



FYI

INFORMATION

*A Research
Summary
From the
Washington
Forest
Protection
Association*

New Findings in Wildlife Research Suggest Food Supply May Be More Important to Elk Populations Than Dense Forest Areas



Large tracts of dense forests may provide excellent thermal and hiding cover, but may not provide sufficient forage to support productive elk herds. Recent research indicates that open, treeless areas with abundant forage interspersed with forested areas for security provide superior habitat for elk. In Washington, forest management is a key tool for creating such conditions.

Through modern forest management, foresters are able to enhance wildlife habitat by strategically thinning, reforesting to control species mix, and controlling harvest unit size and location. These and other silvicultural techniques help create forest structures and vegetation composition favorable to specific wildlife species. Besides maintaining mixes of forest and open areas to encourage forage growth and providing hiding areas from predators, forest managers for the past few decades have attached great importance to creating conditions where forest stands provide “thermal cover”—dense conifer cover that provides some protection for elk from harsh weather. This practice has been based on elk research published in the 1970s and 1980s suggesting that thermal cover was an important part of elk habitat. Recently, however, experts have been paying particular attention to new research findings in this area.

A controlled experiment by Dr. John Cook and Dr. Larry Irwin of the National Council for Air and Stream Improvement has raised questions about the role of thermal cover and suggests that other factors such as forage supply and hunting should be given far greater consideration in habitat models. This change in thinking could have a major impact on forest management in western Washington because rules governing the treatment of elk habitat affect a huge amount of forestland in the state. “In terms of actual timber supply,” said Irwin, “providing good elk habitat actually involves more federal forestland in the

West than that of the spotted owl.”

Cook and Irwin, along with three co-authors, won a national award from the Wildlife Society for their report on the study, “Forest Cover and Elk Condition.” The authors acknowledge that although a dense canopy may moderate both hot and cold weather conditions to some extent, the effects are not sufficient to appreciably influence the overall energy balance of elk. Forest management, therefore, should increase emphasis on the quantity and quality of forage because these factors have a much greater effect on energy balance, body condition, and health than does thermal cover.

Experiment Changes Assumptions

Cook and Irwin conducted the study in cooperation with Dr. Larry Bryant and former head of the U.S. Forest Service Dr. Jack Ward Thomas (then with the Pacific Northwest Research Station), and Dr. Robert Riggs, a wildlife biologist with Boise. For over four years, the team monitored such factors as water consumption, weight change, amount of activity, fat levels, and body composition of a herd of trained elk in northeastern Oregon.

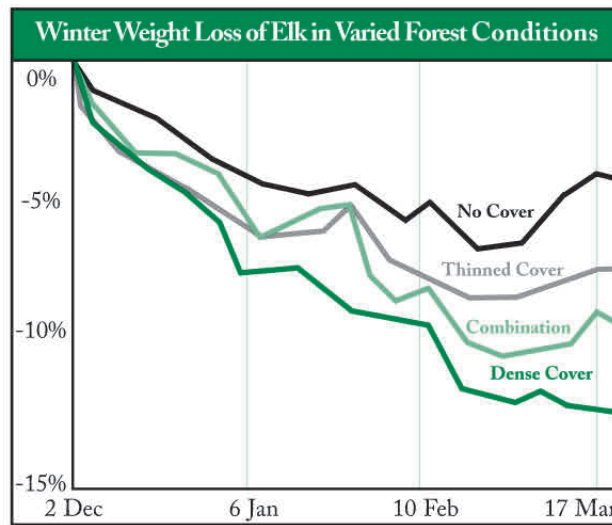
The researchers concluded that elk are well-adapted to cold, and the weather-moderating effects of thermal cover provided no significant benefit. Three independent deer studies conducted in Colorado and Maine also concluded that thermal cover benefits in winter were negligible, providing additional evidence pointing to the same conclusion. According to Cook, results suggest that thermal cover could have a negative effect because forest structure suitable to thermal cover over large areas greatly decreases the amount of forage available to the herds and limits the amount of energy available to them through food intake.

Mt. St. Helens Has Unexpected Effect on Area Elk Populations

When Mt. St. Helens erupted in 1980, the vegetation surrounding the volcano was flattened for miles, creating an environment similar in many respects to an enormous clearcut. According to thermal cover theories of the time, recovery of elk herds should have been hampered in this open treeless area, as it offered no protection from heat and cold in summer and winter. However, that did not turn out to be the case. "To our surprise, the elk did very well in that environment," said wildlife biologist Dr. James Rochelle of Rochelle Environmental Forestry Consulting. "They enjoyed some of the highest reproduction rates on record following the blast. Their numbers actually



An elk calf is seen here stepping out of a weighing chute during the thermal cover study. Body weight of elk in the Northwest typically rises in the summer when forage is plentiful, and falls in the winter.



These results from Cook and Irwin's study for the winter of 1992-3 are fairly representative of the four years they monitored elk. To ensure consistency, each animal was fed the same controlled diet. Elk with no overhead cover, despite slightly colder conditions, lost the least amount of weight.

doubled in only a few years."

According to Rochelle, there was little protection from the elements during these years, but the other two major factors affecting elk survival and reproduction were both ideal. First, there was ample nutritious forage available as fast-growing vegetation quickly reestablished itself in the open, ash-covered environment where competition from other plants was limited. Second, hunting was banned in the area, alleviating the elk's need for hiding cover.

Management Implications

Cook and Irwin's study has led many wildlife biologists to reconsider the importance of forage, especially in summer and fall. Rochelle believes that elk will benefit most from variability in the forest landscape. If proper harvest planning is used, he said, elk will have forage available in open harvested areas, while adjacent young forests provide cover from both predation and hunting.

The timing of forage availability is important to elk population growth and maintenance. In the relatively short period of abundant forage following the eruption, the elk population at Mt. St. Helens doubled. Within a decade, however, shade from the growing forest canopy began to reduce the low-lying vegetation, which is probably responsible for a decline in herd productivity. Rochelle feels that to maintain stable populations, we need to manage forest harvest patterns over time to provide a combination of closed forest stands interspersed with open areas that supply food to the elk. We also need to schedule tim-

ber harvests to offset the inevitable loss of forage as trees regrow in the openings. This mix of forage and hiding cover will then "move" across a dynamic landscape.

Many scientists feel that more research is still necessary to properly integrate elk habitat with forest management. It is still unclear, for example, if there are reasons—in addition to protection from predators—that cause elk to seek out dense stands of trees. Current information indicates it will be beneficial to open areas up through some combination of thinning and clearcut harvesting, but it is likely the ratios of cover and forage necessary for a healthy elk population will vary with the amount of hunting pressure and other factors. Although botanists and foresters have studied trees, shrubs, and other vegetation in the forests for years, less is known about the quantity and quality of wildlife forage that these plants provide, and how these characteristics change with time and forest development. Current and future research along these lines will help guide forest managers as they work to shape tomorrow's forests to benefit elk and other wildlife. ■



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