stand removal.

Climax Forest: 1) An ecological community that represents the culminating stage of a natural forest succession for its environment. 2) Any forest capable of reproducing its own composition in the absence of severe disturbance. 3) A relatively stable and long-lived community that develops late in the course of vegetational development, in the absence of major exogenous disturbance, and on a specific site. It is a position of relative compositional stability, although change continues at a relatively slower pace.

Coarse Woody Debris (CWD): 1) Any piece(s) of dead woody material on the ground in forest stands or in streams. 2) Dead woody material, ≥ 4 inches diameter inside bark at the small end, on the ground in forest stands or in water.

Codominant Crown Class: A tree whose crown helps to form the general level of the main canopy, receiving full light from above and comparatively little from the sides.

Cohort: 1) An age group of individuals. 2) A group of individuals or vital statistics about them having a statistical factor in common, such as age class. 3) A group of trees developing after a single disturbance, or a cluster of disturbances occurring over a relatively short time period, commonly consisting of trees of similar age.

Community: 1) An assemblage of plants and animals living together and occupying a given area. 2) A group of human families.

Compartment: A portion of a forest under one ownership, usually contiguous and composed of a variety of forest stand types, defined for purposes of locational reference and as a basis for forest management.

Composition: 1) The constituent elements of an entity (e.g. the species that constitute a plant community). 2) The proportion of each tree species in a stand expressed as a percentage of the total number, basal area, or volume of all tree species in the stand.

Coppice Regeneration Method: A silvicultural method designed to naturally regenerate a stand using vegetative reproduction.

Cord: A stack of wood that measures 4 x 4 x 8 feet (128 ft³).

Crop Tree: 1) Timber crop trees are trees selected to become a component of a future commercial harvest. 2) Sawtimber crop trees are the best quality, high vigor trees of desirable species that are targeted for (near) final harvest; they will be grown to rotation age or maximum desired size class.

Crown Class: A category of tree based on its crown position relative to those of adjacent trees.

Crown Thinning (High Thinning, Thinning From Above): The removal of trees from the dominant and codominant crown classes in order to favor the best trees of those same crown classes.

Cubic Foot: A unit of true volume that measures 1 x 1 x 1 ft.

Cull: Any item of production (e.g. trees, logs, lumber, seedlings) rejected because it does not meet certain specifications of usability or grade.

Cutting: 1) The felling of trees or stands. 2) A shoot, twig, or other plant part removed from a plant.

Cutting System: A method of cutting logs that determines the grade and size of lumber.

Cut-to-length Harvesting: A system in which felled trees are processed into log lengths at the stump before they are carried to the road or landing.

Deforestation: The removal of a forest stand where the land is put to a nonforest use.

Demographic Transition: A stage of stand structural development, following stem exclusion and preceding old multi-aged. The crowns of the trees are now large enough so that when one dies the surrounding trees cannot fill the gap. As a result, a new cohort of trees has space to enter the canopy. Trees from the original cohort become senescent. This stage lasts from the time the first trees younger than the disturbance cohort are able to grow into the canopy until the disturbance cohort no longer has a significant presence in the stand.

Diameter (at) Breast Height (DBH, dbh): The diameter of the stem of a tree measured at 4.5 ft. (1.37 m) from the ground (on the uphill side).

Diameter Limit Selective Cut: A selective cut of all merchantable trees greater than a specified diameter.

Dioecious: Pertaining to a species having male and female flowers (or strobili) produced on separate plants.

Disturbance: Any relatively discreet event in time that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment.

Dominant Crown Class: A tree whose crown extends above the general level of the main canopy, receiving full light from above and partial light from the sides.

Dormancy: A condition in the life of an organism or its parts when a tissue predisposed to proliferate does not do so and visible growth and development are temporarily suspended.

Economic Clearcut: A clearcut that does not include a plan for regeneration.

Ecoregion: A contiguous geographic area having a relatively uniform macroclimate and used as an ecological basis for management or planning.

Ecosystem: A spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of the abiotic environment within its boundaries.

Ecosystem Management: 1) **WDNR:** A system to assess, conserve, protect, and restore the composition, structure, and function of ecosystems, to ensure their sustainability across a range of temporal and spatial scales, and to provide desired ecological conditions, economic products, and social benefits. 2) Management guided by explicit goals, executed by policies, protocols, and practices, and made adaptable by monitoring and research based on the best understanding of ecological interactions and processes necessary to sustain ecosystem composition, structure, and function over the long term.

Element Occurrence (EO): An area of land or water in which an element (a natural community, a rare plant population, a rare animal population, or other feature tracked by the Natural Heritage Inventory program) is, or was, present. For natural community elements, the EO may represent a stand or patch of a natural community, or a cluster of stands or patches of a natural community.

Endangered Species: 1) A species threatened with extinction throughout all or a significant portion of its range. 2) A species whose continued existence as a viable component of Wisconsin's wild animals or plants is determined to be in jeopardy on the basis of scientific evidence.

Endogenous: 1) Intrinsic, caused by internal factors. 2) Growing from or on the inside.

Epicormic Branch: A shoot arising spontaneously from an adventitious or dormant bud on the stem or branch of a woody plant often following exposure to increased light levels or fire.

Environment: The sum of all external conditions affecting the life, development, and survival of an organism.

Even-aged Stand: A stand where the trees have only small differences in their ages (a single age class). By convention, the spread of ages does not differ by more than 20% of the intended rotation.

Exogenous: 1) Extrinsic, originating from or due to external causes. 2) Growing from or on the outside.

Exotic (Nonnative): A species introduced from another country or geographic region outside its natural range (an exotic can become naturalized, i.e. establish, grow, reproduce, and maintain itself).

Exotic (Nonnative): A species introduced from another country or geographic region outside its natural range (an exotic can become naturalized, i.e. establish, grow, reproduce, and maintain itself).

Extended Rotation Forest: Old forests which are dominated by trees older than their traditional rotation age yet younger than their pathological rotation age (average life expectancy), and are managed by objective for both commodity production and the development of some ecological and social benefits associated with older forests.

Fine Woody Debris (FWD): Dead woody material, <4 inches diameter inside bark at the large end, on the ground in forest stands or in water.

Fine Woody Material (FWM): Woody material, living or dead, <4 inches diameter inside bark at the large end; including fine woody debris and portions of standing living and dead shrubs and trees.

Forest: 1) An ecosystem characterized by a more or less dense and extensive tree cover, often consisting of stands varying in characteristics such as species composition, structure, age class, and associated processes, and commonly including meadows, streams, fish, and wildlife. 2) An organized assemblage of trees, other plants, and animals in complex association with each other and their physical environment.

Forest Cover Type: 1) A category of forest usually defined by its vegetation, particularly its dominant vegetation as based on percentage cover of trees. 2) The plant species forming a plurality of composition across a given area.

Forest Ecology: The science concerned with the forest as a biological community dominated by trees and other woody vegetation, the interrelationships between the various trees and other organisms constituting the community, and the interrelationships between the organisms and the physical environment in which they exist.

Forest Health: The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance.

Forest Management: The practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization, and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest.

Forest Regulation: 1) The technical aspects of controlling stocking, harvests, growth, and yields to meet management objectives, including sustained yield. 2) The control of private forest management by exercise of public authority. 3) A legal enactment or ordinance affecting forests.

Free Thinning: The removal of trees to control stand spacing and favor desired crop trees, using a combination of thinning criteria without strict regard to crown position.

Free-To-Grow: A seedling or small tree free from direct competition from other trees, shrubs, grasses, or herbaceous plants.

Gap: The space occurring in forest stands due to individual or group tree mortality or blowdown.

Gap Dynamics: The change in space and time in the pattern, frequency, size, and successional processes of forest canopy gaps caused by the fall or death of one or more canopy trees.

Germination: The beginning of growth of a mature, generally dormant seed, spore, or pollen grain (for seed, generally characterized by rupture of the seed coat and the emergence of a radicle or plumule).

Germinative Capacity: The percent of seeds, spores, or pollen grains in a given sample that actually germinate irrespective of time.

Grading: The classification of logs, stems, lumber, or seedlings according to quality, value, potential use, or function.

Group Selection (see selection regeneration method): A regeneration method where regeneration is managed in group openings 0.1-0.5 acres in size (comprising part of a larger uneven-aged stand).

Growing Stock: All the trees growing in a forest or in a specific part of it, usually commercial species, meeting specified standards of size, quality, and vigor, and generally expressed in terms of number or volume.

Habitat: The place (environment) where an animal, plant, or population naturally or normally lives and develops.

Habitat Type: 1) A land or aquatic unit consisting of an aggregation of habitats having equivalent structure, function, and responses to disturbance. 2) An aggregation of units of land capable of producing similar plant communities at climax.

Habitat Type Classification System: A site classification system based on the floristic composition of plant communities. The system depends on the identification of potential climax associations, repeatable patterns in the composition of the understory vegetation, and differential understory species. It groups land units with similar capacity to produce vegetation. The floristic composition of the plant community is used as an integrated indicator of those environmental factors that affect species reproduction, growth, competition, and community development. A system to classify forest plant communities and the sites on which they develop.

Hardening Off: 1) The natural process of adaptation by plants to cold, drought, etc. 2) Preparing seedlings or rooted cuttings in a nursery for transplanting or planting out, by gradually reducing watering, shade, or shelter and thus inducing changes in the leading shoot that render it more tolerant of cold, dessication, etc.

Harvest Cutting: An intermediate or final cutting that extracts salable trees.

Harvesting (Logging): The process of gathering a timber crop. It includes felling, skidding/forwarding, on-site processing, and removal of products from the site.

Harvesting Method: A procedure by which a stand is logged, where emphasis is on meeting logging requirements while concurrently attaining silvicultural objectives.

Harvest Scheduling: A process for allocating cutting and other silvicultural treatments over a forest with emphasis on which treatments to apply and where and when to apply them.

Herb: 1) A nonwoody, vascular plant such as a grass, a fern, or a forb. 2) A seed-producing annual, biennial, or perennial that does not develop persistent woody tissue but dies down at the end of a growing season.

Herbivory: The consumption of plants by animals.

High-grade Selective Cut: A selective cut of the most valuable and highest quality trees, that leaves low value and poor quality trees to predominate.

Improvement Cutting: The removal of less desirable trees of any species in a stand of poles or larger trees, primarily to improve composition and quality.

Increment Borer: An auger-like instrument with a hollow bit and an extractor used to extract thin radial cylinders of wood (increment cores) from trees having annual growth rings, to determine increment or age.

Ingrowth: The volume, basal area, or number of those trees in a stand that were smaller than a prescribed minimum diameter or height limit at the beginning of any growth-determining period and that, during that period, attained the prescribed size.

Intermediate Crown Class: A tree whose crown extends into the lower portion of the main canopy, but shorter in height than the codominants and receiving little direct light from above and none from the sides.

Intermediate Treatment: Any treatment or tending designed to enhance growth, quality, vigor, and composition of the stand after establishment of regeneration and prior to final harvest.

Landscape: A spatial mosaic of several ecosystems, landforms, and plant communities across a defined area irrespective of ownership or other artificial boundaries and repeated in similar form throughout.

Layering: A form of vegetative reproduction in which any intact branch develops roots as the result of contact with soil or other media.

Liberation: A release treatment made in a stand not past the sapling stage to free the favored trees from competition with older, overtopping trees.

Litter Layer (Forest): A layer that lies above the mineral soil, made up of organic debris, including leaves, needles, bark, and wood, in different stages of decomposition, with a variety of insects, microbes, and fungi that feed on the litter.

Logging Residue (see slash): The unused portions of trees cut or killed during logging and left in the woods.

Low Thinning (Thinning From Below): The removal of trees from the lower crown classes to favor those in the upper crown classes.

Management Goal: A broad, general statement, usually not quantifiable, that expresses a desired state or process to be achieved.

Management Objective: A concise, time-specific statement of measurable planned results that correspond to preestablished goals in achieving a desired outcome.

Management Plan: A predetermined course of action and direction to achieve a set of results, usually specified as goals, objectives, and policies.

Management Policy: A definite course or method of action to guide present and future decisions or to specify in detail the ways and means to achieve goals and objectives.

Management Prescription: A set of management practices and intensities scheduled for application on a specific area to satisfy multiple goals and objectives.

Mast: Fruit and nuts consumed as food by livestock and certain kinds of wildlife.

Matrix: 1) The most extensive and connected landscape element that plays the dominant role in landscape functioning. 2) A landscape element surrounding a patch. 3) The nonreserved portion of the forest landbase. 4) A rectangular array of mathematical elements consisting of m rows and n columns.

Mature: Pertaining to a tree or even-aged stand that is capable of sexual reproduction, has attained most of its potential height growth, or has reached merchantability standards.

Mean (Arithmetic): The average value of a series or set of observations, obtained by dividing the algebraic sum of all observations in the set by the number of observations; often referred to as a measure of central location or central tendency.

Mean Annual Increment (MAI): The total increment of a tree or stand (standing crop plus thinnings) up to a given age divided by that age. The culmination of mean annual increment (CMAI) is the age in the growth cycle of a tree or stand at which the MAI for volume, basal area, diameter, or height is at a maximum.

Mean Diameter (of a stand or group of trees): 1) Quadratic mean diameter, the diameter corresponding to their mean basal area. 2) Arithmetical mean diameter, the arithmetical mean of the diameters.

Mechanical Thinning: The removal of trees in rows, strips, or by using fixed spacing intervals.

Milacre: An area of 1/1000 (0.001) acres.

Milacre Stocking: Proportion of milacres (sample plots) occupied by a plant of interest (species and/or size), expressed as a percentage of the total number of milacres sampled. A measure frequently applied to sample stocking of seedling and sapling regeneration. For example, at least 60% milacre stocking for established oak regeneration reflects that $\geq 60\%$ of milacre plots sampled contained at least one oak seedling greater than a specified minimum size.

Monoecious: A population or species having functional male and female flowers (or strobili) in separate places on the same plant.

Mycorrhizal Association: The usually symbiotic association between higher plant roots (host) and mycelia of specific fungi that aid plants in the uptake of water and certain nutrients and may offer protection against other soil-borne organisms.

Natural Regeneration: The establishment of young trees through natural seeding, sprouting, suckering, or layering.

Nonnative (Exotic) Invasive Plants: Plant species accidentally or intentionally introduced from another country or geographic region, having the ability to significantly displace desirable vegetation or reduce crop yields.

Nurse Tree(s): A tree, or group of trees, used to improve survival or improve the form of a more desirable tree, or group of trees.

Old Forest: Forests which are older than the typical managed forest (beyond traditional rotation age), but are not biologically old. They are beyond economic maturity, but are not senescent.

Old-growth Forest: Forests which are relatively old and relatively undisturbed by humans. The forest is biologically old, containing some trees which are nearing or beyond their average expected lifespan. The original even-aged overstory, established following a catastrophic disturbance, is becoming senescent, is senescing, or has senesced.

Old Multi-aged: The final stage of stand structural development. An uneven-aged forest with few or no remnants left from the original cohort. This stage will last until another stand-replacing disturbance occurs.

Overmature: 1) A tree or even-aged stand that has reached that stage of development when it is declining in vigor and health and reaching the end of its natural life span. 2) A tree or even-aged stand that has begun to lessen in commercial value because of size, age, decay, or other factors.

Overstory: That portion of the trees in a forest forming the uppermost canopy layer.

Overstory Removal Regeneration Method: A silvicultural method in which the entire stand overstory is removed in one cut to provide release of established seedlings and saplings. Also referred to as a natural shelterwood and a one-cut shelterwood.

Passive Management: A deliberate decision to not manipulate forest vegetation.

Patch: 1) A small area distinct from that about it. 2) A small part of a stand or forest. 3) An ecosystem element (e.g. an area of vegetation, that is relatively homogeneous internally and differs from surrounding elements).

Patch Selection (see selection regeneration method): A regeneration method where regeneration is managed in patches >0.5 acres in size (comprising part of a larger uneven-aged stand).

Perfect Flower: Having both functional pistils and stamens.

Pioneer: A plant capable of invading bare sites and persisting there or colonizing them until supplanted by successional species.

Pistillate Flower: Having female organs only.

Poletimber: A tree of a size between a sapling and a sawtimber tree. Hardwood trees ranging in size from 5 to 11 inches dbh, and conifers ranging in size from 5 to 9 inches dbh.

Polygamous: With bisexual and unisexual flowers on the same or different individuals of the species.

Precommercial thinning: The removal of trees not for immediate financial return but to reduce stocking to concentrate growth on the more desirable trees.

Prescribed Burning: The application of fire in order to attain management objectives.

Pruning: The removal, close to the branch collar or flush with the stem, of side branches and multiple leaders from a standing tree.

Radicle: The root of a seed embryo from which the primary root develops.

Reforestation: The practice of regenerating and growing healthy trees on previously forested sites.

Regeneration (Reproduction): 1) The seedlings or saplings existing in a stand. 2) The act of renewing tree cover by establishing young trees naturally or artificially.

Regeneration Cutting: Any removal of trees intended to assist regeneration already present or to make regeneration possible.

Regeneration Method: A procedure by which a stand is established or renewed by means of natural or artificial reproduction. The various methods include the removal of the old stand (usually involving a harvest), the establishment of a new one, and any supplementary treatments of vegetation, slash, or soil that are applied to create conditions favorable to the establishment of reproduction.

Regeneration Period: The time between the initial regeneration cutting and the successful reestablishment of a new age class by natural means, planting, or direct seeding.

Release: 1) A treatment designed to free young trees (not past the sapling stage) from undesirable, usually overtopping, competing vegetation. 2) To relieve (set free) from restraint, confinement, oppression, or burden.

Relict Forest: Forests which appear never to have been manipulated, exploited, or severely disturbed by humans of European origin; in Wisconsin the stand and site should show no evidence of significant human disturbance since about 1800 AD.

Reserve Trees: Living trees, ≥ 5 inches dbh, retained after the regeneration period under even-aged or two-aged silvicultural systems. They can be dispersed uniformly or irregularly, as single trees or aggregated groups or patches, or any mixture thereof. They are retained well beyond stand rotation, and for purposes other than regeneration. Reserve trees may be harvested eventually or retained to complete their natural lifespan. Synonyms may include leave trees, green tree retention, and standards.

Rhizome: A modified stem that grows below ground, commonly stores food materials, and produces roots, scale leaves, and suckers irregularly along its length and not just at nodes.

Risk: 1) The probability that a tree will die or fail (main stem will break) within a specified time period. 2) The probability that an insect population or outbreak will occur in a particular stand or forest, or that a particular tree will be severely damaged under a given set of conditions. 3) Fire risk. 4) The relative probability of any of several alternative outcomes as determined or estimated by a decision maker when the actual outcome of an event or series of events is not known. 5) The product of the probability of the event taking place, the probability of being exposed to the event, and the probability of certain outcomes if exposure to the event occurs.

Root Collar: The location on a plant where the primary vascular anatomy changes from that of a stem to that of a root.

Rotation: In even-aged silvicultural systems, the period between regeneration establishment and final cutting. Rotation may be based on many criteria including culmination of mean annual increment, mean size, age, attainment of particular minimum physical or value growth rate, and biological condition.

Salvage Cutting: The removal of dead trees or trees damaged or dying because of injurious agents other than competition, to recover economic value that would otherwise be lost.

Sanitation Cutting: The removal of trees to improve stand health by stopping or reducing the actual or anticipated spread of insects or disease.

Sapling: A usually young tree larger than a seedling but smaller than a pole timber tree. Trees ranging from 1 to 5 inches dbh.

Sawtimber: Trees with minimum diameter and length and with stem quality suitable for conversion to lumber. Hardwood trees larger than 11 inches dbh, and conifers larger than 9 inches dbh.

Scaling: The measurement or estimation of the quantity or quality of felled timber.

Scarification: Mechanical removal of competing vegetation and/or interfering debris, or disturbance of the soil surface, designed to enhance regeneration for species that require mineral soil seed beds.

Seedling: 1) A usually young tree smaller than a sapling. Trees less than 1 inch dbh. 2) A plant grown from seed.

Seed Tree Regeneration Method: A silvicultural method designed to bring about reproduction on what are essentially clearcut harvest areas by leaving enough trees singly or in groups to naturally seed the area with adequate stocking of desired species in a reasonable period of time before the site is captured by undesirable vegetation. Only a few trees of the original stand are left, and this residual stocking is not sufficient to protect, modify, or shelter the site in any significant way.

Seed Year: A year in which trees or other plants produce abundant seed as individuals or as a stand.

Selection Regeneration Method: A silvicultural method designed to regenerate and maintain uneven-aged stands by removing some trees at regular intervals. Trees are removed in various size classes, either singly or in small patches. An uneven-aged stand is maintained by periodically regenerating new age classes while manipulating the overstory structure to facilitate continual development of quality growing stock. Regeneration cuts, thinning, and harvesting usually occur simultaneously.

- Single-tree selection: Regeneration managed in gaps <0.1 acres.
- Group selection: Regeneration managed in group openings 0.1 – 0.5 acres.
- Patch selection: Regeneration managed in patches >0.5 acres.

Selective (Partial) Cutting: The removal of only a portion of the trees in a stand.

Senescence: 1) The life phase of an organism, or a part of the organism, that precedes natural death, usually involving a decreased ability to repair damage and degradation. 2) The state of being old: the process of becoming old.

Scerotinous: Pertaining to cones or fruit that remain on a tree without opening for one or more years. In some species cones open and seeds are shed when heat is provided by fires or hot and dry conditions.

Shelterwood Regeneration Method: A silvicultural method designed to regenerate a stand by manipulating the overstory and understory to create conditions favorable for the establishment and survival of desirable tree species. Regenerates an even-aged stand and normally involves removal of all or most of the overstory once the new stand is established. The overstory serves to modify understory conditions, create a favorable environment for reproduction, and provide a seed source. The system is characterized by a preparatory cut (optional), seeding cut(s), and overstory removal.

Silvics: The study of the life history, ecology, and general characteristics of forest trees and stands, with particular reference to environmental factors, as a basis for the practice of silviculture.

Silvicultural Prescription: A planned series of treatments designed to change current stand structure to one that meets management goals and objectives. The prescription normally considers ecological, economic, and societal constraints.

Silvicultural System: A planned program of vegetation treatment during the entire life of a stand. The three basic components are tending, harvesting, and regeneration. Named after the stand age class structure and the regeneration method employed.

Silviculture: 1) WDNR: The practice of controlling forest composition, structure, and growth to maintain and enhance the forest's utility for any purpose. 2) The art and science of controlling the establishment, growth, composition, health, and quality of forests to meet the diverse needs and values of landowners and society on a sustainable basis.

Single-tree Selection (see selection regeneration method): A regeneration method where regeneration is managed in gaps <0.1 acres in size (comprising part of a larger uneven-aged stand).

Site: 1) The sum total of environmental conditions surrounding and available to the plant. The physical (climate, topography, soil) and biotic (plants, animals) factors interact to yield the light, heat, water, and chemicals that are directly available and used by the plant, as well as other chemical and mechanical disturbance factors. 2) The area in which a plant or stand grows, considered in terms of its environment, particularly as this determines the type and quality of the vegetation the area can carry. 3) A spatially explicit, relatively homogeneous portion of land characterized by specific physical and chemical properties that affect ecosystem functions, and where a more or less homogeneous forest type may be expected to develop.

Site Class: A classification of site quality based on actual measured forest productivity, generally measured in terms of the gross volume of bole wood per unit area per year over the normal rotation (mean annual increment at culmination). Some definitions include site index as a direct measure of site quality.

Site Index: A species-specific measure of actual or potential forest productivity (usually for even-aged stands), expressed in terms of the average height of trees included in a specified stand component (dominants, codominants, or the largest and tallest trees) at a specified index or base age.

Site Index Curve: A curve showing the expected height growth pattern for trees of the specified stand component in even-aged stands of a given site index.

Site Preparation: Hand or mechanized manipulation of a site, designed to enhance the success of regeneration. Treatments may include bedding, burning, chemical spraying, chopping, disking, raking, and scarifying and are designed to modify the soil, litter, or vegetation and to create microclimate conditions conducive to the establishment and growth of desired species.

Site Potential (Site Capability): The sum total of all the factors affecting the capacity to produce forests or other vegetation. Collective physical resources (e.g. moisture, nutrients, heat, light) available for plant growth. Different potentials facilitate growth of some species and limit growth of others. Consequently, site potential has a strong effect on plant community development

Site Quality (Site Productivity): The productive capacity of a site, usually expressed as volume production of a given species.

Site Type: A classification of site quality or potential based on indirect measures utilizing site factors (individually or in combination) such as climate, topography, geology, soil, and vegetation. Some definitions include site index as an indirect measure of site quality.

Slash: The residue left on the ground after logging, or accumulating as a result of storm, fire, girdling, or delimiting.

Snag: A standing dead tree.

Special Concern Species: A species with some problem of abundance or distribution suspected but not proved.

Species of Greatest Conservation Need (SGCN Wisconsin): Animal species identified as at risk or declining in the Wisconsin Wildlife Action Plan. They include threatened and endangered species, as well as many other species whose populations are of concern.

Staminate Flower: Having pollen-bearing organs (stamens) only.

Stand: 1) A contiguous group of trees sufficiently uniform in species composition, structure, and age-class distribution, and growing on a site of sufficiently uniform quality, to be considered a relatively homogeneous and distinguishable unit. 2) A contiguous group of similar plants.

Stand Density: 1) A quantitative measure of stocking expressed either absolutely in terms of number of trees, basal area, or volume per unit area or relative to some standard condition. 2) A measure of the degree of crowding of trees within stocked areas commonly expressed by various growing space ratios.

Stand Density Index (SDI): 1) A widely used measure developed by Reineke (1933) that expresses relative stand density in terms of the relationship of a number of trees to stand quadratic mean diameter. 2) Any index that expresses relative stand density based on a comparison of measured stand values with some standard condition.

Stand Initiation: The initial stage of stand structural development, lasting from the time of stand-replacing disturbance until the new cohort forms a continuous canopy and trees begin competing with each other for light and canopy space.

Stand Structural Development: Changes in forest stand structure over time.

Stand Structure: 1) The physical and temporal distribution of plants in a stand. 2) The horizontal and vertical distribution of components of a forest stand including the age, height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags, and down woody debris.

Stem Analysis: The analysis of a complete tree stem by counting and measuring the annual growth rings on a series of cross sections taken at different heights to determine its past rates of growth and changes in stem form, and to develop taper and volume equations.

Stem Exclusion: A stage of stand structural development, following stand initiation and preceding demographic transition. The canopy continues to have only one dominant cohort, and competition among trees is intense. Crowns are small enough so that when one tree dies, the other trees are able to fill the vacated space in the canopy by expanding their branches horizontally. The canopy is dense enough to prevent new saplings from growing into the canopy – there is no space available for new trees.

Strobili: Conifer cones.

Stocking: 1) An indication of growing-space occupancy relative to a preestablished standard. Common indices of stocking are based on percent occupancy, basal area, relative density, stand density index, and crown competition factor. 2) The amount of anything on a given area, particularly in relation to what is considered optimum.

Stratification: 1) The exposure of seed to a cold, moist treatment to overcome dormancy and promote germination. 2) The subdivision of a population into strata (blocks) before sampling, each of which is more homogeneous for the variable being measured than the population as a whole.

Stump Sprout: Regeneration of shoot growth from either adventitious or dormant buds from a cut tree stump.

Succession: The gradual supplanting of one community of plants by another (compositional change).

Sucker (Root Sprout): Shoots arising from below ground level either from a rhizome or from a root.

Sunscald: Localized injury to bark and cambium caused by a sudden increase in exposure of a stem or branch to intense sunlight and high temperatures.

Suppressed (Overtopped) Crown Class: A tree whose crown is completely overtopped by the crowns of one or more neighboring trees.

Sustainability: The capacity of forests, ranging from stands to ecoregions, to maintain their health, productivity, diversity, and overall integrity, in the long run, in the context of human activity and use.

Sustainable Forest Management (Sustainable Forestry): 1) WDNR: The practice of managing dynamic forest ecosystems to provide ecological, economic, social, and cultural benefits for present and future generations. 2) The practice of meeting the forest resource needs and values of the present without compromising the similar capability of future generations. 3) The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and potential to fulfill, 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.

Sustained Yield: 1) The yield that a forest can produce continuously at a given intensity of management. Sustained-yield management implies continuous production so planned as to achieve a balance between increment and cutting. 2) The achievement and maintenance in perpetuity of a high-level regular periodic output of the various renewable resources without impairment of the productivity of the land.

Tending: Treatment of the stand during the time period between stand origin and final harvest.

Thinning: 1) A cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality. 2) To reduce in number or bulk, thickness or depth, density or viscosity, or to dilute or weaken.

Threatened Species: A species likely to become endangered within the foreseeable future, based on scientific evidence.

Timber Quality (Tree): Tree stem form, soundness, and potential timber value.

(Timber) Stand Improvement (TSI): 1) An intermediate treatment made to improve stand composition, structure, condition, health, and growth. 2) Non-commercial intermediate treatments.

Tolerance: 1) The capacity of an organism or biological process to subsist under a given set of environmental conditions. 2) The capacity of trees to grow satisfactorily in the shade of, and in competition with, other trees. 3) The ability of animals to adjust to different or disturbed habitats.

Two-aged Stand: A stand with trees of two distinct age classes, separated in age by more than 20% of rotation.

Understory: All forest vegetation growing under an overstory.

Uneven-aged Stand: A stand where the trees differ markedly in their ages, with trees of three or more distinct age classes either mixed or in small groups.

Variable Retention Harvest System: An approach to harvesting based on the retention of structural elements or biological legacies (trees, snags, logs, etc.) from the harvested stand for integration into the new stand to achieve various ecological objectives.

Viability: 1) The capacity of a seed, spore, or pollen grain to germinate and develop under given conditions. Actual viability is determined by measuring germinative capacity. 2) The ability of a wildlife or plant population to maintain sufficient size to persist over time in spite of normal fluctuations in numbers.

Vigor: Active healthy well-balanced growth.

Weeding: A release treatment in stands not past the sapling stage that eliminates or suppresses undesirable vegetation (including shrubs and herbs) regardless of crown position.

Whole-tree Harvesting: Cutting and removing an entire upper portion of a tree consisting of trunk, branches, and leaves or needles.

Wildlife: All nondomesticated animal life.

Winter Injury: The desiccation and sometimes mortality of foliage or twigs by strong dry winds at times when water conduction is restricted by cold or frozen soil or by frozen plant tissues.

Winter Sunscald: Localized injury to bark and cambium caused by freezing following warming by the sun in late winter or early spring. Winter sunscald is localized on the side of the stem exposed to midday and afternoon sun, and often results in wounds or cankers, particularly on smooth-barked trees.

Wolf Tree: A generally predominant or dominant tree with a broad, spreading crown that occupies more growing space than its more desirable neighbors.

Yield: 1) The amount of wood that may be harvested from a particular type of forest stand by species, site, stocking, and management regime at various ages. 2) The amount of product output recovered from a quantity of raw material input. 3) The harvest, actual or estimated, of mammals, birds, or fish expressed by numbers or weight, or as a proportion of the standing crop, over a given period.

Yield Determination: The calculation, by volume regulation or, less directly, by area regulation, of the amount of timber that may be harvested annually or periodically from a specified area over a stated period in accordance with the management objectives.

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WISCONSIN DEPARTMENT OF NATURAL RESOURCES NOTICE OF FINAL GUIDANCE & CERTIFICATION

Pursuant to ch. 227, Wis. Stats., the Wisconsin Department of Natural Resources has finalized and hereby certifies the following guidance document.

DOCUMENT ID

FA-20-0001

DOCUMENT TITLE

Silviculture Handbook

PROGRAM/BUREAU

Forest Economics and Ecology, Applied Forestry Bureau

STATUTORY AUTHORITY OR LEGAL CITATION

S. 823.075, Wis. Stats. & NR 1.25, Wis. Admin. Code

DATE SENT TO LEGISLATIVE REFERENCE BUREAU (FOR PUBLIC COMMENTS)

2/10/2020

DATE FINALIZED

4/6/2020

DNR CERTIFICATION

I have reviewed this guidance document or proposed guidance document and I certify that it complies with sections 227.10 and 227.11 of the Wisconsin Statutes. I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is not explicitly required or explicitly permitted by a statute or a rule that has been lawfully promulgated. I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is more restrictive than a standard, requirement, or threshold contained in the Wisconsin Statutes.

March 27, 2020

Signature

Date