

## Guidance for Retention under FSC

### Meeting Forest Stewardship Council requirements

---

Forest Stewardship Council® (FSC®) certification entails following rigorous criteria when carrying out active forest management practices. FSC's goal is for forest management to maximize positive environmental benefits while minimizing adverse environmental impacts. Fundamental to this goal is maintaining the ecological functions and resilience of forest ecosystems by taking a precautionary approach that conserves biological diversity, water resources, soils, and unique and fragile ecosystems.

In FSC management, **retention specifically refers to the living vegetation, including trees, shrubs, and herbaceous species, that is retained during timber harvests.** One objective of retention is to mimic the result of natural disturbance events - wildfire, windstorms, volcanic eruptions, and avalanches do not remove woody debris and plant matter entirely from the land. Through even severe natural disturbance events, biological legacies persist in some form. Biological legacies include live trees, snags, large down wood and undisturbed patches of vegetation. Biological legacies conserve organic matter, create critical habitat structures, and maintain micro-environmental conditions that support many forest-dependent organisms. Retaining biological legacies through retention practices is an important part of silvicultural prescriptions under FSC management.

This document covers the following topics:

- **Summary of minimum FSC retention requirements**
- **NNRG recommendations for meeting FSC retention requirements**
- **FSC retention silvicultural guidelines**
- **Appendix: Principle 6: Environmental Impact – indicators for retention - *excerpt from FSC-US Forest Management Standard***

### Summary of minimum FSC retention requirements

---

Retention is required when a regeneration harvest exceeds 6 acres in size. Such harvests must retain 10-30 percent of pre-harvest basal area. Retained trees must reflect the diversity of species and size classes, including large and old trees, represented within the management unit. Retention can be distributed in clumps or dispersed as individual trees as appropriate for site conditions.

The volume of green-tree retention (10-30 percent of pre-harvest basal area) depends on:

- size of regeneration harvest
- presence of legacy trees
- adjacent riparian zones
- slope stability
- upslope management
- presence of critical refugia
- extent and intensity of harvesting across the forest management unit

The maximum clearcut (regeneration harvest) under FSC is 60 acres. Thus, factoring in the 10-30 percent retention requirement, the harvest area is 42-54 acres in size. The average size of an even-aged harvest should be no larger than 40 acres across the ownership.

## **NNRG recommendations for meeting FSC retention requirements**

- Regulatory required retention (e.g. riparian and wetland buffers, steep slopes) can count towards the 10-30 percent retention.
- Scattered and/or clumped retention should also be included in the upland portion of the harvest unit, and not entirely concentrated in a single block of retention.
- Retain trees across all species and age classes. Retention does not have to be exclusively mature or dominant trees. Conversely, retention should not be exclusively young, suppressed or defective trees.
- Low value, defective, or pulp grade trees are good candidates for retention, and often times provide higher habitat values.
- Similarly, low value log segments (e.g. pistol butts, freeze crack) can be retained within the harvest unit vs. exported as pulp.
- Grouping retention around existing legacy structures (e.g. old-growth stumps, snags, large downed logs, etc.) enhances the conservation benefits of the retention practice.
- Retain trees that show obvious signs of wildlife use (e.g. nesting cavities, woodpecker foraging, roosting platforms, owl pellets, etc.).

## **FSC retention silvicultural guidelines**

<b>Retention Principles</b>	<b>FSC Criteria</b>
For even-aged harvest units that exceed 6 acres in size, 10-30% of pre-harvest basal area will be retained following harvest. The levels of green-tree retention will depend on such factors as: opening size, legacy trees, and adjacent riparian zones, slope stability, upslope management, presence of critical refugia, and extent and intensity of harvesting across the forest management unit. Retention will be distributed as clumps and dispersed individuals, appropriate to site conditions. Retained trees will comprise a diversity of species and size classes, which includes large and old trees.	FSC U. S. Standards 6.3.g.1.a
Legacy trees, old and large trees, snags and woody debris will be retained (or, if absent, recruited) to sustain populations of native plants, fungi, and animals, both within the harvest unit and across the forest management unit.	FSC U. S. Standards 6.3.f
Habitat components necessary to support native species (e. g. vertical and horizontal structural complexity, understory species diversity, food sources, nesting, denning, hibernating, and roosting structures, habitats and refugia for sedentary species and those with special habitat requirements) will be protected, maintained, and/or enhanced within each harvest unit and across the entire forest management unit.	FSC U. S. Standards 6. 3.b 6.3.g.1.a
Where necessary to protect against wind throw and to maintain microclimate, green trees and other vegetation are retained around snags, down woody debris, and other retention components.	FSC U. S. Standards 6.3.g.1.c
Native hardwoods and understory vegetation will be retained as needed to maintain and/or restore the natural mix of species and forest structure.	FSC U. S. Standards 6.3.g.1.d
Live trees and native understory vegetation will be retained within the harvest unit in proportions and configurations that are consistent with the characteristic natural disturbance regime in each community type, unless retention at a lower level is necessary for purposes of restoration.	FSC U. S. Standards 6.3.g.1

## Appendix: Principle 6: Environmental Impact - indicators for retention

Available at: <https://us.fsc.org/download.fsc-us-forest-management-standard-v1-0.95.htm>

### Principle 6: Environmental Impact

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

Intent: Principle 6 focuses on maximizing positive environmental impacts and minimizing adverse environmental impacts from forest management operations: assessment of impacts, protection of species and communities, maintenance of ecological functions, the use of pesticides and forest conversion.

Within the scope of Principle 6 are issues and concepts about which there remains considerable uncertainty; in cases of uncertainty, the use of a *precautionary approach* is present both implicitly and explicitly in several aspects of the Principle because mitigation, repair and restoration is often difficult, more costly, and sometimes impossible.

See Glossary for definition of *biological diversity*.

**Criterion 6.3 Ecological functions and values shall be maintained intact, enhanced, or restored, including:**

- a) Forest regeneration and succession.
- b) Genetic, species, and ecosystem diversity.
- c) Natural cycles that affect the productivity of the forest ecosystem.

**Indicator 6.3.f** Management maintains, enhances, or restores habitat components and associated stand structures, in abundance and distribution that could be expected from naturally occurring processes. These components include:

- a) large live trees, live trees with decay or declining health, *snags*, and well-distributed coarse down and dead woody material. *Legacy trees* where present are not harvested; and
- b) vertical and horizontal complexity.

Trees selected for *retention* are generally representative of the dominant species naturally found on the site.

Intent: The intent of this Indicator is to ensure that the forest owner/manager provides adequate habitat for species associated with large and/or decaying trees and dead wood. This Indicator applies to all stands, silvicultural systems, and harvest objectives, including normal operations, salvage harvests, intermediate, and final harvests and stands regenerated by natural means or by planting.

Some stands may take some time to develop these structural elements. Evidence of conformance may include measurable goals (e.g., numbers and sizes of trees), and application of silviculture systems and harvesting practices that develop and maintain these structures over time. Long-term passive approaches may be used to develop snags and coarse down and dead woody material by allowing retention trees (e.g., large live decay trees) to die naturally, rather than girdling and/or felling trees specifically for that purpose.

Trees with decay or declining health include but are not limited to cavity trees.

While species selected for retention should be generally representative of the species found on the site, flexibility in the proportions of species retained may be based on ecological and financial objectives.

**Indicator 6.3.g.1** In the Southeast, Appalachia, Ozark-Ouachita, Mississippi Alluvial Valley, and Pacific Coast Regions, when *even-aged systems* are employed, and during salvage harvests, live trees and other native vegetation are retained within the harvest unit as described in Appendix C for the applicable region.

Intent: This Indicator is intended to apply to the regeneration phase of even-aged silvicultural systems in both natural regeneration and planted stands. This Indicator is not meant to preclude even-aged management in forest types that are typically characterized by gap disturbances. Rather, it is meant to ensure that biological legacies are retained at the time when even-aged management is used. These legacies provide plant species diversity, refugia for understory, soil, and leaf-litter species, retention of wildlife habitat structural elements (e.g., snags, downed logs, etc.), and vertical and horizontal complexity in developing stands.

Guidance: The method of retention, especially patch size and location, should generally reflect the type of live vegetation that would be found given natural disturbance regimes and should be sufficient to provide a variety of “lifeboat” conditions for sensitive understory plant species, fungi, and lichens and habitat elements for animals. When feasible, retained vegetation should be located to protect snags, down woody debris, and other retention components from wind throw, and to maintain their micro-climate and desired function.

Retention objectives and requirements will vary with harvest unit size, the condition of surrounding stands and silvicultural systems applied to those stands and relative rarity of the plant community. For example, no retention may be needed if the harvest unit is small and the adjacent stand will be managed with an uneven-aged system.

It is generally expected that the level of retention will exceed that the minimum requirements of this Indicator and will include trees of all sizes as well as understory plants.

**Indicator 6.3.g.2** Under very limited situations, the landowner or manager has the option to develop a qualified plan to allow minor departure from the opening size limits described in Indicator 6.3.g.1. A qualified plan:

1. Is developed by qualified experts in ecological and/or related fields (wildlife biology, hydrology, landscape ecology, forestry/silviculture).
2. Is based on the totality of the *best available information* including peer-reviewed science regarding natural disturbance regimes for the FMU.
3. Is spatially and temporally explicit and includes maps of proposed openings or areas.
4. Demonstrates that the variations will result in equal or greater benefit to wildlife, water quality, and other values compared to the normal opening size limits, including for sensitive and rare species.
5. Is reviewed by independent experts in wildlife biology, hydrology, and landscape ecology, to confirm the preceding findings.

Applicability: This Indicator is applicable only under limited situations where landowners have opted to conduct site-specific assessments to develop opening sizes that depart from explicit regional limits set forth in Indicator 6.3.g.1.

### **Appendix C: Regional Limits and Other Guidelines on Opening Sizes for PACIFIC COAST REGION**

**Indicator 6.3.g.1.a:** Within harvest openings larger than 6 acres, 10-30% of pre-harvest basal area is retained. The levels of green-tree retention depend on such factors as: opening size, legacy trees, adjacent riparian zones, slope stability, upslope management, presence of critical refugia, and extent and intensity of harvesting across the FMU. Retention is distributed as clumps and dispersed individuals, appropriate to site conditions. Retained trees comprise a diversity of species and size classes, which includes large and old trees. Regeneration harvest blocks in even-aged stands average 40 acres or less. No individual block is larger than 60 acres.

**Indicator 6.3.g.1.b** Even-aged silviculture may be employed where: 1) native species require openings for regeneration or vigorous young-stand development, or 2) it restores the native species composition, or 3) it is needed to restore structural diversity in a landscape lacking openings while maintaining connectivity of older intact forests.

**Guidance:** *In some dry regions, retaining approximately 10 tons of debris per acre may be sufficient. In wetter regions, retaining 20 tons of debris per acre may be sufficient. Debris is well distributed spatially and by size and decay class, with a goal of at least 4 large pieces (approximately 20" diameter x 15' length) per acre. Three to 10 snags per acre (averaged over 10 acres) are maintained or recruited. Snags are well represented by size, species, and decay class.*

**Indicator 6.3.g.1.c** Where necessary to protect against wind throw and to maintain microclimate, green trees and other vegetation are retained around snags, down woody debris, and other retention components.

**Indicator 6.3.g.1.d** Native hardwoods and understory vegetation are retained as needed to maintain and/or restore the natural mix of species and forest structure.

**Indicator 6.3.g.1.e** If regeneration harvest ages do not approach *culmination of mean annual increment* (CMAI), retention approaches the upper end of the range required in Indicator 6.3.h.1.a (above).

**Indicator 6.3.g.1.f** No logical logging unit adjacent to a logged even-aged regeneration unit may be harvested using an even-aged regeneration method unless/until the prior even-aged regeneration unit is adequately stocked by a stand of trees in which the dominant and co-dominant trees average at least five feet tall and three years of age from the time of establishment on the site, either by planting or by natural regeneration. If the requirement to achieve adequate stocking is to be met with trees that were present at the time of harvest, there shall be a period not less than five years following the completion of operations before an adjacent even-aged regeneration harvest may occur.