



Woodland Fish and Wildlife

March 1992

Managing Small Woodlands for Elk



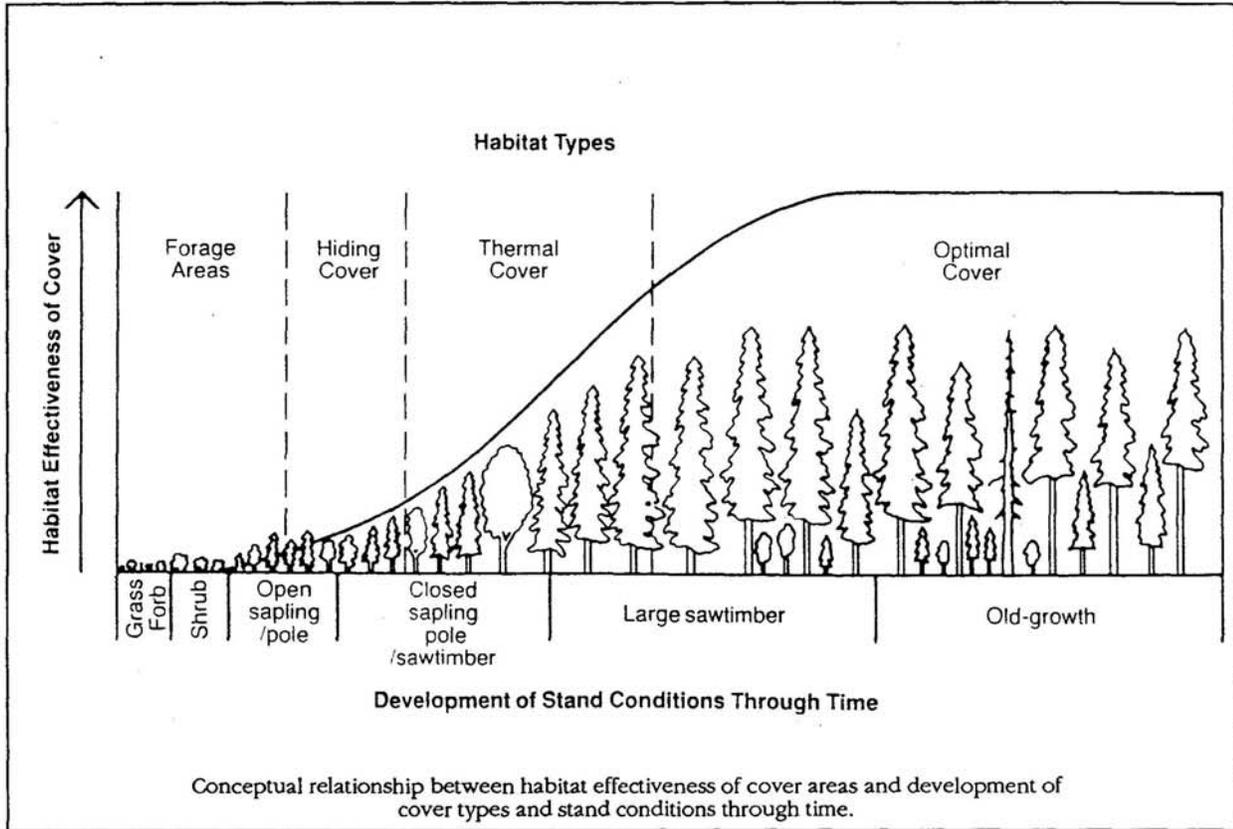
Although elk can occur in most habitats, forest cover is the most common component of elk habitat in Washington and Oregon. (*Illustrations courtesy of U.S. Forest Service*)

If you have elk on your property, your land is home to one of North America's most impressive large mammals. Although once hunted to very low levels, elk populations have increased in response to successful management practices. Populations continue to increase, and in recent years elk have expanded their distribution into non-traditional habitats such as sagebrush and juniper woodlands. Although early explorers reported elk in open habitats, the common component of most habitats today is forest cover, which you, as a

woodland manager, have an opportunity to manipulate to achieve desirable responses from the elk population on your land. These increasing elk populations and their use of non-traditional habitats provide both benefits and costs to the woodland owner.

Having elk on your property yields a number of benefits, some of which are difficult to measure in monetary terms. Aesthetically, elk are large, beautiful animals that exhibit fascinating behavior. Elk provide a number of recreational opportunities, and are sought by

over 250,000 hunters in Oregon and Washington each year. Both archery and rifle hunters seek elk during different seasons that span three or four months each fall and winter. Elk also provide viewing and photographic opportunities, especially where they congregate during the winter. Several road-side viewing areas in both Washington and Oregon have been established for this purpose. These benefits have resulted in income opportunities for some landowners willing to operate fee recreational enterprises on their land.



Although the benefits of having elk on your property may be considerable, there are costs as well. Such costs can be high because these large animals tend to live in groups most of the year. Elk may cause damage to agricultural crops, especially hay and alfalfa fields. Elk may browse young seedlings in conifer plantations in the winter and spring. They may damage fences. When frightened, elk will run through smooth and barbed-wire fences rather than jumping them. Finally, elk on your property will attract hunters, and this may cost you considerable time and effort managing access and monitoring hunting activities.

You may use the guidelines in this leaflet to enhance habitats and increase the benefits of having elk on your property, or you may wish to apply these guidelines to make your property less desirable for elk.

DESCRIPTION AND DISTRIBUTION

The Pacific Northwest is home to two subspecies of elk, the Roosevelt elk (*Cervus elaphus roosevelti*), and the Rocky Mountain elk (*C. e. nelsoni*). Although similar in most respects, these subspecies differ in the habitats they occupy and in behavioral characteristics.

The Roosevelt elk occurs in the Coast Range and Cascade Mountains in both states and in the Olympic Mountains in Washington. The Rocky Mountain elk occurs primarily in the mountain ranges east of the Cascades, but some have been transplanted into the Cascades. The Roosevelt elk is larger than the Rocky Mountain elk and has a darker coat. Roosevelt elk antlers are heavier and more rugged than those of Rocky Mountain elk, but the latter usually have longer antlers with

a wider spread.

NATURAL HISTORY

As with most North American wildlife species, elk exhibit distinct patterns, related to seasonal variations in weather. Calves (1 per adult cow) are usually born in early June. The rut (breeding season) occurs in September, when mature bulls form harems composed of 3-20 cows, and defend them against competitors. Cows usually breed for the first time at 2.5 years of age, although under very good habitat conditions, they may breed as yearlings. Yearling bulls are capable of breeding, but rarely compete with mature bulls because of their smaller body and antler size. Yearling bulls usually have spike (unbranched) antlers, but where forage is highly nutritious, branched antlers are not uncommon. The mature 6-point

antler is usually not achieved until at least the 3rd or 4th year of life. Bulls shed antlers in March and April and almost immediately begin growing a new set that matures in late summer, a few weeks before the rut begins.

Elk are social animals and occur in groups most of the year. Cows are usually solitary for a short time while calving, but soon join other elk and form groups composed of females of all ages and bulls less than 2 years old. Group sizes decrease during the rut as bulls begin to form their harems, but increase again as winter approaches. Bulls older than 2 years seek different habitats than cows, resulting in separation among the sexes. Bulls are also found in small groups of usually just a few individuals, except during the rut.

Home ranges for Rocky Mountain elk vary from 2,500 to 10,000 acres, and usually include distinct summer and winter ranges. Because of a generally less severe climate, and proximity of food and cover, Roosevelt elk home ranges are smaller, usually 1,500 to 4,000 acres. The large home range required by elk means that most woodland owners will not be able to manage or provide year-round habitat. Thus, in most cases, habitat management for elk will require coordination among landowners.

HABITAT REQUIREMENTS

The basic habitat needs of elk are food, cover, water, and security. Woodland owners can manage to protect or enhance these basic components.

Food

An elk's digestive system is adapted to efficiently use many forage species. Elk food habits vary by season and are strongly influenced by availability of forage species. Grasses or

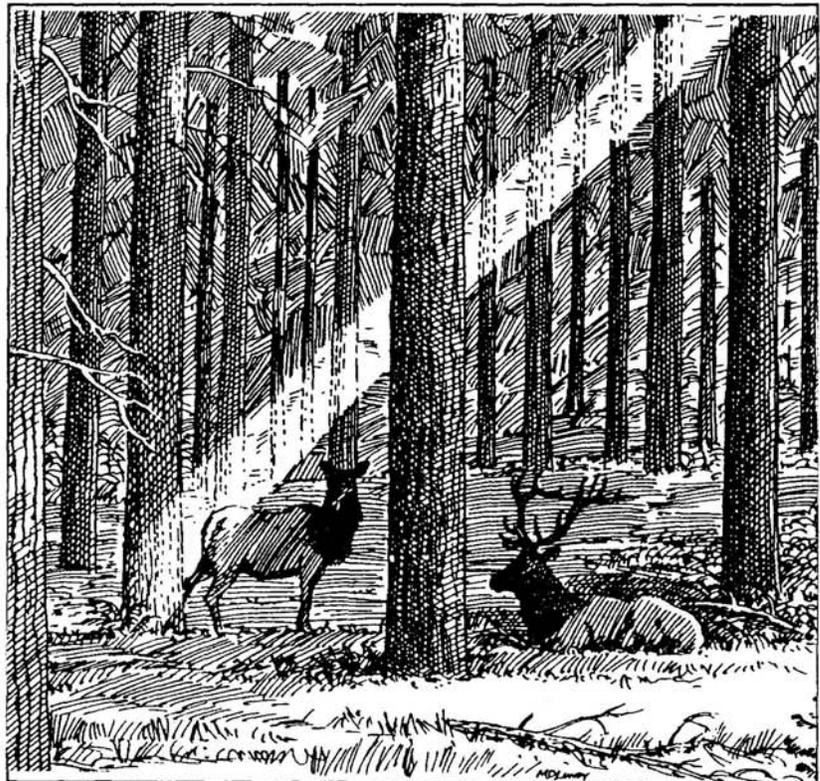
shrubs are the principal winter forage in most areas. During the spring, elk prefer grasses, sedges, and early forbs; forbs and leaves of shrubs become increasingly important as summer progresses. As forage species dry out during the fall, grasses and browse again become important. Elk diets overlap with other wild and domestic animals, but in most areas competition for food is minor except under severe overgrazing or drought conditions.

Cover

Vegetative cover allows elk to hide from predators and to seek shelter from extreme heat and cold. These two components of cover are classified as hiding and thermal cover. Hiding cover is used by elk year-round,

but is especially important during hunting season and the first few months of a calf's life. If your property lacks hiding cover, you will be unable to hold elk on your land during the hunting season if hunters are using the area. Elk normally use hiding cover during resting periods throughout the day, and cover is considered adequate when vegetation will hide 90% of a standing elk at a distance of 200 feet or less. This type of cover can be found in a number of stand conditions and successional stages ranging from shrub habitats to densely stocked pole-size timber or multi-layered mature forest stands. Because elk live in groups, blocks of hiding cover should be at least 600 feet wide to be effective.

Elk use thermal cover for protection from summer heat and winter cold. Some thermal



Thermal cover modifies extremes in climate and provides security from disturbances but may not provide forage needed during periods of heat or cold stress.

CHECKLIST

Landscape:

- _____ Minimum of 40% of property provides cover
- _____ 50:50 ratio of hiding to thermal cover
- _____ Coordination of habitat management with surrounding landowners

Hiding Cover:

- _____ Vegetation capable of hiding 90% of a standing elk at 200 feet or less
- _____ Blocks of hiding cover at least 600 feet wide (patches greater than 3 acres)

Thermal Cover:

- _____ Forest stands at least 40 feet tall with 70% canopy closure or more
- _____ Blocks of thermal cover at least 1,200 feet wide (patches greater than 12 acres)

Forage:

- _____ Open habitats that contain 50-100% herbaceous vegetation (grasses, forbs, or legumes)
- _____ Patches of forage less than 600 feet from cover (less than 26 acres if circular or square)
- _____ Slash burned or piled to aid in movement

Security:

- _____ Less than 2 miles of open roads per square mile of habitat
- _____ Roads closed adjacent to areas heavily used by elk
- _____ Reduced human activity in areas that are seasonally important (calving areas and winter range)

protection is provided by any vegetation tall enough to cast a shadow, or by topography. However, elk show a preference for forest stands, when available, that have trees at least 40 feet tall with a canopy closure of 70% or more. Habitats designed to provide thermal protection should be at least 1,200 feet wide in order to protect a group of elk. Many habitats provide both thermal and hiding cover at the same time.

Elk use forest stands with less than 40% canopy closure and all other open habitats as foraging areas. Because elk prefer to forage in areas near cover, for best results these open areas should not be over 1,200 feet wide. At least 40% of your

property should provide cover. Approximately half of the cover on your property should be of each type (hiding and thermal).

Security

Elk will use a wide variety of habitats, but because they are easily disturbed by human activities they require security areas. Vehicle traffic is the most common source of disturbance, especially on lands where hunting takes place. Elk use of your property will decline markedly as open road density (miles of road per square mile of habitat) increases. Open road densities greater than 2 miles per square mile will significantly reduce elk use of your property. Road closure is one of the most

effective ways to provide security for elk. Where possible, you should design road closures to provide large interior blocks of land without vehicle access; this may require coordinating management with your neighbors.

FOREST AND LAND MANAGEMENT FOR ELK

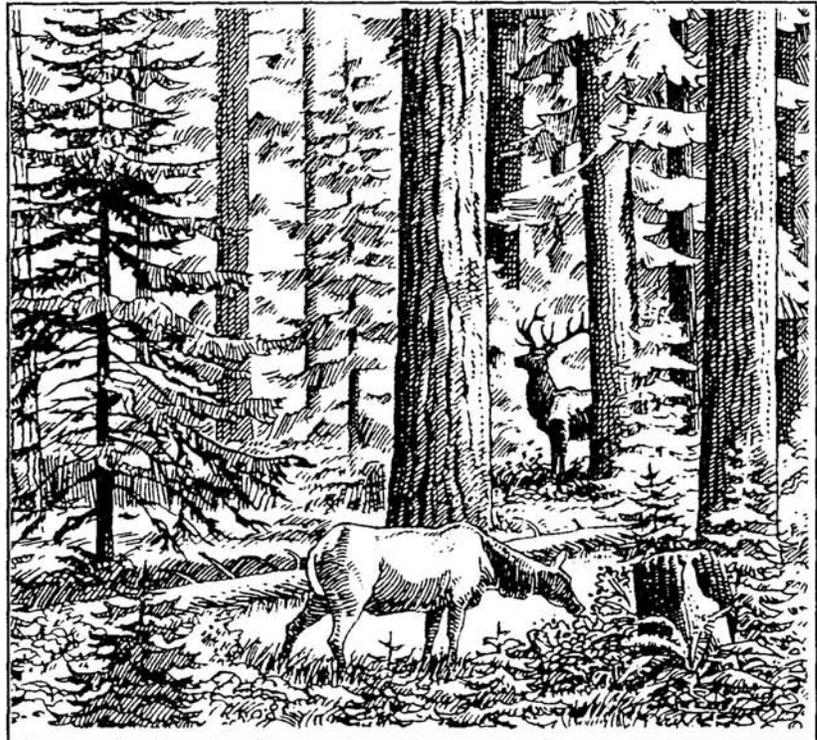
Elk habitat management can be quite compatible with other land management activities if habitat requirements are considered when developing plans. Where possible, design your road system so the roads can be closed after use. Avoid locating roads along ridgetops or streams, and areas of high elk use, such as seeps and springs.

The key to elk management lies in the distribution of habitats on your property over time. Single tree selection can provide continual thermal or hiding cover as well as some foraging opportunities for elk because of the more frequent entry schedule, but will require more attention to road management. Group selection will provide foraging areas within forest stands, although you may have difficulty arranging large enough blocks of cover. Even-aged silvicultural systems such as clearcutting are probably the easiest way to design and schedule timber harvests in order to provide elk habitat components over time throughout your property. Regardless of

the silvicultural system you use, slash accumulation greater than 1.5 feet deep will decrease elk use of an area. Therefore, you should reduce slash wherever possible by crushing, piling or burning it.

Certain sites warrant special protection when you are managing for elk; these include calving areas, winter range and riparian zones. Some elk herds have traditional calving areas where cows come each year to give birth. These sites are usually close to water and have gentle topography with a mixture of habitat types providing good hiding cover and high quality forage. If you have areas on your property where you see cow elk or calves in the spring, minimize their disturbance during this critical period by delaying grazing, logging, or other management activities until late June. Winter ranges are areas where elk congregate during the winter in order to minimize energy expenditure. These are usually lower elevation sites with grass or shrub forage areas intermixed with thermal cover. Proper management of these areas includes a good mixture of forage and cover areas following the guidelines above, and reduction of disturbance by people. Finally, riparian areas are intensely used by elk and many other species of wildlife throughout the year because of the mixture of habitat components these areas provide. Proper management of these high quality wildlife habitats includes careful grazing management, and little or no logging or road construction within riparian zones.

Several techniques can be used to enhance forage quality. Broadcast burning is effective in removing slash and coarse vegetation, and stimulating new forb, grass and shrub growth. Underburns in east-side habitats, especially in mid-aged and older ponderosa pine, can reduce



Optimal cover modifies ambient climate, allows escapement from human harassment, and provides forage.



Like optimal and thermal cover, hiding cover allows elk to escape human disturbances, but other functions provided by older cover types may be absent.

PREFERRED FORAGE SPECIES

ROOSEVELT ELK

ROCKY MOUNTAIN ELK

GRASSES

Redtop
Vernalgrass
Orchardgrass
California danthonia
Windseed sedge
Wildrye

Bluebunch wheatgrass
Mountain brome
Smooth brome
Elk sedge
Wildrye
Idaho fescue
Timothy
Bluegrass
Needlegrass
Rough fescue

FORBS AND LEGUMES

Fireweed
Spotted catsear
Common cowparsnip
Oregon oxalis
Western swordfern
Trefoil foamflower

Fireweed
Sticky geranium
Alfalfa
Yellow sweetclover
Arrowleaf groundsel
Dandelion
Yellow salsify
Clover species
Wyethia
Common beargrass

SHRUBS AND TREES

Vine maple
Cascades mahonia
Salal
Salmonberry
California dewberry
Willow species
Red whortleberry
European red elder

Saskatoon serviceberry
Ceanothus species
Mahogany species
Red-osier dogwood
Quaking aspen
Common chokecherry
Antelope bitterbrush
Currant species
Rose species
Willow species
Elder

litter and significantly increase forage production. Although more common on Roosevelt elk ranges, seeding or planting perennial grasses and legumes can markedly improve forage quality in all regions. Seeding operations may cause difficulties with tree regeneration, and recommended seed mixtures vary from area to area; contact your local

wildlife department habitat biologist about appropriate mixtures and seeding rates for your area. Mixtures usually include 2-3 species of perennial grasses and 1-2 species of legumes. You can fertilize to enhance forage quality for elk, especially for habitats west of the Cascades. Fertilization is most cost effective on limited areas where elk congregate seasonally, such as grass meadows used during the winter.

DAMAGE MANAGEMENT

Elk can cause significant damage to agricultural crops and forest regeneration. Because elk tend to stay in home ranges, once a damage situation develops it is difficult to break elk of this habit. The factors that result in damage situations are complex but usually include forage availability and security in the form of good hiding cover or no human disturbance. Scaring or hazing devices may be partially successful if you begin as soon as elk begin to use an area where you do not want them.

Hazing devices are most effective if they are moved frequently and the noise is made irregularly. Habitat management that seeks to reduce cover and encourage human use of an area



Due to their open canopy, forage areas are usually dominated by grasses, forbs, shrubs, and small trees.

may also work, but this approach should be carefully evaluated because it may simply move the problem to your neighbor's land or elsewhere on your property. Elk often avoid areas being used by cattle, and you may be able to reduce elk damage by moving livestock into these areas. A controlled hunt may effectively reduce elk depredation on your property.

If elk are damaging your property, the local biologist from the Oregon Department of Fish and Wildlife or a local wildlife agent from the Washington Department of Wildlife can assist you in evaluating damage control options.

ASSISTANCE PROGRAMS

Currently, both Washington and Oregon offer programs for assisting you with managing your land for wildlife. Both states have Forest Stewardship Programs designed to encourage non-industrial private landowners to manage their forestlands for all forest resources including wildlife. Cost-share financial assistance to eligible landowners for wildlife habitat enhancement may be available through the Stewardship Incentives Program.

Your local state forestry organization can assist you with

these federal programs. Educational and technical assistance are also available from the wildlife departments and extension service in each state. Also, consultants are available on a fee basis to assist you in managing your property for wildlife.

REFERENCES

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Our Purpose...

This leaflet was written by W. Daniel Edge, Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR.

The Woodland Fish and Wildlife Project is a cooperative effort among the World Forestry Center, Oregon State Department of Forestry, Washington State Department of Natural Resources, Oregon State University Extension Service, Washington State University Cooperative Extension, University of Washington Center of Streamside Studies, Oregon Association of Conservation Districts, Oregon Small Woodlands Association, Washington Farm Forestry

Association, Oregon Department of Fish and Wildlife, Washington Department of Fisheries, Washington Department of Wildlife, Oregon Soil Conservation Service, Washington Soil Conservation Service and the USDA Forest Service. The World Forestry Center serves as the coordinating organization for the project.

The Woodland Fish and Wildlife Project was initiated to provide information on fish and wildlife management to private woodland owners and managers. It is the intent of the organizations involved in this project to produce publications that will serve as practical guides to woodland owners.

Each publication is intended to be complete in itself. Users may find it convenient to collect all publications in this series in a three-ring binder to form a permanent reference file. Woodland Fish and Wildlife Project publications range from an overview of fish and wildlife opportunities on woodland properties to specific publications concerning techniques for managing individual species.

These publications can be obtained from any of the cooperating organizations or by contacting the World Forestry Center, 4033 SW Canyon Road, Portland, OR 97221, (503) 228-1367.

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