

Clearcut logging has long been considered by the timber industry, as well as many wildlife managers, to be beneficial to deer. The theory has been that first forest regrowth is excellent food for deer. However, recent studies by the Alaska Department of Fish and Game (ADF&G) and the U. S. Forest Service's Forestry Sciences Laboratory (FSL) in Juneau have produced information which contradicts this generality when applied to Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) in southeastern Alaska.

Southeastern Alaska is the northwest extent of the black-tailed deer's natural distribution. This region is best characterized as a narrow band of land bordered on

the east by rugged glaciers and snow-capped mountains and on the west by ocean. The habitat of the Sitka black-tail in southeastern Alaska consists primarily of temperate rain forest and, at high elevations, alpine tundra. For three to five months out of the year much of the alpine area is snow-free and produces an abundance of high-quality deer forage. During the remaining seven to nine months deep snow covers this area and then deer are restricted to the lower forested regions. Most deer mortality occurs in late winter and early spring when snow limits their mobility and reduces the availability of high-quality forage.

The main objective of the first phase of the recent ADF&G-FSL

cooperative deer study was to actually measure deer use of clearcuts at various stages of regrowth and compare this to deer use of adjacent or nearby old growth. Current timber management plans in Southeastern consist of clearcutting the old-growth forest and then cutting it again in about 100 years. This is called even-aged silviculture on a 100-year rotational basis. Comparisons of deer use were made by pellet-group (or feces) counts, a standard deer research technique. Pellet groups were counted on 300 one-by-ten-meter plots in each regrowth and adjacent old-growth study site on Admiralty and Chichagof islands during the fall of 1977 and the spring of 1978. The fall sample gave information on

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## DEER AND LOGGING RELATIONSHIPS



O. C. Wallmo stands in a clear-cut in mid-February, demonstrating how snow cover prevents black-tailed deer from utilizing whatever forage is in these areas.



By comparison, the nearby old-growth forest provides protection from the snow, leaving many areas for the Sitka black-tailed deer to browse.



summer use, and the spring sample on winter use.

Results of fall sampling indicated that deer summer use of 15 even-aged regrowth stands (4-147 years old) averaged about one-sixth that of the nearby or adjacent uneven-aged old-growth stands. Spring sampling gave similar results: deer winter use of 17 regrowth stands (1-147 years old) averaged about one-seventh that of the comparable old-growth. Throughout this study, no regrowth stands were observed where deer use was as high as comparable old growth.

Measurements of understory plants showed that regrowth stands from 34 to 147 years old produce a substantially lower abundance and diversity of understory vegetation

(deer forage) than do the adjacent old-growth stands. Although these regrowth stands may provide some cover, because their dense even canopy blocks out much light, they produce little or no forage. Additionally, comparisons of winter snow depth revealed that even in a moderate winter green-leaved plants, (which are the most nutritious for deer) were more available in an uneven-aged old-growth forest than in a recent clearcut. Open areas of the forest, like the open alpine, may produce abundant forage, but snow cover prevents its use by deer. Uneven-aged old-growth forests (in excess of 200 years) include trees of varying ages and sizes, many with high, broad, strong canopies which block much snow.

At the same time they include small dispersed openings which allow adequate light for growth of understory vegetation. Thus uneven-aged old-growth stands provide both the cover and forage necessary to sustain deer through their critical winter-spring period.

In southeastern Alaska about 18,000 acres of old-growth forest are clearcut annually. There are about five million acres of potentially commercial forest land in this area of which 13 percent is already in young (less than 150 years) regrowth stands. If we continue our present level and methods of harvest, by the time the current clearcuts reach rotation or recutting age (100 years) about two and one-half million acres, or 50 percent, of our

*(continued on page 10)*

## IN SOUTHEASTERN ALASKA



*The high even canopy of this nearly hundred-year old regrowth shades the forest floor and prevents growth of green-leaved plants, necessary food for the black-tailed deer.*



*Uneven-aged old growth is made up of trees of varying sizes and ages, providing spaces in the canopy for light to enter. The understory vegetation that grows here is accessible to Southeastern's deer year-round.*



best winter deer habitat will be affected. Of all the current land-use practices in southeastern Alaska, timber management will have the greatest impact on deer.

On February 22 through 24, the U. S. Forest Service and the Alaska Department of Fish and Game sponsored a Sitka Black-Tailed Deer Conference in Juneau, attended by about 50 individuals representing ADF&G, U. S. Forest Service, U. S. Fish and Wildlife Service, the British Columbia Fish and Wildlife Branch, several timber companies as well as the Universities of Alaska, British Columbia, Washington and California. The joint ADF&G-FSL study and many others about the black-tailed deer were presented. The general consensus of the con-

ference members was that current forest practices (clearcutting on a 100-year rotation) in Alaska and British Columbia are permanently eliminating the uneven-aged old-growth forest on the northern coast, and further, that the result will most likely be a serious and long-term detrimental impact on deer habitat and consequently deer populations throughout this region. In fact deer biologists from Vancouver Island described substantial decreases (as much as 85 percent) in deer harvest levels as a result of removing the old-growth (climax) forest community.

It appears that uneven-aged old-growth forests provide critical winter habitat for deer in southeastern Alaska. Beyond this, however,

much remains to be learned. The climax forest is a highly diverse community made up of a mosaic of different forest types over a range of topographic variation. Answering the question of how deer utilize this habitat mosaic and how their habitat preferences vary seasonally will be the next phase of our cooperative investigation. We intend to accomplish this through a combination of techniques including monitoring radio-collared deer and on-the-ground studies of their seasonal distribution. Such research will provide us with information which will enable us to better plan for the long-term maintenance and protection of critical deer habitat throughout southeastern Alaska. ■

## Deer and Logging (continued from page 3)



Photo by Leonard Lee Rue III

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