Prince of Wales Landscape Level Analysis Project

Draft Issue Statements and Alternatives, December 2017

Appendix B

Wolf Habitat Management Program Thinning Recommendations from Wolf Technical Committee. 2017. Interagency Wolf Habitat Management Program: Recommendations for Game Management Unit 2. Management Bulletin R10-MB-822. USDA Forest Service, USDI Fish and Wildlife Service, and Alaska Department of Fish and Game.

Deer habitat improvement may be prioritized as needed in areas with high potential for important deer winter range, such as on low-elevation, southerly-facing slopes. The overall goal would be to provide stand heterogeneity, providing deer forage in close proximity to high canopy cover (to provide thermal cover, snow interception, and travel corridors) through time, across the landscape. Deer like edges (Chang *et al.* 1995) and treatments that create many openings can break up large expanses of young-growth stands, improving deer habitat. Therefore, more small treatments as opposed to fewer large treatments, spread across larger or contiguous even-aged stands, can improve deer habitat value of the area. Staggering treatments in time (cutting only a small percentage of a large stand each decade, for example) can reduce fluctuations in deer habitat quality and help stabilize deer numbers. Slopes are also a consideration (The Nature Conservancy 2014). Due to higher predation of deer on flatter slopes, especially during snowy winters (Farmer *et al.* 2006), there may be benefits to designing treatments that are smaller and more dispersed on flatter terrain (The Nature Conservancy 2014).

Harris (1984) developed a strategy for maximizing edge effects through successive rotations by systematically placing new cuts adjacent to stands of mid-rotation age. His concept of “long rotation islands” relies on skips between successive, wedge-shaped cuts, arranged in a circular pattern similar to a pie, with all but a permanently-protected reserve in the center harvested over successive rotations (Figure 1). This system could be conceptually adapted to low-gradient sites where deer habitat is a consideration. For example, a large young-growth stand or set of stands (e.g., a valley bottom) could be divided into 9 wedges, with one wedge treated each decade, in an order similar to that shown in Figure 1. As a guideline for wedge size, Nelson *et al.* (2008) suggested limiting openings to 2.5 to 7.4 acres on deer winter range that experience enough snow accumulation to restrict deer foraging and movement. This conceptual design would maintain early-succession stands (in the shrub stage) adjacent to stands at least 40 to 50 years old, throughout the entire (and successive) rotation(s). Additional ecological benefits would likely result from retention of mature or old forest in the center of the treatment “pie.”

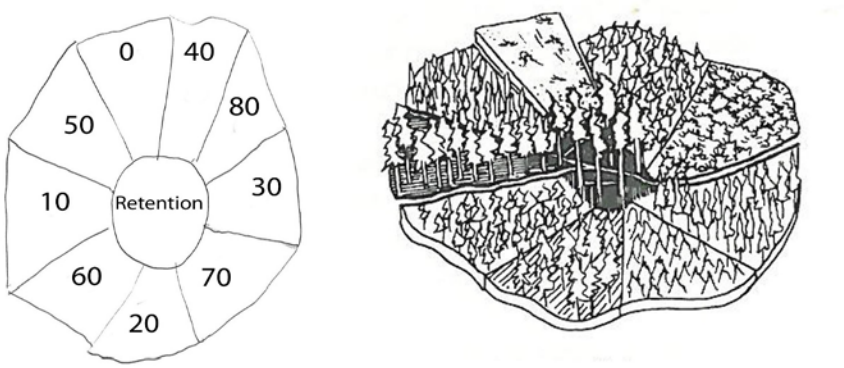

Figure 1. An example rotation island concept to provide heterogeneity and edges through successive timber rotations. Left is a schematic of 9 wedge-shaped harvest units, with the year each unit is cut through a 90-year rotation. Alternate wedges are cut 10 years apart, leaving intervening units to provide snow interception and hiding cover between recently cut units. After 90 years, the rotation island might resemble the diagram on the right; with the stand that was cut in year 0 harvested a second time. This system is recommended for low-gradient, low-elevation, young-growth sites (e.g., valley bottoms) where improvements in deer wintering habitat are desired (Adapted from Harris 1984).

A variation of Harris's (1984) long rotation island that could be adapted for use on south-facing slopes with existing roads to provide deer habitat through the full timber rotation would use blocks of 9 or more parallel strip cuts and oriented with their long axes running from high to low elevation along a south-facing slope (Figure 2). This "strip rotation block" arrangement would also rely on skips between cuts, with successive cuts done approximately every10 years. Closed canopy forest (either old growth or young growth, as available) should be retained along ridgelines or other elevational corridors to provide snow interception throughout the rotation (Figure 2).

Both systems would produce a relatively stable ratio of shrub to older stand edges once the first few cuts were established. We note that these systems would provide a slower but perhaps more stable flow of timber from existing young-growth stands, with entries every 10 years. Managers may choose to experiment with a variety of treatments, such as gaps, variable retention thinning, pruning, or other techniques to create additional heterogeneity in the strips and wedges over time (The Nature Conservancy 2014, Harris 1984, Aubry *et al.* 1999).

While vertical strip rotations would be useful for deer on slopes to address their elevational movement needs, smaller treatments (including Harris's long rotation islands) may be useful on flatter terrain, especially if dispersed across the landscape (The Nature Conservancy 2014).

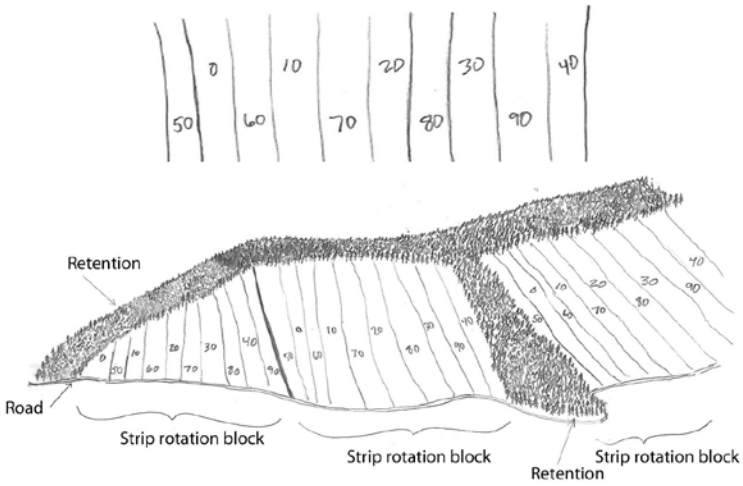

Figure 2. An example of strip rotation blocks using skips between successive cuts, to provide improved deer habitat on slopes in a landscape dominated by even-aged young growth. At the top is a schematic showing the year that each strip in a block is cut, with skips between successive strip cuts. Below is an example of how 3 strip rotation blocks might be scheduled to provide a stable supply of edges through successive, 100-year rotations, with leave strips along ridgelines to provide elevational migration corridors.

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There are also opportunities to steer old-growth harvest in ways that promote deer habitat needs. For example, when conditions are suitable, old growth needed to bridge timber transition to primarily young-growth management could be obtained from northerly-facing, higher elevation slopes that constitute less important deer winter habitat. It would also be helpful to use uneven-age management or retention system techniques instead of even-aged management in old-growth harvesting where feasible to promote deer habitat needs. Further, retention of residual old-growth patches in young-growth forest can provide important landscape and stand diversity needed by deer (Chang *et al.* 1995, Alaback 2013).

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