

## Forest Stand Improvement

(Acres) 666

### Definition

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

### Condition Where Practice Applies

On private non-industrial and tribal forest lands. On overstocked stands as described by a forest management plan. Goals commonly are to release commercially desired species such as ash, cherry, oak, pine, sugar maple, birch, spruce and fir. Forest restoration and wildlife enhancement is also appropriate, by diversifying age classes, creating gaps in the canopy, creating snags and den trees and improving the quantity of coarse woody debris on the forest floor.

This practice is eligible for financial assistance only on non-commercial cuts which are recommended in a Forest Management Plan (FMP).

### Massachusetts Practice Intent

The purpose of this practice is to support good forest management that will result in the long-term sustainable use of forest resources while improving the health of the forest – including wildlife habitat, soils, and water quality.

### Massachusetts NRCS Program Rules

#### For all projects:

- The boundary of all proposed treatment areas will be delineated during the planning phase.
- The proposed treatment must be recommended in a forest management plan (FMP) or an addendum to the plan. The recommendation shall include:
  - a) The silvicultural goal and prescription, including a description of the quality of the material being cut.
  - b) The amount of basal area per acre being removed, including the amount of saw logs (MBF) and cordwood (this can come from existing cruise data).
  - c) The proposed area delineated on the stand map.
  - d) The NRCS practice name (for existing plans, if a-c are already met, the plan does not need to be amended to state the practice name).
- Treatments shall be focused on areas with low commercial value that do not generate revenue to the landowner above the normal cost of running the operation including the forester's time and mobilization.
  - Revenue is mainly generated from cutting saw timber sized 10" or greater. Thus, if the Mean Stand Diameter is >10" and has some quality trees, there may be saw timber.
  - Target sites that have less than 1500 board feet/acre being removed. For example, a 14" tree with one 16 ft log has 80 board feet. It would take about 19 trees like this per acre to reach 1500 board feet. See table showing DBH, number of logs and corresponding board feet per tree.
  - If the proposed project is located in NHESP Priority Habitat, consult with the Natural Heritage partner during planning phase.
  - Tree marking does not constitute commencing a cutting practice.

## **Further Requirements Applicable to Specific Scenarios:**

### **Pre-Commercial Thinning Pole – Hand Tools**

- Adjust the stocking of young, non-merchantable stand of trees, sized 4.9” to 6-8” DBH.
- Minimum removal/cutting must be at least **1/3** of the material in the stand in order to provide adequate adjustment to the stocking of stand to improve stand growth, and overall quality.
- Note, due to the stand size class, density of these stands is generally high. In many instances 1/3 of material to be cut and left on the ground may not be enough. Consult with forester to ensure proper quantity of thinning will be implemented to provide adequate results.

### **Thinning for Wildlife and Forest Health**

- For a whole suite of non-commercial thinning prescriptions that remove at least 30 sf basal area per acre to improve forest health, productivity, regeneration, wildlife habitat or that address other resource concerns. Trees must be marked.
- The planner should state in the narrative the type of thinning that is planned.
- For crop tree release of at least 30 trees per acre.
  - Tree to be released must be dominant or co-dominant,  $\geq 5$ ” DBH, at least 25 feet tall, and without epicormic sprouting on stem.
  - Tree must be high value hardwood species (e.g., oak, cherry, sugar maple – including in a sugar bush, etc.), and must be released on a minimum of 2 sides.
  - The crop trees must be marked and preferably the cull trees as well.
- For uneven-aged management- minimum 1 acre, but preferably a minimum of 3-5 acres.
  - Create canopy gaps, sized 0.1 – 1.9 acres;
  - Crop tree release or thinning must be planned in the matrix between the gaps.
  - Payment is based on the overall area receiving treatment (evidence of gaps and culled trees in between). Untreated areas on the margins of the overall treated polygon area do not count toward the treated acreage.
- For shelterwood cuts that do not meet the early successional habitat specifications. Although it will normally be much higher, at least 30 sf basal area per acre must be removed.
- For other prescriptions not listed that address a resource concern and meet the general criteria above.

### **Creating Small Patch Clearcuts**

- Each individual patch to be created must be a minimum of 2 acres in size.
- Typically planned to improve horizontal diversity for wildlife and/or to improve regeneration of desired species.
- All proposed clear cuts  $\geq 5$  acres, that meet the 647 specification, shall be planned under Practice 647.

### **Tree Marking**

- This scenario cannot be combined with any other 666 or 647 scenarios.
- The intent is to ensure that a proposed non-commercial or commercial thinning treatment is silviculturally sound and that damage to the residual stand is minimized.
- The silvicultural treatment must be prescribed in the forest management plan.
- Liquidation harvests are not eligible.

### **Girdling**

- Trees to be girdled must be  $\geq 6$ ” DBH.
- Individual trees to be girdled must be marked.
- The canopy of live trees must be reduced by 20%.

**Table A-3.—Volume in board feet (International ¼-inch rule) by d.b.h. and number of 16-foot logs to an 8.0-inch top diameter inside bark (d.i.b.) (Gevorkiantz and Olsen 1955, Wenger 1984)**

D.b.h. Inches	Number of 16-foot logs							
	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4
	----- board feet -----							
12	30	57	80	100				
13	36	68	96	118	134			
14	42	79	110	140	163	184		
15	50	92	128	160	188	214	232	
16	59	105	147	180	213	247	274	295
17	66	118	166	208	245	281	314	340
18	74	135	188	235	278	320	360	400
19	83	152	212	265	314	360	405	450
20	92	170	236	295	350	400	450	500
21	102	189	262	328	390	450	505	550
22	112	209	290	362	430	495	555	610
23	122	228	316	396	470	540	610	680
24	133	252	346	430	510	595	670	740
25	145	275	376	470	555	645	730	810
26	158	300	410	510	605	700	790	880
27	172	325	440	550	650	760	850	950
28	187	348	480	595	700	810	920	1020
29	203	378	515	640	760	870	990	1100
30	220	410	550	685	810	930	1060	1180
31	237	440	595	740	870	1000	1140	1260
32	254	470	635	790	930	1070	1210	1350
33	270	500	680	840	990	1140	1290	1440
34	291	530	725	900	1060	1210	1380	1530
35	311	565	770	950	1120	1290	1460	1630
36	333	600	820	1010	1190	1370	1550	1725

Table from Leak, W.B.; Yamasaki, M.; Holleran, R.  
 2014. **Silvicultural Guide for Northern Hardwoods in the Northeast**. US Forest Service. Pg 39.