

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

FOREST STAND IMPROVEMENT

(Ac.)
CODE 666

DEFINITION

The manipulation of species composition, stand structure, and stocking by cutting or killing selected trees and understory vegetation.

PURPOSE

- To increase the quantity and quality of forest products by manipulating stand density and structure;
- Harvest forest products;
- Initiate forest stand regeneration;
- Reduce wildfire hazard;
- Improve forest health reducing the potential of damage from pests and moisture stress;
- Restore natural plant communities;
- Improve aesthetic and recreation values;
- Improve wildlife habitat;
- Increase carbon storage in selected trees.

CONDITIONS WHERE PRACTICE APPLIES

All forest land [where improvement of forest resources is needed](#).

CRITERIA

General Criteria Applicable To All Purposes

The harvest-regeneration strategy will be identified for all planned forest improvement harvesting:

- Uneven-aged management systems (e.g., single-tree selection, group selection, coppice selection)
- Even-aged management (e.g., clear-cut, seed-tree, shelterwood, coppice)

The extent or size and orientation of treatment area(s) shall be defined as part of practice design.

Preferred tree and understory species are identified and retained to achieve all planned purposes.

Spacing, density, size class, number and amounts of trees and understory species to be retained will follow established guidelines for the intended purposes.

Stocking guidelines shall contain stocking in terms of basal area, spacing or trees per acre by species and size class distribution.

The method, felling direction and timing of tree cutting for harvesting shall protect site resources, e.g., residual trees, wetlands, cultural resources, improvements and utilities. Time tree cutting to avoid buildup of insect or disease populations. Felling direction must be compatible with trail layout as specified by Forest Trails and Landings, 655.

Forest stand improvement activities shall be performed to minimize soil erosion, compaction, rutting, and damage to remaining vegetation and maintain hydrologic conditions.

Slash and debris will be treated such that they do not present an unacceptable fire, safety, environmental, or pest hazard. Such remaining material will not interfere with the intended purpose or other management activities. Refer to Slash Treatment, 384.

[Sustainable, non-commercial removal/harvests of firewood shall be an acceptable means of forest stand improvement.](#)

[Comply with applicable federal, state and local laws and regulations during the installation, operation and maintenance of this practice.](#)

Massachusetts laws and regulations related to forestry activities include:

- M.G.L. c. 132, §40-46 (Massachusetts' Forest Cutting Practices Act);
- 304 CMR 11.00 (DCR, Division of Forest and Parks Forest Cutting Practices Regulations);
- M.G.L. c. 61 (Massachusetts' Forest Tax Law);
- 304 CMR 8.00: (Chapter 61, Forest Classification);
- M.G.L. c. 48, §§16-20 (An Act Relative to the Handling of Slash);
- 310 CMR 10.00 et. Seq. (DEP Wetlands Protection Regulations for forestry activities);
- M.G.L. c. 131A (The Massachusetts Endangered Species Act), 321 CMR 10.00 et. seq (State-Listed Rare Plant and Animal Species regulations).

Forest stand improvement plans and specifications shall be in accordance with any existing forest management plan and with any Forest Cutting Plan (Ch. 132) currently in effect for the property.

Additional Criteria to Reduce Wildfire Hazard

Reduce stocking rates of trees to minimize crown-to-crown spread of fire.

Remove “ladder” fuels to minimize the occurrence of crown fires.

Further treat or eliminate slash accumulations next to roads and trails.

Reduce or eliminate species with high volatility but not to a level that would compromise other intended purposes.

For additional wildfire risk and damage reduction, refer to the Firebreak standard, 394.

Additional Criteria to Improve Wildlife Habitat

Manage for tree species and stocking rates that meet desired wildlife species food and cover requirements.

Create, recruit and maintain sufficient snags and down woody material to meet requirements of desired species in balance with conditions needed to achieve other intended purposes.

Minimize improvement actions that disturb seasonal wildlife activities.

Refer to Upland Wildlife Habitat Management, 645, and Wetland Wildlife Habitat Management, 644 to further develop and manage wildlife-related activities.

Additional Criteria to Increase Carbon Storage in Selected Trees

Manage for tree species and stocking rates that have higher rates of growth and potential for carbon sequestration.

CONSIDERATIONS

Silvicultural objectives and harvest-regeneration strategies may change over time and may be limited by prior management.

Successful regeneration of desirable species is usually dependent upon timely application of forest stand improvement and other practices, e.g., prescribed burning, site preparation, tree and shrub establishment, and use exclusion.

The extent, timing, size of treatment area, or the intensity of the practice should be adjusted to minimize cumulative effects (onsite and offsite), e.g., hydrologic and stream alteration, habitat fragmentation, nutrient cycling, biodiversity and visual resources.

For purposes other than improving wildlife habitat, the practice should be timed to minimize disturbance of seasonal wildlife activities.

Landowners should secure a written contract with any service provider that specifically describes the extent of activity, duration of activity, liability and responsibilities of each party and amount and timing of payments for services provided

Slash, debris and other vegetation (biomass) removed during stand improvement may be used to produce energy. Management alternatives should consider the amount of energy required to produce and convert the biomass into energy with the amount produced by the biomass.

Clients should be advised of responsibilities of wildfire control and consider the development of a wildfire control plan including “defensible” space, access routes, fire-season water source, and location of wildfire control facilities.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation. (See Forest Stand Improvement (666) Specifications Guide.)

OPERATION AND MAINTENANCE

Periodic inspections during and after treatment activities are necessary to ensure that purposes are achieved and resource damage is minimized, e.g., assessment of insects, disease and other pests, storm damage, and damage by trespass. The results of inspections shall determine the need for additional treatment under this practice. Follow-up and ongoing management activities will be needed to obtain desired results.

REFERENCES

A Guide to Invasive Plants in Massachusetts 2nd Edition, MA Natural Heritage and Endangered Species Program, MA Division of Fisheries and Wildlife.2008.

Massachusetts Department of Conservation and Recreation, Forestry Division.
<http://www.mass.gov/dcr/stewardship/forestry/index.htm>