Bluff Conservation - Vegetation Management

Vegetation Management:

Tree Removal on Coastal Bluffs

Selective cutting and pruning can provide an effective “window” to view the lake. Windows maintain the protective function of the trees from storm winds.

Introduction

Owners of bluff properties have many questions about site development, erosion control, view clearing and beach access. Often, these questions are asked too late: after the damage is done and possible options are eliminated. Even when a property owner is aware that his or her decisions are critical to the long-term stability of a site, it can be difficult to judge the best course of action.

Due to the complexity of the shoreline environment and the role of vegetation, it is important to consider all the factors involved before acting.

Should trees be removed?

This simple question generates a range of sometimes contradictory answers. There are many factors to consider before reaching a decision. These factors include: stability of the slope, species, health, current stability of the tree, position on the slope, surrounding vegetation, rooting habit/soil type, and the density of the stand. Before considering these factors, it is necessary to mention some general considerations that apply to tree removals on steep slopes.

General Considerations Pertaining to Any Tree Removal

Tree Roots: The root systems of trees form an interlocking network, especially on many shoreline sites where rooting can be shallow. Often rooting is only two to three feet deep. The depth of root penetration is largely a function of soil depth and type, soil moisture, and the presence or absence of a dense layer of clay or till. These factors have a greater influence on rooting than any tendency of a tree to develop a characteristically deep or shallow root system.

Trees compensate for shallow rooting by increased spread of root systems. Research indicates that a tree's root system will extend considerably beyond the dripline, often as much as two to three times as far. Extensive lateral root systems are common where soil moisture is excessive, soil is shallow, and impervious soil layers provide a barrier for vertical growth. Where soils are porous, well-drained, deep, and no impervious layer exists, deeper rooting will occur.

Generally, the influence of a tree's roots on a given site will be related to the tree's age and size. Larger trees will have more extensive, often deeper and better developed root systems. Dominant trees, those larger and taller than the surrounding ones, have been more exposed to wind and usually have developed stronger root systems as a result. Before clearing trees, consider the effects of removal on tree rootmass over time. As roots of dead trees decay, their stabilizing influence diminishes over a three to nine year period. As a result of the gradual loss of root strength after tree removal, barely stable slopes may fail several years after clearing or thinning.

Trimming debris can contribute to stability problems by smothering vegetation and by causing damage to the slope in sliding or rolling downhill. In addition, such organic material absorbs large quantities of water as it decomposes. The added weight can add to the destabilizing effect of such material. Disposing of vegetative debris (branches, leaves, grass clippings, etc.) over the edge of a slope is not advisable.

Do Not Remove Trees Without Cause. People tend to remove many more trees than are necessary during site preparation. The value of a healthy, strong tree on a slope or bluff far outweighs its value as lumber or firewood. A tree should be retained unless it is a hazard to life or property, is growing on the proposed house site or drainfield area or has some other major problem. Explore alternatives to removal thoroughly before deciding to cut. The location of trees and other factors involved should be considered carefully. Do not remove trees on slopes until cottage construction is complete. You may find that the trees do not need to be removed.

On Choosing a Tree Service

Many common practices, such as tree topping, are no longer recommended. There has been a great deal of research regarding how trees grow and react to environmental changes. New equipment and techniques are continually being developed.

Choosing a tree service can be a bewildering experience for a property owner. For an owner of shore property, making the wrong choice can have serious consequences. Beware of bids that seem "too good to be true." The money saved initially may end upas a costly disaster within a few years.

When hiring a tree service to work on a potentially unstable site, require proof of the following:

- Experience (ask for references)
- Proper equipment
- Valid license and insurance
- Understanding of your concerns

Most of the pruning practices on coastal slopes are hazardous operations. They should only be performed by qualified and well-equipped personnel. Most property owners should not attempt to perform the work themselves.

Specific Factors to Consider in Tree Removal

Species: Different species have different characteristics. The growth habit, rooting habit, height, shape, longevity, strength, durability, resistance to climatic stresses, and tolerance to pruning all differ among species. The Coastal Centre recommends the use of native, endemic plant species along Lake Huron.

Health of the Tree: Tree health and vigour are important considerations when deciding on removal. Root rots and stem or trunk diseases are the most serious defects. In dense, single species stands infested by root rot, removal may be your only choice. It is advisable to consult with a knowledgeable professional, such as a forest pathologist or arbourist if widespread woodland health problems are observed.

Clear cutting a lake vista can have profound implications for bluff instability. The effects of such cutting will become evident with time. As roots of dead trees decay, their stabilizing influence diminishing over a three to nine year period.

Current Stability: An assessment of the stability of a tree in relationship to surrounding trees is important. Before landscape alterations begin, determine if the tree is part of an inter-dependent group or can be managed as an individual. Generally, if mature trees grow within 3 metres of each other and share crown canopy space, they are functionally a group. If rooting in the area is shallow due to high water table, impervious or impermeable layers, or shallow soils, then inter-dependence will be greater. If tree trunks lean away from each other it is probable they are "balanced" and the removal of one will predispose the other to windthrow.

It is often difficult to evaluate how inter-dependent a grouping is when considering a dense stand. Typically, the denser the stand and the younger the trees, the greater number that can be removed safely. Again, it is important to consider all pertinent factors.

When a tree on a slope has become undermined or is otherwise in danger of falling over it should be cut. Determine if an individual tree is losing anchorage or if the lean is the result of soil movement. Removal could cause a slope failure. Exercise extreme caution when cutting trees on slopes.

Position on Slope: Consider a tree's location on the slope before removal. There may be situation where various conifers and deciduous broad-leaved trees are obscuring the view of the lake. They are also protecting the cottage from the full force of prevailing winds, as well as stabilizing the site from a landslide. Tree cover can often reduce the height of brush. If trees are removed, the brush grows higher thereby requiring constant trimming.

Often, the first solution that can come to mind would be to remove some or all of the trees to access a view. However, upon considering the benefits these trees provide and some of the possible adverse impacts that could result, a landowner might seek ways to enhance the view without removing the trees. This might include interlimbing, cutting “windows”, and skirting-up, each of which involves a careful, measured approach to achieving your objective.

Surrounding Vegetation: All factors should be considered together. This is especially important in regard to the vegetation surrounding trees being considered for removal.

As mentioned, some brush species thrive and flourish when a tree canopy is removed, creating a view management problem. Poplar, Sumac, choke-cherry and some willow species may become maintenance problems when tree canopies are removed and additional light is able to reach the ground. Invasive species prefer disturbed sites with abundant light, and can require constant control to maintain a view.

Stability of the Slope: An analysis of slope condition by a geomorphologist or geotechnical engineer is strongly advised and, where development is being considered, is usually required. Vegetative clues should be used in conjunction with the geotechnical data and an assessment of the role of the vegetation on the site should be made.

In situations where soil and hydrological conditions promote well-rooted, healthy, mature trees, the trees should be left insofar as is possible. As mentioned, the practice of removing a majority of trees on a slope can greatly increase the probability of a slope failure in the future as the trees roots decompose and their soil-binding capacity declines.

Density of the Stand: The implications of dense stands of short-lived species such as Poplar and willow have been discussed. In the case of dense stands of conifers such as cedar, the situation can be quite different. On stable sites with no serious ground water or surface runoff problems, the landowner has several options.

When trees are fairly young (between 5 and 30 years old) they are still capable of vigorous growth in response to thinning. It is possible to remove enough trees to attain a view and even improve the strength and growth of existing trees without creating a potentially hazardous situation. If the crowns of the trees are "crowding" each other and receiving light only from the top, then a thinning could be done. Caution should be exercised not to predispose the remaining trees to windthrow by altering the wind-deflecting properties of the windward trees or allowing wind to be channeled into the interior of a stand that was previously protected.

Removal of trees from a dense stand without damaging those remaining can be difficult and expensive, but the extra care required is a good investment in maintaining the health of the trees that protect your property. Broken tops and branches, as well as trunk scars left by falling trees can serve as entry ports for disease and insects. Consult with a qualified tree service when low-impact falling and removal of trees on a slope is necessary.

Source: Washington Department of Ecology, Managing Vegetation on Coastal Slopes.