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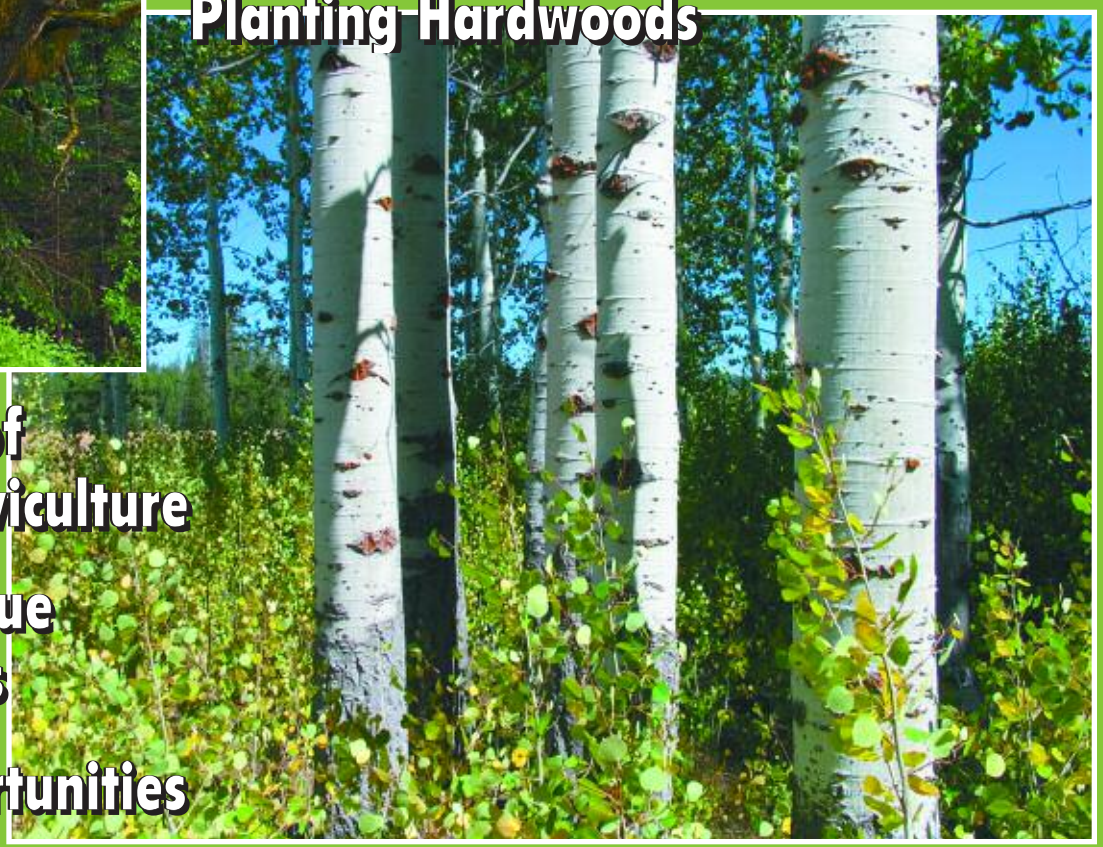
Northwest Woodlands

A Publication of the Oregon Small Woodlands, Washington Farm Forestry, Idaho Forest Owners & Montana Forest Owners Associations

HARDWOODS

Hardwoods Are Growing Up and Becoming Profitable

Evaluating Sites for Planting Hardwoods



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OSWA President Ken Faulk shows off his prized oak tree. Photo courtesy of Robert Petit.

Quacking aspen is slowly being restored through active management. Photo courtesy of Darin Stringer.

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Reclaiming Fading Glory: The Decline of Aspen and How to Bring it Back

By DARIN STRINGER

Quaking aspen (*Populus tremuloides*) is one of a few iconic species that symbolizes the spirit of the west. Its brilliant fall colors against alpine backdrops are postcard sceneries. While often admired at a distance, its cool, humid understory and rustling canopy have soothed many a wary hunter, rancher or hiker. Though often sparse and scattered in distribution throughout the region, aspen is heavily used by wildlife from big game to neotropical migratory birds. Aspen is one of the shortest-lived trees in the west, yet their clones can live for millennia.

"Quakies" as many call aspen, are venerated by most; in fact I've not met a person that didn't speak fondly of them. Even so, the species is seriously declining throughout the west and has already disappeared from many landscapes. Bringing this tree back to its former glory will require active management. That effort is starting to take shape throughout the west, one grove at a time.

Aspen is the most widely distributed tree in North America, occurring from New England to Alaska and as far south as Central Mexico. In the Pacific Northwest, aspen is found across the intermountain regions from shrub-steppe to upper montane forests. Though very rare, a few scattered populations are found west of the Cascades, even near sea level in the southern Puget Sound. Unlike the large expanses of aspen forest that occur in Colorado, Utah and New Mexico, in the PNW, most are found in small isolated groves of a few acres or less.

PHOTO COURTESY OF DARIN STRINGER

This overstory of aspen is old and declining, but the clone has successfully re-established a new generation of "cohort" trees.

Aspen prefer cool conditions and moist well-drained soils. The best aspen sites are well-drained loams, high in organic matter, calcium, magnesium, potassium and nitrogen. Dig around in an aspen grove and you will often notice high soil organic levels. The forestry adage that "site makes height" is strikingly apparent when examining aspen across its range. In marginal places where moisture is limiting, soils thin and/or growing seasons short, aspen can top out at 30 feet, while reaching heights above 100 feet on the best sites. The Oregon state champion aspen, found in the Northeast part of the state, is 130 feet tall.

Aspen distribution in the Pacific Northwest can broadly be fit into three categories.

Upland Aspen: Aspen is found on a wide range of vegetation cover types on upland sites. In mixed-conifer stands, aspen is often found in close quarters with ponderosa pine, Douglas-fir, grand fir and Western larch. Further upslope, it reluctantly shares ground with lodgepole pine, Engelmann spruce and subalpine fir. In the sagebrush-steppe country, aspen occurs as small deciduous island groves amidst the sea of rangeland. Observant folks have noticed aspen growing in other peculiar upland places. Krummholz aspen is found on exposed ridgelines, avalanche tracks and wind-swept alpine areas. Snowpocket aspen occurs in areas throughout the Great Basin and other sparsely treed areas where topography promotes snow accumulation. Lithic aspen is found on glacial

moraines, talus slopes and lava flows, where it finds cool moist growing conditions between rocks, reduced animal browse and more freedom from conifer competition.

Riparian Aspen: Aspen is frequently found along permanent and seasonal creeks, seeps, springs and other water bodies. In steep drainages and other areas where the riparian zone is confined by slope, aspen often are scattered or following a narrow line along just above high water mark and in the company of willow, alder and conifers.

Meadow Fringe Aspen: Aspen is often found on the edges of meadows where soils are moist, but not permanently saturated. These aspen sites are generally very high in understory plant productivity and diversity and are well used by wildlife and livestock.

Aspen is disappearing from western landscapes in all of the above categories at alarming rates. Losses of aspen in the west by state range from 50-96 percent since pioneer settlement, and include a 61 percent reduction in Montana and 64 percent in Idaho. Rates of loss in Washington and Oregon are estimated at around 50 percent.

At local levels, declines are also reported. In southeastern Oregon, 75 percent of 91 surveyed aspen stands were encroached with juniper. On the North Fork John Day River District in northeast Oregon, 90 percent of groves are in poor shape, with 50 percent loss of remaining aspen predicted within 10-20 years. Recently, managers in Colorado, Utah and Nevada have noticed a rapid die off of aspen in what scientists are now calling Sudden Aspen Decline (SAD). This phenomenon appears limited to these southern states.

To understand the decline of aspen, one must delve into the fascinating biology of this species. Aspen is a clonal species. Individual stems are connected below ground to a single root network. Trees within a grove are often a single organism with identical genetic makeup. This is an important adaptation because though aspen is a prolific seeder, reproduction very rarely occurs from seed. Instead, clones replace individual trees, which don't commonly live beyond 100-150 years, by "sucker-

Enhancing Aspen: Six Simple Steps for Landowners

1. Locate and map aspen on your property.

2. Determine if aspen is healthy or fading.

3. Set goals and targets, and prioritize areas and treatments.

4. Prescribe treatments.

5. Implement treatments.

6. Evaluate response of aspen to treatments, and adjust to meet goals and targets.

ing." These new stems grow directly from the root system.

Aspen need periodic disturbance (fire, beavers, avalanche, cutting) to stimulate suckering. Without disturbance, these clones lose vitality. On most sites, aspen is "seral," meaning it will be replaced by another more shade-tolerant species if undisturbed. As conifers overtop and replace the aspen, the clone eventually dies as its roots become depleted of carbohydrates. If fire or another agent kills encroaching conifers, new suckers must grow above the browse height of deer, elk and livestock. Like conifer overtopping, chronic heavy browsing of regeneration also depletes the aspen root systems and can kill the clone if the roots do not have another source of sugars (e.g. from the overstory aspen). Re-establishing dead clones through plantings is very difficult and often not possible.

If aspen is declining on your property, it is probably driven by a few simple causes including: (1) lack of disturbance to regenerate new aspen and keep conifers in check; and/or (2) lack of aspen suckers reaching "free to grow" sizes due to excessive browse and physical damage by deer, elk and livestock.

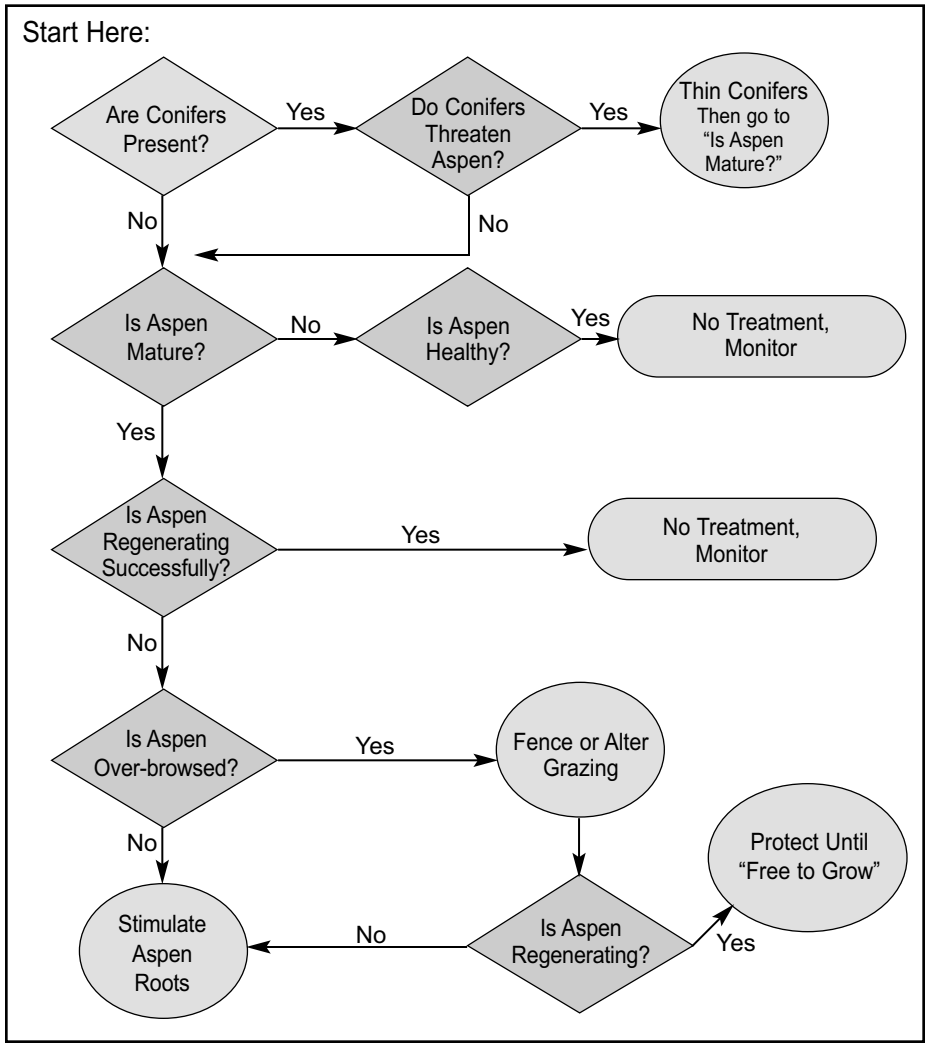
Aspen is a highly resilient species and will usually rejuvenate itself if actively managed. The key to success is following a series of steps starting with locating and assessing aspen conditions, prescribing and implementing appropriate treatments, and evaluating responses to actions.

The Aspen Management Options Flow Chart (Figure 1) is designed to guide landowners toward appropriate actions. In some cases no action or minor changes (altering grazing timing or intensity) to management practices are needed to maintain/enhance your aspen. Other situations require more aggressive measures, such as cutting out conifers and/or constructing fencing to protect aspen regeneration. In extreme situations where conifer removal and fencing do not stimulate adequate regeneration, cutting some mature aspen, ripping roots and prescribed burning have been successful. These treatments should not be done without careful planning and appropriate consultation.

A healthy grove has at least one vigorous age class of aspen, preferably more, and <10-15 percent basal area stocking of conifers. Dead mature trees and conk-infected trees do not necessarily indicate poor health of the clone. At least 34 species of wildlife nest in cavities within decayed wood. Remember, aspen is short-lived and the key to long-term health of the clone is for successful regeneration of new age classes. Noxious weeds and overgrazing pose a threat to aspen understory health and should also be controlled.

Because so much aspen throughout the west is old, decadent, overtopped and lacks healthy regeneration, quick action is needed to save many clones. Finding and assessing your groves will help prioritize treatments so time and resources can be used most efficiently. ■

Figure 1. Aspen Management Options Flow Chart
Source: Modified from Muggler, W.F. (1989)



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