



THE WILDLIFE SOCIETY

ALASKA CHAPTER

The Alaska Chapter of The Wildlife Society strives to enhance the ability of wildlife professionals to conserve biological diversity, sustain productivity, and ensure responsible use of wildlife resources in Alaska for the benefit of society.



Helge Eng, Director

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Dear Dr. Eng,

Attached are guidelines for deer habitat conservation in managed forests of Southeast Alaska. They were compiled by members of the Alaska Chapter of the Wildlife Society with knowledge of deer ecology and habitat requirements, some of them with decades of first-hand experience. We seek to encourage informed dialog between state foresters, state wildlife biologists, and interested members of the public on how to best ensure deer winter range is conserved on managed state lands, particularly in close proximity to communities.

I encourage you to share these guidelines with the Alaska Board of Forestry members. We were not able to find on the Division of Forestry website if you have a citizen advisory committee for Southeast Alaska state forest lands. If Board members have any questions or would like to discuss the recommendations with topic experts, we can ask for their participation in a future meeting.

Sincerely,

Cynthia Wardlow

Alaska Chapter President

The Alaska Chapter was founded in 1971 as part of The Wildlife Society. It is a nonprofit organization of professional wildlife biologists dedicated to excellence in wildlife stewardship through science and education. We have over 200 members in state and federal agencies, academic institutions, non-governmental organizations, and private industry.

The mission of the Alaska Chapter of The Wildlife Society is to benefit the long-term health of Alaska's wildlife and the sustained use and enjoyment of these resources. In meeting our mandate, the Alaska Chapter serves as an objective, science-based organization that provides information and thoughtful analysis on important and relevant issues pertaining to conservation of wildlife and their habitats. We actively promote the conservation of wildlife and their habitats through educational outreach and the production of technical reviews and position papers.

Guidelines for selective timber harvest in important deer habitat
in the Southeast Alaska State Forest and other state lands in coastal forest

The goal of these guidelines are to inform the Alaska Board of Forestry and foster prescriptive application for important deer habitat related to old growth forest on state lands in Southeast Alaska.

Forest habitats at low elevation (less than 800 feet above mean sea level) with high timber volume (30 million board feet per acre), complex canopy structure (not even-aged), and south facing (120-240° aspect) slopes are important winter range for Sitka black-tailed deer during periods of high snowfall. Snow depth dominates deer habitat selection and is a primary driver of deer population size in Southeast Alaska. In coastal Southeast Alaska, where deer are important subsistence resources for sustaining local communities, if timber harvest is desired from forest areas that also provide important deer winter range, the following practices are prudent for deer habitat management:

- Maintain deer access to large stands with a multi-layer canopy, which is critical for snow interception above important winter forages, by selective harvesting of small numbers of trees distributed evenly throughout the unit (2-12 per acre) (Kirchhoff and Thomson 1998);
- Maintain vertical connectivity from beach to alpine to ensure seasonal altitudinal migration by deer (Schoen and Kirchhoff 1985, Wolf Technical Committee 2017) by retaining multi-layer canopy strips at least 300 feet wide; and
- Maintain deer foraging shelter in suboptimal habitat during extreme snow depths (Doerr et al. 2005) by retaining multi-layer canopy buffers at least 300 feet wide that are connected to high quality habitat patches across the wider landscape.

Background and rationale

Existing guidance on conserving wildlife habitat, including for deer, in timber sales on state lands in Southeast Alaska is non-regulatory and minimally prescriptive. The Southeast State Forest Management Plan mentions wildlife many times, but there is no landscape or stand level prescription for any wildlife species. The plan has no scientific references for wildlife despite the substantial investment by federal agencies, the State of Alaska, and non-governmental organizations since the 1970s to guide forest practices in a managed landscape.

- Alaska Forest Resources and Practices Act specifies that forest management plans must consider and permit non-timber forest uses to the extent compatible with timber use, including consumptive and non-consumptive uses of wildlife (Alaska Statute 41.17.230(a)) and “allowance shall be made for important fish and wildlife habitat” (Alaska Statute 41.17.060(c)(7)).

- The Southeast Alaska State Forest management plan (Alaska Division of Forestry 2016) has recommendations for wildlife in each management unit. A common recommendation is “Consider deer winter habitat range on south facing slopes below 800 feet in elevation.” Select units additionally have “DOF will consult with ADF&G during the Forest Land Use Plan process prior to timber harvest.”
- The Wolf Technical Committee (2017) and Bennetsen (2020) discussed prescriptive techniques to reduce impacts of post-clearcut forest succession on deer forage. Although, not specific, this seemingly was only focused on National Forest lands. Consultation between foresters and wildlife biologists on logging design in the remaining late seral, multi-layer canopy that is important for snow interception on deer winter range can reduce the need for further costly treatments of second growth in an attempt to restore late-seral structure.

Deer habitat requirements and timber harvest effects in coastal forest

- Multi-layer canopy, late seral conifer forest provides critical winter deer habitat because it produces an abundant understory of high-quality deer forage and intercepts snow that would cover important herbaceous and woody forages of high nutrition that can be buried by as little as 4 inches of snow (Wallmo and Schoen 1980, Kirchhoff and Schoen 1987, Schoen and Kirchhoff 1990, White et al. 2009). Adequate forage and snow intercept are both requisite for continued winter deer survival. Maintaining a mosaic of small disturbance patches in late seral forest is optimal for deer fitness during winter when energetic demands for nutritional intake are high (Parker et al. 1999). Winter landscape connectivity, provided by habitats where canopy cover is sufficient to keep snow depths low that connect high-quality habitat areas as described above, is also critical to ensure deer do not become isolated by deep snow and die of malnutrition (Kirchoff 1994).
- The most important deer winter range is typically defined as southerly-facing slopes (120-240°, Person et al. 2009) lower than 800 foot elevation (USDA 2011). Habitat selection by deer in winter is dominated by snow depth, and these low-elevation, southerly slopes allow deer to avoid deep snow (Gilbert et al. 2017). Suboptimal habitat in close proximity to salt water may also be selected during severe winters by deer living near the coastline (Doerr et al. 2005). Leaving strips of intact mature forest as elevational movement corridors for deer should retain multi-layer mature canopy cover within harvested landscapes to provide habitat heterogeneity, snow interception, and slash-free areas facilitating movement along elevational gradients. It is important to maintain or enhance connectivity of the full seasonal elevational span of alpine to beach habitat (Wolf Technical Committee 2017:7) so deer do not become isolated in pockets of forage that can become over-browsed in winters of deep snow (Kirchoff 1994). A caution is that reducing important habitat to relatively narrow strips in managed landscapes will increase risk of predation where wolves occur, particularly during deeper snow in winter. It may also increase susceptibility to tree blow-down during wind events if the strips are not sufficiently wide to be wind firm.

- The natural disturbance regime in coastal forest is a dynamic canopy gap created by individual or small group treefall. Where maintaining multi-layered canopy with tall trees and large limb structure (characteristic of old growth) is a management priority for important wildlife habitat (particularly for winter deer habitat), uneven-aged management of silvicultural systems can emulate a desired range of canopy gaps through a combination of single tree selection and small group selection (Kirchhoff and Thomson 1998, Ott and Juday 2002). Tappeiner and Alaback (1989) suggested creation of canopy openings 33 to 98 feet in diameter to help maintain understory forb and shrub species and found evidence of successful forage regeneration in the resulting “canopy gaps” (Alaback 2010; Harris and Barnard 2017). Biologists judge the smaller diameter openings are more valuable than larger openings during winter because of closer proximity to canopy interception of snow that would otherwise bury important forages. It is important to maintain an abundant evergreen forb community (e.g., *Cornus canadensis*, *Rubus pedatus*, etc.), along with palatable shrubs (Hanley et al. 2012) beneath a broken, multi-layered canopy allowing penetration of sunlight while also maintaining a high-volume canopy in mature trees capable of intercepting snow
- Deer managers recommend avoiding harvest of low elevation, late seral coastal timber, particularly by even-age management (clear cutting), to conserve important winter habitat (Nyberg et al. 1989, Wallmo and Schoen 1980, Kirchhoff and Schoen 1987, Schoen and Kirchhoff 1990). During heavy winter snow accumulation, it is important to maintain the remaining high-volume or large-tree, old growth stands (Schoen and Kirchhoff 1990) that have become relatively rare because historical patterns of logging have targeted those stands (Albert and Schoen 2013).

Biological, social, and economic factors of deer habitat management

- Sitka black-tailed deer are the most common large herbivore in Southeast Alaska and the most important terrestrial subsistence resource to local residents (Titus et al. 2009). Reports by state game managers in this region summarize literature on how timber harvest and road building have influenced deer and wolf populations, deer hunting success, and potential for winter mortality (e.g., Hasbrouck 2020). Low deer abundance reduces ungulate prey biomass in the ecosystem and complicates management of deer-bear-wolf systems in already heavily human-disturbed landscapes with forest road access (Person and Brinkman 2013, Gilbert et al. 2022, Roffler et al. 2023).
- The dominant method of timber harvest in Southeast Alaska beginning in the 1950s was clear cutting at relatively large spatial scales to meet pulp source contracts, with equipment and processing mills scaled for handling large trees. Approximately half of high volume, low elevation forest of Southeast Alaska has been harvested since the 1950s (Albert and Schoen 2007, Albert et al. 2016:56), with change most acute on Prince of Wales Island (Albert and Schoen 2013).

- Public input to national forest policy and shareholder input to Alaska Native corporations have raised strong concerns over clearcutting of important deer winter range in low elevation forest, particularly near communities that use adjacent forest for subsistence harvest of deer. The forest industry, US Forest Service, and non-government organizations continue to seek viable economic strategies that shift management to second growth. Wildlife conservation entities seek to avoid harvest of the remaining old growth. Where harvest in old growth may occur, it should be minimal selective harvest of large old trees in important deer habitat to have the least negative impact on deer access to forage in winter and other native biota in these stand age classes. Defining “selective” is crucial for informed dialog and habitat recommendations.
- The Alaska Legislature created the Southeast Alaska State Forest in 2010 (expanded in 2011) to provide a source of larger, late-seral timber for an unspecified period of transition by the industry to harvest second growth timber. Many of the 33 management units across 11 islands are in close proximity to small communities with residents reliant on nearby subsistence resources, both terrestrial and marine. This state forest is in state Game Management Units 1A, 2, and 3. Alaska Mental Health Trust lands occur near several communities and are also subject to timber harvest regulations and guidance under the Alaska Forest Resources and Practices Act (AFRPA). Natural post-logging regeneration of trees often meets the AFRPA reforestation standards in Region I. However, deer habitat conditions in clearcuts are poor for decades because dense canopy regeneration reduces ground forage during the pole timber stage (30-100 years).
- Precommercial thinning holds promise to extend the useful life of clearcuts for deer forage production in low-snow areas and hasten development of large trees (Bennetsen 2020). Precommercial thinning can open the canopy and allow sunlight to reach the forest floor, but the benefits in terms of understory response are short-lived (5-15 years) before the crown closes over again. Repeated thinning will be necessary; and the slash generated will need to be treated (piled, crushed, or yarded) to maximize usefulness to deer, because without treatment, slash can be several feet thick and persist for a decade (McClellan et al. 2014), making thinned habitats inaccessible to deer (e.g., Parker et al. 1984). The need for repeated treatments and slash management will increase stand-level expenses. In recent years, approximate cost for precommercial thinning was \$975/acre (range: \$800-1850) and for slash treatment was \$985/acre (range: \$550-2150) with access influencing cost range (source: Tongass National Forest). Snow is a significant problem in the openings of thinned stands because the surrounding young trees do not have the limb structure to hold significant amounts of snow aloft compared to very old, large trees (Schoen and Kirchhoff 1990).
- Near communities, area accessed by road or boat is heavily used by subsistence users. For example, on Prince of Wales Island, 50% of deer harvest occurs on 20% of the land area near the communities of Craig, Klawock, Naukati, Coffman Cove, and Thorne Bay (ADF&G unpublished data). Conserving important deer winter range in late seral forest near communities will help maintain relatively stable deer abundance, particularly during severe

winters, in areas most accessible to subsistence users. Where logging has already occurred near communities, concentrating precommercial thinning with slash treatments to allow for deer movement and forage access will benefit subsistence user access to the resource.

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