

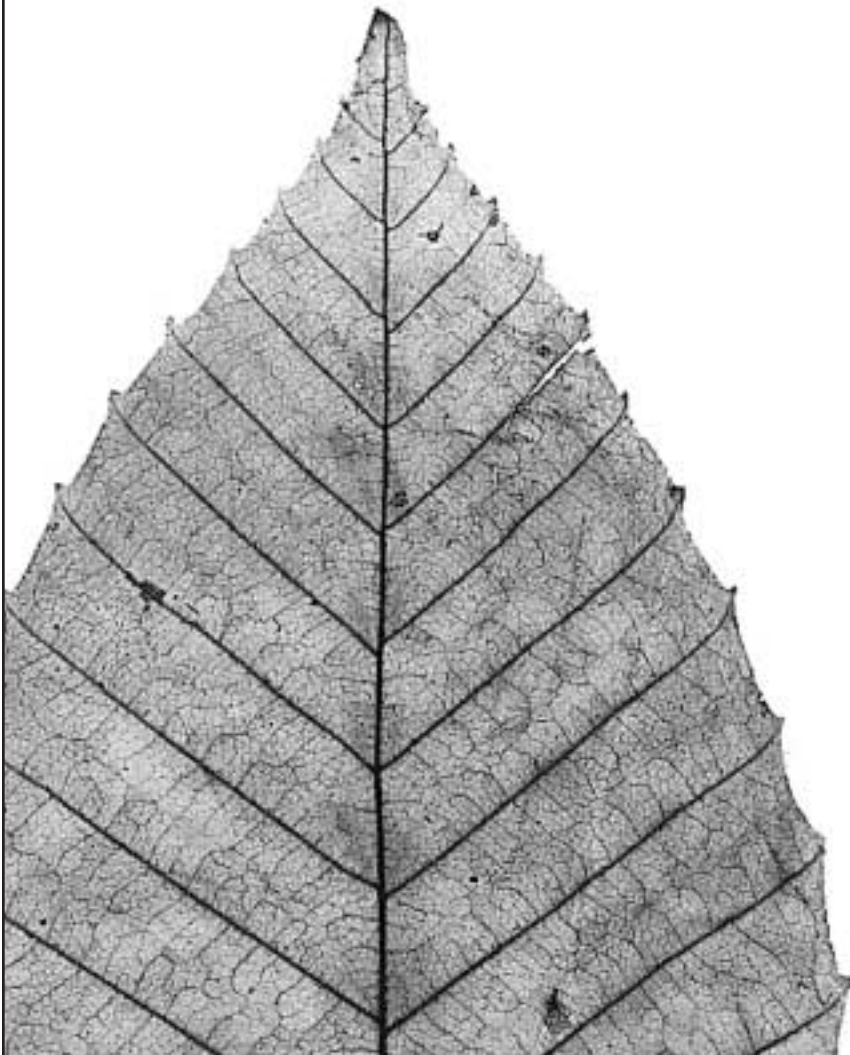


EVERGREEN

Bring Nature Back to Your City

The Learning Grounds

Guide for
Schools





 **TOYOTA | EVERGREEN**

LEARNING GROUNDS

Bring Nature Back to Your City

Evergreen and Toyota Canada Inc. with its Dealerships are working together to ensure that children's school environments are as nurturing as possible. The Toyota Evergreen Learning Grounds Program represents a commitment to contribute positively to the health and well-being of future generations by educating children about the importance of restoring and preserving the environment. Teachers, students and community members are invited to participate in a nation-wide effort to reclaim Canada's school grounds and to create healthy learning environments.

Toyota Evergreen Learning Grounds Charter

The Evergreen and Toyota Canada Inc. partnership represents a shared commitment to positively contribute to the school grounds, environment and emotional and physical development of Canada's children.

We believe that the provision of educational resources and the support of caring citizens will transform school grounds into healthier, more dynamic places for learning.

We believe that by combining Toyota's commitment to corporate social responsibility with Evergreen's ecological restoration practices we will enhance our combined reach and the quality of business, community and learning.

We commit our organizations to lead by example, and to provide measurable and meaningful resources and support to Canada's schools and to the communities in which we work.

It is our sincere intent to foster a new spirit of community involvement and environmental stewardship within the hearts and minds of Canada's future: children and youth.

Geoff Cape, Executive Director, Evergreen
www.evergreen.ca

Mr. Kenji Tomikawa, President and CEO, Toyota Canada Inc.
www.toyota.ca

Published by Evergreen

Evergreen is a national non-profit environmental organization with a mandate to bring nature to our cities through naturalization projects.

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Contents

WELCOME TO LEARNING GROUNDS

This guide will help you get started with your school ground greening project. You will learn what you need to do in order to plan and implement your project.

PLANNING AND DESIGN

1



The Big Picture

A step-by-step task list for your project. Tasks are accompanied with a reference for more information and a recommended timeline. Completion of many of these tasks will help you with your funding application.

2



Developing Your Project Team

An overview on organizing your team of students and teachers.

3



Sizing Up Your Site

How to map your school ground and then figure out where you want to plant.

4



Choosing Native Trees, Shrubs and Wildflowers.

An overview on choosing native plants for your project.

5



Planting Heritage Varieties of Vegetables & Berries

Planting heritage varieties of vegetables and berries.

6



Maintenance Strategy

How to develop a maintenance strategy for your planting project.



Organizing Your Planting

A step-by-step program to organize your project.



Templates

Sample notices to organize planting and maintenance work, and request donations; a letter to the neighbours; and a sample thank-you letter.

SUPPORTING MATERIALS



Designing for Shade

Shade Assessment tools and a tree shadow template will help you create a shade strategy so that shade is where you want it.



“Greening High Schools”

Article from *Green Teacher* magazine.



Plantwatching

A national program to monitor global warming by recording bloom times of temperature-sensitive plants and trees.



Site Map

A sample of what a site map looks like once the site inventory and analysis is complete.



Site Plan

Samples of site plans for different garden designs.

ALL ABOUT EVERGREEN



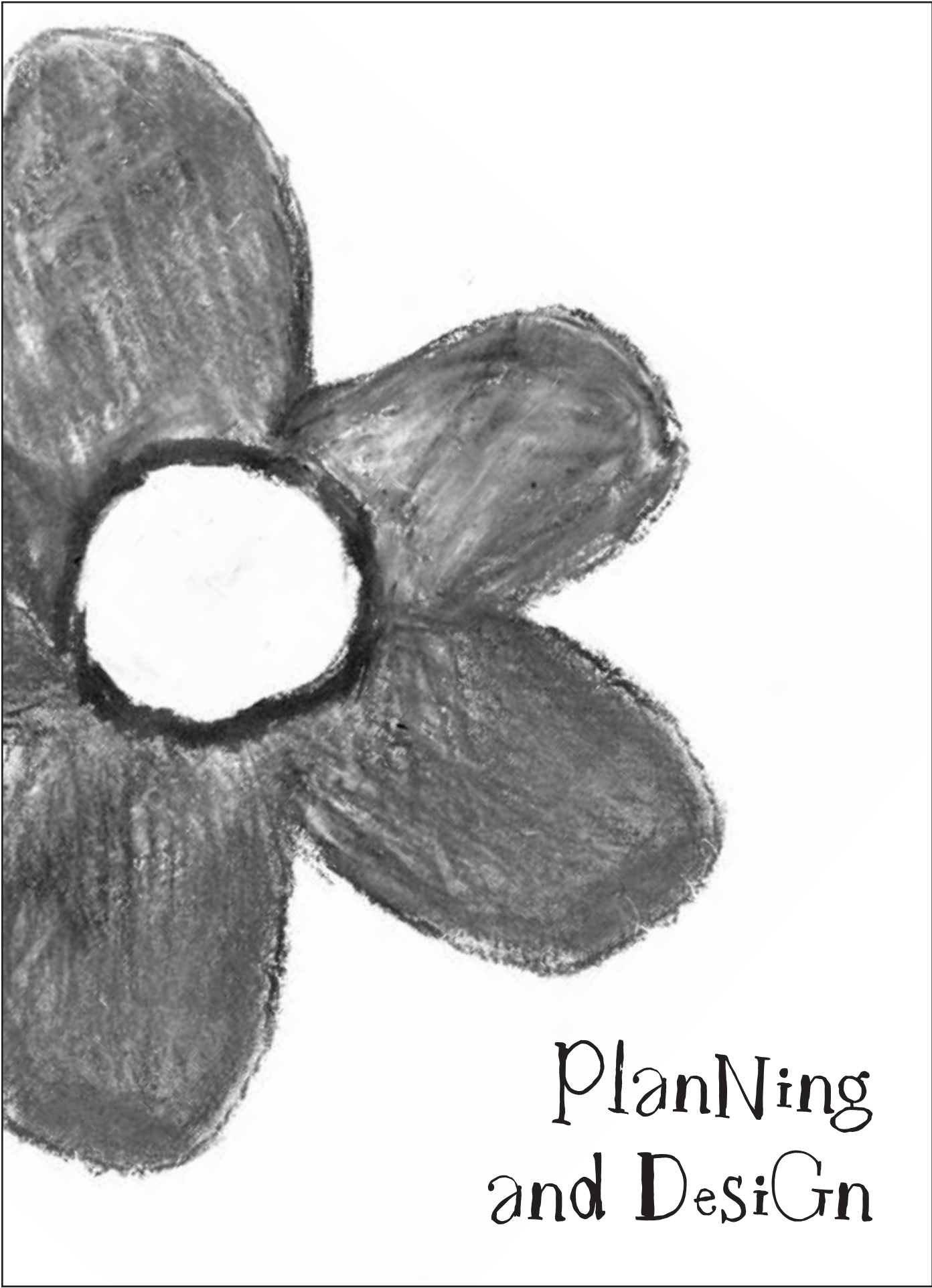
Background Sheet on Evergreen

Useful tips for when you prepare a press release or a report on your project.



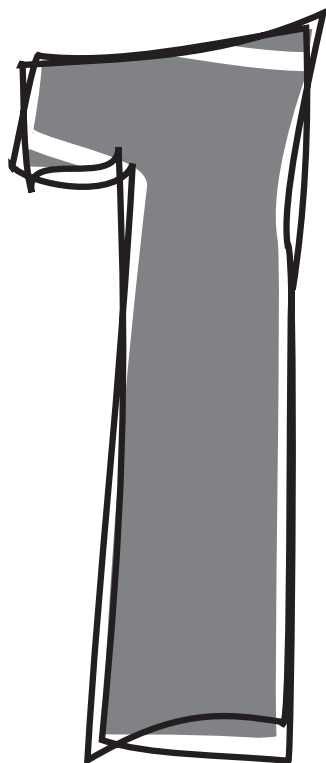
How to use Evergreen’s On-line Project Registry

Detailed instructions on how to post your project on our web site so that other schools can find out what you are doing.



PlanNing
and DeSiGn

THE BIG PICTURE



THE BIG PICTURE

Your Road Map

An Overview of the School Ground Greening Process

NOTE: The order of these steps may vary.

1. GETTING STARTED

- a) Form a Committee
- b) Research
- c) Brainstorm
- d) Survey—Students, Staff and Neighbours
- e) Common Themes—Your Top 3-5 Ideas

2. PLANNING

- a) Draft a Statement of Purpose
- b) Size Up Your Site
- c) Design Plan and Approval of Concept
- d) Decide What You Are Planting This Spring—Start Small and Do It Well!
- e) Maintenance Plan
- f) Approvals for Design Plan
- g) Fundraising—**Funding Application**

3. GETTING IT DONE

- a) Planting
- b) Publicity

4. EVALUATION

- a) For Evergreen
- b) Final Evaluation and Wrap Up



THE BIG PICTURE

What is The Big Picture?

The Big Picture will guide you through all the things that need to be done in order to organize a school ground

greening project. Use it as a road map to plot your strategy and adapt it to your particular project.

What will you find in the List of Tasks?

The tasks are based on what other schools have found useful in planning and implementing their projects.

Use it to guide your efforts and ensure success.

In the Big Picture you will find:

A list of

- Tasks
- Resources
- Recommended Timeline.

Why do you need *Learning Grounds Resources*?

Each task is linked to a **Learning Grounds Resource**—check them out if you need clarification or more information.

NOTE: *AHD* refers to the book entitled *All Hands in the Dirt*.

(www.evergreen.ca/en/lg/resources/allhands/index.html)

LGG refers to this guide book.

Design Ideas (www.evergreen.ca/en/lg/designideas.html)

Nature Nurtures (www.evergreen.ca/en/lg/nurtures-en.pdf)

A Crack in the Pavement Video (www.evergreen.ca/en/lg/lg-resources.html)

How do you get it all organized?

The **Recommended Timeline** will help you plan;

- **What** has to be done; and
- **When** it needs to be done by in order to have your *Funding Application* completed on time. Deadline is January 26, 2005.

**START SMALL
AND DO IT WELL!**

TIPS

- Use a calendar to outline a work plan and make specific deadlines for your project.
- Post the calendar on your bulletin board.
- **Keep in mind:** Everything takes longer than you anticipate. Try to allow for this.



1. GETTING STARTED

A) Form a Committee Task

- Plan a meeting with your committee.

B) Research Task

- Start your research with a review of Evergreen resources.
- View the videos. Involve staff, students, parents & the community.
- Check out this resource if you need to convince anyone about the benefits of your project.
- Take a walk around the site with your committee.
- Visit other schools that have greening projects or check out what other schools have done on the Evergreen's on-line project registry.

Recommended Timeline

September

Recommended Timeline

September-October

September-December

September-October
May-August

Resources

LGG Ch.2

Resources

Print & on-line resources
www.evergreen.ca/en/lg/lg-resources.html
A Crack in the Pavement
Nature Nurtures
 LGG Ch.3, AHD p. 23-28
 LGG Ch.15
Design Ideas
 Project Registry
 (www.evergreen.ca/en/lg/lg-projects.html)



C) Brainstorm

Task



Brainstorm some ideas for your school ground. Involve staff, students, parents and the community.

Resource

LGG Ch.2

Recommended Timeline

September–October

D) Survey

Task



Conduct a survey of staff and students to see how they feel about their school ground and what changes they would like to see.

Resources

AHD p. 25–31

Recommended Timeline

September–November

**E) Common Themes
(Your top 3-5 ideas)**

Task



Organize the feedback from the brainstorming and survey results into categories and note the most popular ideas.



Analyze the results of your brainstorming session and the results of your survey to determine the top three to five ideas.

Resources

LGG Ch.2
AHD p. 29–31

Recommended Timeline

September–November

November



2. PLANNING

A) Draft A Statement Of Purpose

Task

- What are you trying to accomplish and why?
- What are the benefits of your project?

B) Size Up Your Site

Task

- Obtain a site plan of your school and the surrounding school grounds from the office or school board.
- Create a map of your school ground using the guide in your package. This is easier to do in nice weather!
- Choose a planting site. This is based on the findings and analysis of your site map.
- Check with your school board grounds and maintenance people that the site you have chosen is appropriate.

Resources

AHD p. 20
& *Nature Nurtures*

Recommended Timeline

November

Resources

AHD p. 23

LGG Ch.3, Ch.12
AHD p. 23-28

LGG Ch.3
AHD p. 39-42

AHD p. 12, 42-43

Recommended Timeline

September-November

September-November

September-November

October-November





C) Design Plan and Approval of Concept

Task

- Draw your plan.
- Choose your native trees, shrubs and vines.
- Choose your heritage vegetables and berries.
- Create a planting/design plan.
- Set specific goals and objectives.
- Does your project need a name, slogan or logo?

D) Decide What You Will Plant This Spring "Start Small And Do It Well"

Task

- This applies to projects that will be planted over more than one year or season.

E) Maintenance Plans

Task

- Plan maintenance for all seasons.
- Make sure your summer maintenance plans are in place.

Resources

AHD p. 41-42
LGG Ch.4
LGG Ch.5
AHD p. 41-42
LGG Ch.13
AHD p. 33-36

Resources

AHD p. 45-46

Resources

LGG Ch.6
AHD p. 47

Recommended Timeline

December-January
December-January
December-February
October-December
November-March

Recommended Timeline

January

Recommended Timeline

January
Mid-May

F) Approvals

Task

Obtain the necessary approvals for your design from:

- School administration
- School custodians
- School board grounds and maintenance people
- Neighbours (if applicable)

G) Fundraising

Task

Toyota Evergreen Learning Grounds

- Prepare your budget.

- Submit your Evergreen Funding Application.**

Resources

LGG Ch.7, AHD p. 57

Recommended Timeline

December-January

Resources

[www.evergreen.ca/en/
lg/lg-funding.html](http://www.evergreen.ca/en/lg/lg-funding.html)

AHD p. 49-54

Recommended Timeline

January-February

Deadline:
January 26, 2005.



3. GETTING IT DONE

A) Planting

Task

- Call Before You Dig (utilities).
- Purchase plants
- Planting Day-Dig in! (and remember to get some great planting day photos)
- Planting must be complete by the end of May.

B) Publicity

Task

- Take some "before" pictures.
- Organize some publicity for your event.
- Take "after" pictures.

Recommended Timeline

- February-March
- January-April
- April-May

Resources

- LGG Ch.7, AHD p. 57
- LGG Ch.7
- LGG Ch.7
- AHD p. 57-59

Recommended Timeline

- September-March
- February-March
- May-June

Resources

- LGG Ch.7, AHD p. 59
- LGG Ch.7
- AHD p. 11, 12, 46.
- LGG Ch.7



4. EVALUATION

A) For Evergreen

Task

- Send in your “before” and “after” pictures to Evergreen.
- Return the completed Evergreen Evaluation.
- Update your school’s information on the Project Registry. Share what you have learned. Discuss how the project has gone so far. What went well? What didn’t? What changes will you make next year?

Resources

Via e-mail or snail mail
 Evergreen Evaluation
 The Evergreen On-Line Project Registry
www.evergreen.ca/en/lg/lg-projects.html

Recommended Timeline

May-June
 May
 May-June

B) Final Evaluation And Wrap-Up

Task

- Send thank-yous and reports to your supporters.
- Prepare an outline of your future plans.

Resources

AHD p. 54
 AHD p. 61-65

Recommended Timeline

May-June
 February-May



DEveloping YoUr ProJect TEam



2

DEVELOPING YOUR PROJECT TEAM

The process of building a Green Team for a successful project is found in **AHD p. 17-21**. Here are some basic steps to get you started.

1

How to Build an Effective Team

1. The Participatory Process

- Having a wide range of people involved (i.e. staff, students, parents and the community) is the best way to plan and complete a project. It ensures a broad base of support that will sustain the project for many years.
- To learn more about key people to include in your project, refer to **AHD p.7**.

2. A Summary of the Team's Skills and Interests

- Once you have gathered together all those interested in your project, find out what skills and areas of interest you have available in your group.
- Check out the skills inventory in **AHD p. 15**. Copy this form and distribute to all those interested in participating.

3. Group People Into Task Areas

- Using an organizational chart (like the one below), note who is interested in each area. This will help you identify what skills are present and what additional skills your team requires.
- Even if there is only a small group of people involved, divide the tasks to focus efforts and define areas of responsibility.
- If you have several people interested in the same area, they can share responsibility for the task.



Debby Morton

How to Use the Organizational Chart:

- Create your own list of tasks to put across the top of the chart. Refer to **The Big Picture** for ideas.
- Committee members can choose which areas they would like to be involved in.

Name	Planning	Fundraising	Planting	Maintenance	Publicity	Other
Cam	✓			✓		refreshments
Debby		✓		✓		Web page
Tim			✓		✓	photos
Elizabeth			✓	✓		

2

Brainstorming

Brainstorming encourages creativity and participation from everyone in the group. It can also be useful in decision making when you are looking at all possible options. Best of all—it can be quite fun! Here’s how it works:

Overview—Before you start:

- Do a quick overview of where the group is at in the planning process and what this meeting is all about.

Brainstorming Objectives—Be clear on the objectives of the exercise.

- Example: To come up with creative ideas for greening our school ground.
- Mention if there are any requirements or restrictions—i.e. the principal will only let us work in the front of the school. Or, we can only obtain grant money for native plant species.

Set Ground Rules—These can vary, but should include:

- There is no such thing as a bad idea—all get recorded.
- Take risks and encourage everyone to contribute.
- Be creative.
- No interrupting while someone is offering an idea.
- No commenting on an idea during the brainstorm. Treat each other with respect, no ridicule.

Select a Note Taker—The role of the note taker is to:

- Record all of the ideas offered by the group members onto chart paper for all to see.



Brian Hydesmith



John Hillis

Brainstorm!—Some suggestions to get you started are:

- Encourage all ideas to be spoken out loud.
- Be spontaneous.
- Build on each other’s ideas.
- Keep energy high by allowing ideas to flow quickly, one after another.
- Respect each other’s right to be heard.
- Respect your note taker!
- Wrap up when you run out of ideas.
- For large numbers it may be useful to break into smaller groups.

Find Common Ideas

- Discuss each idea on your list.
- Group ideas into common themes. This will organize the input and show you which themes had the most suggestions.
- Set priorities. Have each member of the group choose three to 10 of their favourite ideas in order of preference. Total them and see which items are most popular. This will help your group set priorities.



Next Steps

- ✦ Research the top three to five ideas.
- ✦ Include them in your design plan.
- ✦ Determine your action plan and who will do what.



Debby Morton



Productive Meetings

With a few simple guiding principles, meetings produce exceptional results in a minimum amount of time. For some helpful tips on how to conduct your first meeting see **AHD p.13**.

Decision-Making Models

Groups usually need to determine a method for decision making. One or more of the following decision-making models may be useful to you as your project evolves.



Consensus Decision Making—Here is a way to make decisions that respect different points of view—through consensus. These decisions take all opinions into account. **AHD p.8**.

Sub-committee Model—Sub-committees work on specific tasks and make decisions that they report to the larger group.

Voting—Decisions are made with a vote or tally to determine the most popular choice.

Hierarchical—The leader or chairperson of the group makes a decision based on information supplied by the members.



Consult With The Experts

There will be times when you may need to consult with the “experts”: staff from a plant nursery, landscape supervisor, maintenance staff and/or people with previous experience. **AHD p. 42**.



Don Morton

Meeting Times

Many schools have had difficulties finding convenient times for all team members to meet. One solution may be to **have the meeting over the Internet, i.e. MSN**.



Sizing Up Your Site





Sizing Up Your Site

A site inventory that documents the physical features and patterns of use of your site will help you successfully choose your locations for planting and prevent future problems.

This activity offers an opportunity to

involve a community resource person such as a landscape architect, biologist, ecologist, forester, conservationist, cartographer or field biologist.

ON A COPY OF YOUR SCHOOL'S SITE MAP (AHD P.23) DRAW THE FOLLOWING FEATURES IN COLOUR

- Green existing vegetation (shrubs, trees, grass and flowers)
- Red active play areas (sports fields, baseball, sandpits, etc.)
- Orange passive play areas (gathering spots, benches, seating)
- Yellow proposed planting area (approximate size)
- Blue wet areas or natural water sources (where does water collect seasonally?)
- Brown where people walk (natural pathways)
- Purple fences, telephone poles and property lines
- Black paved areas other than parking (i.e. sidewalks, tennis courts and running tracks)

THEN LABEL THE FOLLOWING ON YOUR MAP

North Compass direction with arrow

Utilities

- hydro lines
- water pipes
- hydrants
- gas lines
- overhead wiring
- sewers
- storm drains
- cable TV
- taps
- night lighting

Patterns Of Use

- entrances and exits
- dark areas
- garbage bins
- routes for fire drills
- after-school activities
- piles from snow plows
- maintenance challenges

Built Features

- portables
- parking
- bike racks
- benches
- goal posts
- basketball hoops
- worksheds

Natural Features

- hills
- slopes and ditches
- windy areas
- compass orientation
- adjacent parklands
- woodlots

With this information you can speak to the grounds and maintenance staff regarding a site for your project.



OTHER THINGS TO CONSIDER

SOIL: conditions, types, existence of earthworms

MICROCLIMATE: sun, wind direction, shade, sheltered areas

SIGHT LINES and safety issues

SITES of previous vandalism

HISTORY/CULTURE of the site and community.

WILDLIFE sighted on or near school grounds through the seasons

NATIVE SPECIES of plants existing in your immediate neighbourhood

Key Questions to Consider

Selecting a site for your planting is based on analysis of the information collected on your site map. Some of the details will render certain sites

obvious poor choices and eliminate them immediately. For example, you will not want to plant in the middle of a soccer field. For more information on the Site Mapping, please refer to **AHD p. 23–31**.

Ask yourselves the following questions and use your site map to determine the answers. There may be considerations unique to your school or project, so try to think of other questions and do your best to address them when choosing your site.

- Is your site accessible to students?
- Are you planting in the midst of a frequently used pathway?
- Will the proposed planting area fit into the school community in an aesthetically pleasing way?
- Could you build on existing natural features? For example, are you enhancing a wetland or extending a windbreak?
- Are you choosing native vegetation that is already growing successfully in the community?
- Have you considered the logistics of maintenance? How difficult will it be to water? Can a hose reach the plantings? If not, do you have an alternate plan?



Debby Morton

- Where does snow get piled up when shoveled or plowed in the winter? Will this damage your small trees? Are your plants salt tolerant? Do they need to be?
- How moist is the ground in the spot you are considering? Will your plants thrive in that level of moisture?
- Have you checked with the maintenance department, the main office and the police about required sight lines for safety, fire drills and security? (see codes and safety standards in **Design Ideas**)
- Is there a minimum distance required between trees and the school building or fences?
- Are there any community concerns?

TIPS

- Make several copies of your site plan.
- Large plans will need to be reduced.
 - Keep one as a master.
- This task can be shared by several students or done as a class activity i.e. a mapping activity for geography.
- If students collect different information, compile the results onto one master plan. You can use tracing paper for this task to see each layer of information.



Choosing Native,
Trees, Shrubs
And Wildflowers



4

Choosing Native Trees, Shrubs And Wildflowers.

WHY CHOOSE NATIVE TREES, SHRUBS AND WILDFLOWERS?

What are Native Species?

Native species of trees, shrubs and vines are those that occur in the region in which they evolved. Plants evolve over time in response to climate and interactions with other species inhabiting the community. Thus, native plants possess certain traits that

make them uniquely adapted to local conditions. Check our our Evergreen Native Plant Database

<http://www.evergreen.ca/nativeplants/>
and our recommended plants lists at
<http://www.evergreen.ca/nativeplants/lists/>

1. Native species have adapted to:

- ☛ local soil and climate conditions; and
- ☛ local levels of rainfall.

2. Natives species:

- ☛ have evolved with local insects and wildlife, providing them food and habitat;
- ☛ rarely have pest problems;
- ☛ require little to no watering once established;
- ☛ do well in poor soils and will flourish without fertilizer;
- ☛ offer us the opportunity to study plants that are part of our natural heritage; and
- ☛ are beautiful!

3. Re-introduction and restoration of native plant communities contributes to:

- ☛ wildlife habitat;
- ☛ biodiversity; and
- ☛ a local seed source.

4. Planting a diversity of species provides:

- ☛ a means of coping with drought and disease; and
- ☛ provides wildlife with a more nurturing habitat. The more diverse the vegetation, the more diverse the wildlife attracted to the area.

One of your project's goals may be the preservation of local endangered plant species. It has been estimated that as much as 25 to 30 per cent of Canada's natural flora are rare or endangered; by growing endangered species you are part of a movement to protect biodiversity. Find out which species are at risk. www.speciesatrisk.gc.ca



THINGS TO CONSIDER WHEN CHOOSING NATIVE TREES FOR YOUR PROJECT:



- ✦ Where are the leaves going to drop? Are there neighbours or any others who will be affected by this? Will blowing leaves be a problem?
- ✦ Will leaves need to be raked and disposed of? If this is a problem, consider trees with small leaves that will blow away i.e. honey locust.
- ✦ Where and at what time of day will the shade be cast? Do you want people to be able to enjoy the shade?
- ✦ Where does the shade of neighbouring trees fall? Will this affect the trees that you are considering?
- ✦ Are there any obstructions overhead? Will your trees grow into this?
- ✦ Is there anything your tree's canopy will obstruct? Will it hang over a neighbour's yard?
- ✦ Are you choosing nut trees? Some schools cannot plant nut trees due to nut allergies (anaphylaxis).
- ✦ **Compaction Strategy**—Have you considered how to keep the soil at the base of the tree from becoming compacted and smothering the tree?

Solutions:

- Plant on a berm (a human made hill).
 - Plant in a garden.
 - Weave a fence around the base.
 - Plant ground cover.
 - Block the area off with string.
 - Surround with a living fence (i.e. oats, wheat, rye, sunflowers, birdseed or corn).
 - Build bench seating around the tree will sometimes work if you watch where the feet will go.
-
- ✦ How does your spot affect the **energy needs** of surrounding buildings? Does it provide a windbreak or sun block to reduce energy needs?
 - ✦ Is your tree too close to the school? Will people be able to climb onto the roof once the tree grows?
 - ✦ When planning for a forest-like setting, put in canopy trees first (possibly pioneer species*) then add under-story species, and finally the forest floor.
 - ✦ Consider planting both **deciduous** and **evergreen** trees.
 - ✦ Investigate the tree communities in your province. Some trees are naturally found growing together and you can recreate these communities on your school ground.
 - ✦ What size tree will you plant? What is the shape of the mature canopy? Does this have any implications for your site? Do you want heavy or dappled shade?
 - ✦ What to consider when choosing nursery stock:
(see chart on the next page)
 - Shrubs are usually sold in containers or bare root.

What is compaction?

Compaction occurs when the soil over the tree roots is compressed by foot traffic. The soil in this condition has fewer air spaces making it difficult for tree roots to grow.





- Trees are usually sold as bare root, ball and burlap, wire basket, or container stock.
- Trees are measured:
 - by trunk width in mm, or
 - by height in cm.

☛ **Staking**—some schools are able to stake trees successfully while others find the stakes are vandalized. You won't know for sure until you try. There is an art to staking trees and some controversy. Check it out with your local nursery or Parks Department for the latest practices in your area.

**Pioneer species are fast growing short-lived trees that are first to colonize a site after a disturbance. They prepare the soil for the next stage of succession.*

Types of Nursery Stock

Whips (cm*) or Seedlings

BENEFITS

- ☛ Best for large planting areas.
- ☛ Fast growing seedling trees can become very tall in five years.
- ☛ Very easy to plant.
- ☛ Grown from seed they promote a diverse gene bank.
- ☛ Cheapest.

CHALLENGES

- ☛ Easily vandalized.
- ☛ Higher mortality.

* (cm) is the height measurement
 ** (mm) is the caliper (or trunk diameter) measurement

Bare Root (mm** or cm)

BENEFITS

- ☛ Bare root trees adapt quickly and grow faster than ball and burlap or container stock.
- ☛ In four years they can overtake the caliper trees.
- ☛ Good size for individuals to plant.
- ☛ Cheaper than caliper, potted or ball and burlap material.

CHALLENGES

- ☛ They must be planted early in the spring before they leaf out.

Caliper (mm**)

BENEFITS

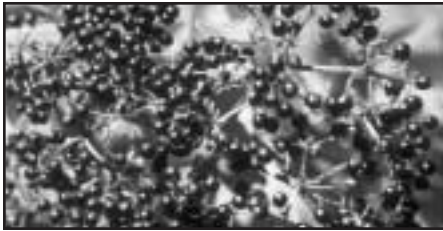
- ☛ Immediate effect and instant gratification.
- ☛ Survive best if vandalism is a problem (min. 45mm caliper).

CHALLENGES

- ☛ Take longer to become established.
- ☛ The root ball is very heavy and hard to maneuver so they are very difficult for individuals to plant.
- ☛ Expensive.

THINGS TO CONSIDER WHEN CHOOSING NATIVE SHRUBS FOR YOUR PROJECT:

- ☛ Native shrubs can provide beautiful spring **colour** when they bloom and provide a valuable source of **food** (through their berries) for birds.



- ☛ If **young children** visit the site, consider planting only edible berries such as serviceberry and elderberry.
- ☛ Start with small stock (i.e. bare root) and plant in a **well wood-mulched** bed (at least 15cm deep).
- ☛ Cardboard (or thick newspaper sections) under the mulch will help keep aggressive weeds under control.

- ☛ For the first few years of growth the **space between these shrubs** can be planted with reseeding annuals such as cosmos, poppies and calendula. Or plant this space every year with sunflowers or nasturtiums until the shrubs have filled in. This will get you over the “is this all there is?” stage.
- ☛ Also consider planting this space as a **theme garden** such as: bird food, butterfly, colour, scent, kitchen (herbs, salad, veggies), cereal bowl (oats, wheat, buckwheat, corn), medicinal, herb, pizza (toppings or looks like pizza) or giant (large plants).

To assist you with researching native species and where to buy them check out the Evergreen Web Site
www.evergreen.ca/cgi-bin/library.cgi

THINGS TO CONSIDER WHEN CHOOSING NATIVE WILDFLOWERS FOR YOUR PROJECT:

- ☛ Choose plants with soil, sun and moisture requirements that closely match the conditions of your site. You can obtain information from a grower’s catalogue. You also need to know the bloom time, colour and height.
- ☛ Native plants already growing on local remnant sites are indicators of suitable species and can give you hints about the growing conditions in your community.
- ☛ Existing native trees and other plants should be preserved.
- ☛ Plant for diversity, imitating natural patterns.
- ☛ Pay attention to edge vegetation. Does it need to be low growing? Does it need to be vigorous to maintain an edge? Will spreading varieties be able to be easily controlled?
- ☛ Consider plants that are known to attract wildlife, for example, butterfly gardens.
- ☛ Use plants that provide year-round interest, remembering that most students won’t be around during the summer months. Look for species that flower in spring and fall.
- ☛ You may also wish to use species that are drought-tolerant to minimize summer maintenance requirements.
- ☛ Some plants are unsuitable for school grounds, such as those with attractive but poisonous berries or sharp thorns.



Planting Heritage
Varieties of
Vegetables
and Berries



5

Planting Heritage Varieties of Vegetables and Berries

1

Why Grow Food on School Grounds?

The benefits of growing food on school grounds are multiple, from making highly nutritious snacks available for students (nutrition is highest in vegetables when they are fresh picked) to encouraging children to eat vegetables (kids love to eat what they grow themselves).

TIPS

Nutrition is highest in vegetables when they are fresh picked, and in our experience, children love to eat vegetables that they grow themselves.

What are Heritage Varieties of Vegetables and Berries...and Why Grow Them?

Heritage varieties of vegetables and fruit have been grown by humans over many generations. They are very rare now since modern agriculture has selected only a handful of food crops to grow. According to

Seeds of Diversity, 75% of the 100,000 vegetables and fruit varieties in North America today are endangered. By planting heritage varieties, school communities can help maintain food plant diversity and learn about the tastes, colours, shapes and cultural uses of plants, while providing nutritious food for students.

2

What to Grow?

Check out our web site for information on what to grow on school grounds and where you can find species that might be of particular interest to your school.

<http://www.evergreen.ca/en/lq/h-seeds.html>

Corn, Beans and Squash—The Three Sisters

Learn about the fascinating history of The Three Sisters, tips for planting them and recommended species at <http://www.evergreen.ca/en/lq/h-corn.html>.



Plus Beans and More Beans

Beans are good for the soil (they add nitrogen), drought tolerant and easy and fun to grow. Evergreen is working with Seeds of Diversity (www.seeds.ca) to protect the diversity of beans in partnership with schools. Read *The Bean Keepers* story below and if it inspires you to try helping out, we'll send you some beans and be there to answer questions. After you grow the beans, we ask that you collect a few to send back to Seeds of Diversity for safe keeping in their public heritage seed bank. *Kids can make a valuable contribution to conserving the diversity of 2000 varieties of beans across Canada!* Schools can sign up through Evergreen's grant application or by contacting Jane Hayes at jhayes@evergreen.ca or 1-888-426-3138 x 27.



Seeds of Diversity

Berries

Historically, native fruit species were important to indigenous peoples and European settlers. Some of these have been cultivated and cross-bred for many years and are now considered heritage varieties. A number of these berry species are on our site at <http://www.evergreen.ca/en/lg/h-berry.html>. Native berries that are edible, but not altered through cultivation (i.e. strawberries, raspberries, blackberries) are listed on our native plant database at <http://www.evergreen.ca/nativeplants/lists/>.

Spring Crops

Check out <http://www.evergreen.ca/en/lg/h-spring.html> for a list of vegetable varieties that can be planted in early spring and harvested before the end of the school year. We suggest sowing the seeds when the soil is soft and can be worked easily (usually mid-March in coastal B.C., late April in most of Southern Quebec and Ontario, early May in Northern Ontario, Northern Quebec, Maritimes, Prairies, and interior B.C.) Most varieties that we recommend can be harvested by mid-June.

Tips for planning successful vegetable patches at schools:

- ☛ Determine whether there is enough volunteer commitment to water and weed a garden in the summer months (5 people is a good number). Coordinate a watering and weeding schedule for the hot summer months. If you have enough volunteers, you can plant your summer garden.
- ☛ Select an area near water access and out of the way of foot traffic
- ☛ Prepare the soil in fall by laying down layers of newspaper, manure and leaves (approximately 1 foot thick) to kill off grass. This makes for less need to turn sod in the spring (this is especially useful when working with younger children)
- ☛ Plant peas, radishes and lettuce in spring for spring harvest
- ☛ Plant vegetables that need more water together and make sure to grow lots of drought tolerant plants (e.g. herbs)
- ☛ Mulch heavily to help moisture stay in the ground and the weeds down
- ☛ Plant edible flowers, cherry tomatoes, and unusual looking veggies
- ☛ Grow plants that others don't recognize. They are less likely to be stolen!
- ☛ Plant sunflowers in late June for September flowers
- ☛ Integrate garden visits with arts, literature, curriculum



- Encourage informal participation and learning (e.g. at recess)
- Invite after school and summer programs to participate in the garden
- Consider inviting community gardeners to start a garden at your school and use an area of it for classes

- Start small and grow as volunteer and community participation grows.

TIPS

For more help on Growing a Successful School Vegetable Garden, drop us a line at www.evergreen.ca/en/lg/lg-expert.html



The Bean Keepers (Gr.2-6)

By: Jane Hayes

Not long ago in a town named Tumbleweed, there was a terrible drought.

One year, it hardly rained in May. It hardly rained in June and July, and it didn't rain at all in August.

When fall came, the farmers harvested the scrawny crops. The pumpkins were too small for carving into jack o' lanterns and the carrots were too tiny for snowmen's noses. The corn was so little that everyone ate five or six cobs at Tumbleweed's harvest festival. There wasn't even one watermelon to share.

The adults were worried.

"What if there's no rain next year?" asked Ms. Krauss, the kindergarten teacher.

"We won't have enough of our favourite foods," said farmer Elijah Bernstein.

"Not enough beans, that's for sure," said farmer Joe Piper.

"We'll have to cancel the harvest festival next year," said Emma Jones, Tumbleweed's mayor.

On Sunday afternoon after the harvest festival, Paolo and his friends met at the tree house as they did every week.

"No watermelons, no jack o' lanterns and no harvest festival next year!" he exclaimed.

Jim asked, "What can we do?"

Ellie had a bright idea. "We could grow food. Then we could still have the harvest festival."

"But what do we know how to grow?" asked Olivia.

"I know how to grow beans," said Paolo's youngest sister Maria, who had grown them with Ms. Krauss in kindergarten that year.

"Yeah! We grew beans at school," said Jim.

"We did too," said Charlie and Ellie at the same time.

"Let's make a list of what we need to grow beans," said Olivia, who liked to make lists.

Jim thought of the first thing and Olivia wrote it down in her best printing:



GET BEANS

They stopped the list there, which made Olivia a little grumpy, and went in search of beans. Paolo's mom gave him pinto beans from the kitchen cupboard. Ellie's dad gave her some kidney beans from a jar in the pantry. Charlie got five little green bush beans from his garden.

The next day, they met at the tree house to look at their beans. The kidney beans and pinto beans were dry, but the green beans were still fresh and the seeds inside looked very small and too soft to be planted.

"We need more beans," said Jim.

"We need them to be dry beans," added Ellie.

Olivia wrote on her list:

GET A LOT MORE BEANS. GET DRY BEANS.

"What will we do when we get all these beans?" wondered Paolo. "How will we tell them apart?"

Olivia suggested that they put them in paper bags and write the name of the bean on the bag.

Jim ran home and came back panting. "Paper bags!" he announced, as he plunked them on the floor of the tree house.

Paolo grabbed a marker and wrote on one bag:

Pinto beans, from Paolo's house.

Ellie wrote on her bag: Kidney beans, Ellie's house.

Little Maria ate the green beans.

Olivia wrote on the list:

PUT BEANS IN PAPER BAGS.

LABEL BAGS (bean name, where from).

Over the next few weeks, they went looking for more beans.

Elijah Bernstein gave Paolo two kinds of pole bean.

"Sometimes these grow 20 feet high if I'm lucky!" he said.

He pointed to the scarlet runner beans.

"These ones have big red flowers," explained Elijah.

Paolo put the scarlet runner beans in one bag and wrote: scarlet runner pole beans, Elijah's farm.

He wrote on the other bag: liana pole beans, Eliza's farm.

Charlie went to Tumbleweed's community garden and found string beans, yellow beans and waxed beans that had dried on their beanstalks.

Olivia asked Ming Pi for some of his special Chinese long beans. "Each bean grows three feet long," said Ming Pi proudly.

Ms. Krauss gave Ellie some rattlesnake snap beans and said, "Please give me a few back if you grow extras so I can grow them with the kindergarten class next year."

Paolo and Maria's uncle Ricardo gave them six kinds of beans. He gave them black turtle beans and more kidney beans. He even gave them some Mexican jumping beans.

"Why do they jump?" asked Maria.

"The jumping bean has a little worm that lives inside. When it wiggles, the bean jumps up and down," explained Ricardo.

Uncle Ricardo gave Paolo some special orca beans too. "They look like an orca whale or a yin yang sign if you squint just right," he said.

One day, they all visited Joe Piper, Tumbleweed's most famous bean farmer. He was really old and rumour was he'd been growing beans forever.

Joe Piper listened to what they were up to and said, "Well, at long last."

He offered them some lemonade and said, "Until you walked in the door and told me your story, I thought I was Tumbleweed's only Bean Keeper. I've been one since I was knee high to a beanstalk. All my friends were too. Truth is, I'm getting a little old to be the only Bean Keeper now, so I'm very glad you're here to help. Do you know that Bean Keepers have a special and very important job to do?"



They looked at each other. Olivia and Jim asked in unison, "What? What's our job?"

"Each year you have to plant beans, water them, pick them when they're ready to be picked. Then you store some of them for future planting. You don't have to grow all the beans out every year, but it is good to grow them out every three years or so to replenish your bean seeds so they don't get too old." said Joe Piper. "That sounds like what we're doing, only we hadn't figured out how we were going to do it," said Charlie.

"Do you have any beans for us?" asked Ellie.

Joe Piper smiled, rolled up his sleeves and went deep into his cupboards. He pulled out paper bag after paper bag after paper bag of beans. Soon the bags were piled so high on the table that the kids had to stand on chairs to see the top of the pile.

When he was done, Joe Piper gave them some beans from each bag. Paolo, Olivia, Ellie and Jim carefully labelled each one while Maria and Charlie counted the bags. There were 77 kinds of beans all together. When they had labelled every last bag, Joe Piper said, "Welcome to the Bean Keepers." "Thanks Joe!" they said, as they waved goodbye. "We'll do our best to be good Bean Keepers, we promise!"

That night, they counted all their paper bags. They had a hundred kinds of beans. Maria had brought some jelly beans in a paper bag that were labelled "Jelly beans, candy store," but they all knew jelly beans wouldn't grow so they didn't count them.

Thinking back to what Joe Piper had told them earlier that day, Olivia pulled out her favourite marker and wrote on their list:

**PLANT BEANS.
WATER BEANS.**

LET BEANS DRY (on the vine).

PICK BEANS.

**PUT BEANS IN PAPER BAGS.
LABEL PAPER BAGS.**

EAT SOME OF THE BEANS!

Spring was still a few months away so they wouldn't be able to grow beans for a while. They skated and waited. They drank hot chocolate and waited. They hung out in the tree house and waited.

One cold day Paolo said, "Let's do a play about the Bean Keepers and perform it at the school talent show."

"We can use the list to help us with our play!" suggested Olivia.

Jim said, "We can invite all the kids to help us grow the beans!"

They wrote down how they had become Bean Keepers and what they had said to people along the way. They turned Olivia's list into a rap song. They used their bean bags as props for the show. They made a kitchen table like Joe Piper's. They even made a mural of their tree house. They practiced and practiced and finally the talent show night came.

"Announcing the Bean Keepers!" said Paolo.

Charlie started by acting out how he discovered that fresh beans couldn't be grown.

Maria made everyone laugh when she tried to convince them they could grow jelly beans.

Jim played the part of Joe Piper and Ellie acted the part of telling Joe Piper that they'd be good Bean Keepers.

Olivia explained, "Bean Keepers always use a list to help them, now let's rap it!"



They rapped:

**“WANT TO BE A
BEAN KEEPER?
THIS IS HOW.**

**GET BEANS
INTO PAPER BAGS,
THEN LABEL.
WAIT, WAIT, WAIT TILL SPRING.**

**PLANT BEANS
INTO THE SOIL,
THEN WATER.
WAIT, WAIT, WAIT TILL FALL.**

**PICK BEANS
OFF THE VINE.
WAIT, WAIT, WAIT TILL THEY DRY.**

**GET BEANS
INTO PAPER BAGS
THEN LABEL.
WAIT, WAIT, WAIT TILL SPRING.**

**WANT TO BE A
BEAN KEEPER?
NOW YOU KNOW HOW.
SO DON'T WAIT, WAIT,
WAIT AT ALL!”**

The applause was deafening! At the end of the show Ms. Krauss announced with tears in her eyes that they had won the talent show and that her class would help from now on. Dozens of kids came and said they'd help too.

Paolo, Ellie, Jim, Olivia, Maria and Charlie spent the final weeks before spring distributing the beans among all the new Bean Keepers. Finally the soil warmed up, the trees began to leaf out and Joe Piper said, “It is time to plant the beans. Plant them close to your houses so you remember to water them.” Everyone got busy planting.

It was another year of hardly any rain. Early in June, Joe Piper said, “Time to mulch your beans. Put straw around them. That way they need less water.”

In July, Ellie had a great idea. “Let’s grow the beans with leftover bath water.”

They convinced almost everyone in Tumbleweed to plug their tubs when they showered. They collected water in buckets and carried it to the beans. It was hard work.

The beans grew and grew.

A few weeks before the harvest festival, the kids collected their beans, put them in paper bags, labelled them and gathered together.

“Each of my waxed beans made 150 more beans,” said Charlie.

“My scarlet runner beans and my orca beans are really beautiful,” said Paolo.

“My Chinese long beans are over three feet long,” said Olivia.

Everyone had a story to tell.

They invited Joe Piper to see the beans they had grown.

“You kids are spectacular Bean Keepers. It looks like you’ve grown over 100 pounds of beans during the worst drought year Tumbleweed has seen in a long time. You oughta show mayor Emma Jones in case she is still thinking about cancelling the harvest festival,” he suggested.



Mayor Jones couldn't believe what she saw. "You children have done an amazing thing! You've grown more beans than most of you weigh! We definitely can't cancel the festival now."

"Could we put on our play at the harvest festival?" asked Maria.

"Absolutely! We'll invite schools from other towns to come too so they can learn how to be Bean Keepers," said the mayor.

School kids came to the harvest festival from all around. Elijah Bernstein and Ms. Krauss couldn't stop talking about the Bean Keepers. Paolo, Charlie, Jim, Olivia, Ellie and Maria put on their show again. Olivia even printed up the rap song and a new version of the list and handed them out to everyone who came. Old Joe Piper just smiled. There would be Bean Keepers aplenty for years to come.

THE END

Epilogue

In case you were wondering, here's Olivia's final list...

In Fall,
GET DRY BEANS.
PUT INTO PAPER BAGS,
THEN LABEL (bean name, where from).

In Spring,
PLANT, WATER AND MULCH BEANS.

In Summer,
WATER (recycle water if you can).

In Fall,
LET BEANS DRY (on the vine).
THEN PICK,
PUT INTO PAPER BAGS AND LABEL.

In Winter,
EAT SOME BEANS & TEACH OTHER KIDS
TO BE BEAN KEEPERS TOO!

TIPS

And if you're a Bean Keeper school, send about 100 beans back to
Seeds of Diversity
P.O. Box 36, Station Q
Toronto, Ontario M4T 2L7
Canada
for their public heritage seed bank. Your seeds will be shared with new bean keepers.



Food Garden Curriculum Resources

Evergreen's resources:

Patterns through the seasons: A year of school garden activities.

This resource, a joint production of Lifecycles and Evergreen, is a BC curriculum-based experiential learning tool focused on food gardening. Order at <http://www.evergreen.ca/en/lg/lg-resources.html>

Patterns in Relationships: Ethnobotany.

This module can be used in conjunction with Patterns, Plants and Playgrounds, and is designed for grades 4-7. It was written by educator Illene Pevac and piloted at Grandview/uuqinak'uuh Elementary School in Vancouver, BC. Activities all focus on ethnobotany—the plant knowledge of social groups of people, and how this relates to food, clothing, ceremonies, etc. Activities range from making a medicine wheel to identifying plants in Halkomelem, a West Coast First Nations language. Order at <http://www.evergreen.ca/en/lg/lg-resources.html>



Teacher's Corner

<http://www.evergreen.ca/en/lg/lg-teach.html>.

Evergreen's on-line resource has several food garden related activities to help teachers get the most out of the outdoor classroom and garden.

Other curriculum resources:

Worms Eat Our Garbage: Classroom Activities for a Better Environment

Mary Applehof. Kalamazoo, Michigan: Flower Press, 1993.

The Wonderful World of Wigglers: Exploring the Mysteries and Magic of the Mighty Earthworm

Julia Hand. Food Works, 1997.



Beans and their Buddies: An Integrated Primary Science Resource

Sandy Pollmer and Diana Mumford, eds. Gabriola, B.C.: B.C. in the Classroom Foundation.

Grow Lab: Activities for Growing Minds

Burlington, Vermont: National Gardening Association. 1990.

Feeding Minds, Fighting Hunger

This site offers "an international classroom for exploring the problems of hunger, malnutrition and food insecurity." There are sample materials and lessons, and an interactive forum for exchanging ideas and experiences around the world. For primary, intermediate and secondary levels.

<http://www.feedingminds.org/>

Discovering the Food System: An Experiential Learning Program for Young and Inquiring Minds

This site offers on-line curriculum for understanding the food system, and is designed for teachers and leaders of middle- and high-schooled aged youth. <http://www.cce.cornell.edu/foodsys/>

Teaching unit on how to educate about food systems, Green Teacher 65, Summer 2001

Activities and topics include: What is a Sustainable Food System?; A Three Sisters Garden; Classroom Hydroponics. Order copies on-line at www.greenteacher.com/contents65.html

Gardens for Growing People

Tips and activities for working with kids in the garden—<http://www.svn.net/growpepl/>

Kids Gardening

<http://www.kidsgardening.org/>

Children's Stories about Gardening

<http://www.city.toronto.on.ca/parks/programs/storybooks.html>



5

Other Resources

Seeds of Diversity Canada

A non-profit group of gardeners that save seeds from rare and unusual garden plants for the purpose of preserving the varieties. <http://www.seeds.ca>

Organic Gardening

Soil; composting; flowers; vegetables; natural lawn care; permaculture; pests & diseases; herbs; urban gardening:

<http://www.life.ca/food>

<http://www.organicgardening.com/steps>

<http://www.city.toronto.on.ca/compost/index.htm>



Seeds of Diversity

Plants for a Future: Edible and Useful Plants

For an excellent database of plants, their uses, their needs, check out

<http://www.scs.leeds.ac.uk/pfaf/index.html>.

Worms

Learn about worms and vermicomposting at:

<http://www.wormdigest.org/home.html>

Rethinking School Lunch

A growing movement has emerged to transform school lunch into a vibrant expression of environmental education. The Center for Ecoliteracy has launched the Rethinking School Lunch initiative to help restore the connection of farms to communities, meals to culture, and health to environment. <http://www.ecoliteracy.org/pages/rethinking/rethinking-home.html>

City Farmer

<http://www.cityfarmer.org>

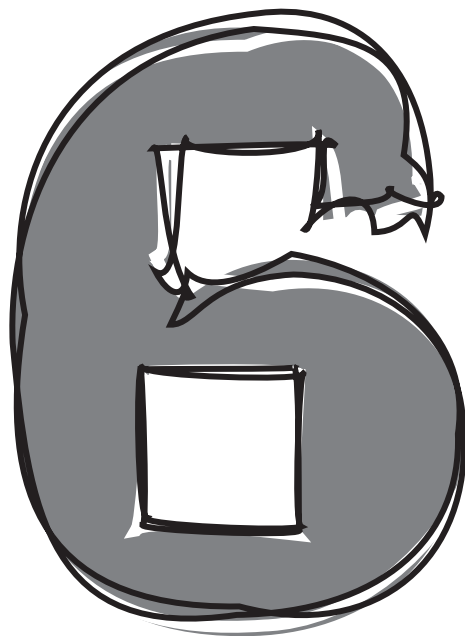
Organic Opportunities

Canada's largest directory and guide to natural and organic food, gardening and agriculture:

<http://www.planetfriendly.net/organic.html>



MaiNtenaNcE StraTegy





Maintenance Strategy

A well-planned and organized maintenance strategy will protect your investment of energy, resources, money and time.

- Over time, the need for maintenance will decrease—but the more you plan for it in the beginning, the less work there will be later.
- Have one person oversee the maintenance plan to ensure the work is done.
- Realize that assessment of maintenance needs is on-going as conditions change.

WHEN MAKING YOUR MAINTENANCE PLAN CONSIDER THE FOLLOWING:

- 1. Include good quality maintenance tools** in your grant applications (i.e. shovels, wheelbarrows, gardening gloves, hoses, hose reels, buckets, clippers, tree guards, weeding tools and edging tools).
- 2. Compaction strategy** (see Choosing Wildflowers, Trees and Shrubs, Ch. 4)
- 3. Protection from pests such as rodents**—protect young trees with tree guards.
- 4. Moisture strategy (watering and mulching)**—Make sure you have a watering schedule to ensure trees, shrubs and plants get enough (see Watering Issues). Maintain a 15cm thick layer of mulch around the base of your plants. Mulching will retain moisture and improve the organic content of the soil.



Laura Berman

Watering Issues for Native Plants

Newly planted trees and shrubs will need summer watering until they become established (approx. three years).

Wildflowers usually need watering for the first year to develop a good root system.

On-going watering after these time periods will depend on the suitability of the vegetation for your site. Consult with your local arborist or tree nursery for recommendations re: how much watering your trees need (i.e. slow trickle for three hours two times per week).

Even **established plants** may need assistance during periods of **extreme drought**.



5. **Weed control strategy (mulching and hand weeding)**—Mulching will also keep weeds to a minimum. However, make sure you have a work schedule to hand pull any weeds before they spread. If you keep on top of it, weeding is quick and easy.
6. **Replacing damaged plants**—If you can keep your project in good shape, people will tend to show it more respect than if it looks beaten-up and damaged. Replace or remove any damaged plant material right away.
7. **Maintaining trails**—Another way of avoiding possible damage. Keep paths clear and well marked so people will use them - not make new ones! If new paths develop indicating a usage pattern, consider making the path a permanent one.



Don Morton

8. **Mulching, trimming and pruning**—Scheduling these activities will keep your plants healthy and protected. Mulch in the spring, prune in February and trim when the tree or shrub is not in a transitional period (i.e. transition periods are early spring and late fall).

9. **On-going general clean-up**—If you want others to show your project respect, lead by example. Provide garbage bins and empty regularly. Keep litter picked up. Maintain signage, seating and fencing.

10. **Plan an annual spring cleanup and garden closing in the fall.** This makes good use of available student power. In the fall, don't forget to drain your hoses.
11. **Seed collection**—Collected native plants and heritage vegetable seeds can be scattered in different areas or packaged and sold as a fundraiser. They can also be shared with the community through the **North American Native Plant Society seed exchange program** (www.nanps.org) or Seeds of Diversity (www.seeds.ca).
12. **Ease of maintenance**—Trees and shrubs are easier to maintain than wildflowers. Wildflowers will always need more maintenance.

TIPS

- Weed before they form seed heads!
- Pull the whole plant—roots too!
 - Remember: it's easier to weed after it rains!
- Weeds on pathways can be killed by pulling, cutting back or mowing and then applying boiling water or vinegar.

WHAT TO DO DURING THE SUMMER MONTHS

It may seem a little early to be worrying about summer maintenance plans, but figuring out who is available for watering and regular upkeep now, will save you from last minute scrambling later.

- ✦ Make sure maintenance teams have access to an **outdoor tap**, which may require a special key. Arrange for the key to be kept in a central location.
- ✦ Organize student volunteers to water and maintain the area for **one-week** periods during the



summer. Reward their time with a share of fruits, vegetables or flowers at harvest time. Be sure to have this organized by mid May.

During the summer, there are few people to do the work but the demands are greatest in terms of watering and weeding. Here are some creative solutions:

- ✦ Have a get-together **BBQ in September** for those who helped.
- ✦ Ask **neighbours and community groups** i.e. Guides and Scouts for a helping hand.
- ✦ Invite a **local gardening** or conservation organization to donate some time and energy.
- ✦ Coordinate with **summer school/recreation programs** to incorporate use and maintenance into their programs.
- ✦ Organize **work parties**. This is a fun way to share the load.
- ✦ **Hire a student**. Fundraising and matching government grants can assist with hiring a part-time student to weed and water.
- ✦ Some schools **recognize planting volunteers** with a native wildflower to grow at home. This recognizes their contribution and creates a seed bank in the community for natural regeneration and backup should you have a crop failure.
- ✦ Enlist the help of **school teams or clubs** to come out and volunteer their time each year.

Volunteers rarely like to work alone. Consider the buddy system so they can help each other out. A calendar with names and phone #'s facilitates collaboration.

Start work parties early in the AM while it is cool. Plan a breakfast break with fresh fruit, bagels, muffins and juice to make it a festive work party.

- ✦ A **maintenance log** will help keep track of what was done and provide suggestions for the next round of maintenance.
- ✦ **Caretakers and office staff** may be willing to help with summer watering.
- ✦ Small areas can be assigned to **individuals or small teams** who can come at a time that suits them.

All Hands in the Dirt p. 34

has a year round calendar called A Year in the Outdoor Classroom. Use this as a guide for each season to get the most out of your project.



OrgaNiziNg YoUr PlaNtinG



Organizing Your Planting

1) BEFORE YOU START

- a) First Things First:
Take Some “Before” Pictures

2) WHEN TO PLANT?

- a) Select a Date
- b) Determine When Your Nursery Stock will be Available for Planting
- c) Set a Backup Rain Date

3) EVENT PLANNING LOGISTICS

- a) Permission and Approvals
- b) Purchase and Delivery of the Plant Material, Mulch and Planting Equipment
- c) Publicity for Your Event

4) THE PLANTING DAY: READY, SET, GO! Pulling It All Together

- a) Prepare Your Site
- b) Marking The Planting Areas
- c) Equipment
- d) Safety Issues
- e) Supervision
- f) Time Considerations
- g) Getting The Job Done—Work Teams
- h) Balance Your Work Force With The Amount of Material To Be Planted
- i) Dealing With The Dirt
- j) Food and Refreshments
- k) Weather Considerations



7 Organizing Your Planting

1

BEFORE YOU START

a) FIRST THING'S FIRST—TAKE A “BEFORE” PICTURE



Designate a Photographer.

- Find someone who would enjoy taking pictures of your project before, during and after each phase.
- Be sure to do this each year.
- Perhaps someone from a photography club would like to be involved.

Consider Film and Processing costs.

- Costs for film and processing need to be included in your grant applications/fundraising.

Pictures, Pictures, Pictures!

- People will want to see how the project was done and will be impressed when they see it was students who did it!
- A few group shots are OK but most interest is captured in shots with one or two people working.
- Make sure you get permission from people before you take their picture, especially if you want to use it later for publicity.

Consider video and digital records.

- This will depend on your resources and how the images will be used to share your project with others.

In fact, take a whole bunch!

This will provide great promotional material for future additions to your project. Record where the pictures were taken and when so you can do accurate before/after comparisons.



2

Selecting a Planting Day

a) SELECT A DATE

Can you connect the planting day with an event?

- ☛ Choosing a special event to commemorate will help attract extra attention to your project and will provide additional opportunities for people to participate.
- ☛ Some suggestions are: Earth Day, Arbor Day, Wildlife Week, Pitch-In Day, Environment Day, Dedications, Retirement and Graduation.

Best Fit

- Does the date coincide with availability of plant material?
- Are there any conflicting activities going on in the school at that time?
- Does the focus of the special event match your own?
- Can the coordinators of large-scale events like Earth Day or Pitch-In Day provide you with some sort of support?

TIPS

Bare root stock—needs to be planted before it 'leaves out' in early spring.

Ball and burlap and container grown stock—can be planted any time.

Planting early in the spring—allows the material more time to become established before summer.

Implications of Your Choice:

- ☛ If you choose Earth Day you will have an increased chance of attracting media attention. Media will tend to provide umbrella coverage for such events. On the other hand, you may be competing for media time with other Earth Day events.
- ☛ If you choose Graduation you may have an opportunity for Green Gifting—when individuals or groups donate trees to commemorate their graduation.

Spread the work over several days.

- ☛ Site preparation, planting, watering and wood chipping can be done on separate days.



b) DETERMINE WHEN YOUR NURSERY STOCK WILL BE AVAILABLE FOR PLANTING.

- ☛ The date you choose may be dependent on when the nursery stock will be ready for planting. This can be variable due to weather and ground conditions (i.e. a very wet spring can delay when trucks can get the trees).

c) RAIN DATE

- ☛ Be prepared. Always schedule a rain day for your planting event.

TIPS

Consider Plaques

Investigate ways to attach plaques to commemorative trees to mark the occasion.



EVENT PLANNING LOGISTICS

a) PERMISSION AND APPROVALS

This must happen both within your school and the community.

- ☛ **Within School**—Make sure your plans are all approved by your Principal and school board maintenance staff.
- ☛ **Within the Community**—Call before you dig! Ensure that you have obtained any permits necessary for planting. Check with the works department, gas, power, cable and phone companies to ensure there are no cables or pipes below ground.

b) PURCHASE AND DELIVERY OF THE PLANT MATERIAL

Shop around.

- ☛ Once you have chosen the plant material for your project, you will need to find a nursery or grower who sells the particular native species that you are looking for. This may require that you order your material from more than one source.
- ☛ **Get the lowest possible price** by obtaining **three quotes** from growers/suppliers before making the purchase.
- ☛ Many growers will offer **wholesale prices** to school projects. Note—this is usually half the retail cost and comes without a guarantee.
- ☛ Large-scale wildflower plantings are best done with **contract grown plugs** (you pay a grower to grow the plants for you). Orders must be placed by January for a spring planting.



Don Morton



Order the nursery stock and arrange the delivery date in advance.

- ☛ To ensure you get the material when you want, give the nursery as much notice as possible (i.e. as soon as your grant is approved).
- ☛ Organize a delivery date when you confirm your order.



Cam Collyer

- ☛ Prior to delivery establish how payment will be made (i.e. on delivery or by invoice). Have the cheque ready if payment is expected on delivery.

Delivery day

- ☛ Someone needs to meet the delivery truck. Tell the company to ask the driver to go to the office. Then have someone give directions where to unload.
- ☛ If the company cannot guarantee a delivery time, consider having the material delivered the day before you plant.

Inspect the material.

- ☛ If any of your plants, trees or shrubs have been badly damaged during delivery, speak to the driver immediately and call the company.
- ☛ Prune broken branches before you plant the tree or you may not be able to reach them.

c) ORGANIZE PUBLICITY FOR YOUR EVENT

Publicity should happen both within your school and with the local media.

Within the School:

- ☛ By now everyone in the school should know about your plans, but be sure to turn up the volume closer to the big event.
- ☛ Remember that outside attention is fantastic and helpful, but most of the support for your project will come from under your own (school) roof. Make posters, announcements, flyers, and most of all—try to involve others!

With the Local Media:

- ☛ Be sure to get the word out to local papers, organization newsletters, and the community event section of major daily papers.
- ☛ Utilize public bulletin boards in stores and libraries.
- ☛ If you have a Web site—get your event posted.
- ☛ Notify any community organizations that may be interested. Send pictures and stories to Evergreen, Green Street, Green Teacher magazine, Teachers publications, your trustee, school superintendent and TV stations.
- ☛ Depending on the size of your event, you will likely have different degrees of attention from the media.
- ☛ It is worthwhile having a group spokesperson—a person selected beforehand who is prepared to speak to the media if they show up.

TIPS

For some great and easy-to-follow tips on how to write a **Press Release**, and on **What To Do In an Interview**, please refer to pages 58–59 of *All Hands in the Dirt*.

Note: Info on Evergreen is in the **Evergreen Backgrounder Ch. 14**.



Create a Web site with pictures and a description of your project.

People will be interested in:

- how you came up with a plan;
- who gave you help;
- where on school property you planted stuff;
- what you planted;
- what obstacles you ran into and how you overcame them; and
- quotes from students and teachers about your project.

If you don't have a Web site, use Evergreen's on-line project registry to create a web page for your project. Go to www.evergreen.ca/en/lg/lg-projects.html



PLANTING DAY: READY, SET, GO!

Pulling It All Together

a) GETTING READY

Prepare your site for planting.

- Sod can be solarized (with black plastic for three months), removed manually or smothered with thick newspaper or cardboard and covered with wood mulch 15cm thick.
- Holes for trees can be dug the day before and marked off for safety.

Mark your planting areas.

- Mark off planting areas with stakes and strings well in advance to make expectations clear.
- If the planting is to be done over successive days, colour-code the areas to indicate which ones are to be planted on what days.



Evergreen Staff

- Leave the string boundaries in place until the plants have had a chance to grow to protect them from being trampled.
- Indicate exactly which trees and shrubs go where.
- Plant wildflowers 22–30 cm apart in groups of six or more of one species.

Make sure you have enough suitable equipment for each student.

- This may include shovels, rakes, pitchforks, pick axes, wheelbarrows, bushel baskets, green garbage bags, gardening gloves, hoses, watering cans, trowels and weed diggers.
- You can include equipment in your grant application and purchase it for the school or have teachers and students bring equipment from home.
- If equipment is borrowed make sure each item is clearly marked with the owner's name. School equipment can also be marked with an identifying paint colour for easy identification.



b) PLANTING

You will need one or two people (staff or senior students) who will supervise the operation throughout the day.

- ☛ Most schools work with one class at a time.
- ☛ Supervisors are needed for teaching, safety, quality control and to ensure that everyone is occupied.

Safety Issues

It's a good idea if there is a lot of equipment being schlepped around that some equipment rules be established (i.e. avoid carrying shovels over the shoulder and don't dig in a hole if someone's fingers are doing something down there). Caution against jumping on shovels. Some schools have someone assigned to watch for unsafe practices.

Consider the amount of time for each activity.

- ☛ Classes or groups of students work well for 1 period. Allow time to get to the site from the classroom and for wash-up afterwards.
- ☛ Make sure that the last group of the day helps with clean up (i.e. brings in the equipment and remaining plant material).

Consider these organizational options to get the job done.

- ☛ Work in teams of two to three students.
- ☛ Teams could complete the whole planting process: digging, planting, mulching and watering.
- ☛ Have teams of students specialize in one task area; one team digs and plants, another mulches all

the planted material and a third group follows with watering.

- ☛ Explain the task to the group and let them figure it out.

Balance your work force with the amount of material to be planted.

- ☛ Try to ration the plant material so that everyone can be involved in the planting.
- ☛ If you run out of things to plant during a group's allotted time period have other activities for them to do such as picking up litter, moving wood chips or watering.

Prepare for the dirt and mud that will accumulate on peoples' hands and shoes.

- ☛ Speak with custodians for help with this. Gloves are a huge help. Make sure you wash them after each planting day.



Evergreen Staff



Joshua Berson



c) OTHER CONSIDERATIONS FOR HAVING FUN

Reward hard working students with snacks and drinks during the day.

- ☛ This is a great opportunity to have a local restaurant demonstrate its support for your project with a donation of sandwiches and snacks.



Don Morton

Be prepared for all kinds of weather.

- ☛ Especially for early spring and late fall plantings, come dressed in warm layers.
- ☛ Good solid shoes, preferably boots, will help you push the shovel into the ground.
- ☛ For hot summer days, have lots of water on hand and sunscreen readily available. Hats are a must.



Remember:

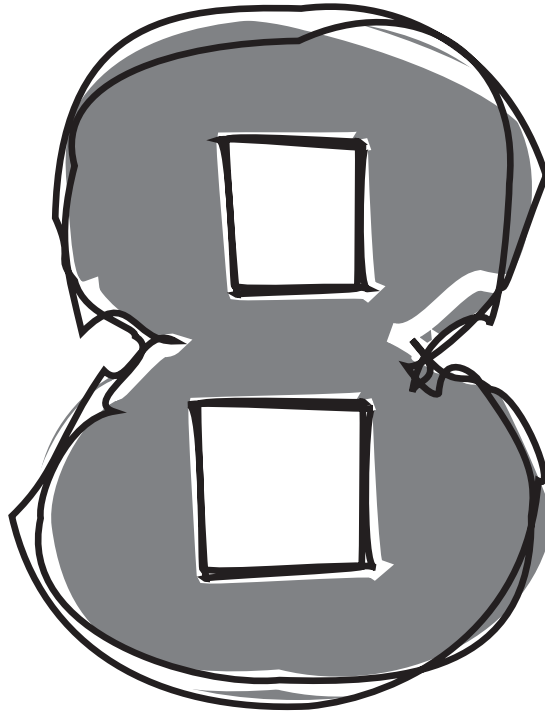
The hotter it is the less time people will last. Progress will not be as fast.
Try to avoid planting in June.



Templates

Here are some templates that may be of use
to you for organizational purposes.

PLANTING NOTICES FEEDBACK SPECIAL EVENTS
DONATION REQUESTS SCHEDULING





SORROW - NO ONE CARES, NO ONE DOES ANYTHING!

HOPE - IF WE WORK TOGETHER, AS A TEAM!

JOY - YES, GLENFOREST

We Can Do It

In the fall of 1994, Glenforest started to put "The Forest Back into Glenforest". Native trees and wildflowers were planted, and 2 ephemeral ponds were created. To date, over **3000** students have been involved with this project.

What is taking place this year?

- 1. Earth Day** at Glenforest is **Wednesday April 22, 1998 (Day 2)**. Again we will be visiting **Fleetwood Park** for a planting with the City of Mississauga Parks Department between 11:30 and 2:30 p.m. Classes may sign up for work at the park for period 4 and/or period 5.
 - **Before Tuesday** - Please give the tear-off below to Johanne Christensen to let her know that you and your class will be coming.
 - **On Tuesday** - (Go to class, take attendance, walk to the park, work, head back to school 15 minutes before the period, pick up books and get ready to move to the next period.)
- 2. Shrub Planting.** Will take place on Thursday April 30, and possibly on Friday May 1. (**Small Activity, few classes**)
- 3. Tree Planting at Glenforest. Stay Tuned.** The dates will be announced later via a staff memo much like this one. (Trying for Wed. May 6, Thur May 7, and Fri. May 8.) (**Large Activity, many classes**)
- 4. Flower Planting at Glenforest. Stay Tuned.** The dates will again be announced later. (Trying for Tues. May 12 - Friday May 15, or Tues. May 19 - Fri. May 22.) (**Large Activity, many classes**)

Please return this portion by **Friday April 17, 1998** to **Johanne Christensen**.

Teachers name _____ Number of students _____

Period **4 only** _____ , **5 only** _____ , or **4 & 5 together** _____



SORROW - *NO ONE CARES, NO ONE DOES ANYTHING!*

HOPE - *IF WE WORK TOGETHER, AS A TEAM!*

JOY - *YES, GLENFOREST, We Can Do It*

_____, you and your class indicated on the visioning sheets filled in after the assembly on Wed. March 6th, that you would be interested in helping with the naturalizing of our school. You are invited to help with the following tasks

1. Prepare 2 PEACE gardens at the front of the school, (edge the garden, lift sod, turn sod, move soil, cover with landscaping fabric or paper, and transport mulch).
2. Transport and relay the lifted sod to the back of the school.
3. Perform maintenance work on the trees planted last year.
4. Replant the damaged trees at the side of the school.
5. Implement a general grounds clean up (for those that do not wish to dig in the dirt)
6. Flowers donated by members of the student body and staff will be planted into the PEACE gardens.

Teachers, come to the Independent Learning Centre this week to sign up your class for tasks #1 - 5 from the above list. Sign for periods 1, 2, 3, or 4, on Mon. May 6, Tues. May 7, or Wed. May 8.

Planting, task #6, will occur during periods 1, 2, 3, or 4 on Mon. May 13 and Wed. May 15 during periods 1-4. Sign up this week in the Independent Learning Centre. First come first served.

We need square nose shovels, and wheelbarrows. If any of the students or staff could loan either, it would be appreciated. We have purchased some gloves.

It is expected that the class room teacher will accompany their class outside during work periods.

Don't forget, we need plant donations for our gardens! Students and staff are encouraged to bring in some of their favourite flowers. Brief stories accompanying your plants will be included in the garden's history.





Ross Road Naturalization

Donation Information

_____ has agreed to help with Ross Naturalization.

We will be donating the following: (please mark beside the area you wish to donate)

- Funding
- Plants
- Gardening Supplies
- Building Supplies

Please list below the specific items that your group will be donating. Please include price as well. (For a detailed list please see budget)

Item	Amount	Total

Is a receipt required?

- YES
- NO

Please make cheques payable to Ross Road Naturalization Fund

We would like to acknowledge your support. Please let us know the name you would like to see on the acknowledgment.

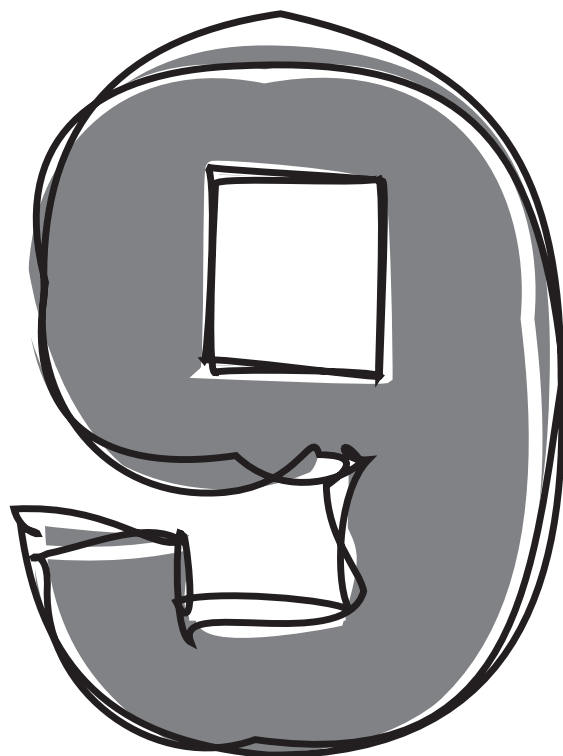
If you have any questions please contact Heather Hughes or Carl Glawson at 462-8340 or fax us at 462-8398

Ross Road School
Dartmouth, NS
B2Z 1H2



Supporting
Materials

DeSigNing for SHade





DeSigNing for SHade



Introduction

One of the mandates of the Toyota Evergreen Learning Grounds program is to provide safe and healthy school grounds for children. Canadian school grounds are typically barren places with little to no vegetation. Frequently missing are large trees, which provide shade for children playing outdoors. Children spend approximately 25% of their school day outdoors, including before/after school, lunch and recess periods. The lack of trees, and therefore shade, on school grounds is of increasing concern given the amount of time children spend outside and the rising incidence of skin cancer due to ultraviolet radiation (UVR).

Learning Grounds is supporting the creation of shade by encouraging the planting of trees, shrubs and vines on school grounds. Shade in active and passive play areas will protect students who are most vulnerable to the long term effects of solar ultraviolet radiation (UVR). Shade can also contribute considerably to the reduction of heating and cooling costs.

This guide will give you the facts about UVR and help you to determine your shade goals, develop a shade strategy and evaluate the outcome of your plan.



Facts About Ultraviolet Radiation (UVR)

NEGATIVE SUN (UVR) EFFECTS: Skin Cancer

- One in seven Canadians will develop skin cancer in their lifetime. Canadian Cancer statistics (2000)
- 80% of our exposure to UVR occurs before the age of 18. (Health Canada)
- Although fair-skinned people are at greatest risk, all skin types are at risk for skin damage from the sun. (Canadian Dermatology Association)
- Sun damage is cumulative and irreversible. (Canadian Dermatology Association)
- Skin cancer is largely preventable. (Canadian Dermatology Association)



Melanoma

- One in 200 Canadians will develop melanoma in their lifetime. Dr. Lynn From, head of dermatology, Sunnybrook and Women's College Health Sciences Centre, June 2003, Designing for Shade Conference
- Sunburns during childhood may increase the risk of developing malignant melanoma. (Canadian Dermatology Association)
- People with freckles and red hair are at risk, as are some blonds and those with blue or green eyes. (Canadian Dermatology Association)
- Those with lots of moles (more than 50) have an elevated risk. (Canadian Dermatology Association)

Other Effects of UVR

- Causes temporary eye damage (for example: snow blindness).
- Increases risk of permanent blindness (for example: cataracts, macular degeneration).

Facts about UVR

- UVR is reflected by snow, sand, water, cement and asphalt.
- UVR is measured on a scale of 1-10 (1 is low, 10 is high).
- Protection from UVR is particularly challenging because you can't see it or feel it.

POSITIVE SUN EFFECTS:

- Helps body produce Vitamin D.
- Psychological benefits/mood lifter.
- Essential source of energy for all living things.
- Helps sterilize and purify certain environments.
- Provides warmth.

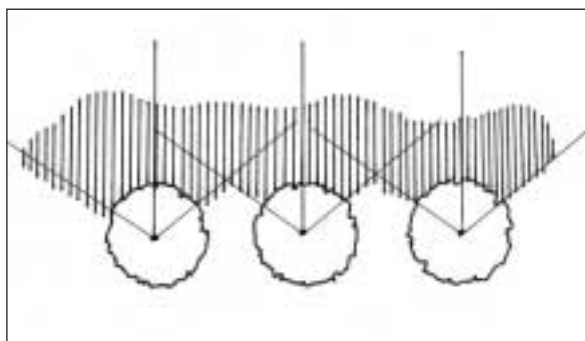
***Shade is the best protection from UVR
If shade is there, people will use it.***



Where do we Need Shade?

An Assessment Tool

This **Shade Assessment Tool** will help you determine existing shade usage patterns on your school ground. *LGG p.54*



- Once you have determined how and where the grounds are used you will know where you need to provide shade (**Shade Goals**).
- After you have determined your **Shade Goals** you will need to figure out how to get it there (**Shade Strategy**). *LGG p.59*
- The **Shade Assessment Tool** can be used annually to evaluate and track the progress of your **Shade Strategy**.



Shade Assessment Tool

**Goal: To reduce students and staff exposure to UVR on school grounds.
To use shade for energy conservation.**

Basic Assumptions:

Tree canopies and built structures can be used to shade a variety of school ground areas to protect students from solar UVR.

Trees planted in appropriate locations will provide shade and shelter to buildings to reduce energy consumption.

Trees planted in appropriate areas will reduce wind speeds and moderate air temperatures.

Natural Shade on School Grounds <i>Trees planted to shade the following areas:</i>	Sufficiently shaded	Increase the amount of shade	Time of Day Shade is required (am recess, lunch, pm recess, other)	Implement This Year	Implement Later Phase:	Achieved	Comments
1. active play areas—within 50 meters of the school building (asphalt play areas, adjacent to basketball courts, hopscotch, etc.)							
2. play structures							
3. sand play							
4. meet and greet areas—where caregivers/buses pick-up and drop off children							
5. outdoor classrooms							
6. large group seating areas							
7. small group seating areas							
8. spectator areas adjacent to sports fields							
9. spectator areas adjacent to baseball diamonds							
10. perimeter of school grounds							
11. connecting corridors and pathways into school grounds							
12. next to school buildings on the south and south west sides to cool the building and reduce energy consumption.							
13. evergreens planted on the north and west sides of the building to reduce exposure to wind (windbreak)							
14. building entrances where students line up							
15. portables							



4

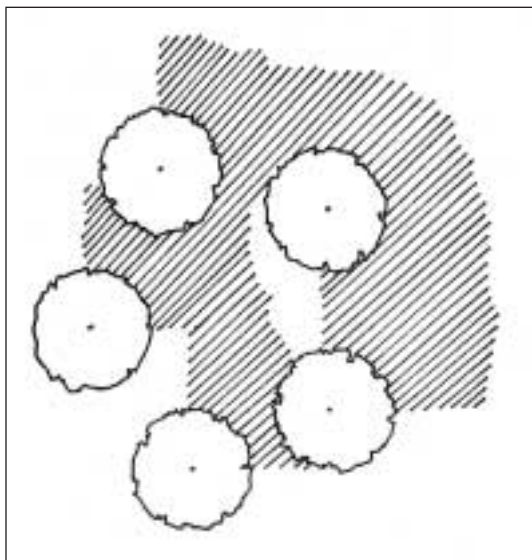
Design Considerations When Planning for Shade Types of Shade Strategies

Effective shade

- ☛ Considering the movement of the sun, make sure the shade is **where** you want it **when** you want it.

Natural shade

- ☛ Advantages: aesthetic, environmental, no stored heat, low capital cost
- ☛ Disadvantages: slow growing, unpredictable, variable protection, high maintenance



Built Shade (permanent)

- ☛ Advantages: predictable outcome, quick results, less maintenance, rain protection, structures that support shade can be used for growing vegetables.
- ☛ Disadvantages: no environmental benefits, stores heat, higher cost, target for vandalism.

Demountable Shade

- ☛ Portable, can be put up and taken down i.e. tents at sport and school events.

Retractable Shade

- ☛ i.e. awnings

Use of Existing Shade

- ☛ Reschedule activities outside of the peak UVR times between 11:00 and 4:00.
- ☛ Redesign the existing shade at the front of your school or 'out of bounds' areas to make it safely accessible to students.
- ☛ Make program and supervision changes that will allow you to use existing shade.

Guiding Principals

- ☛ Quality of shade matters
Rule of thumb: The amount of diffuse UVR is proportionate to the fraction of sky that you see.
- ☛ Plan for a minimum of 94% protection (spf16)
- ☛ Some materials can be clear and give high levels of protection i.e. polycarbonate gives 99% protection.
- ☛ Indirect UVR can increase UV levels by approximately 50%.
- ☛ You can decrease reflective characteristics of materials making them less smooth and less even.
Note: Painted surfaces reflect UVR at the same rate regardless of the colour.



- Plan for summer and winter comfort (i.e. deciduous trees and adjustable louvers)
 - Summer—decrease UVR, heat and light
 - Winter—decrease UVR but allow heat and light (warmth and protection from winter winds)

- Effect of shade on buildings**

Plant trees and vines on the south and western exposures of buildings to provide passive cooling
 Careful selection and placement of trees can result in a 30% reduction of cooling and 20–50% reduction in heating loads

Effective shade can decrease indoor temperatures by 11 degrees Celsius

- Effective shade**

Considering the movement of the sun, make sure the shade is where you want it when you want it.
 Plant trees in a configuration to maximize shade.



Tree Shadow Template— How to Indicate on Your Design Where the Shade Will be Cast

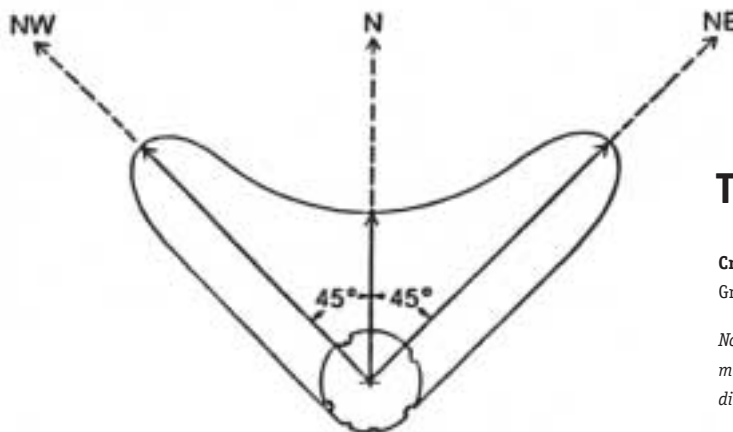
Use the **tree shadow template** below to see what direction the shade is being cast by the trees you are planting.

This will help you determine where seating should be placed and if the shade will be cast where you want it, when you want it, i.e. during peak sun periods.

To determine the tree shadow at noon

Steps:

- Place a circle on your diagram to represent the tree.
- Draw a line from the center of the tree toward North (the opposite direction of the sun) on your site map.
- Place two more lines at a 45° angle from the centerline.
- The area between the 45° angles will show you where the shade from the tree will fall.



Tree Shadow Template

Credit: Adapted from Energy-conserving Site Design Edited by Gregory McPherson 1984. p.126

Note: this template can be used to determine tree shadow in the morning and afternoon by pointing the arrow in the opposite direction from the sun at those times.

5. Go outside on a sunny day and **test where the shade is falling** at the time of day when it is needed.

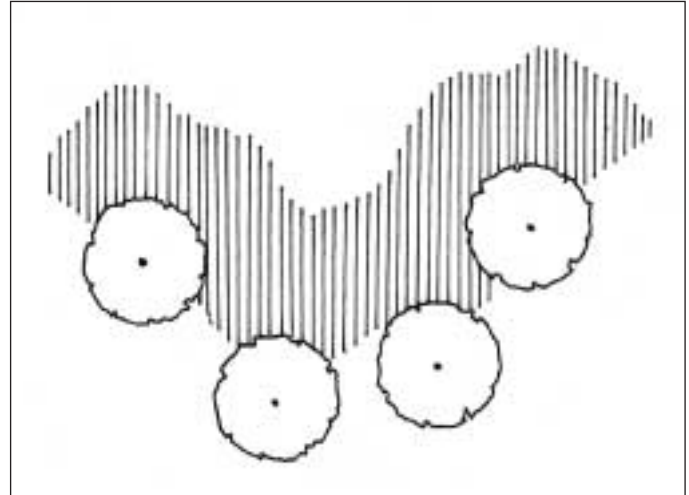
- ☛ Two people are needed to complete this process.
- ☛ Go out to the proposed planting site, i.e., play structure, sand pit, etc. One person should stand with their back towards the sun.
- ☛ The other person should measure the length of the shadow and record where the shadow falls on a copy of the site plan.
- ☛ Repeat this step during morning recess, lunch-time and afternoon recess. If you want the spectator areas adjacent to sports fields shaded then go to those spaces at the times of the day you want the shade and record the shade patterns.



Recommended Trees For Shade

Check out the Evergreen Native Plant Database for lists of native trees, shrubs and vines that you can use for your shade strategy.

<http://www.evergreen.ca/nativeplants/lists>



Krista Long



Where to find more information about shade.

Sunsafety for Kids

<http://www.sunsafetyforkids.org/>

Toronto Public Health has produced a document called Sunburn–Prevention and Treatment. The activities in this document are linked to the Grade 6 Health and Physical Education Curriculum in the Healthy Living Strand. This resource is available at www.city.toronto.on.ca/health/sun_grade6.pdf. This document contains worksheets that would be useful as assessment tools.

Why trees are important: <http://www.naturenet.net/trees/important.htm>

Canadian Dermatology Association

<http://www.dermatology.ca/english/sun/index.html>

Health Canada

<http://www.hc-sc.gc.ca/english/iyh/diseases/cancer.html>

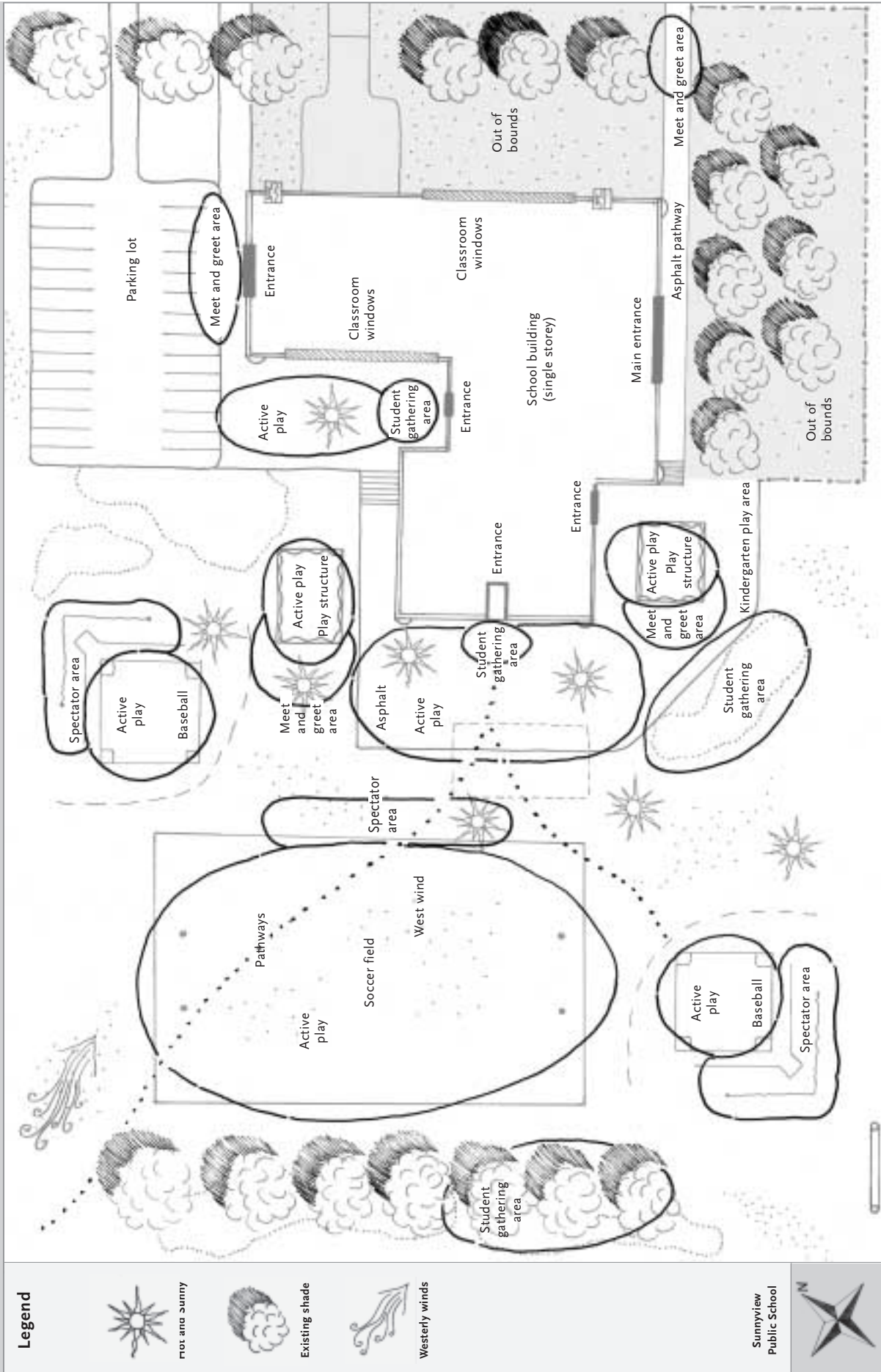
<http://www.hc-sc.gc.ca/english/iyh/environment/ultraviolet.html>

Environment Canada

http://www.msc-smc.ec.gc.ca/education/uvindex/index_e.html



EXISTING SHADE AND USE PATTERNS



Legend



Hot and sunny



Existing shade



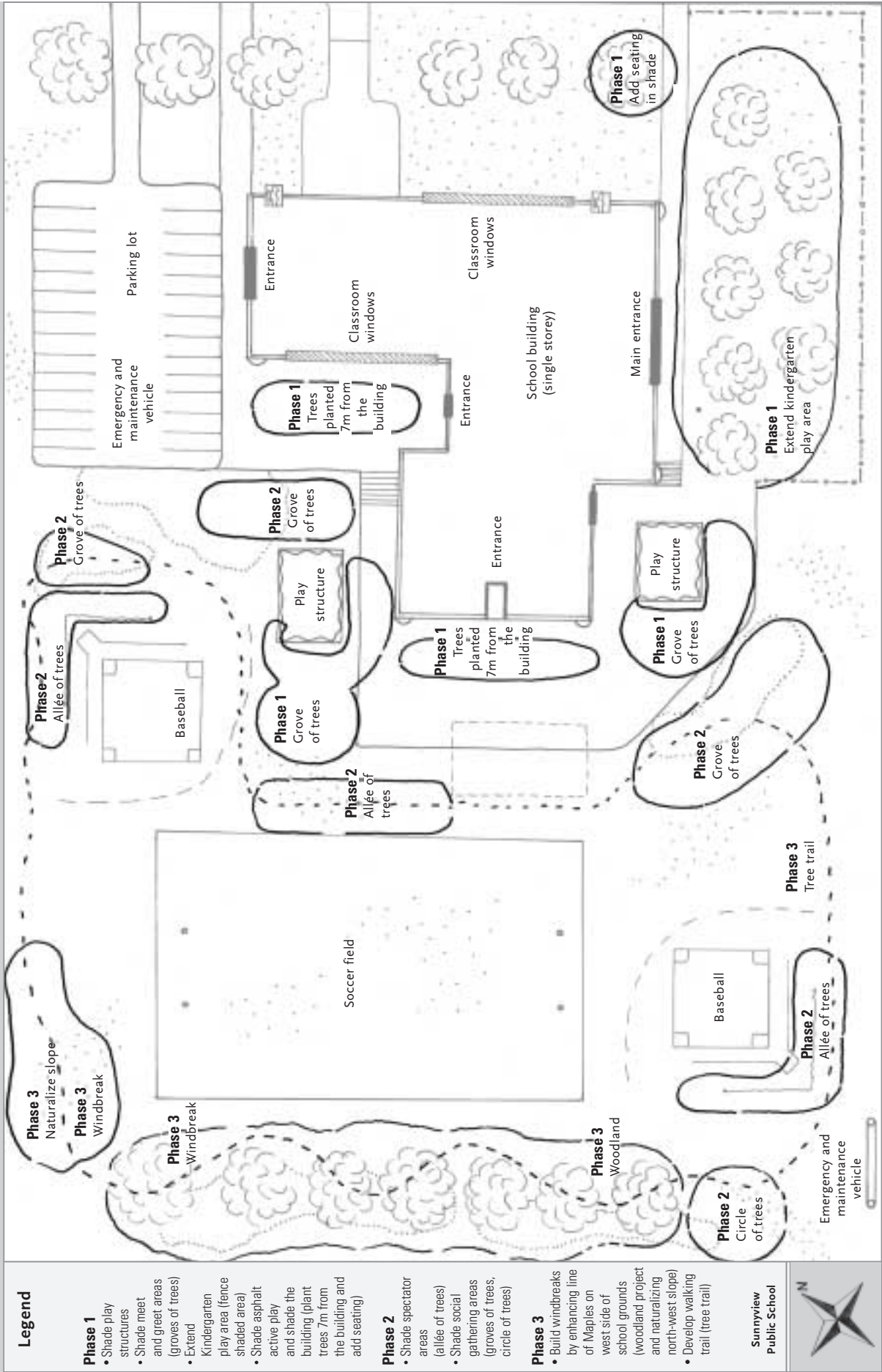
Westerly winds

Sunnyview Public School



Originally published in, *Ontario EcoSchools: Designing for Shade and Energy Conservation*

STRATEGY FOR SHADE AND ENERGY CONSERVATION



Originally published in, *Ontario EcoSchools: Designing for Shade and Energy Conservation*



Greening High Schools

10

Greening High Schools:

Leaping Subject Barriers

by **Barbara Kerby**
and **John Egana**

WHILE MANY elementary schools have successfully developed school gardens and nature areas, such projects have been quite challenging for high schools. The subject-based curricula and rigid timetables of high schools are formidable barriers to initiating a project as a school-wide endeavor, and most projects are too large an undertaking for one department. But all is not bleak. In fact, high schools have some advantages when it comes to schoolyard greening projects:

- High school campuses are typically much larger than the grounds of elementary schools. Consequently, finding a site for a nature area or outdoor classroom may be easier. High schools are also likely to have courtyards and other areas near the school building that are unused. Similarly, schools often have safety zones around ball fields that must be maintained but are not used during the school day.
- Many school districts have service learning programs through which high school students receive academic credit for performing community service. Ecological restoration projects in schoolyards and in the surrounding community offer tremendous rewards as service learning projects. (Check to ensure that your school's rules allow community service hours to be applied to a school grounds project.)



Any project with gardens will need a place for growing plants. At Lely High School an unused rooftop greenhouse was refurbished as a student project. Heavy clear plastic panels cover a basic framework and rough wooden tables provide the work area. A simple greenhouse of this type could be erected in any unused sunny area on the school grounds.

Photos: John Egana

- Being more mature and physically stronger than elementary students, high school students are capable of undertaking a much greater proportion of the planning, fundraising and installation of school grounds projects.
- The budgets of high schools are usually larger than those of elementary schools and thus there is greater potential to support school ground greening projects. If several subject departments are involved, each can provide some funds without straining their individual budgets. If large numbers of students are involved, the administration may support the project with money from the school's discretionary fund. Most important, however, high school students themselves are capable of writing proposals for grants and raising funds in their communities.

Involving multiple departments

It is usually the science department which initiates an environmental project, but there are many roles for

other teachers and departments. In fact, school grounds naturalization is a perfect project for integrating learning in a number of subject areas while still retaining the subject focus. For example, the art department could help design the layout of the garden and use the naturalized area for drawing classes. The media department could document the project for the school television station, newspaper or yearbook. Economics classes could be directly involved in budgeting and management, and could use the project as a case study in how funding, needs and aesthetics affect decision-making. The math department could tabulate soil or water test results and keep the databases. Convincing departments to get involved is easier than it seems. Classes in subjects like mathematics that do not usually enjoy field trips may be thrilled to spend a class period on the school grounds. With no permission slips required or extra costs for buses, only the time has to be budgeted.

A project undertaken at Lely High School in Naples, Florida, offers an excellent example of the way in which several departments can participate in a school grounds project. At Lely, the original idea was a modest one, to create a cross-country practice trail around a storm water pond located behind a football stadium. However, the track coach, also a science teacher, realized this was a perfect opportunity for the environmental, biology and marine biology classes to get involved in a hands-on restoration project. Students removed invasive plants around the edge of the pond, refurbished an unused rooftop greenhouse, and propagated native plants from cuttings and transplants. They learned mapping and GPS (global positioning system) skills in order to create the new habitat areas, and began keeping a database to determine whether the native plants are effective in creating habitat areas for wildlife. To enhance the naturalized area, they stocked the pond with fish and planted a privacy hedge between it and the adjoining subdivision.

The science teachers recruited the vocational/technical department to design and build a dock from which to perform water quality tests at the pond, as well as outdoor tables for use in experiments. Students now regularly test the pond water and add the results to a database of water quality information. The school maintenance department uses the water quality data to track runoff from fertilizer used on the athletic field. The pond is part of the school storm water management system, and keeping it clear of trash and invasive plants has helped to reduce the risk of flooding on the school grounds.

To promote problem-solving skills, language arts teachers incorporated logistical and planning issues related to the project into a unit on critical thinking. They now lead their classes on trail walks to establish shared experiences that later become the basis of expository writing and stories. In the instructional technology and desktop publishing classes, students have published the ongoing story of the project, along with digital images, on the school web site and in the newsletter.

Student interest has remained high. Having started with a butterfly garden, they are now creating other specialty gardens for students and citizens to enjoy. Each year,

roughly 700 students (one-third of the student body) at Lely have hands-on experience with the project. It grows and changes over time as each class contributes to the existing databases and introduces new ideas.

Extra-curricular opportunities

There is little doubt that the schedules of most high schools make it difficult for students to spend significant amounts of time outside each day during their regular classes. However, extra-curricular clubs can also support school grounds greening projects. For example, a school's Envirothon team could use the project to hone their environmental study skills to prepare for regional and international Envirothon competitions.¹ The environmental focus of agricultural clubs such as 4-H or Future Farmers of America would



also support participation in these projects. An environment club could become involved in one of the many environmental monitoring programs sponsored by government agencies. For example, the GLOBE project is an international program through which students perform specific environmental experiments in their schoolyards and post the results on a web site² where they are used by scientists.

Sustaining interest

If students design the project, it is more likely that their interest levels will remain high. At Lely, the science teachers outlined a study plan for the area and encouraged students to contribute ideas for projects such as removing invasive plants, renovating the greenhouse, and creating a water quality database. As each phase of the project was completed, students provided input into its next phase. In addition, the work of developing the pond was linked to science fair projects and other student competitions.

Students' interest is also sustained by opportunities to link with the wider community. Students can take on the tasks of recruiting outside organizations and businesses to help with the project and inviting guest speakers from the community. This will not only give students access to real-life experts to answer their questions, but also create networking opportunities which may lead to internships, summer or permanent jobs, or further fields of study through working with outside companies.

Another possible motivational activity is for

students to compare their school project to a local or national environmental project, such as the restoration of the Everglades here in Florida. Students could follow the national project in the media and through web sites. At the same time, they would document

their own project through school and local media and by creating their own web site.

While school grounds projects may be challenging for high schools to undertake, the large number of related academic topics that can be covered makes them worthwhile. But the best side-effect of such a project may be in the way it helps students forge an identity as a student body and as individuals.

Through a project involving several school departments as well as local organizations and businesses, students form new bonds and are exposed to career options they may have never considered. And their hands-on participation may give them a

feeling of greater self-worth at a time when many young people often feel themselves to be just a faceless part of a large institution.

Barbara Kerby works in public affairs for Big Cypress Basin in Naples, Florida. **John Egana** teaches at Lely High School, also in Naples.

Notes

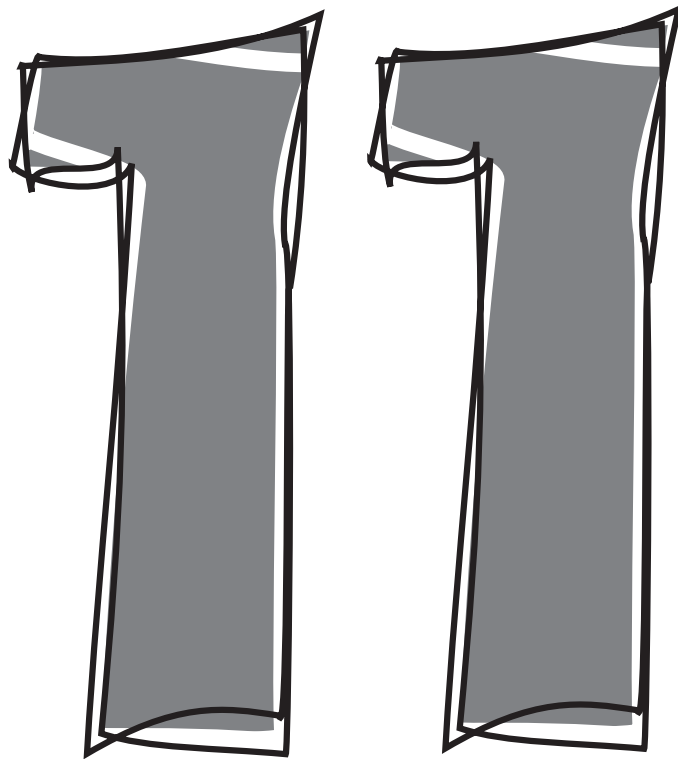
¹ Envirothons are annual team competitions which test high school students' knowledge of environmental topics. Teams who win at the state or provincial level go on to compete in North American finals. See the Envirothon web site at www.envirothon.org

² See the GLOBE web site at www.globe.fsl.noaa.gov



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Plantwatching



11 Plantwatching

We have been struck by an odd kind of spring fever called **Plantwatching**. But there is more to **Plantwatching** than just going outdoors and reveling in the beauty of plants.

Attracting Plantwatchers

Plantwatching is a systematic survey of when plants flower. It also has a fancy Greek name—**phenology**, meaning, “to study the appearance”. (This is not to be confused with phrenology, a supposed science popular last century when doctors tried to characterize human personalities based on bumps on the skull.)



Plant **phenology** is the study of the seasonal appearances and the timing of life-cycle events in plants—mostly flowering and cone-bearing plants, but sometimes also including mushrooms and other kinds of plants. Phenology surveys help us to understand the secret messages of flowers, what makes them unfold their spring colours.

These surveys also have a broader purpose—**using the flowers as indicators of weather changes and forecasters for the future.**

More seriously, the plants, like **canaries** in a coal mine, may be warning us of a pending disaster—in this case, **global warming.**

Since the flower is the essential part of a plant’s life cycle that ensures its future survival, plants must fine-tune their flowering to weather conditions. There is no point in flowering before—or after—the creatures that carry pollen are out and wind conditions are good. Flowers do respond sensitively to changes in the weather, and this is why they are important to **Plantwatching.**



Debby Morton



Flowers as Weather Forecasters

Studies in Europe have revealed over the centuries, that some spring wildflowers are super-sensitive weather instruments that can be used to indicate local temperature, precipitation and wind. They can even be used to forecast the best time for planting, harvesting, avoiding pests or taking a holiday.



Plantwatching in Canada

Today scientists across Canada are using the help of Plantwatchers to observe and record the flowering time of selected spring wildflowers. Beginning in **Alberta**, the plantwatch data were fed into computers that compared the thousands of numbers with weather across the nation. **These studies show that spring flowering in Alberta is now up to 10 days earlier than 45 years ago, seemingly the result of global warming.**

Plantwatch species are chosen for their known sensitivity to spring temperature rather than the seasonal light changes that prompt the flowering of our summer flowers and trees. The main species are **native wild flowers and trees** found in your province, so everyone has a chance to Plantwatch.



How to Begin Plantwatching

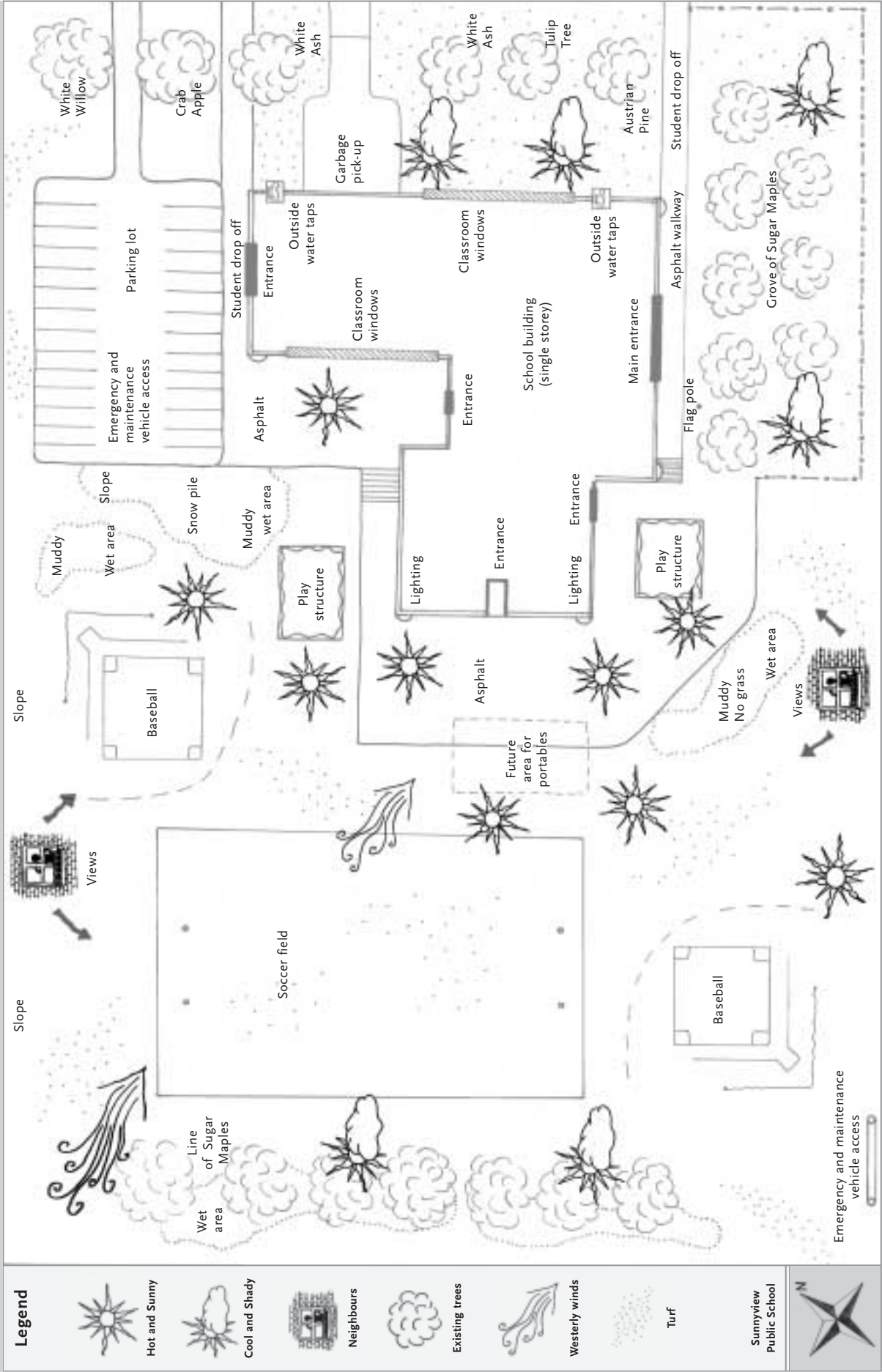
To participate in this discovery adventure of climate change, the main things you need to do:

- ☛ Check out the Web site: <http://www.devonian.ualberta.ca/pwatch/>
- ☛ Plant the **Plantwatch** species in your school ground naturalization project. For details on the plants and where you are most likely to find them (their habitat) check out the Plantwatch Web site.
- ☛ Get a form and instructions on how to fill it in.
- ☛ Find out on the Web site who is coordinating this program in your province.

Site Map

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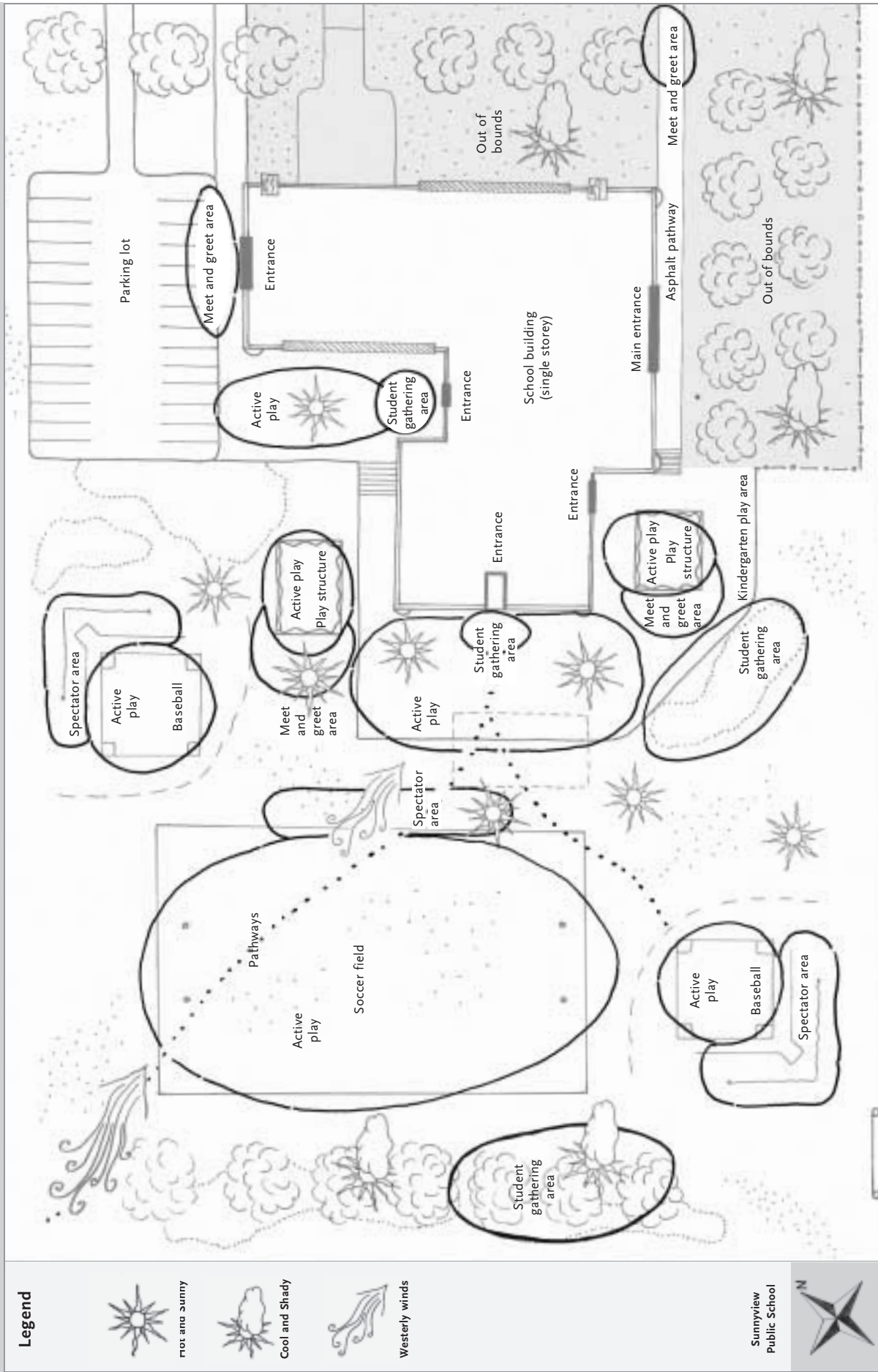
PHYSICAL AND ENVIRONMENTAL FEATURES



Originally published in, *Ontario EcoSchools: Designing for Shade and Energy Conservation*

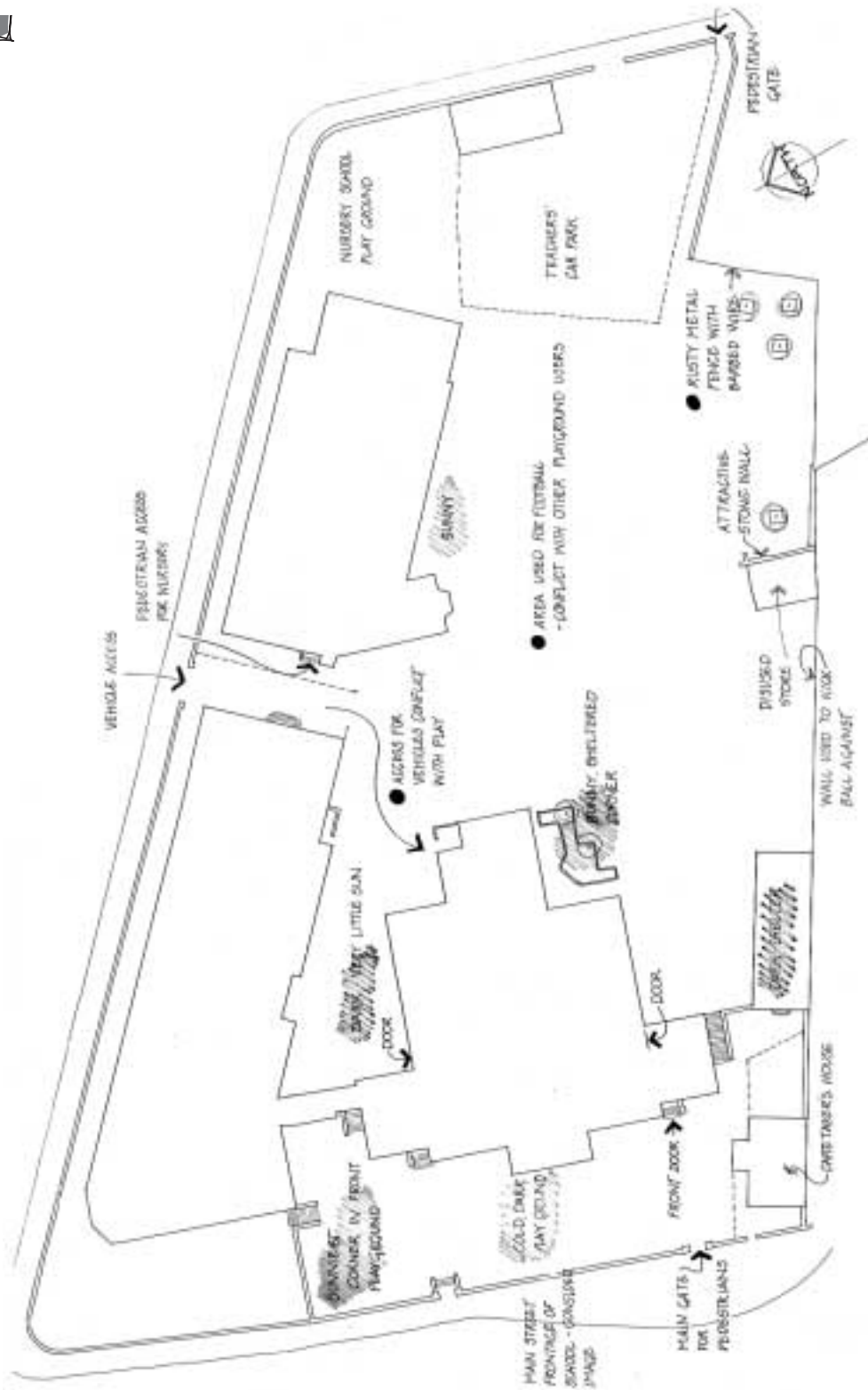


PLAY AND USE PATTERNS



Originally published in, *Ontario EcoSchools: Designing for Shade and Energy Conservation*





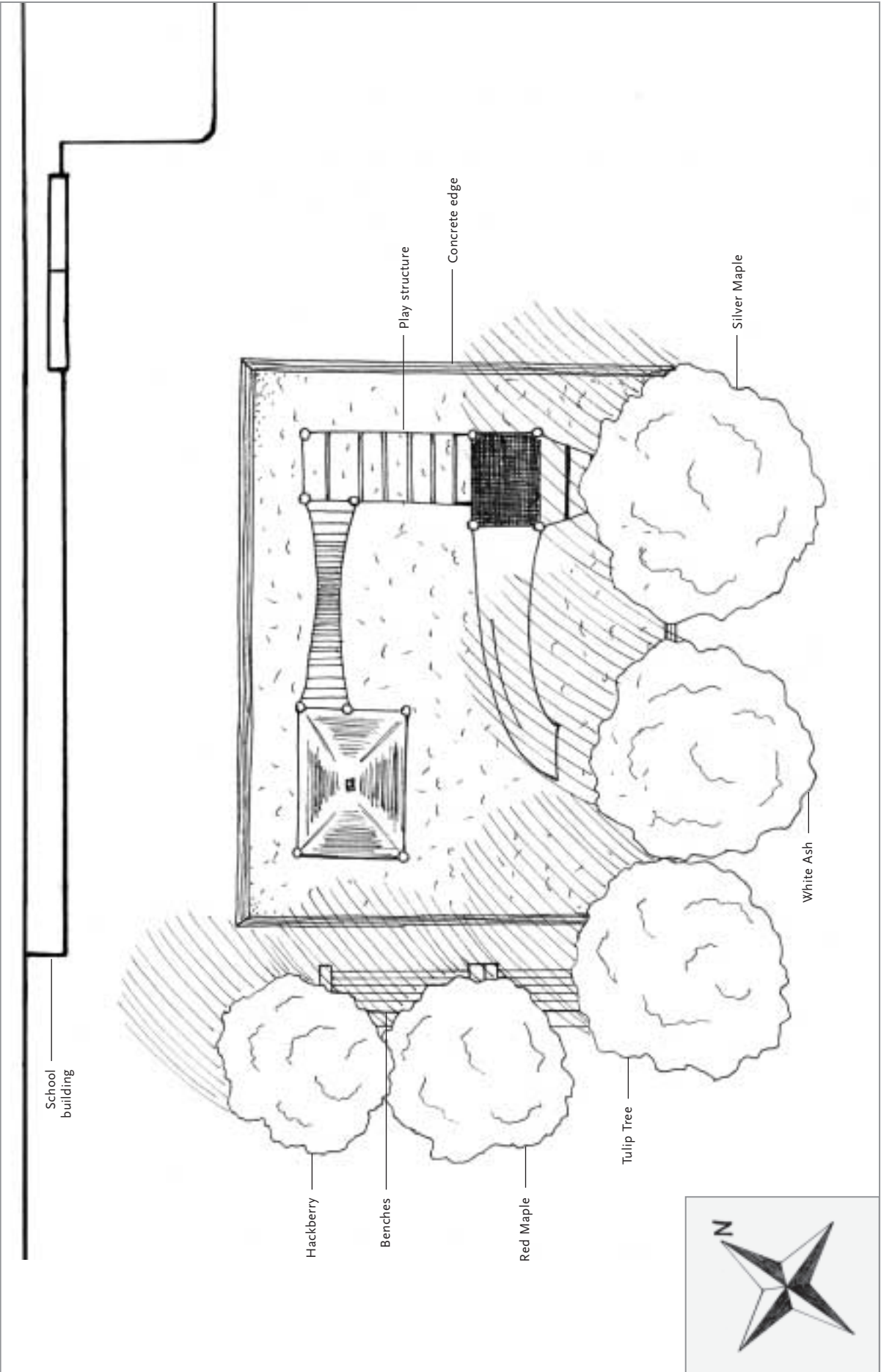
Elizabeth Dorrian



Site Plan

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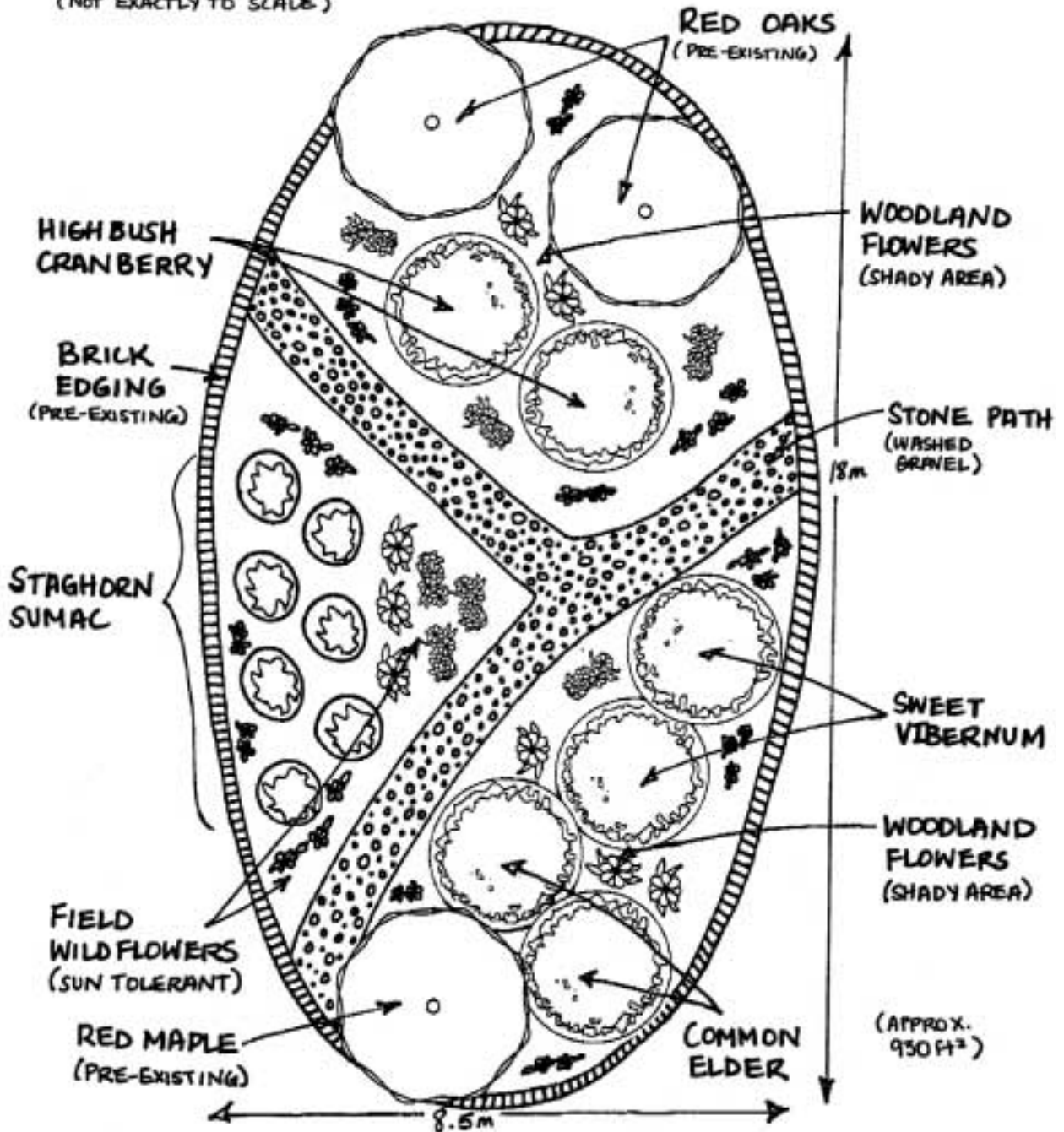
PHASE ONE: SHADING THE PLAY STRUCTURE

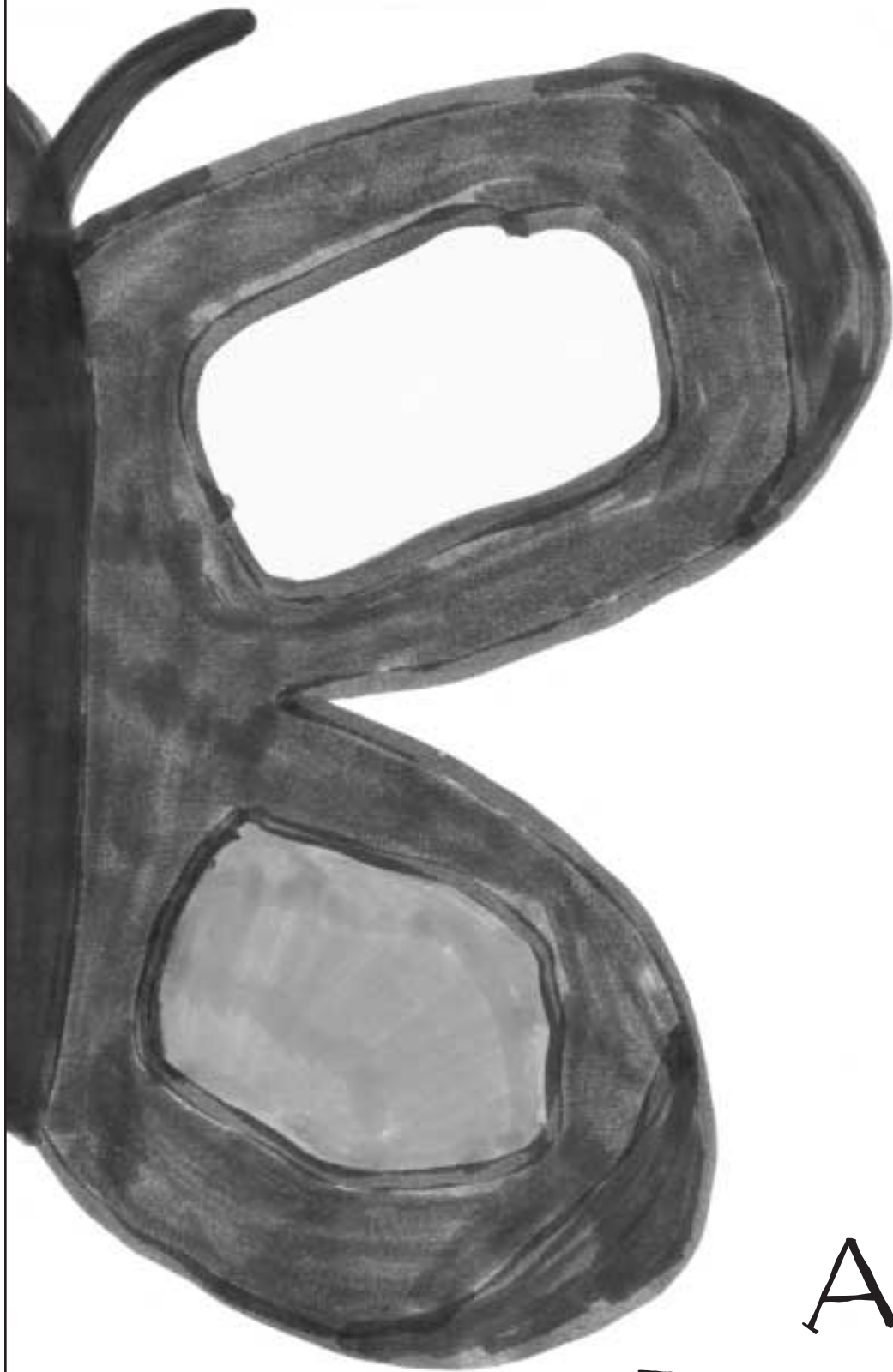


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NATIVE SPECIES INTERPRETIVE GARDEN

(NOT EXACTLY TO SCALE)





About
EverGREEN

All About Evergreen

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14 All About Evergreen

BACKGROUND

EVERGREEN—THE ONLY NATIONAL ORGANIZATION DEDICATED TO COMMUNITY—BASED URBAN RESTORATION

Evergreen is a national non-profit environmental organization with a mandate to bring Nature to our cities through naturalization projects. Evergreen motivates people to create and sustain healthy, natural outdoor spaces and gives them the practical tools to be successful through its three core programs: Learning Grounds (transforming school grounds), Common Grounds (working on publicly accessible land) and Home Grounds (for the home landscape). We believe that local stewardship creates vibrant neighbourhoods, a healthy natural environment and a sustainable society for all.

Today, 86 per cent of Canadians live in cities and urban development is at an all-time high. More than ever, there is an immediate need to conserve natural areas in rapidly developing suburbs, restore Nature in urban centres, and to reconnect people with Nature.

Evergreen's mission is to bring communities and Nature together for the benefit of both. Evergreen's programs foster change at the local level by inspiring people to take action, providing them with the training, tools and education to bring about positive change, and supporting their efforts through recognition and celebration.

Evergreen achieves its mission through three core programs:

The Toyota Evergreen Learning Grounds Program

The Toyota Evergreen Learning Grounds program brings school communities together to transform barren school grounds into healthy, natural and creative outdoor classrooms. By planting trees, shrubs and vines, and adding shade, seating and heritage vegetable gardens, the learning opportunities come alive. These outdoor classrooms provide students with a healthy and safe place to play, learn and develop a genuine respect for nature and each other.

Common Grounds

Common Grounds is a national service that conserves natural and cultural landscapes, restores degraded environments, and protects open spaces for recreation, education and enjoyment in urban, suburban and urbanizing areas. The Common Grounds program works to ensure Canada's urban common grounds grow sustainably and prosper through the 21st century and beyond.

Home Grounds

teaches Canadians to restore and enhance the natural environment where they live by encouraging people to practice environmentally friendly gardening techniques. Evergreen's goal is to teach people to garden without chemical pesticides and artificial fertilizers, to plant with native species that require little maintenance and water, and to grow naturalized gardens on under-utilized space such as rooftops and balconies.

Evergreen's communications serve as a call to action. Its programs respond to this call to action and give people the practical tools to create change through:

- resources to train, educate and inspire—these include guidebooks, newsletters, policy guidelines, videos, curriculum activities and research reports (available in hard copy and on-line);
- facilitating dialogue and providing training through a regional conference series and local workshops;
- leading and supporting hands-on site restoration initiatives;
- an interactive web site which includes a registry of school and community projects, an on-line searchable library of articles, organizations, other web sites and nurseries;
- grants for school ground projects; and
- a team of experienced staff across the country.

Evergreen is funded by the generous support of individual Canadians, foundations, businesses and various government agencies. Its work has been recognized for its efforts with several awards including the 1996 Peter F. Drucker Award for Non-profit Innovation. In December 2000, we were recognized by The Globe and Mail as one of Canada's "10 best charities to donate to."

In its mission to bring Nature to cities, Evergreen is a catalyst for the creation of community greening projects in Canada's urban areas. What started in 1991 as a Toronto-based tree-planting program, has grown into a national program supporting community naturalization initiatives on public land from coast to coast. By planting native trees and plants, and turning under-utilized spaces into parks and gardens, communities can create vibrant neighbourhoods and ensure their cities stay clean and healthy.

Evergreen's
On-line registry

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Evergreen's 15 On-line registry



EVERGREEN

Bring Nature Back to Your City

THE EVERGREEN ON-LINE PROJECT REGISTRY

An on-line resource to support your community or school ground greening project!

www.evergreen.ca

Evergreen's on-line project registry lets you share information about your project and find out how others across the country are making their schools and communities greener, more dynamic places. The on-line project registry allows you to **search** through project profiles, **register** your project and **update** it as needed. The information you provide will be available to everyone who searches the registry so here's your chance to promote successes, recognize sponsors and advertise events and volunteer opportunities!

The on-line project registry is part of Evergreen's ongoing effort to facilitate school and community greening. The project registry is a simple, accessible and **free** forum for sharing information and learning new ideas. Using the registry does not require a big time commitment or a lot of technical skills and training, just a small commitment to keep project information up to date.

HOW will the registry help your project?

Whether you are just beginning your project or it's an ongoing initiative, reading about other projects and viewing their pictures is always a great resource.

The following list contains some of the information you can find on the registry about community and school-based greening projects:

- **goals** and **objectives**;
- creative ideas for **events**;
- where funding and other forms of **support** have come from;



- ✎ **maintenance solutions;**
- ✎ types of **gardens** or **habitat;**
- ✎ built **features;**
- ✎ **strategies** for sustaining the project over the long-term;
- ✎ **barriers** encountered and solutions to overcome them; and
- ✎ how issues of **safety** and **vandalism** have been addressed.

WHAT do you get out of registering?

- ✎ An opportunity to **connect** with others involved in similar initiatives.
- ✎ An opportunity to create a **mini web site** on your project.
- ✎ A unique **teaching tool** for engaging students.
- ✎ A forum for **advertising** events and volunteer opportunities.
- ✎ A place to **acknowledge** and **thank** supporters.
- ✎ A growing and changing **historical record of the project.**
- ✎ A place to display a **photo of your project** on the Web.
- ✎ Volunteer opportunities at project events.
- ✎ Creative ideas for working with volunteers.

WHERE to find the Project Registry? <http://evergreen.ca/en/lg/lg-projects.html>

Go to **www.evergreen.ca** and click on our Resources link.

Choose Project Registry from the list.

Follow the prompts on the screen.

Create your mini-site as a group activity!

Include your group in the creation and maintenance of the mini-site. Participants can compose the text for the mini-site as a follow-up activity. School groups may wish to use these tasks as an Internet or computer activity in the classroom, while community greening projects can use this as a way for more participants to help outside of the garden.

For example, share the responsibility by dividing the creation and maintenance of the site into smaller tasks.

- Tasks could include:
- *keeping the mini-site up-to-date for all upcoming events;*
 - *adding any milestones achieved;*
 - *updating the support section as more funding is raised;*
 - *adding pictures to the site; and*
 - *finding new and fun ideas from other project sites.*

If you require assistance with any aspect of creating and updating your project's mini-Web site, please contact Evergreen at (416) 596-1495 or 1-888-426-3138 (outside Toronto).



NoT^es

NoT^es



EVERGREEN

Bring Nature Back to Your City

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Evergreen Tool Shed

The Tool Shed is an integrated collection of resources designed to inspire, educate and guide students, teachers, planners, community groups and individuals through all stages of a school, community or home naturalization project. The Tool Shed series includes guide books, instructional and inspirational videos, fact sheets, case studies, newsletters, research reports and an on-line registry. For the latest information on Evergreen's Tool Shed resources, check out our website at www.evergreen.ca.

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