

Practice: 666 - Forest Stand Improvement

Scenario # 1 Thinning Hand Tools

Scenario Description: Actual Scenario # 1

New York

The stocking rate of an unhealthy stand lacking in diversity in variety and stand age is adjusted to an acceptable level. The operation is supervised by a consultant forester and is carried out using hand tools such as chain saws. Managing the stocking rate improves plant productivity and health, prevents wildlife habitat degradation, reduces wildlife hazards and provides adequate structure and composition.

Associated Practices: Restoration and Management of Declining and Rare Habitat(643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Brush Management (314), Woody Residue Treatment (384), Prescribed Burning (338), Firebreak (394), Fuel Break (383) and Integrated Pest Management (595).

Before Practice Situation:

An overstocked, unhealthy forest stand contains over-stocked trees lacking diversity in variety and stand age. The woodlot includes undesirable, invasive species inhibiting plant health. The overstocked stand results in slowed growth, increased susceptibility to insects and disease, and an unacceptable wildfire risk.

After Practice Situation:

The stocking rate is adjusted through thinning to an acceptable level to promote stand growth, condition, and improve overall quality. The wildlife habitat is also improved with the resulting increase of sunlight reaching the forest floor.

Scenario Feature Measure:

Area treated

Scenario Typical Size:	10	Acre	Tot Unit Cost	\$226.88
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Tree Marking Paint	3.5	Acre	\$6.19	\$21.67
Equip./Install.	Chainsaw	20	Hour	\$6.90	\$138.00
Labor	General Labor	20	Hour	\$23.16	\$463.20
Labor	Specialist Labor	12	Hour	\$105.46	\$1,265.52
Mobilization	Mobilization, small equipment	2	Each	\$190.19	\$380.38

Total Cost: \$2,268.77

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$170.16	EQIP-HU	\$204.19
WHIP	\$170.16	WHIP-HU	\$204.19

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Scenario # 2 Single Stem Treatment

Scenario Description: Actual Scenario # 2

New York

Species composition, stand structure, and stocking density are managed by controlling selected trees and understory vegetation. The tree is debarked with an axe or hatchet and the tree is then injected with an herbicide. Due to the ability of target species to propagate via the root system the injected herbicide is critical in order to ensure control of the target species. The snag trees will remain for wildlife habitat. Up to 35% of the forest stand will be treated.

Restoration and Management of Declining (643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Brush Management (314) and Integrated Pest Management (595)

Before Practice Situation:

The existing stand consists of unwanted/undesirable species and the stocking rate exceeds the recommended level. Undersirable species consist of hardwoods and shrubs that can propagate via root systems that make commercial control unfeasible.

After Practice Situation:

The forest health is managed and improved due to the selective management and chemical treatment of hardwoods and shrubs. Treatment of the hardwoods and shrubs promotes plant health and vigor of the remaining trees, and allows them greater availability to water and nutrients and promotes wildlife habitat. Habitat is created for cavity nesting birds by leaving snags on site.

Scenario Feature Measure:

Acres treated

Scenario Typical Size:	10	Acres	Tot Unit Cost	\$354.41
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Tree Marking Paint	3.5	Acre	\$6.19	\$21.67
Materials	Herbicide, Triclopyor	3.5	Acre	\$42.84	\$149.94
Equip./Install.	Chemical, spot treatment, single	20	Hour	\$62.08	\$1,241.60
Equip./Install.	Pruning tools, hand tools	20	Hour	\$1.09	\$21.80
Labor	General Labor	20	Hour	\$23.16	\$463.20
Labor	Specialist Labor	12	Hour	\$105.46	\$1,265.52
Mobilization	Mobilization, small equipment	2	Each	\$190.19	\$380.38

Total Cost: \$3,544.11

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$265.81	EQIP-HU	\$318.97
WHIP	\$265.81	WHIP-HU	\$318.97

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Scenario # 3 Chemical, Ground

Scenario Description: Actual Scenario # 3

New York

Removal of target, undersirable species is achieved using ground applied chemicals to release young, desirable tree speices competing with overtopping vegetation. Target removal is necessary to promote plant health and vigor and to achieve the appropriate spacing and trees per acre of the desirable species that facilitates plant growth.

Removal is supervised to ensure objectives are achieved.

Associated Practice(s): Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Integrated Pest Management (595) and Firebreak (394)

Before Practice Situation:

An adequately stocked stand of desirable species is not growing to its potential for the site due to severe competition from undesirable trees and brush competing for water and nutrients. Competition inhibits plant health and vigor.

After Practice Situation:

The desirable vegetation is released from the compeition by ground applying herbicides to the stand as an over-the-top spray. Undesirable vegetation is managed to promote desirable plant health and vigor through reduced competition. The appropriate stocking density and spacing is achieved.

Scenario Feature Measure:

Acres treated

Scenario Typical Size:	40	Acre	Tot Unit Cost	\$85.61
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Herbicide, Imazapyr	40	Acre	\$42.03	\$1,681.20
Materials	Herbicide, Surfactant	40	Acre	\$1.34	\$53.60
Equip./Install.	Chemical, ground application	40	Acre	\$6.37	\$254.80
Labor	Specialist Labor	10	Hour	\$105.46	\$1,054.60
Mobilization	Mobilization, small equipment	2	Each	\$190.19	\$380.38

Total Cost: \$3,424.58

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$64.21	EQIP-HU	\$77.05
WHIP	\$64.21	WHIP-HU	\$77.05

Practice: 666 - Forest Stand Improvement

Scenario # 4 Mechanical, Light Equipment

Scenario Description: **Actual Scenario # 5**

New York

The stocking rate of an unhealthy stand with competing vegetation is adjusted to an acceptable level using a brush hog. The competing vegetation is controlled to manage desirable trees and species. A brush hog is used by mowing or shredding strips through the stand, mowing between planted rows, etc. to achieve objectives. Stand health and wildlife habitat is improved and undesirable vegetation is managed.

Associated Practice(s): Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Integrated Pest Management (595) and Firebreak (394)

Before Practice Situation:

An young stand of desirable species is not growing to its potential for the site due to severe competition from undesirable trees and brush competing for water and nutrients. Competition inhibits plant health and vigor. The vegetation to be controlled is small enough that it can be mowed or shredded. The stand may also be overstocked.

After Practice Situation:

The stocking rate is adjusted to an acceptable level and the competing vegetation is controlled. The stand growth, condition, and overall quality is improved. In addition, wildlife habitat is improved with the increase of sunlight to the forest floor.

Scenario Feature Measure:

Area Treated

Scenario Typical Size:	10	Acre	Tot Unit Cost	\$197.56
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Equip./Install.	Mower, Bush Hog	20	Hour	\$55.71	\$1,114.20
Labor	Equipment Operators, Light	20	Hour	\$24.05	\$481.00
Mobilization	Mobilization, small equipment	2	Each	\$190.19	\$380.38

Total Cost: \$1,975.58

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$148.17	EQIP-HU	\$177.80
WHIP	\$148.17	WHIP-HU	\$177.80

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Scenario # 5 Mechanical, Heavy Equipment

Scenario Description: **Actual Scenario # 6**

New York

The stocking rate of an unhealthy stand with competing vegetation is adjusted to an acceptable level using mechanical treatment such as a masticator or mulcher. The competing vegetation is controlled to manage desirable trees and species. Trees are marked by a consultant. Stand health and wildlife habitat is improved and undesirable vegetation is managed.

Associated Practices: Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Fuel Break (383), Woody Residue Treatment (384), Firebreak (394) and Integrated Pest Management (595)

Before Practice Situation:

An young stand of desirable species is not growing to its potential for the site due to severe competition from undesirable trees and brush competing for water and nutrients. Competition inhibits plant health and vigor. The vegetation to be controlled is too large to be mowed or shredded, requiring larger mechanical methods such as masticators or mulchers.

After Practice Situation:

The stocking rate is adjusted to an acceptable level and the competing vegetation is controlled. The stand growth, composition, condition, and overall quality is improved. In addition, wildlife habitat is improved with the increase of sunlight to the forest floor. . Therefore other mechanical methods such as using masticators or mulchers is necessary.

Scenario Feature Measure:

Area treated

Scenario Typical Size:	10	Acre	Tot Unit Cost	\$715.70
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Tree Marking Paint	10	Acre	\$6.19	\$61.90
Equip./Install.	Mechanical cutter, chopper	30	Hour	\$140.87	\$4,226.10
Labor	Equipment Operators, Light	30	Hour	\$24.05	\$721.50
Labor	Specialist Labor	15	Hour	\$105.46	\$1,581.90
Mobilization	Mobilization, medium equipment	2	Each	\$282.78	\$565.56

Total Cost: \$7,156.96

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$536.77	EQIP-HU	\$644.13
WHIP	\$536.77	WHIP-HU	\$644.13

Practice: 666 - Forest Stand Improvement

Scenario # 6 Forest Openings, Low Density

Scenario Description: Actual Scenario # 7

New York

Two acre patches are created in over-mature or degraded stands using hand tools such as chainsaws. Small openings are created by removing all undesirable trees greater than 2" in diameter. Removal of undesirable trees fosters regeneration of shade-tolerant, desirable species. Early successional wildlife habitat is created promoting forest diversity. Resource concerns include: Undesirable plant productivity and health, Inadequate structure and composition, and habitat degradation.

Associated Practices: Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Fuel Break (383), Woody Residue Treatment (384), Firebreak (394) and Integrated Pest Management (595)

Before Practice Situation:

An overly mature, existing stand has been degraded in value by previous management practices. The stand is stocked with the remaining undesirable species. Wildlife habitat is degraded. The undesirable species are overshadowing the desirable species inhibiting plant health and vigor.

After Practice Situation:

A young stand of desirable species is established by removing competing, larger undesirable species. An early successional wildlife habitat is created along side the forest diversity. Small openings are created by removing all trees greater than 2" in diameter. Removal of larger trees fosters regeneration of shade-tolerant, desirable species. Trees are removed using a chainsaw.

Scenario Feature Measure:

Area treated

Scenario Typical Size:	2	Acre	Tot Unit Cost	\$734.18
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Equip./Install.	Chainsaw	16	Hour	\$6.90	\$110.40
Labor	General Labor	16	Hour	\$23.16	\$370.56
Labor	Specialist Labor	4	Hour	\$105.46	\$421.84
Mobilization	Mobilization, medium equipment	2	Each	\$282.78	\$565.56

Total Cost: \$1,468.36

Payment types:

PavType	Unit Payment	PavType	Unit Payment
EQIP	\$550.64	EQIP-HU	\$660.76
WHIP	\$550.64	WHIP-HU	\$660.76

Practice: 666 - Forest Stand Improvement

Scenario # 7 Comprehensive Forest Stand Treatment with Chipping

Scenario Description: Actual Scenario # 8

New York

Trees within a woodlot are managed as part of a Forest Stewardship Plan (or approved equivalent) to create the appropriate stocking density for both forest health and wildlife habitat. Overstocked species over 5 inches in diameter are removed with a feller buncher. Over stocked species under 5 inches in diameter are removed using a mechanical chopper. The material is then run through a chipper/shredder and spread within the stand. Overstocked trees that are inaccessible by the large equipment are removed manually with a chainsaw. Woody vegetation and invasive species left by the cuttings that are inhibiting regeneration are removed using an herbicide that can control the woody species. The herbicide is applied via spot treatment. Activities are supervised, trees marked, and reviewed according to the management objectives by a specialist to ensure objectives are being achieved.

Resource concerns include: Inadequate structure and composition, Undesirable plant productivity and health, and Habitat degradation.

Associated Practices: Restoration and Management of Declining and Rare Habitat (643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Brush Management (314), Woody Residue Treatment (384), Prescribed Burning (338), Firebreak (394), Fuel Break (383) and Integrated Pest Management (595).

Before Practice Situation:

A 10 acre mature, unhealthy forest contains over-stocked trees lacking diversity in variety and stand age. The woodlot includes undesirable, invasive species inhibiting plant health. Undesirable species do not meet adequate needs of food and cover for targeted wildlife species.

After Practice Situation:

Forest health is managed and improved by manipulating the stand density and structure to restore natural/desirable plant communities. An even-aged management system is implement creating a forest of preferred, native trees and shrubs, and understory species. The stand may vary in tree/shrub spacing, density, and class size. Plant health and vigor is improved. Healthy forest provides suitable food and cover for a variety of small and large mammals, forest interior birds, migratory songbirds, pollinators, reptiles, and amphibians.

Scenario Feature Measure:

Area treated

Scenario Typical Size:	10	Acre	Tot Unit Cost	\$801.09
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Tree Marking Paint	3.5	Acre	\$6.19	\$21.67
Materials	Herbicide, Imazapyr	1.3	Acre	\$42.03	\$54.64
Equip./Install.	Chainsaw	20	Hour	\$6.90	\$138.00
Equip./Install.	Mechanical cutter, chopper	10	Hour	\$140.87	\$1,408.70
Equip./Install.	Chemical, spot treatment, single	20	Hour	\$62.08	\$1,241.60
Equip./Install.	All terrain vehicles, ATV	16	Hour	\$33.68	\$538.88
Equip./Install.	Brush Chipper, 12" capacity	10	Hour	\$60.81	\$608.10
Labor	General Labor	20	Hour	\$23.16	\$463.20
Labor	Equipment Operators, Light	20	Hour	\$24.05	\$481.00
Labor	Specialist Labor	20	Hour	\$105.46	\$2,109.20
Mobilization	Mobilization, small equipment	2	Each	\$190.19	\$380.38
Mobilization	Mobilization, medium equipment	2	Each	\$282.78	\$565.56

Payment types:

Total Cost: \$8,010.92

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$600.82	EQIP-HU	\$720.98
WHIP	\$600.82	WHIP-HU	\$720.98

Practice: 666 - Forest Stand Improvement

Scenario # 8 Comprehensive Forest Stand Treatment, no chipping

Scenario Description: **Actual Scenario # 9** **New York**

Trees within a woodlot are managed as part of a Forest Stewardship Plan (or approved equivalent) to create the appropriate stocking density for forest health or wildlife. Overstocked species over 5 inches in diameter are removed with a feller buncher. Over stocked species under 5 inches in diameter are removed using a chainsaw. Woody vegetation and invasive species left by the cuttings that are inhibiting regeneration are removed using an herbicide that can control the woody species. The herbicide is applied via spot treatment. Activities are supervised, trees marked, and reviewed according to the management objectives by a specialist to ensure objectives are being achieved.

Resource concerns include: Inadequate structure and composition, Undesirable plant productivity and health, and Habitat degradation.

Associated Practices: Restoration and Management of Declining and Rare Habitat (643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Forest Trails and Landings (655), Brush Management (314), Woody Residue Treatment (384), Prescribed Burning (338), Firebreak (394), Fuel Break (383) and Integrated Pest Management (595).

Before Practice Situation:

A 10 acre mature, unhealthy forest contains over-stocked trees lacking diversity in variety and stand age. The woodlot includes undesirable, invasive species inhibiting plant health. Undesirable species do not meet adequate needs of food and cover for targeted wildlife species.

After Practice Situation:

Forest health is managed and improved by manipulating the stand density and structure to restore natural/desirable plant communities. An even-aged management system is implemented creating a forest of preferred, native trees and shrubs, and understory species. The stand may vary in tree/shrub spacing, density, and class size. Plant health and vigor is improved. Healthy forest provides suitable food and cover for a variety of small and large mammals, forest interior birds, migratory songbirds, pollinators, reptiles, and amphibians.

Scenario Feature Measure:

Area treated

Scenario Typical Size:	10	Acre	Tot Unit Cost	\$541.58
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Tree Marking Paint	10	Acre	\$6.19	\$61.90
Materials	Herbicide, Imazapyr	10	Acre	\$42.03	\$420.30
Equip./Install.	Chainsaw	40	Hour	\$6.90	\$276.00
Equip./Install.	Chemical, spot treatment, single	20	Hour	\$62.08	\$1,241.60
Labor	General Labor	40	Hour	\$23.16	\$926.40
Labor	Specialist Labor	20	Hour	\$105.46	\$2,109.20
Mobilization	Mobilization, small equipment	2	Each	\$190.19	\$380.38

Total Cost: \$5,415.78

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$406.18	EQIP-HU	\$487.42
WHIP	\$406.18	WHIP-HU	\$487.42

Practice: 666 - Forest Stand Improvement

Scenario # 9 Forest opening, heavy density

Scenario Description: Actual Scenario # 10

New York

Early successional habitat opening creation: Cuts should occur from September through March to minimize disturbance to nesting birds. A well stocked pole-timber sized northern hardwood stand has the potential to provide optimal food and habitat for numerous life stages of early successional target wildlife. A professional biologist or forester has flagged out four (4) five (5) acre wildlife openings (clear cuts). Cuts should be in wide blocks. Where possible, forest wildlife openings will be applied no closer than 300 feet from any edge of the forest area. Location of wildlife openings can be adjusted to avoid steep slopes, streams, wetlands, and other environmentally sensitive areas. Tree tops can be loped and left in place.

Before Practice Situation:

Young forest dominated by pole-sized timber (4 to 8 inches DBH). Early successional shrub habitat is lacking in the forest block. Forest canopy needs to be opened to stimulate shrub growth in the under story.

After Practice Situation:

Minimum 5 acre opening is created. Large mast trees or other species valuable to wildlife may be retained at a rate of 10 to 12 trees per acre. Wildlife habitat is improved with the increase of sunlight to the forest floor.

Scenario Feature Measure:

Area treated

Scenario Typical Size:	5	Acre	Tot Unit Cost	\$1,139.99
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Equip./Install.	Feller buncher	30	Hour	\$94.57	\$2,837.10
Labor	Equipment Operators, Heavy	30	Hour	\$36.55	\$1,096.50
Labor	Supervisor or Manager	15	Hour	\$45.77	\$686.55
Mobilization	Mobilization, large equipment	2	Each	\$539.90	\$1,079.80

Total Cost: \$5,699.95

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$854.99	EQIP-HU	\$1,025.99
WHIP	\$854.99	WHIP-HU	\$1,025.99

Practice: 666 - Forest Stand Improvement

Scenario # 10 Wildlife selective tree felling

Scenario Description: **Actual Scenario # 11**

New York

Selective tree felling calls for cutting with chainsaw large trees that are scattered throughout shrubs in order to maintain canopy opening and sunlight penetration to shrub layer . Stock is typically >4" dbh or 20' tall. Leave about 10 to 12 wildlife reserve trees per acre and all shagbark hickory. Trees can be cut and left or removed. Only cut while dormant. Can be used to regenerate aspen.

Associated Practices: Restoration and Management of Declining and Rare Habitat(643), Upland Wildlife Habitat Management (645), Wetland Wildlife Habitat Management (644), Brush Management (314), Forest Slash Treatment (384) and Integrated Pest Management (595).

Before Practice Situation:

Tree canopy beginning to close and shade out shrubland habitat, reducing wildlife value for early successional species.

After Practice Situation:

Large trees removed to an acceptable level to promote shrubland habitat, improving wildlife habitat with the resulting increase of sunlight reaching the forest floor.

Scenario Feature Measure:

Area treated

Scenario Typical Size:	5	Acre	Tot Unit Cost	\$278.20
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Tree Marking Paint	5	Acre	\$6.19	\$30.95
Equip./Install.	Chainsaw	8.5	Hour	\$6.90	\$58.65
Labor	General Labor	17	Hour	\$23.16	\$393.72
Labor	Specialist Labor	5	Hour	\$105.46	\$527.30
Mobilization	Mobilization, small equipment	2	Each	\$190.19	\$380.38

Total Cost: \$1,391.00

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$208.65	EQIP-HU	\$250.38
WHIP	\$208.65	WHIP-HU	\$250.38