Woodland Fish & Wildlife

Managing for Deer and Elk on Small Woodlands

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Both deer and elk play important roles in the ecology and culture of the Pacific Northwest. These iconic animals can provide both substantial benefits to woodland owners through viewing and hunting, but can also be considered pest due to the damage they are known to cause. There are many pressures on habitat for these species. The most important thing that small woodland owners can do to maintain habitat for deer and elk is to keep their land in forest use.

Elk Species in Oregon and Washington

There are two subspecies of elk in Oregon and Washington: Roosevelt Elk (Cervus elaphus roosevelti) and Rocky Mountain Elk (Cervus elaphus nelson). Distinguishing between these two subspecies is difficult, but generally Roosevelt elk are found west of the Cascades while Rocky Mountain elk are found east of the Cascades. Roosevelt elk are also darker and slightly smaller than Rocky Mountain Elk.

Elk will use forests of all ages, but are most commonly associated with young stands (clearcuts) where food is most abundant. Closed-canopy forests are used for forage in late summer, shelter, and as hiding cover from predators. Principal predators include mountain lions, bears, wolves, and people. Preferred forage for Roosevelt elk includes huckleberry, vine maple, big-leaf maple, salmonberry, western redcedar, forbs and grasses. Rocky mountain elk are known to eat grasses and forbs in the summer, grasses in the spring and fall, and grasses, shrubs, tree bark and twigs during the winter, especially aspen (RMEF 2013).

Elk breed in the fall with spectacular herd behaviors including bugling and fighting among dominant males. Bulls gather cows and calves together in small groups called harems. To attract females, the males wallow in mud and coat themselves with urine. Males will also bugle and rub trees, shrubs and the ground with their antlers to attract cows and intimidate other bulls. Bulls will also aggressively guard their harems from other bulls. Cows produce one calf every year to every other year, depending on physical vigor. Twins are rare.

Deer and Elk are ungulates. Ungulates are large hoofed mammals.

Rocky Mountain Elk. Photo by ODFW

Roosevelt Elk. Photo by ODFW

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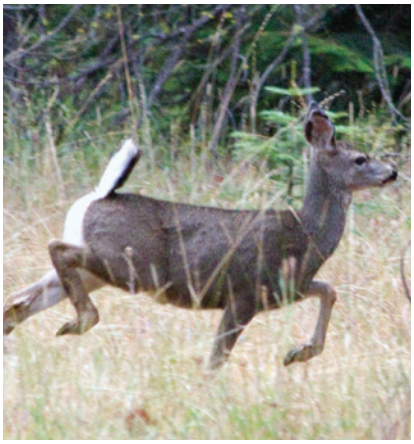
Deer Species in Oregon and Washington

There are two species of deer in Oregon and Washington: mule deer and white-tailed deer, each with one or more subspecies. The following table compares the deer species in Oregon and Washington.





Left to right: Mule deer, White-tailed deer, Blacktailed fawn. Photos from ODWF.

Deer Species in Oregon and Washington

	Mule deer		White-tailed deer		
Variety	**Rocky Mountain mule deer** *Odocoileus hemionus*	**Columbian black-tailed deer** *Odocoileus hemionus columbianus*	**Columbian white-tailed deer** *Odocoileus virginianus lecurus*	**Northwest white-tailed deer (Oregon)** *Odocoileus virginianus ochrourus*	**White-tailed deer (Washington)** *Odocoileus virginianus idahoensis*
Physical Description	Large mule-like ears, generally three quarters of the head in length. They have a white rump patch and a small white tail with a black tip. Antlers typically branch twice.	Wide triangular tail with a black top and white underside. Antlers typically branch twice.	Similar to black-tailed deer, but has a longer tail that is brown rather than black on top and white underside. Antlers usually branch off of a single main beam.	Slightly larger than Columbian white-tailed deer with longer tail that is brown on top and white underside. Antlers usually branch off of a single main beam.	Slightly larger than Columbian white-tailed deer with longer tail that is brown on top and white underside. Antlers usually branch off of a single main beam.
Range	Widespread east of the Cascades.	Widespread west of the Cascades.	Small pockets along the Columbia River and one population near Roseburg, Oregon	Most of Wallowa, Union, and Baker counties; parts of Umatilla and Grant counties.	NE WA from Methow to Spokane, SE WA Blue Mts. Rare in Yakima Valley, absent N. to Chelan.
Predators	Wolves, mountain lions, coyotes, bears and people.	Mountain lions, bobcats, bears, coyotes, dogs and people.	Coyotes, mountain lions, bears and people.	Coyotes, mountain lions, bears and people.	Coyotes, mountain lions, bears and people.
Habitat	Winter habitat is in low-elevation areas with minimal snow that provide vegetation for forage. Summer habitats are commonly in agricultural areas and high-elevation mountains.	Young to old forest stands. Prefers young forest stands for feeding and fawning. Older stands are used for cover from predators.	Prefers white oak woodlands. Historically, inhabited wet meadows, grasslands, and riparian and oak woodlands.	Riparian valleys, mixed hardwood areas and agricultural lands.	Riparian valleys, mixed hardwood areas and agricultural lands.
Food Needs	Primarily forbs and the leaves and twigs of woody shrubs, especially young shrubs following vegetation disturbances, such as fire, storms, or logging.	Primarily forbs and the leaves and twigs of woody shrubs but consumes many plant species.	Feeds mostly on grasses and forbs; occasionally woody vegetation.	Feeds mostly on grasses and forbs; woody vegetation and agricultural crops.	Feeds mostly on grasses and forbs; woody vegetation and agricultural crops.

Cover

Recent studies regarding thermal cover (dense vegetation to provide warmth) for deer and elk have shown that the availability of thermal cover has little influence over survivability of elk. However, biologists do recommend providing and maintaining cover for deer and elk as it provides security and protection from predators (Wisdom and Cook 2000). Biologists also suggest that land managers who are interested in promoting healthy elk populations should focus on providing forage opportunities.

Providing dense forest vegetation on winter range in eastern Oregon and Washington may be an important strategy in some areas, especially for visual security from predators. In areas where deer and elk regularly congregate in winter, reducing or eliminating disturbance from humans may be the most important way we can help them through winter months.

Grasses and forbs as shown in this picture provide excellent forage for deer and elk. Photo by Kendel Emmerson.

Forage

The availability of high-quality forage has profound effects on deer and elk survivability and reproductive success. In general, deer and elk require the most quantity and quality of forage during the late spring and summer. Landowners have an opportunity to provide quality foraging opportunities by making nutritious forage available at the right times of the year (particularly in summer).

What species of plants are nutritious for deer and elk?

Salal, Oregon grape, and most ferns (especially bracken fern and sword fern) are not good forage species for deer and elk as they lack the nutrition deer and elk need. Instead, deer and elk need high protein and mineral-rich grasses, forbs and shrubs common to open areas following fire, storm events or logging.

In moist west-side forest ecosystems, vegetation preferred by elk tends to utilize a harvest site following clearcutting or thinning of trees, encouraged by the increase in sunlight that reaches the forest floor. Cook (2005) found that clearcutting, site preparation, planting and herbicide application produced a large flush of early-successional vegetation with good representation of species preferred by elk and deer during summer and fall. The average digestibility of forage was highest in the early years, although even during some of the early years of this study, forage in some locations was inadequate to provide high-quality nutrition. Given the importance of summer forage, land managers may also want to consider using wildlife specific seed mixes in disturbed areas.

Fruit-bearing shrubs such as this hazel are important species for deer and elk. Photo by Mike Dykzeul.

Species of Plants Nutritious for Deer and Elk

	Mule deer	Black-tailed deer	White-tailed deer	Roosevelt elk	Rocky Mountain elk
Trees	Serviceberry Mock orange Bitter cherry Willow	Vine maple Hazelnut Cascara Western redcedar	Crabapple Bitter cherry Willow species Western redcedar Serviceberry	Aspen Cottonwood Vine maple Willow species Big-leaf maple Hazelnut Cascara	Aspen Chokecherry Cottonwood Rocky Mountain maple Willow species
Shrubs	Red twig dogwood Ninebark Golden currant Wild rose Thimbleberry	Trailing blackberry Thimbleberry Huckleberry Wild rose	Trailing blackberry Wild rose.	Trailing blackberry Thimbleberry Huckleberry Wild rose	Current Huckleberry Oceanspray Red-twig dogwood Serviceberry Wild rose
Forbs, Grasses, and Legumes	Trefoil Alfalfa Twinflower Oat Bluegrass Oxalis	Clover Alfalfa Orchard grass	Cat's ear Alfalfa Clover	Bear grass Cat's ear Clover Cow-parsnip Oxalis Pearly everlasting Queen's cup beadlily Northern bedstraw False Solomon's seal	Alfalfa Clover Dandelion Sweet clover

Many seed mixes are available, and choosing a deer and elk-friendly mix could go a long way toward providing much-needed forage. Also, as the conifers on a site begin to close canopy, the deciduous component of the vegetation starts to dwindle, and over the next 20 to 30 years the site becomes dominated by less-nutritious evergreen shrubs and forbs. Land managers may want to consider practices such as thinning to increase forage for deer and elk within closed canopy stands.

What about deer and elk friendly forage mixes?

There are many places to find forage mixes for wildlife. It's a good idea to check to make sure you are getting locally sourced, weed free mixes. There are both native and nonnative mixes available and costs vary widely among sources and seed mixes. If you're not sure about the mix you are thinking of using, check with Rocky Mountain Elk Foundation or a local wildlife biologist. Here are some sample forage mixes from the Washington State Department of Natural Resources:

Sunmark Seeds:
http://www.sunmarkseeds.com/

Heritage Seedlings:
http://www.heritageseedlings.com/

Native Seed Network:
http://www.nativeseednetwork.org/

Bailey Seed:
http://www.baileyseed.com/

Rainier seeds:
http://www.rainierseeds.com/product-sandservices.html

Grass-Legume Seed Mix for Timber Harvest Areas

Species	Percent by weight
Clearcut Mix	
Perennial Ryegrass	2
Annual Ryegrass	2
Orchard grass	4
Fescue	1
White Clover	2
Birdsfoot trefoil	5
TOTAL	**16 lbs/acre**
Commercial Thin Mix	
Fescue	17
Big Trefoil or Birdsfoot trefoil	2
Annual Ryegrass	1
White Dutch clover	2
TOTAL	**22 lbs/acre**

Grass-Legume Seed Mix for Eastside Timber Harvest Areas

Species	Percent of total
Sherman big blue grass	4
Regar meadow brome grass	20
Paiute Orchard grass	18
Tall fescue	10
Timothy grass	11
White clover	10
Small burnett	5
Ladino clover	10
Medium red clover	9
Alfalfa	3
TOTAL	**100**

Exclosures like the one shown here is one way to keep elk out. This method is most useful for small areas. Photo by Thomas Stokely.

What about damage from deer and elk?

Conifer forests in the Pacific Northwest are certainly susceptible to deer and elk browse, primarily during stand initiation following harvest or natural disturbance. During the first five years of tree growth, deer and elk forage on the terminal and lateral shoots of young seedlings. In some cases, seedlings are completely uprooted, usually indicative of elk. Trees may also be trampled or broken by deer and elk moving through or bedding down in a stand. Browse and other sources of seedling mortality are expected by land managers; however, severe and repeated browse can lead to significant economic loss and noncompliance with reforestation standards.

Strategies for dealing with deer and elk damage involve three basic methods: Repellent, exclosure or armoring, and tolerance. Several commercial repellents are sold to deter deer browse. They generally act on one or more modes of action including irritation, conditioned aversion and flavor modification. Research conducted at the National Wildlife Research Center (NWRC) has shown that habituation to odor limits the effectiveness of repellents that are not applied directly to food sources, while topically applied irritants and animal-based products produce significant avoidance. While repellents may provide temporary relief in some situations, they are not a long-term solution to deer and elk browse. The durability and effectiveness of repellents can be affected by environmental factors such as air temperature, rain, snow and wind.

Physical barriers range from protection of individual trees with devices such as tubing to exclusion of large areas with fencing. Fencing is an option for excluding deer and elk but is usually avoided because it is cost-prohibitive. However, it can be a good option for smaller areas such as riparian plantings. Research has shown that not just any fence will exclude deer and elk. Fences must be sturdy enough to withstand breakthrough by running ungulates and tall enough to prevent jumping (minimum 8 feet). It is extremely important that if you do build a fence that you build it at least 8 feet tall. Shorter fences are dangerous for deer and elk, especially the young, as they can

Elk are known to cause damage to Douglas-fir plantations. Photo by Ken Bevis.

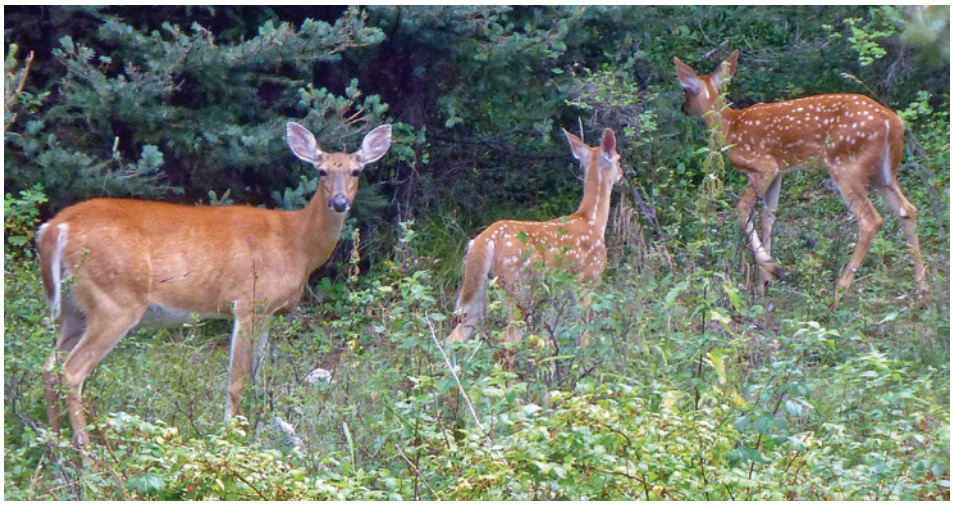
Vexar tubing can help protect Douglas-fir seedlings in some locations. Photo by Mike Tucker.

become entangled in these lower fences when trying to cross. In a research study conducted on commercial forests with historic browse damage, NWRC scientists found that survival of Douglas-fir seedlings inside and outside fences was similar after two years; however, seedling heights were reduced significantly outside fences due to browsing by deer and elk. Additionally, NWRC scientists found that survival and heights of seedlings planted with scented bud caps were no different than untreated seedlings. Landowners may wish to consult with a wildlife biologist or stewardship forester for site specific animal control recommendations.

What silvicultural methods can I use to promote habitat for deer and elk?

Early seral vegetation provides forage and habitat for deer and elk, as well as many of the other wildlife species associated with young forest habitats in Oregon and Washington. Land managers whose objectives include providing habitat and forage for deer and elk may want to consider the following silvicultural treatments:

- Where thinning is prescribed, thin timber stands to or below 50 percent crown closure to allow sufficient sunlight to reach the ground surface for early seral vegetation to become established.
- Retain any natural meadows and openings and remove encroaching conifers from these open areas. Note that power-line easements make great openings and often provide habitat for deer and elk.
- In managed or thinned stands, create gaps of 1 to 5 acres on sites with east, south or west facing slopes and on slopes less than 30 percent and away from open roads.
- In created gaps, plant native shrubs that provide fruit, nuts, berries or browse for wildlife.
- Protect preferred forage species during forest operations.



White-tailed deer with fawns. Photo by Ken Bevis.

- Seed all disturbed soil including skid trails, yarding corridors, landings and decommissioned roads with a seed mix of native grass and forb species that will provide high forage value for deer, elk and other species.

These management prescriptions may not make sense for all landowners or all landscapes, but they will generally help provide better habitat for deer and elk.

Summary:

Managing for both healthy forests and healthy deer and elk herds is challenging. As the human population increases and the demand for human habitat rises, there will be more pressure to convert forested areas to other uses. Remember, keeping lands as working forests is the number one thing that land managers can do to promote wildlife habitat, including habitat for deer and elk.

More specifically, deer and elk require the right kinds of nutrition at the right times of year. Land managers whose goals include healthy deer and elk herds may consider what actions they can take to provide forage opportunities for ungulates on their lands. Conversely, managers may look at ungulate distribution across the state and take appropriate actions to discourage deer and elk from their lands. Damage to trees resulting from deer and elk is one of the biggest challenges facing landowners today. There are many ways of dealing with deer and elk damage, and more studies are needed to determine the actual cost to landowners resulting from deer and elk browse. Understanding the needs of deer and elk, and how they change throughout the year is an important step toward achieving individual management objectives. Your forests, regeneration sites, meadows and streams can be managed to help provide excellent habitat for deer and elk through thoughtfully planned timber harvest, planting, vegetation management, and other stewardship activities.

Mule deer buck. Photo by Jim Ward.

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About The Woodland Fish and Wildlife Group

The Woodland Fish and Wildlife Group is a consortium of public agencies, universities, and private organizations which collaborates to produce educational publications about fish and wildlife species, and habitat management, for use by small woodland owners in the Pacific Northwest.

Currently available publications can be viewed and downloaded, free of charge, at the organization's website: **www.woodlandfishandwildlife.com**

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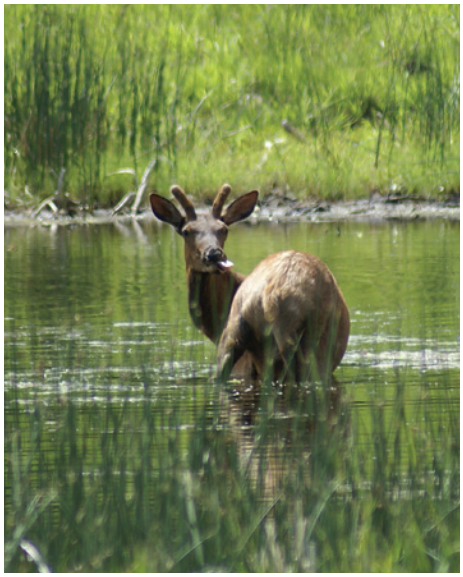

Water features are important for many species of wildife - including elk. Photo by Scott Fitkin.