

APPENDIX B: OLD GROWTH STRATEGY

OLD GROWTH DEFINITIONS AND INVENTORY CRITERIA

Management of old growth in the George Washington Forest Plan is based upon the report of the Region 8 Old Growth Team entitled *Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region, Forestry Report R8-FR 62, 1997* (Old Growth Guidance). The Old Growth Guidance defines three terms used by national forests in the Southern Region when describing old growth: Existing Old Growth, Possible Old Growth and Future Old Growth.

Existing Old Growth: forest stands or patches that have been determined to meet the age, disturbance, basal area, and tree size criteria described in the operational definitions for the 16 old growth forest community types of the Southern Region. A stand or patch must meet all four criteria in order to be classified as Existing Old Growth.

Possible Old Growth: forest stands which meet the preliminary inventory criteria in Table B-1 from the Old Growth Guidance based on stand age from current FSVEG data. Although not all of these stands would likely meet all four criteria for Existing Old Growth, this is the best estimate of the acreage and location of old growth on the GWNF.

Future Old Growth: stands or patches that may, or may not, currently meet the operational definition for Existing Old Growth, but are allocated to management prescription areas that will not allow timber harvest and thus allow the stands to mature and develop old growth attributes.

The determination of a stand's status as Existing Old Growth is based on the old growth forest type (OGFT), age, basal area, tree size and past disturbance as defined in Table B-1.

The minimum age criterion is generally applicable for the oldest age class in a stand when approximately 30 trees per acre meet that criterion for the deciduous forest community types and at least 10 trees per acre for the pine forest community types. The largest trees diameter at breast height (dbh) criterion is generally applicable when at least 10 trees per acre are present for all forest community types. The minimum basal area is a measurement of stand density and is a conservative estimate to ensure that stands are not excluded due to the variety of ecological conditions which exist. Tree sizes for inclusion in the estimate of stand basal area will follow the Forest Service silvicultural stand examination protocols for pine and hardwood species. The fourth attribute is past disturbance. However, the acceptable level of past human disturbance can prove difficult to quantify. For this reason, a "coarse, non-quantified, and common sense" approach will be used when considering past human disturbance. For a stand to be considered as Existing Old Growth, no obvious evidence of past human disturbance which conflicts with the old growth characteristics of the area should be present, such as powerline corridors. Recent vegetative management activities which maintain characteristics consistent with old growth usually do not disqualify an area as Existing Old Growth. Examples of these activities may include commercial thinnings, mid-story treatments, prescribed fire, or interpretive trails.

Table B-1. Operational Criteria for Determining Existing Old Growth

Old Growth Forest Community Type	Minimum Age of the Oldest Age Class	Minimum Basal Area (square feet/acre)	Largest Trees (dbh)
1 - Northern Hardwood	100	40	14
2a, 2b, 2c - Conifer Northern Hardwood Subgroups	140	40	20
5 - Mixed Mesophytic	140	40	30
10 – Hardwood Wetland	120	40	16
21 - Dry-Mesic Oak	130	40	20
22 - Dry and Xeric Oak Forest, Woodland and Savannah	110	40	16
24 - Xeric Pine and Pine-Oak Forest and Woodland	100	20	20
25 - Dry and Dry-Mesic Oak-Pine	120	40	19
28 – Eastern Riverfront	100	40	25

Table B-2 provides a crosswalk between the Old Growth Forest Types and the Forest Types that are used in the silvicultural stand examination inventory database, FSVEG.

Table B-2. Crosswalk Between Old Growth Forest Community Types and FSVEG Forest Types

Old Growth Forest Community Type	FSVEG Forest Types
1 - Northern Hardwood	Sugar maple-Beech-Yellow birch (81)
2a, 2b, 2c - Conifer Northern Hardwood	Red pine (2), White pine (3), White pine-Hemlock (4), Hemlock (5), Fraser fir (6), Red spruce-Fraser fir (7), Hemlock-hardwood (8), White pine-Cove hardwood (9), White pine-Upland hardwood (10), Red spruce-Northern hardwood (17)
5 - Mixed Mesophytic	Cove hardwood-White pine-Hemlock (41), Yellow poplar (50), Yellow poplar-White oak-Red oak (56), Sweet gum-Yellow poplar (58), Black cherry (70), Black walnut (82)
10 – Hardwood Wetland	Black ash-American elm-Red maple(71)
21 - Dry-Mesic Oak	Chestnut oak (52), White oak-Red oak-Hickory (53), White oak (54), Northern red oak (55), Scarlet oak (59), Chestnut oak-Scarlet oak (60)
22 - Dry and Xeric Oak Forest, Woodland and Savannah	Post oak-Black oak (51)
24 - Xeric Pine and Pine-Oak Forest and Woodland	Shortleaf pine-Oak (12), Pitch pine-Oak (15), Virginia pine-Oak (16), Table mountain pine-Hardwood (20), Loblolly pine (31), Shortleaf pine (32), Virginia pine (33), Eastern red cedar (35), Pitch pine (38), Table mountain pine (39), Bear oak-Southern scrub oak-Yellow pine (49), Scrub oak (57)
25 - Dry and Dry-Mesic Oak-Pine	Upland hardwood-White pine (42), Chestnut oak-Scarlet oak-Yellow pine (45), Bottomland hardwood-Yellow pine (46), White oak-Black oak-Yellow pine (47), Northern red oak-Hickory-Yellow pine (48)
28 – Eastern Riverfront	River birch-Sycamore (72), Cottonwood (73), Sycamore-Pecan-American elm (75)

The age at which old growth develops and the specific structural attributes that characterize old growth can vary widely according to forest type, climate, site conditions and disturbance regimes. Old growth in fire-dependent forest types may not differ greatly from young forests in the number of canopy layers or accumulation of downed woody material. However, old growth is typically distinguished from younger growth by several of the following attributes:

- Large trees for the species and site.
- Wide variation in tree size and spacing.
- Accumulations of large-sized, dead, standing and fallen trees.
- Decadence in the form of broken or deformed tops or boles and root decay.
- Multiple canopy layers.
- Canopy gaps and understory patchiness.

Additional information regarding the old growth forest community types can be found in the Old Growth Guidance.

OLD GROWTH STATUS ON THE FOREST

Existing Old Growth. Few stands of Existing Old Growth have been documented on the GWNF. Stands of OGFT 2a–Hemlock-Northern Hardwood have been identified in the Little Irish Creek and Statons Creek Special Biological Areas and along Skidmore Fork in the Shenandoah Mountain Crest area. These areas are all dominated by hemlock that has now died due to hemlock wooly adelgid.

Possible Old Growth. While few stands have been documented as Existing Old Growth, about 245,000 acres meet the minimum stand age criterion for old growth and are identified in Table B-3 as Possible Old Growth.

The forest continues to age and much of the forest is moving towards old growth conditions, with 70% of the acres aged 90 and older. Table B-3 also shows the progression of acres meeting the stand age criteria in the next 10 years and in the next 50 years. The last column in Table B-3 shows the percentage of acres that currently meet the age criterion for old growth that are within management prescriptions that do not allow timber production. The table shows that in another ten years, an additional 120,000 acres will meet the age definitions for Possible Old Growth, an increase of about 50 percent over the current acreage. More than half of the acreage of the current Possible Old Growth and the Possible Old Growth in 2020 is located in management prescriptions that will retain the old aged stands. Aging the stands out 50 years to 2060 results in slightly less than half of the total stands will be in old growth, but the total acreage of old growth is nearly four times current levels and all old growth forest types are well represented (except for the riverine systems).

Table B-3. Current Acres of Possible Old Growth Compared to 10 Years and 50 Years in the Future

Old Growth Forest Community Type	Total Acres in All Age Classes	Acres Possible Old Growth Current, 2010	Acres Possible Old Growth in 2020	Acres Possible Old Growth in 2060	% of Current Possible Old Growth in Management Prescriptions that are Unsuitable for Timber Production
01 - Northern Hardwood	9,644	1,263	4,491	8,457	91%
02a - Hemlock-Northern Hardwood	6,570	2,494	3,010	5,194	94%
02b - White Pine-Northern Hardwood	37,682	688	1,741	9,888	40%
02c - Spruce Northern Hardwood	524	118	118	255	100%
05 - Mixed Mesophytic	57,372	5,064	7,936	32,905	61%
10 - Hardwood Wetland Forest	111	0	0	0	0%
21 - Dry-Mesic Oak Forest	678,550	151,371	207,224	598,663	54%
22 - Dry and Xeric Oak Forest	492	331	467	467	48%
24 - Xeric Pine and Pine-Oak Forest and Woodland	124,264	66,468	101,758	118,709	46%
25 - Dry and Dry-Mesic Oak-Pine	122,515	16,850	36,224	113,658	56%
28 - Eastern Riverfront	194	6	25	76	0%
Total	1,037,918	244,653	362,996	888,271	53%

Future Old Growth. While some stands will be harvested during plan implementation, other stands are allocated to management prescriptions that are unsuitable for timber production. Allocations of lands to these management prescription areas will result in stands that are capable of developing old growth as the forest ages. These management prescription areas include Wilderness, recommended Wilderness study areas, National Scenic Areas, recommended National Scenic Areas, Shenandoah Mountain crest, remote backcountry, wild and scenic river corridors, Appalachian Trail corridor, Research Natural Areas, geologic areas, special biological areas, key natural heritage community areas, dispersed recreation areas that are unsuitable for timber production, Indiana bat primary conservation areas, and riparian areas. Most of these areas provide large patches (2,500 acres or larger) and medium patches (100 to 2,499 acres) of old growth that fit into a network of varying size patches distributed across the national forest landscape. These areas comprise about 460,000 acres (Table B-4). The distribution of this Future Old Growth by OGFT is also displayed in Table B-4.

Table B-4. Current (2010) Possible Old Growth (age defined) and Future Old Growth (management prescription is unsuitable for timber production)

Forest Community	Total Acres in All Age Classes	Current Acres Possible Old Growth	Acres Future Old Growth
01 - Northern Hardwood	9,644	1,263	7,896
02a - Hemlock-Northern Hardwood	6,570	2,494	4,960
02b - White Pine- Northern Hardwood	37,682	688	7,780
02c - Spruce Northern Hardwood	524	118	420
05 - Mixed Mesophytic	57,372	5,064	25,629
10 - Hardwood Wetland Forest	111	0	0
21 - Dry-Mesic Oak Forest	678,550	151,371	301,563
22 - Dry and Xeric Oak Forest	492	331	211
24 - Xeric Pine and Pine-Oak Forest and Woodland	124,264	66,468	56,299
25 - Dry and Dry-Mesic Oak-Pine	122,515	16,850	55,010
28 - Eastern Riverfront	194	6	129
Total	1,037,918	244,653	459,897

OLD GROWTH NETWORK AND REPRESENTATION

Through allocation of management prescription areas, identification of lands unsuitable for timber production, and the current distribution of older aged stands across the Forest, this Forest Plan establishes a network of old growth areas. This network consists of a mix of large, medium, and small patches embedded in a forest matrix dominated by mid and late successional forests where old growth areas are generally interconnected by mature forests. Large patches are designed to ensure the integrity of ecological functions and the distribution of old growth conditions at the subregional scale. Large patches are greater than 2,500 acres and are established through the allocation of lands in large blocks to management prescription areas like wilderness, recommended wilderness, national scenic areas, recommended national scenic areas, Shenandoah Mountain crest, and remote backcountry. The areas will all become old growth and currently contain about 370,000 acres. This Forest Plan provides large patches of old growth in every Ecological Subsection. All forest community types except OGFT 02c-Spruce Northern Hardwood, OGFT 10-Hardwood Wetland Forest and OGFT 28-Eastern Riverfront Hardwoods are represented in these large patches. OGFT 01-Northern Hardwoods, OGFT 02a-Hemlock-Northern Hardwood, OGFT 02b-White Pine-Northern Hardwood, OGFT 05-Mixed Mesophytic Forest, OGFT 21-Dry-Mesic Oak Forest, OGFT 22-Dry and Xeric Oak Forest, OGFT 24-Xeric Pine and Pine-oak Forest and Woodland, and OGFT 25-Dry and Dry-Mesic Oak-Pine Forest communities are represented in one or more large patches. Six of the seven 4th level watersheds contain portions of large old growth patches.

Medium patches are designed to fill in gaps in old growth forest community type representation or to improve the spatial distribution between large-sized areas. Medium patches are greater than 100 acres and are typically a mix of Possible and Future Old Growth. All forest community types except OGFT 10-Hardwood Wetland Forest and OGFT 28-Eastern Riverfront Hardwoods are represented in one or more medium patches. Of the 110 6th level watersheds with more than 1,000 acres of NFS lands, 81% have medium patches of Possible Old Growth that are not suitable for timber harvest.

Small patches are typically represented by Possible Old Growth. Small patches are 100 acres or smaller. All forest community types are represented in several to many small patches, with the River Floodplain and

Eastern Riverfront representing the least. Of the 110 6th level watersheds with more than 1,000 acres of NFS lands, 83% have small patches that are not suitable for timber harvest.

Table B-5 displays the current number and acreage of small, medium, and large patches of Possible Old Growth. It also displays the status of patches as the forest ages 10 and 50 years.

Table B-5. Large, Medium and Small Old Growth Patches

Patch Size	Current Condition (2010)			Condition in 10 Years (2020)			Condition in 50 years (2060)		
	# of Patches	Total Acres	% in Prescriptions Not Suitable for Timber Production	# of Patches	Total Acres	% in Prescriptions Not Suitable for Timber Production	# of Patches	Total Acres	% in Prescriptions Not Suitable for Timber Production
Small (1-99 acres)	1,749	58,828	37%	1,846	60,534	35%	234	7,476	13%
Medium (100-2,499 acres)	450	152,714	54%	522	202,909	46%	108	56,050	12%
Large (>2,499 acres)	7	33,111	76%	19	99,553	69%	32	824,745	51%
Total	2,206	244,653	53%	2,387	362,996	51%	374	888,271	48%

The network of old growth patches across the GWNF is distributed across all Ecological Subsections and linked by a forest matrix dominated by mid- and late-successional forest conditions. Important linkages are provided by riparian corridors and unsuitable lands on steeper slopes near the tops of major ridges. Currently there are 151,000 acres of old growth forest type 21 and over half of it is in prescription areas that will maintain the old growth character. In ten years, this would increase to 207,000 acres. In addition, this old growth type is well distributed around the GWNF. Of the 110 6th level watersheds that contain more than 1,000 acres of National Forest System lands, 91 percent of them have Possible Old Growth in forest type 21 that is unsuitable for timber production.

For OGFT 25-Dry and Dry-Mesic Oak-Pine Forest, there are currently 17,000 acres of Possible Old Growth and over half of it is in prescription areas that will maintain the old growth character. In ten years, this would increase to 36,000 acres. In addition, this old growth type is well distributed around the GWNF, though not as well distributed as OGFT 21-Dry-Mesic Oak Forest. Of the 110 6th level watersheds that contain more than 1,000 acres of National Forest System lands, 64 percent of them have Possible Old Growth in OGFT 21 that is unsuitable for timber production.

The OGFT 10-Hardwood Wetland Forest and OGFT 28-Eastern Riverfront forest communities are not well-represented on the GWNF in any age class. These community types are typically found along the banks of large streams and rivers which tend to be in private ownership. These forest communities are restricted to riparian zones where flooding routinely occurs, therefore, the locations of these forests shift as stream and river course change and meander. Newly discovered old growth communities will be managed to retain their old growth character.

The OGFT 02a-Hemlock-Northern Hardwood and OGFT 02b-White Pine-Northern Hardwood forests contain eastern hemlocks which are being severely affected by hemlock wooly adelgid. These forest communities are currently widespread across the riparian areas of the GWNF, but will become increasingly rare as the hemlock wooly adelgid spreads southward. Newly discovered Existing Old Growth communities will be managed to retain their old growth character.

The OGFT 01-Northern Hardwood and OGFT 2c-Spruce-Northern Hardwood forest communities are confined to the higher elevations of the GWNF. They are largely protected in, wilderness and backcountry management prescription areas. Due to the rareness of these communities on the Forest and their importance to a number of threatened, endangered, sensitive, or locally rare species, any newly discovered patches which meet the operational criteria for Existing Old Growth will be managed to retain their old growth character.

The OGFT 05-Mixed Mesophytic forest community is well-distributed throughout the GWNF, particularly in riparian areas and coves. This community is important for many biological, social, and economic reasons. Older trees in this community type are tall and very large in diameter, providing an aesthetic landscape that most people picture when they think of old growth. Newly discovered patches which meet the operational criteria for Existing Old Growth communities will be managed to retain their old growth character.

The OGFT 22-Dry and Xeric Oak Woodlands and the OGFT 24-Xeric Pine and Pine-Oak Forest and Woodland communities have historically experienced frequent fires and are relatively short-lived. Newly discovered patches which meet the operational criteria for Existing Old Growth communities within this type will be managed to retain their old growth character.

The OGFT 21-Dry-Mesic Oak Forest and OGFT 25-Dry & Dry-Mesic Oak-Pine Forest communities are well-represented in both Possible and Future Old Growth; however there are specific forest types within this broader community classification which are not well-represented. When evaluating newly discovered patches which meet the operational criteria for Existing Old Growth in these community types, specific forest types should be considered separately for their contribution to the matrix of large, medium, and small old growth patches. If, during project analysis, it can be demonstrated that an identified Existing Old Growth patch does not contribute to the Forest old growth inventory, then harvest of the patch could occur. The analysis will include a discussion of the old growth characteristics found in the area, the effect of the action on these characteristics, and the effect the action will have on the contribution of the area to the Forest's old growth inventory.

OLD GROWTH MANAGEMENT FOR THE FOREST

Additional Existing Old Growth, as it is identified, will be managed based on the old growth forest type and the representation of that type in the Existing, Possible and Future Old Growth inventories. In OGFT 01-Northern Hardwood, OGFT 02a-Hemlock-Northern Hardwood, OGFT 02b-White Pine-Northern Hardwood, OGFT 02c-Spruce Northern Hardwood, OGFT 05-Mixed Mesophytic, OGFT 10-Hardwood Wetland Forests, OGFT 22-Dry and Xeric Oak Forest, OGFT 24-Xeric Pine and Pine-Oak Forest and Woodland, and OGFT 28-Eastern Riverfront forests, any Existing Old Growth will be unsuitable for timber production. In evaluating the previous old growth forest types, as long as the forest type and stand age meet the definition of old growth, the stand will remain unsuitable, regardless of the other three criteria (basal area, number of large trees or past disturbance). In the OGFT 21-Dry-Mesic Oak Forest and OGFT 25-Dry and Dry-Mesic Oak-Pine forests, any Existing Old Growth in areas that are suitable for timber production will be evaluated to determine its suitability for harvest.

Much of the old growth on the GWNF will be managed to maintain its old growth character through the allocation of lands to management prescriptions as shown in Table B-3 through B-4. In addition, all of the Possible Old Growth stands in the following old growth types have been identified as unsuitable for timber production: OGFT 01-Northern Hardwood, OGFT 02a-Hemlock-Northern Hardwood, OGFT 02b-White Pine-Northern Hardwood, OGFT 02c-Spruce Northern Hardwood, OGFT 05-Mixed Mesophytic, OGFT 10-Hardwood Wetland Forests, OGFT 22-Dry and Xeric Oak Forest, OGFT 24-Xeric Pine and Pine-Oak Forest and Woodland, and OGFT 28-Eastern Riverfront. During field review of these stands, if the stands are correctly identified in forest type and stand age, then the stand will remain unsuitable.

The only stands of Possible Old Growth that can be considered for timber harvest are those in the OGFT 21-Dry-Mesic Oak Forest and OGFT 25-Dry and Dry-Mesic Oak-Pine old growth forest types that are also located in management prescription areas that contain lands suitable for timber production. With the aging of the current forest, there will be a need to harvest stands that meet the definition of old growth if we are to meet our objectives for openings, regenerating forests and open woodlands. Therefore, OGFTs 21 and 25 will be considered for harvest. These types are well represented in the inventory of Possible Old Growth.

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