WiNdbreaKs, Hedgerows aNd Living FeNces

Trees and shrubs can create screens between different use areas and provide protection and comfort from sun and prevailing winds. They can also be used to create aesthetic borders or wildlife habitat corridors, linking other natural areas on or off your school grounds. Wildlife will appreciate the passageways created by hedgerows and the resting and hiding places afforded by your windbreaks. Schools can incorporate these features on their grounds to make it a more comfortable and inviting place for play and learning.

DesigN detaiLs

Windbreaks

1 Windbreaks are an important consideration for schools in Canadian climates. Just as trees are critical for providing shade on school grounds during hot spring and fall days, protection is also needed during the cold winter months. For example, during winter months, wind chill can decrease the temperature by more than double, depending on wind speed. Windbreaks also help to reduce drifting snow and soil erosion on exposed sites.
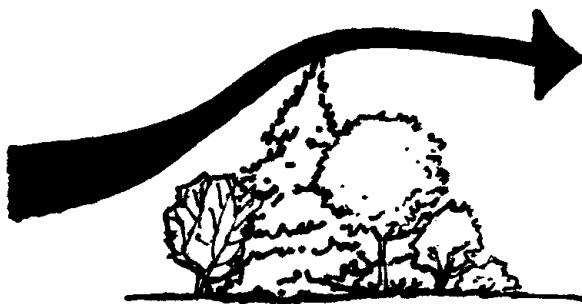

did YOU know…

A windbreak will reduce wind speed for a distance of as much as 10 times the windbreak's height!

Designing your windbreak

- Use several rows (one to five) of defense to create your windbreak. Make it at least seven metres wide.
- Design your windbreak as three parts: the windward, centre and leeward. The windward row is what the wind hits first and should be made up of dense and fast growing trees and shrubs that prevent snow from piling up in the centre. This also helps to prevent moisture accumulation in the spring in areas where snow is trapped and is not melted by the sun. The middle row should be made up of tall and fast-growing trees and shrubs that force winds to rise up over the windbreak. Finally, the leeward row should be made up of dense-growing trees and shrubs.
- Plant your rows in a line perpendicular to the prevailing wind and upwind from the space or building you want to protect, forming a backwards V.
- Use both evergreen and deciduous species to provide a variety of food and shelter for wildlife.
- Place your windbreak on the windward side of your school grounds. Windbreaks planted on the north and west sides of a school building can reduce the school's heating costs by 30 per cent.
- Select species that are native to your region — they will be better suited to local climate conditions including harsh winter winds. Do not use invasive species like Norway maple, Russian olive, European buckthorn, tatarian honeysuckle or tree of heaven. These species reproduce rapidly and take over natural areas, eventually displacing the native species that wildlife depend on for survival.
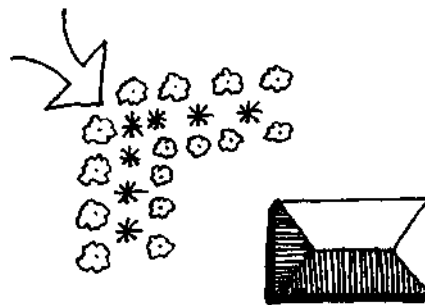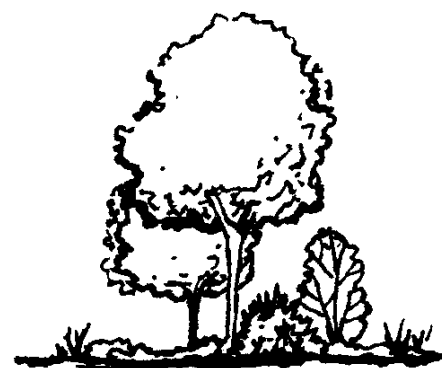
Hedgerows and Living Fences

Hedgerows and living fences are rows of trees, shrubs and vines. They provide a more aesthetically pleasing alternative to standard chain link fences, provide wildlife habitat, and provide visual screens and boundaries for different use areas. They can also incorporate plant species that offer sensory and play opportunities for students. For more information on sensory plants see the *Plants for Play and Learning* fact sheet in Natural Features.

Designing your hedgerow or living fence

- Make use of existing built features on the school grounds, like fences, arbors, trellises and pergolas to provide support and a boundary for your hedgerow or living fence.
- Use a variety of types (coniferous and deciduous) and sizes of trees, shrubs, vines or wildflowers.
- Prepare an area at least 60 centimetres wide for planting shrubs and trees, or 15 centimetres wide for vines to grow along your fence.
- Plant shrubs 50 to 60 centimetres apart and trees one to 1.5 metres apart.
- Group and stagger shrubs and trees by height to create multiple vertical layers for your hedgerow. This will add visual interest as well as provide shelter for a variety of wildlife species.
- Zigzag split rail fencing through your hedgerow or living fence to help define a boundary and provide resting and perching sites for wildlife.

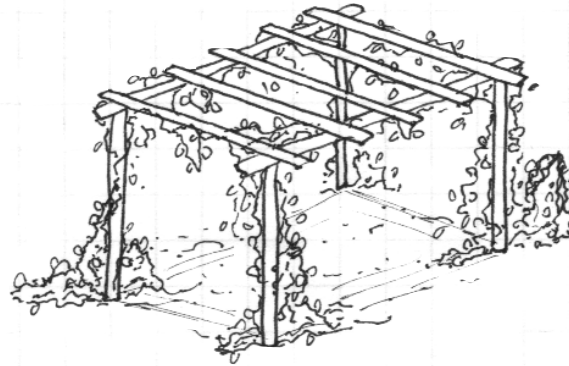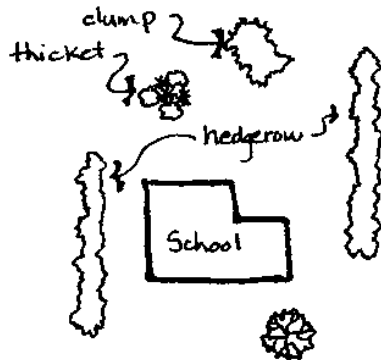**Selecting species for your hedgerow or living fence**

- Select hardy species that are native to your region and that provide food and shelter for wildlife. For more details see the *Natural Habitat Communities* fact sheet in Natural Features.
- Select fast growing tree species (e.g. maple, ash, cedar, serviceberry and chokecherry) and dense shrub species (e.g. buffalo berry, dogwoods and viburnums).
- Include spring flowering shrubs and wildflowers; trees and shrubs with coloured berries; trees, shrubs, and vines with fall colour; deciduous shrubs with coloured bark for winter interest; and shrubs that have seed pods throughout the winter for seasonal interest.
- Use vines (e.g. Virginia creeper, American bittersweet, wild grape, virgin's bower and honeysuckle) and perennials that will climb along your fence.
- Use native roses and dense shrubs spaced in double rows to create nesting habitat.

Variations

Clumps and Thickets

Clumps and thickets can be used to provide shelter and wildlife habitat in small corners or sections of your school grounds. They can be strategically placed to provide stopping places for wildlife between hedgerows, living fences or windbreaks.

- Cluster groups of small trees and shrubs (e.g. willow, viburnums, birch) to create a clump.
- Use dense bushes (e.g. buffaloberry and dogwood) grown close together to create a thicket.
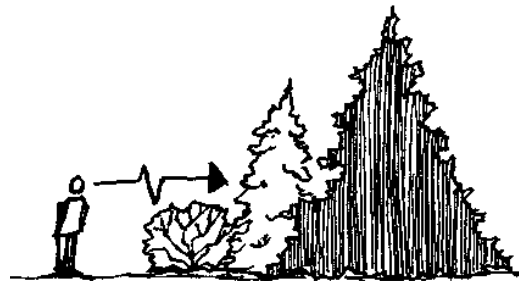

Fencerows

Fencerows are borders with a fence. Typically grass is mown right up to fences, providing little visual interest or wildlife habitat. If you have a fence around your school ground you may want to try these ideas for creating a fencerow.

- Stop mowing the grass along your fence and let native grasses and wildflowers naturally regenerate the area. Work with your school's maintenance department to define the perimeter of your natural fencerow.
- Intersperse clumps of dense trees or shrubs (e.g. cedar) along the fencerow to add more interest and cover for birds

Hedgerows and living fences are also useful for shading sidewalks and buildings. This helps reduce the heat that is reflected off asphalt surfaces around the school. Because cool air settles near the ground, air temperature directly under trees can be as much as 14-degrees cooler than air temperatures above asphalt.

Living Walls and Structures

- Create a living wall using vines that climb up a trellis or a wall.
- Create a living archway with small shrubs, trees and vines growing around a pergola or entrance structure on your grounds.

Borders and Barrier Plantings

- Select dense tree and shrub species to provide a visual barrier between different use areas.

- Use dense shrubs or vines, or thorny plants to create a physical barrier. The height will vary based on the function and location of the barrier.
- Plant living fences around gardens and the base of trees to protect them from trampling and compaction. Plant sturdy wildflowers (e.g. sunflowers) or small shrubs along the edge of the garden, or in a trench dug around trees.
- Line edges of planting beds with willow branches (30 centimetres high) looped together and planted 45 centimeters apart. Plant in late spring so the branches will root and anchor the fence. Keep pruned to 45 centimeters.

Codes and Safety Standards

The use of landscape design elements such as windbreaks, screens and hedgerows on school grounds may raise safety concerns. Typically school grounds are designed with flat, open grounds to maintain clear sight lines from any spot on the grounds. However, flat, open school grounds provide uninteresting outdoor learning environments for students and also put them at risk from exposure to the harmful effects of wind and sun. It has been found that the flat, open design of school grounds promotes negative behaviour due to boredom, bullying and chasing, and results in more falls and injuries. In contrast, naturalized sites provide increased opportunities for imaginative play, learning and social opportunities, leading to a decrease in negative behaviour.

Typically, windbreaks, hedgerows and living fences are situated along the perimeter of school grounds, presenting less concern for visual access and safety. Screens and plantings that are more integrated with play environments can be designed to provide interesting play spaces and still allow for visual access. The following guidelines will help to minimize safety concerns.

Maintaining Visibility

- Use focal points (e.g. large trees, totem poles, nesting poles or sculpture) in the design of screens, boundary plantings and hedgerows to help maintain sight lines. Focal points provide an object of orientation that can be quickly identified in your visual field, making monitoring of natural areas on school grounds easier. Focal points can also serve as a boundary marker for teachers.
- Use lighter density plantings and complete regular pruning and maintenance practices to ensure low branches are removed in areas where visibility is a concern.
- Select species that have a high branch structure (2.5 metres) so there is a distinction between the tree canopy and under-story species.
- Adjust patterns of monitoring and routine observations of school grounds to reflect the natural settings.

Safety and Risk Management

- Do not place trees or shrubs with berries, cones or pods too close to pathways where they could cause slippery, messy surfaces.
- Ensure that branches do not hang over pathways, blocking passageways for children in wheel chairs.
- Use soft-branching plant material (e.g. cedar, hemlock, sumac) where children may fall or run through it.

did **you** *know…*

It has been shown that naturalizing school grounds and community parks helps increase community use and interest in these areas. More community use results in decreased vandalism and safer places.

- Do not include species that have poisonous parts or may pose allergy problems (e.g. nut trees) on the school grounds.
- Complete regular pruning and maintenance practices to ensure low branches at eye level are removed.
- Make sure your hedgerow or windbreak does not interfere with utility lines on or around the school property.
- Provide educational information about the importance of trees, shrubs and other natural settings on school grounds to enhance learning opportunities and provide healthier play settings. Also, explain the safety standards that are in place at your school to alleviate any worries that parents or community members might have.
- Involve the community in your project so that they help to watch over the school grounds for any signs of vandalism or misuse.

Where to go from here?

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Example projects

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Hickory Wood Public School, Brampton, Ontario: (905) 451-3444
K.B. Woodward School, Surrey, British Columbia: (604) 588-5918
Sherwood Elementary School, Charlottetown, Prince Edward Island: (902) 368-2020