

## 100415 Draft Tonto NF Plan Amendment - Ponderosa Pine, Dry Mixed Conifer and Old Growth in northern goshawk habitat

There is a need for the 4FRI Rim Country analysis to be in alignment with the Apache-Sitgreaves and Coconino NF revised forest plan management direction. The revised forest plans reflect a change in conditions since the 1980s including acknowledgement that vegetation conditions (structure, pattern, composition and function) are divergent from reference conditions and forest conditions indicate a substantial departure from the historic fire regime. The revised plans use the latest best available science and information. Because a final Tonto National Forest (hereafter referred to as Tonto NF) revised forest plan is not expected until 2019 an amendment is needed to:

- Replace forest plan standards and guidelines for ponderosa pine, dry mixed conifer and old growth (including northern goshawk direction) with desired conditions and guidelines
- Add a desired condition for the percentage of interspaces within uneven-aged stands to facilitate restoration.
- Add the desired interspaces distance between tree groups.
- Add a definition to the forest plan glossary for the terms interspaces and openings.

For the purposes of this draft amendment, the following definitions apply:

**Interspaces** as defined by RMRS-GTR-310 (Reynolds et al. 2013) are areas within a stand that are not currently under the vertical projection of the outermost perimeter of tree canopies (drip-line). They are generally composed of grass-forb-shrub cover but could also be areas with scattered rock or exposed mineral soil. As spaces between trees, tree groups and tree clumps, interspaces contribute to the “open canopy” character of frequent-fire forests. They often connect with other interspaces and thus are variably shaped and sized. Also see “openings”. Interspaces and tree group locations are dynamic and shift over time.

**Openings** are defined as generally persistent treeless areas having a fairly distinct shape or size, occurring naturally due to differences in soil types as compared to sites that support forests or woodlands. Openings include meadows, grasslands, rock outcroppings, and wetlands. In contrast, created openings result from disturbances like severe fire or windthrow, or management activities to intentionally create space for new tree regeneration. Natural and created openings are not the same as interspaces found in the frequent-fire forests or woodlands. See “interspaces.”

**Uneven-aged forests** are forests that comprise three or more distinct age classes of trees, either inter-mixed or in small groups.

**Uneven-aged management** is the application of combined actions needed to simultaneously maintain continuous forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection. An uneven-aged, regulated forest is one which has a balanced progression of three or more age/size classes, such that each younger/smaller class is advancing to replace the class above it on approximately the same acreage, until

it is mature for harvest or other resource objectives. A regulated forest reaches sustained yield when the volume cut periodically equals the amount of net volume growth for that same period.

**Table 1. 100415 Draft Tonto NF Forest Plan Amendment for Ponderosa Pine, Dry Mixed Conifer and Old Growth in goshawk habitat**

Current Tonto NF Forest Plan Direction	Draft Forest Plan Amendment: Desired Condition, Standard and Guideline Language	Crosswalk and/or Comments
<p><b>Management Prescriptions Applicable to All Forest Areas</b></p>		
<p>Until the forest plan is revised, allocate no less than 20 percent of each forested ecosystem management area to old growth as depicted in the table in Appendix L, page 271 (Tonto NF Forest Plan, p. 40) .</p>	<p><b>Desired Conditions for ponderosa pine and dry mixed conifer vegetation structure:</b></p> <p><b>At the landscape scale (10,000 acres and greater) the ponderosa pine and dry mixed conifer forest is a mosaic of structural states ranging from young to old trees in approximately balanced proportions. Forest structure is variable but uneven-aged and open in appearance. Sporadic areas of even-aged structure may be present on 10 percent or less of the landscape to provide structural diversity. Old growth occurs throughout the landscape, in small, discontinuous areas consisting of clumps of old trees, or occasionally individual old trees. Other old growth components are also present including dead trees (snags), downed wood (coarse woody debris), and/or structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality).</b></p> <p><b>At the mid-scale (100 to 1,000 acres) the ponderosa pine forest is characterized by variation in the size and number of tree groups depending on elevation, soil type, aspect, and site productivity. The more biologically productive sites contain more trees per group and more groups per area, resulting in less space between groups. Interspaces typically range from 10 percent in more biologically productive sites to 70 percent in the less productive sites. Tree density within forested areas ranges from 20 to 80</b></p>	<p>See revised Apache-Sitgreaves NF Forest Plan for example of ponderosa pine and dry mixed conifer direction.</p> <p>With uneven aged management we would be evaluating a representative diameter distribution and developing three or more distinct age/structural classes in the long term. We can model for this and set up trajectories. We will be using the large and old tree implementation plan and not targeting large, old trees for removal. Through individual tree or group selection and by reducing the high densities in other trees treatments would accelerate the progression into the larger size classes.</p> <p>The VSS size class distribution would be replaced with metrics related to an unevenaged structure. One of the metrics in analysis would be post treatment changes in size classes. A surrogate for age is diameter class, i.e., the distribution of trees per acre by diameter classes. The analysis will be able to identify the number of large trees and the number of old trees over time. Tracking the diameter distribution is the key and it will allow us to display trends towards old growth.</p> <p>To achieve desired conditions in goshawk PFAs the target would be up to approximately 100 BA in the larger trees. Where the BA is generated depends on site quality. Site quality will add to heterogeneity by having different densities in nest sites. The sites would be marked so that there are more interlocking canopies and larger groups. The key is to have less interspace</p>

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	<p><b>square feet basal area per acre. The tree group mosaic composes an uneven-aged forest with all age classes, size classes, and structural stages present in approximately balanced proportions (area based). Occasionally, patches of even-aged forest structure are present (less than 50 acres). Disturbances sustain the overall age and structural distribution.</b></p> <p><b>Northern goshawk post-fledging family areas (PFAs) should have 10 to 20 percent higher basal area in mid-aged to old tree groups than northern goshawk foraging areas and the surrounding forest. Goshawk nest areas have forest conditions that are multi-aged and dominated by large trees with relatively denser canopies than the surrounding forest.</b></p> <p><b>At the fine scale (less than 10 acres) typically trees typically occur in irregularly-shaped groups and are variably spaced with some tight clumps. Tree crowns in the mid- to old-aged groups are interlocking or nearly interlocking providing for species that require these forest structure conditions. Interspaces surrounding tree groups are variably shaped and composed of a grass, forb, and shrub mix. Some may contain individual trees or snags.</b></p>	<p>and larger groups. In the short term the BA may be lower than long term desired condition but this should only occur in the lower quality sites.</p> <p>See the final (post objection) FEIS Appendix D, implementation plan, pp. 13 to 39 for examples of how PFAs and nest sites are designed to move towards desired conditions.</p>
<p>In the long term, manage old growth in patterns that provide for a flow of functions and interactions at multiple scales across the landscape through time (Tonto NF Forest Plan, p.40).</p>	<p>No change</p>	<p>See ponderosa pine and dry mixed conifer desired conditions. The Old Tree Implementation Plan (FEIS Appendix D, Section C) will be carried forward into this analysis. Treatments would be designed similar to those used in the first 4FRI analysis and modified as needed to address site-specific site conditions. Because language related to old growth appears throughout Appendix D, a word search would be the most efficient</p>

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		way to locate examples.
Allocations will consist of landscape percentages meeting old growth conditions and not specific acres (Tonto NF Forest Plan, p. 40).	This language would be removed because the distribution of old growth across the landscape (at various scales) is addressed in the desired conditions (see above).	See above.
All analyses should be at multiple scales - one scale above and one scale below the ecosystem management areas. The amount of old growth that can be provided and maintained will be evaluated at the ecosystem management area level and be based on forest type, site capability, and disturbance regimes (Tonto NF Forest Plan, p. 40).	This language would be removed because the distribution of old growth across the landscape (at various scales) is addressed in the desired conditions (see above).	See above.
Strive to create or sustain as much old growth compositional, structural, and functional flow as possible over time at multiple area scales. Seek to develop or retain old growth function on at least 20 percent of the naturally forested area by forest type in any landscape (Tonto NF Forest Plan, p. 40).	This language would be removed because the distribution of old growth across the landscape (at various scales) is addressed in the desired conditions (see above).	See above.
Use information about pre-European settlement conditions at the appropriate scales when considering the importance of various factors (Tonto NF Forest Plan, p. 40).	This language would be removed because the distribution of old growth across the landscape (at various scales) is addressed in the desired conditions (see above).	See above.
Consider the effects of spatial arrangement on old growth function, from groups to landscapes, including de facto allocations to old growth such as goshawk nest sites, Mexican spotted owl protected activity centers, sites protected for species behavior associated with old growth, wilderness, research natural areas, and other forest structures managed for old growth function Tonto NF Forest Plan, p. 40).	This language would be removed because the distribution of old growth across the landscape (at various scales) is addressed in the desired conditions (see above).	See above.

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<p>In allocating old growth and making decisions about old growth management, use appropriate information about the relative risks to sustaining old growth function at the appropriate scales, due to natural and human-caused events (Tonto NF Forest Plan, p. 41).</p>	<p>This language would be removed because the distribution of old growth across the landscape (at various scales) is addressed in the desired conditions (see above).</p>	<p>See above.</p>
<p>Use quantitative models at the appropriate scales when considering the importance of various factors. These models may include, but are not limited to: Forest Vegetation Simulator, BEHAVE, and FARSITE (Tonto NF Forest Plan, p. 41).</p>	<p>No change</p>	
<p>Forested sites should meet or exceed the structural attributes to be considered old growth in the five primary forest cover types in the southwest as depicted in the table in Appendix L, page 271 (Tonto NF Forest Plan, p. 40).</p>	<p>This language would be removed because the distribution of old growth across the landscape (at various scales) is addressed in the desired conditions (see above).</p>	<p>See ponderosa pine and dry mixed conifer desired conditions (above).</p>
<p><b>Ecosystem Management in Northern Goshawk Habitats</b></p>		
<p>Applicability: The northern goshawk standards and guidelines apply to the forest wood- land communities described below that are outside of Mexican spotted owl protected and restricted areas. Within Mexican spotted owl protected and restricted areas, the Mexican spotted owl standards and guidelines take precedence over the northern goshawk standards and guidelines. One or the other set of standards and guidelines apply to all forest and woodland communities but the Mexican spotted owl standards always take precedence in areas of overlap (Tonto NF Forest Plan, p. 40-8).</p>	<p>Applicability: The northern goshawk standards and guidelines apply to the forest wood- land communities described below that are outside of Mexican spotted owl protected and <b>recovery habitats</b>. Within Mexican spotted owl protected and <b>recovery areas</b>, the Mexican spotted owl standards and guidelines take precedence over the northern goshawk standards and guidelines. One or the other set of standards and guidelines apply to all forest and woodland communities but the Mexican spotted owl standards always take precedence in areas of overlap.</p>	

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<b>Standards</b>		
Survey the management analysis area prior to habitat modifying activities including 1/2 mile beyond the boundary (Tonto NF Forest Plan, p. 40-8).	No change	
Establish, and delineate on a map, a post-fledgling family area that includes 6 nesting areas per pair of nesting goshawks for known nest sites, old nest sites, areas where historical data indicates goshawks have nested there in the past, and where goshawks have been repeatedly sighted over a 2 year or greater time period but no nest sites have been located. Manage for uneven- age stand conditions for live trees and retain live reserve trees, snags, downed logs, and woody debris levels throughout woodland, ponderosa pine, mixed conifer and spruce-fir forest cover types. Manage for old age trees such that as much old forest structure as possible is sustained over time across the landscape. Sustain a mosaic of vegetation densities (overstory and understory), age classes and species composition across the landscape. Provide foods and cover for goshawk prey (Tonto NF Forest Plan, p. 40-8).	No change	
Limit human activity in nesting areas during the breeding season (Tonto NF Forest Plan, p. 40-8).	No change	
Manage the ground surface layer to maintain satisfactory soil conditions i.e., to minimize soil compaction; and to maintain hydrologic and nutrient cycles (Tonto NF Forest Plan, p. 40-8).	No change	

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<p>When activities conducted in conformance with these standards and guide- lines may adversely affect other threatened, endangered, or sensitive species or may conflict with other established recovery plans or conservation agreements; consult with US Fish and Wildlife Service to resolve the conflict (Tonto NF Forest Plan, p. 40-8).</p>	<p>No change</p>	
<p>Within the ranges of the Kaibab pincushion cactus, <i>Pediocactus paradinei</i>, the Arizona leatherflower, <i>Clematis hirsutissima arizonica</i>, management activities needed for the conservation of these two species that may conflict with northern goshawk standards and guidelines will be exempt from the conflicting northern goshawk standards and guidelines until conservation strategies or recovery plans (if listed) are developed for the two species (Tonto NF Forest Plan, p. 40-9).</p>	<p>No change</p>	
<p><b>General Guidelines</b></p>		
<p>Emphasize maintenance and restoration of healthy riparian ecosystems through conformance with Forest Plan riparian standards and guidelines. Management strategies should restore degraded riparian areas to good condition as soon as possible. Damage to riparian vegetation, streambanks, and channels should be prevented (Tonto NF Forest Plan, p. 40-9).</p>	<p>No change</p>	
<p>Refer to USDA Forest Service General Technical Report RM-217 entitled "Management Recommendations for the Northern Goshawk in the Southwestern</p>	<p>No change</p>	

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<p>United States" for scientific information on goshawk ecology and management which provide the basis for the management guidelines. Supplemental information on goshawk ecology and management may be found in "The Northern Goshawk: Ecology and Management" published by the Cooper Ornithological Society as Studies in Avian Biology No. 16. In woodland forest cover types, use empirical data to determine desired habitat conditions (Tonto NF Forest Plan, p. 40-9).</p>		
<p><b>Home Range Establishment Guidelines</b></p>		
<p>Post-fledgling family areas (PFA) will be approximately 600 acres in size. Post-fledgling family areas will include the nest sites and consist of the habitat most likely to be used by the fledglings during their early development (Tonto NF Forest Plan, p .40-10).</p>	<p>No change.</p>	
<p>Establish a minimum of 3 nest areas and 3 replacement nest areas per post-fledgling family area. The nest areas and replacement nest areas should be approximately 30 acres in size. A minimum total of 180 acres of nest areas should be identified within each post-fledgling family area (Tonto NF Forest Plan, p. 40-10).</p>	<p>No change.</p>	
<p>Nest site selection will be based first on using active nest sites followed by the most recently used historical nest areas. When possible, all historical nest areas should be maintained (Tonto NF Forest Plan, p. 40-10).</p>	<p>No change.</p>	
<p>Manage for nest replacement sites to attain sufficient quality and size to replace the three</p>	<p>No change.</p>	

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suitable nest sites (Tonto NF Forest Plan, p. 40-10).		
<b>Inventory Guidelines</b>		
Use the R3 survey protocol to get complete coverage of the management analysis area (Kennedy and Stahlecker 1993, as modified by Joy, Reynolds, and Leslie 1994). Management analysis areas should be entire ecosystem management areas if possible (TNF Forest Plan, p. 40-9).	No change	
Complete at least 1 year of survey, but 2 years of survey should be done to verify questionable sightings, unconfirmed nest sites, etc. If nesting goshawks are found during the first year of inventory, a second year of inventory is not needed in that territory (TNF Forest Plan, p. 40-9).	No change	
For areas where complete inventories cannot be done, use aerial photographs to locate vegetative structural stages (VSS) 4-6 within the project area and inventory just those sites for goshawk nest areas using R3 inventory protocol. All uninventoried areas (VSS 1-3) will be managed to post-fledgling family area (PFA) specifications while in that stage. If while using this inventory option evidence suggests goshawks are present (such as finding plucking perches or molted goshawk feathers), conduct a complete inventory as outlined above (TNF Forest Plan, p. 40-9).	Delete	This language would be deleted because the project would defer to GTR071 Woodbridge and Hargis 2006 Inventory and Monitoring Guide and request recommendation from the regional office.
If forests have goshawks commonly nesting in stands classified as VSS 1-3, use the complete inventory methods for those areas. There may be situations where an area is	This language would be deleted.	Project will defer to GTR071 Woodbridge and Hargis 2006 Inventory and Monitoring Guide and request recommendation from the regional office.

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classified as a VSS 3, based on the predominant VSS class, but in actuality a combination of VSS 4 & 5 predominate the area. For those situations, use the complete inventory methods (TNF Forest Plan, p. 40-10).		
<p>Management Scale Guidelines</p> <p>Distribution of habitat structures (tree size and age classes, tree groups of different densities, snags, dead and down woody material, etc) should be evaluated at the ecosystem management area level, at the mid-scale such as drainage, and at the small scale site. (TNF Forest Plan, p. 40-10)</p>	<p>Management Scale Guidelines</p> <p>Distribution of habitat structures (tree size and age classes, tree groups of different densities, snags, dead and down woody material, etc.) should be evaluated <b>at the landscape scale</b>, at the mid-scale such as drainage, and at the <b>fine scale</b>.</p>	Language is edited to reflect management scales.
<b>Vegetation Management Direction - Landscapes Outside of Goshawk Post-fledging Areas</b>		
No similar direction in forest plan	<p><b>General: Within ponderosa pine and dry mixed conifer in northern goshawk habitat, manage over time for uneven-aged stand conditions composed of heterogeneous mosaics of tree groups and single trees, with interspaces between tree groups. The size of tree groups, as well as sizes and shapes of interspaces, should be variable. Over time, the spatial location of the tree groups and interspaces may shift within the uneven-aged stand.</b></p>	
<p>General: The distribution of vegetation structural stages for ponderosa pine, mixed conifer and spruce-fir forests is 10 percent grass/forb/shrub (VSS 1), 10 percent seedling-sapling (VSS 2), 20 percent young forest (VSS 3), 20 percent mid-aged forest (VSS 4), 20 percent mature forest (VSS 5), 20 percent old forest (VSS 6). NOTE: The specified percentages are a guide and actual percentages are expected to vary + or – up to</p>	<p><b>Desired Conditions for ponderosa pine and dry mixed conifer vegetation structure:</b></p> <p><b>At the landscape scale (10,000 acres and greater) the ponderosa pine and dry mixed conifer forest is a mosaic of structural states ranging from young to old trees. Forest structure is variable but uneven-aged and open in appearance. Sporadic areas of even-aged structure may be present on 10 percent or less of the landscape to</b></p>	<p>With uneven aged management we are looking for a representative diameter distribution and looking to develop 3 distinct age classes for the long term. We can model for this and set up trajectories. We will be using the large tree and old tree implementation plans and not targeting large, old trees. Through individual tree selection and by reducing the density in other trees treatments would move the 16 inch trees to 18 inch trees and the 12 inch trees to 18 inch trees. Overall there is a faster progression to the larger size classes.</p>

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<p>3 percent (TNF Forest Plan, p. 40-10).</p>	<p><b>provide structural diversity. Old growth occurs throughout the landscape, in small, discontinuous areas consisting of clumps of old trees, or occasionally individual old trees. Other old growth components are also present including dead trees (snags), downed wood (coarse woody debris), and/or structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality).</b></p> <p><b>At the mid scale (100 to 1,000 acres) the ponderosa pine forest is characterized by variation in the size and number of tree groups depending on elevation, soil type, aspect, and site productivity. The more biologically productive sites contain more trees per group and more groups per area, resulting in less space between groups. Interspaces typically range from 10 percent in more biologically productive sites to 70 percent in the less productive sites. Tree density within forested areas ranges from 20 to 80 square feet basal area per acre. The tree group mosaic composes an uneven-aged forest with all age classes, size classes, and structural stages present. Occasionally, patches of even-aged forest structure are present (less than 50 acres). Disturbances sustain the overall age and structural distribution.</b></p> <p><b>Northern goshawk post-fledging family areas (PFAs) should have 10 to 20 percent higher basal area in mid-aged to old tree groups than northern goshawk foraging areas and the surrounding forest. Goshawk nest areas have forest conditions that are multi-aged and dominated by large trees with relatively denser canopies than the surrounding forest.</b></p>	<p>The VSS size class distribution would be replaced with metrics related to an unevenaged structure. One of the metrics in analysis would be post treatment changes in size classes. A surrogate for age is diameter class, i.e., the distribution of trees per acre by diameter classes. The analysis will be able to identify the number of large trees and the number of old trees over time. Tracking the diameter distribution is the key and it will allow us to display trends towards old growth.</p> <p>To achieve desired conditions in goshawk PFAs the target would be up to 100 BA in the larger trees. Where the BA is generated depends on site quality. Site quality will add to heterogeneity by having different densities in nest sites. The sites would be marked so that there are more interlocking canopies and larger groups. The key is to have less interspace and larger groups. In the short term the BA may be lower than long term desired condition but this should only occur in the lower quality sites.</p> <p>See the final (post objection) FEIS Appendix D, implementation plan, pp. 13 to 39 for examples of how PFAs and nest sites are designed to move towards desired conditions.</p>

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	<p>At the fine scale (less than 10 acres) typically trees typically occur in irregularly-shaped groups and are variably spaced with some tight clumps. Tree crowns in the mid- to old-aged groups are interlocking or nearly interlocking providing for species that require these forest structure conditions. Interspaces surrounding tree groups are variably shaped and composed of a grass, forb, and shrub mix. Some may contain individual trees or snags.</p>	
<p>The distribution of VSS, tree density, and tree age are a product of site quality in the ecosystem management area. Use site quality to guide in the distribution of VSS, tree density, and tree ages. Use site quality to identify and manage dispersal post-fledging family areas and nest habitat at 2 - 2.5 mile spacing across the landscape (TNF Forest Plan, p. 40-10).</p>	<p>Delete</p>	<p>See desired conditions for ponderosa pine and dry mixed conifer.</p>
<p>Snags are 18" or larger d.b.h. and 30 feet or larger in height, downed logs are 12 inches in diameter and at least 8 feet long, woody debris is 3 inches or larger on the forest floor, canopy cover is measured with vertical crown projection on average across the landscape (TNF Forest Plan, p. 40-10).</p>	<p><b>Desired Condition: In ponderosa pine and dry mixed conifer snags and coarse woody debris are well distributed throughout the landscape. Snags are typically 18 inches in diameter or greater and average 3 per acre. Coarse woody debris, including logs, may range from 5 to 15 tons per acre. Logs may average 3 per acre within the forested area of the landscape.</b></p> <p><b>Guideline: Snags should be retained in the largest diameter classes available as needed to meet wildlife or other resource needs.</b></p> <p><b>Guideline: Where possible, canopy cover should be retained on the south and southwest sides of small, existing forest openings that are naturally cooler and moister. These small (generally one-tenth to one-quarter acre) shaded openings provide habitat</b></p>	<p>To retain an adequate amount of coarse woody debris fuels transects would provide the data needed to model for the expected level of snags. Using post treatment monitoring with photo fuels plots or Brown's transects is the method needed to document movement towards coarse woody debris desired conditions. In areas where snags are deficit in 14 inch trees, snags could be created. See final FEIS (post objection) appendix D (implementation plan, pp. 13, 14) for examples of treatment designs intended to address coarse wood debris (including snags) in MSO and goshawk habitat.</p>

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	<p>conditions needed by small mammals, plants, and insects. Where these openings naturally occur across a project area, these conditions should be maintained on an average of 2 or more such openings per 100 acres.</p>	
<p>No corresponding forest plan direction</p>	<p><b>Guideline: Tree group spatial distribution may be highly variable based on local site and current conditions; the interspaces between groups should range from 20 to 200 feet, but generally between 25 and 100 feet from drip line to adjacent drip line. This spacing of groups is not affected by single trees in the interspace.</b></p>	
<p>No corresponding forest plan direction</p>	<p><b>Guideline: At the landscape scale and mid-scale the number of trees per group and the number of groups per area should vary across the landscape. Collectively these stands should aggregate to uneven-aged forest landscapes, similar to natural conditions.</b></p>	
<p>The order of preferred treatment for woody debris is: (1) prescribed burning, (2) lopping and scattering, (3) hand piling or machine grapple piling, (4) dozer piling ((TNF Forest Plan, p. 40-11).</p>	<p>No Change</p>	
<p>Canopy Cover: Canopy cover guidelines apply only to mid-aged to old forest structural stages (VSS 4, VSS 5, and VSS 6) and not to grass/forb/shrub to young forest structural stages (VSS 1, VSS 2, and VSS 3) (TNF Forest Plan, p. 40-11).</p>	<p>This language would be deleted because the desired conditions are to manage for mature tree groups with interlocking or nearly interlocking crowns.</p>	<p>See desired conditions for ponderosa pine and dry mixed conifer in northern goshawk habitat at 3 scales</p>
<p>Spruce-Fir: Canopy cover for mid-aged forest (VSS 4) should average 1/3 60 percent and 2/3 40 percent, mature forest (VSS 5) should average 60+ percent, and old forest (VSS 6) should average 60+ percent. Maximum opening size is 1 acre with a maximum width of 125 feet. Provide 2 groups of reserve trees</p>	<p>No Change</p>	<p>Not relevant to the analysis</p>

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<p>per acre with 6 trees per group when opening size exceeds 0.5. Leave at least 3 snags, 5 downed logs, and 10–15 tons of woody debris per acre (TNF Forest Plan, p. 40-11).</p>		
<p>Mixed Conifer: Canopy cover for mid-aged forest (VSS 4) should average 1/3 60+ percent and 2/3 40+ percent, mature forest (VSS 5) should average 50+ percent, and old forest (VSS 6) should average 60+ percent. Maximum opening size is up to 4 acres with a maximum width of up to 200 feet. Retain 1 group of reserve trees per acre of 3–5 trees per group for openings greater than 1 acre in size. Leave at least 3 snags, 5 downed logs, and 10–15 tons of woody debris per acre (TNF Forest Plan, p. 40-11).</p>	<p>This language would be deleted because the desired conditions are to manage for mature tree groups with interlocking or nearly interlocking crowns.</p>	<p>See desired conditions for ponderosa pine and dry mixed conifer in northern goshawk habitat 3 scales. SDI, trees per acre and basal areas will be used to define canopy closure/openness (canopy relationships).</p>
<p>Ponderosa Pine: Canopy Cover for mid-aged forest (VSS 4) should average 40+ percent, mature forest (VSS 5) should average 40+ percent, and old forest (VSS 6) should average 40+ percent. Opening size is up to 4 acres with a maximum width of up to 200 feet. One group of reserve trees, 3–5 trees per group, will be left if the opening is greater than an acre in size. Leave at least 2 snags per acre, 3 downed logs per acre, and 5–7 tons of woody debris per acre (TNF Forest Plan, p. 40-11).</p>	<p>This language would be deleted because the desired conditions are to manage for mature tree groups with interlocking or nearly interlocking crowns.</p>	<p>See desired conditions for ponderosa pine and dry mixed conifer in northern goshawk habitat at 3 scales. SDI, trees per acre and basal areas will be used to define canopy closure/openness (canopy relationships).</p>
<p>Woodland: manage for uneven age conditions to sustain a mosaic of vegetation densities (overstory and understory), age classes, and species composition well distributed across the landscape. Provide for reserve trees, snags, and down woody debris (TNF Forest</p>	<p>No Change</p>	

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Plan, p. 40-11).		
<b>Within Post-fledging Family Areas</b>		
General: Provide for a healthy sustainable forest environment for the post-fledging family needs of goshawks. The principle difference between within the post-fledging family area and outside the post-fledging family area is the higher canopy cover within the post-fledging family area and smaller opening size within the post-fledging family area. Vegetative Structural Stage distribution and structural conditions are the same within and outside the post-fledging family area (TNF Forest Plan, p. 40-11).	General: Provide for a healthy sustainable forest environment for the post-fledging family needs of goshawks. The principle difference between within the post-fledging family area and outside the post-fledging family area <b>is the higher basal area in mid-aged to old tree groups than northern goshawk foraging areas and the surrounding forest.</b>	This language was added to reflect desired conditions.
Spruce-fir: Canopy Cover for mid-aged forest (VSS 4) should average 60+ percent and for mature (VSS 5) and old forest (VSS 6) should average 70+ percent (TNF Forest Plan, p. 40-11).	No Change	
Mixed Conifer: Canopy Cover for mid-aged (VSS 4) to old forest (VSS 6) should average 60+ percent (TNF Forest Plan, p. 40-11).	This language would be deleted because the desired conditions are to manage for mature tree groups with interlocking or nearly interlocking crowns.	See desired conditions for ponderosa pine and dry mixed conifer in northern goshawk habitat at 3 scales. SDI, trees per acre and basal areas will be used to define canopy closure/openness (canopy relationships).
Ponderosa Pine: Canopy Cover for mid-aged forest (VSS 4) should average 1/3 60+ percent and 2/3 50+ percent. Mature (VSS 5) and old forest (VSS 6) should average 50+ percent (TNF Forest Plan, p. 40-12).	This language would be deleted because the desired conditions are to manage for mature tree groups with interlocking or nearly interlocking crowns.	See desired conditions for ponderosa pine and dry mixed conifer in northern goshawk habitat at 3 scales. SDI, trees per acre and basal areas will be used to define canopy closure/openness (canopy relationships).

Current Tonto NF Forest Plan Direction	Draft Forest Plan Amendment: Desired Condition, Standard and Guideline Language	Crosswalk and/or Comments
Woodland: Maintain existing canopy cover levels (TNF Forest Plan, p. 40-12).	No change	
No corresponding forest plan direction	<b>Guideline: Tree group spatial distribution may be highly variable based on local site and current conditions; the interspaces between groups may range from 20 to 200 feet, but generally between 25 and 100 feet apart from drip line to adjacent drip line. This spacing of groups should not be affected by single trees in the interspace.</b>	
No corresponding forest plan direction	<b>Guideline: A minimum of six nest areas (known and replacement) should be located per northern goshawk territory. Northern goshawk nest and replacement nest areas should be located around active nests, in drainages, at the base of slopes, and on northerly (northwest to northeast) aspects. Nest areas should be 25 to 30 acres each in size.</b>	
No corresponding forest plan direction	<b>Guideline: Northern goshawk post-fledging family areas (PFAs) of approximately 420 acres in size should be designated around the nest sites.</b>	
<b>Within Nesting Areas</b>		
General: Provide unique nesting habitat conditions for goshawks. Important features include trees of mature to old age with high canopy cover (TNF Forest Plan, p. 40-12).	<b>Guideline: Goshawk nest areas should have forest conditions that are multi-aged and dominated by large trees with relatively denser canopies than the surrounding forest.</b>	
The structure of the vegetation within nest areas is associated with the forest type, and tree age, size, and density, and the developmental history of the stand. Table 5 of RM-217 presents attributes required for goshawks on locations with "low" and "high" site productivity (TNF Forest Plan, p. 40-12).	No Change	
Preferred treatments to maintain the desired structure are to thin from below with non-	<b>Guideline: Preferred treatments should be maintained to maintain and improve the desired nest structure.</b> Lopping	

Current Tonto NF Forest Plan Direction	Draft Forest Plan Amendment: Desired Condition, Standard and Guideline Language	Crosswalk and/or Comments
<p>uniform spacing and use of hand tools and fire to reduce fuel loads. Lopping and scattering of thinning debris is preferred if prescribed fire cannot be used. Piling of debris should be limited. When necessary, hand piling should be used to minimize compaction within piles and to minimize displacement and destruction of the forest floor and the herbaceous layer. Do not grapple or dozer pile debris. Manage road densities at the lowest level possible to minimize disturbance in the nest area. Use small, permanent skid trails in lieu of roads for timber harvesting (TNF Forest Plan, p. 40-12).</p>	<p>and scattering of thinning debris is preferred if prescribed fire cannot be used. Piling of debris should be limited. When necessary, hand piling should be used to minimize compaction within piles and to minimize displacement and destruction of the forest floor and the herbaceous layer. Manage road densities at the lowest level possible to minimize disturbance in the nest area. <b>Designate</b> skid trails in lieu of <b>creating new</b> roads for timber harvesting.</p>	
<p>Spruce-fir, Mixed Conifer and Ponderosa Pine Cover Types: The nesting area contains only mature to old forest (VSS 5 &amp; 6) having a canopy cover (measured vertically) between 50-70% with mid-aged VSS 6 trees 200-300 years old. Non-uniform spacing of trees and clumpiness is desirable (TNF Forest Plan, p. 40-12).</p>	<p>Delete</p>	<p>See desired conditions for ponderosa pine and dry mixed conifer in northern goshawk habitat 3 scales.</p>
<p>Woodland: Maintain existing canopy cover levels (TNF Forest Plan, p. 40-12 to 13).</p>	<p>No Change</p>	
<p>Human Disturbance Guidelines (TNF Forest Plan, p. 40-12)</p>	<p>No Change</p>	
<p><b>Glossary</b></p>		
<p>No corresponding forest plan language</p>	<p><b>Interspaces as defined by RMRS-GTR-310 (Reynolds et al. 2013) are areas within a stand that are not currently under the vertical projection of the outermost perimeter of tree canopies (drip-line). They are generally composed of grass-forb-shrub</b></p>	

Current Tonto NF Forest Plan Direction	Draft Forest Plan Amendment: Desired Condition, Standard and Guideline Language	Crosswalk and/or Comments
	<p>cover but could also be areas with scattered rock or exposed mineral soil. As spaces between trees, tree groups and tree clumps, interspaces contribute to the “open canopy” character of frequent-fire forests. They often connect with other interspaces and thus are variably shaped and sized.</p>	
<p>No corresponding forest plan language</p>	<p><b>Openings are defined as generally persistent treeless areas having a fairly distinct shape or size, occurring naturally due to differences in soil types as compared to sites that support forests or woodlands. Openings include meadows, grasslands, rock outcroppings, and wetlands. In contrast, created openings result from disturbances like severe fire or windthrow, or management activities to intentionally create space for new tree regeneration. Natural and created openings are not the same as interspaces found in the frequent-fire forests or woodlands.</b></p>	