

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

FOREST STAND IMPROVEMENT

(Acre)
Code 666



DEFINITION

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

PURPOSES

- Increase the quantity and quality of forest products by manipulating stand density and structure.
- Timely harvest of forest products
- Development of renewable energy systems.
- Initiate forest stand regeneration.
- Reduce wildfire hazard.
- Improve forest health reducing the potential of damage from pests and moisture stress.
- Restore natural plant communities.
- Achieve or maintain a desired native understory plant community for special forest products, grazing, and browsing.
- Improve aesthetic and recreation, values.
- Improve wildlife habitat.
- Alter water yield.
- Increase carbon storage in selected trees.

CONDITIONS WHERE PRACTICE APPLIES

All forest land.

This standard is not applicable for Florida NRCS conservation practice standards Alley Cropping, Code 311; Windbreak/Shelterbelt Establishment (operation and maintenance), Code 380; and Windbreak/Shelterbelt Renovation, Code 650.

CRITERIA

General Criteria Applicable To All Purposes

The harvest-regeneration strategy is 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., clearcut, seed-tree, shelterwood, coppice)

The extent or size and orientation of treatment area(s) are identified as part of the 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 follow established guidelines for the intended purposes.

Stocking guidelines contain desired basal area, spacing or trees per acre by species and size class distribution.

The method, felling direction and timing of tree cutting for harvesting facilitates efficient and safe tree removal and protects unique and sensitive areas such as wetlands, riparian zones, 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 Florida NRCS conservation practice standard, Forest Trails and Landing, Code 655.

Refer to the Florida NRCS conservation practice standard, Access Road, Code 560 for roads associated with forest stand improvement activities.

Perform forest stand improvement activities to minimize soil erosion, compaction, rutting and damage to remaining vegetation and maintain hydrologic conditions.

Treat slash and debris so they do not present an unacceptable fire, safety, environmental, or pest hazard. Remaining material will not interfere with the intended purpose or other management activities. Refer to Florida NRCS conservation practice standard, Woody Residue Treatment, Code 384. Burning of slash and other debris on-site shall follow the Florida NRCS conservation practice standard, Prescribed Burning, Code 338.

Comply with applicable laws and regulations, including the Florida Forestry Service's Silviculture Best Management Practices (BMPs). http://www.floridaforestry.com/publications/silvicultural_bmp_manual2011.pdf

Impact to cultural resources, wetlands, and Federal and State protected species need to be avoided or minimized to the extent practical during planning, design, and implementation of this conservation practice in accordance with established National and Florida NRCS policy; General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning Procedures Handbook (NPPH) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH); and The National Environmental Compliance Handbook (NECH).

Additional Criteria to Develop Renewable Energy Systems

Bioenergy intensity and frequency of energy biomass removals will be managed to prevent long-term negative impacts on the stand.

The harvesting of energy biomass shall be accomplished in a manner that will not compromise the other intended purpose(s) and functions. If applicable refer to State woody biomass Best Management Practices (BMPs).

NRCS, FL, March 2012

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 Florida NRCS Conservation Practice Standard Fuel Break, Code 383 and Florida NRCS conservation practice standard, Firebreak, Code 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 Florida NRCS conservation practice standards, Early Successional Habitat Development/Management, Code 647, Upland Wildlife Habitat Management, Code 645, and Wetland Wildlife Habitat Management, Code 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 this practice and the Florida NRCS conservation practice standards: Prescribed Burning, Code 338; Tree and Shrub Site Preparation, Code 490;

Tree/Shrub establishment, Code 612; Prescribed Grazing, Code 528; and Use Exclusion, Code 472.

The extent, timing, size of treatment area or 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. Wildlife and sustainability requirements should also be considered.

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.

Control or eradicate invasive-exotic and noxious native vegetation.

PLANS AND SPECIFICATIONS

Prepare specifications for applying this practice for each site and record them on approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

Specifications minimally need to include:

- Goal(s) of forest stand improvement(s)
- Schedule and methods of conducting forest stand improvement.
- Plans for management of forest stand.
- Site map or sketch of planning area.
- Locations of different species and/or age stands, if applicable.

- Dimensions and estimated fuel load of forest stands if planning prescribed burning. Refer to Florida NRCS conservation practice standard Prescribed Burning, Code 338.

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. Need for additional treatment under this practice should be based on results of periodic inspections.

REFERENCES

Florida NRCS Conservation Practice Standards

Access Road, Code 560
 Alley Cropping, Code 311
 Early Successional Habitat
 Development/Management, Code 647
 Forest Trails and Landing, Code 655
 Firebreak, Code 394
 Fuel Break, Code 383
 Prescribed Burning, Code 338
 Prescribed Grazing, Code 528
 Tree and Shrub establishment, Code 612
 Tree and Shrub Site Preparation, Code 490
 Upland Wildlife Habitat Management, Code 645
 Use Exclusion, Code 472
 Wetland Wildlife Habitat Management, Code 644
 Windbreak/Shelterbelt Establishment, Code 380
 Windbreak/Shelterbelt Renovation, Code 650
 Woody Residue Treatment, Code 384

2011. Silviculture Best Management Practices
 Florida Forestry Service, Florida Department of
 Agriculture & Consumer Services.
http://www.floridaforests-service.com/publications/silvicultural_bmp_manual2011.pdf

General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26.

National Cultural Resources Procedures Handbook (NCRPH).

National Planning Procedures Handbook (NPPH)
 FL Supplements to Parts 600.1 and 600.6.

National Environmental Compliance Handbook (NECH)