

Growing a Natural Habitat Garden at Your School

Introduction

Natural habitat gardens are slowly changing people's perceptions of what is beautiful in nature. A natural habitat garden is different from a traditional formal garden in that it re-creates a natural ecosystem specific to the area of the province (country, world) in which it is located. Because native plants thrive in their own unique habitat, maintenance of a natural garden is minimal; chemical fertilizers and pesticides are generally not needed, and significantly less watering is required.

A natural habitat garden can provide basic survival needs for many species of wildlife year-round. The natural habitat garden's ability to attract local wildlife for observation and study also gives them a distinct educational advantage over traditional gardens. Natural habitat gardens grown for dual environmental/educational purposes sometimes include more flowering plants than might occur in nature; the reasons for having more flowers are to attract certain species, and to keep the neighbours happy. This ensures a garden that is both functional and pleasing to view.

Creating, growing, and maintaining a natural habitat garden provides an authentic outdoor experience for students, where they can play, learn, and develop a genuine respect for nature and each other in a safe environment. The hands-on opportunities made possible by such a garden teach students about the importance of protecting and celebrating nature. Natural habitat gardens provide many opportunities for curriculum tie-ins in a variety of subjects, and can aid in a better understanding of the Aboriginal culture. Student involvement in the whole process - including the planning, designing, planting, and maintenance - is critical in order to promote a sense of ownership, which in turn reduces the likelihood of vandalism.

In Saskatchewan, less than 20% of original prairie habitat remains intact. (From aerial photos, it would seem that about 15% of natural prairie remains; adding in an estimate for ditches and road allowances, the number has been increased to 20%.) This figure drops to less than 1% in urban and agricultural areas. We can choose to reclaim our natural prairie habitat even in the middle of a city, by setting aside space at our schools, in our communities, and around our homes. This document specifically addresses how to create a natural habitat garden that complements the educational and aesthetic goals of local schools.

Where to Start?

The idea for a garden usually comes from a teacher. However, the teacher cannot continue unless students agree the project is worthwhile. With the above rationale, students will usually agree that a natural habitat garden is a good idea. It is now up to the teacher to provide guidance about sources of information for student research. There are many potential sources of information about natural habitat gardening available. You will need to refer to these sources frequently throughout the planning process. Sources of information include:

- ❖ The Internet
- ❖ Books at your local library
- ❖ Plant and horticultural societies
- ❖ Horticultural staff at universities
- ❖ Nurseries
- ❖ Environmental groups

It is essential that you have a good overview of what is involved in the initiation, planting and maintenance of a natural habitat garden before you proceed with any action plan.

The Internet

We suggest you start your search at Toyota Evergreen's website (www.evergreen.ca), which provides not only general information about natural habitat gardens, but also specific details about setting goals, planning, species selection, garden design, sources of funding, budgeting tips, and more. Evergreen's website includes tips for the greening of school grounds (click on "Learning Grounds"), communities ("Common Grounds"), and private homes ("Home Grounds"). This one-stop website gives an excellent overview of what is involved in creating a natural habitat garden. Because of this website's comprehensive nature, a "guided tour" is provided below.

As expressed on its website, the Toyota Evergreen "Learning Grounds" mandate is to "[bring] school communities together to transform typically barren school grounds into healthy, natural, and creative outdoor classrooms". The program "rationale" outlines the educational, relational, and environmental benefits of a school habitat garden. Clicking on "FAQs" gives answers to frequently asked questions about project initiation, school board and maintenance support, funding, vandalism and safety issues, summer maintenance, community support, and how to achieve project continuity. Learning Grounds provides various levels of support to schools across Canada and internationally, listing and describing some of these projects and providing information about certificate programs, partnerships, workshops, initiatives, and conferences for support, reference, and inspiration.

There are a number of organizations that will assist schools financially in starting a natural habitat garden. Clicking on "Funding" gives you links to information about Toyota Evergreen grants; current grant recipients; pre-approved plant lists; other government departments, corporations and agencies that provide grants; proposal writing; and a grant resource guide that helps with clarifying your goals and designing your garden. A link is included to the Learning Grounds Tool Shed, which lists various on-line handbooks and guides, such as volunteer management, policy and planning information, current initiatives, and design ideas. Of particular interest is the document "All Hands in the Dirt: A Guide to Designing and Creating Natural School Grounds", which includes sections on developing your team, sizing up your site, setting goals and objectives, designing your plan, developing an action plan, budgeting and fundraising, preparing for planting day, and building a lasting legacy. There are also selected Learning Grounds Newsletters that can be printed directly off the website.

The guided search provided by the “Native Plant Database” provides a list of trees, shrubs, wildflowers, grasses, ferns, vines, ground cover, and aquatic plants native to the area in which your natural habitat garden is to be located. It is an excellent starting point for your plan.

Finally, the "Teacher's Corner" is a database of lesson plans, tips and techniques designed to get the most out of teaching in an outdoor classroom. In addition, it provides a comprehensive list of printed educational resource materials and contact information for ordering. There are also suggestions for adjusting teaching styles to the outdoor classroom, including classroom management modifications.

There are many other websites devoted to the design and species selection of natural habitat gardens. Some of the sites we found particularly useful are included as a separate list with this document.

Other Sources of Information

Books from your local library can be used to supplement the information found on the Toyota Evergreen website should you need more specific details for your natural habitat garden. We found books that were particularly useful for planning for the site and for plant selection. A list of references is included with this document.

In Saskatoon, the public library occasionally sponsors gardening workshops (e.g. xeriscaping) that might be useful for information and planning purposes, usually in the spring season. Other organizations such as the Saskatoon Forestry Farm and Native Plant Society of Saskatchewan also sponsor speakers, workshops, and/or conferences about natural habitat gardening. The University of Saskatchewan Extension Division sponsors workshops, runs courses, and answers gardening questions. Members of the horticultural staff at the University of Saskatchewan were invaluable in giving us “insider” tips on the design, budgeting, and species selection for our garden. Some of the local nurseries were quite willing to give us tips on overall garden design, although few nurseries carry native plants.

What’s next?

A natural habitat gardening project can only become a reality with administrative support; therefore, you need to make a proposal to appropriate administrative personnel (this could include the principal and school board, among others). Having a good overall picture of the commitment required for and logistics of a natural habitat garden is essential before you approach administration. This can be addressed by having a written rationale prepared, a list of possible funding sources, a suggested location, and a sketch and/or planting plan of your proposed garden. You should also have a good idea about overall stewardship and roles and responsibilities, and administration can clarify any approvals protocol.

Planning up to this stage should be flexible enough to be modified as required. Safety for everyone involved should be of primary consideration throughout.

Who else can help in the planning process?

Once approval for site location and concept has been obtained from administration, it is time to do some serious planning. One of the most important groups to contact at this stage is ground and facilities management personnel. You need to know that facilities caretakers are on board to assist and/or support you in the groundbreaking and/or maintenance processes. It is better to have only rough sketches and ideas at this time. In fact, facilities management personnel can assist not only in refining your plan, but can also provide details on what services and equipment can be provided in-kind for budgeting purposes. It is also appropriate at this time, should it be your desire to incorporate an Aboriginal perspective, to meet with a First Nations elder who has experience with native plants to assist in the selection of species and preparation of garden design to incorporate First Nations elements. If you wish to work with First Nations people, they must be involved from the very beginning. Your rationale and preliminary sketches should be brought along to these meetings for reference purposes; but be prepared for considerable alteration. Remember – the students must be involved from the very beginning. They should be involved in meetings with administration, facilities caretakers, and the Elder. Once you and your students have met with and received approval and advice from all administrative personnel, it is time to come up with an action plan.

Some sites where lessons pertinent to Natural Habitat Gardens and First Nations, are: <http://capes.usask.ca/ccstu/units/index.html> for lessons designed for northern Saskatchewan, but easily adaptable to other regions of the province.

<http://www.schoolnet.ca/aboriginal/science> Relevant lesson plans to click on include survival (grade 6), feathers (gr. 7), and snow (gr. 7).

<http://www.schoolnet.ca/aboriginal/science2> Relevant lesson plans include the ones called berries (gr. 3), environment (gr. 3), trees (gr. 3), and light/pigments (gr. 4).

How can we fund a natural habitat garden?

At this stage, it is important to list everything you think you will need to implement your plan, based on your research and discussions with the experts. Document what you already have available to you in terms of gardening equipment, planting materials, maintenance and monitoring services, professional consultation and technical support, and numbers of volunteers. These should be listed as in-kind support on your budget sheet. Then list what you still need. Be as explicit as you can in listing budget items that you must purchase. Be very thorough at this stage in anticipating costs. Rather than underestimating the costs, consider deferring items that are not essential.

Contact local organizations with an interest in supporting community-based or environmental projects, such as corporations, credit unions, social service organizations, universities (offering student support free of charge), service clubs (e.g. Lions, Rotary, Kiwanis), and local horticultural societies, who may be able to provide cash donations or in-kind support. At the very least, they will be informed of, and hopefully a support for, your plans to grow a natural habitat garden. In addition, parents can be tremendous advocates for this kind of project, providing person-power and equipment, as well as organizing and running fundraising events to raise capital for the project, if needed.

Some organizations provide funding for school ground greening projects. Toyota Evergreen provides grants up to \$1000 for qualifying schools. Its website

(<http://www.evergreen.ca>) also provides a list of other organizations that can provide funding and/or technical support and information for starting and growing natural habitat gardens. A best bet for funding for schools within this list is the Tree Canada Foundation (<http://www.treecanada.ca>) which sponsors the Greening Canada's School Grounds Program, providing educational information, technical advice, and financial support up to \$5000 towards the "transformation of...school grounds into environmentally enriched learning landscapes". Application forms are found directly on the respective websites and must be mailed to the appropriate organization. Note that some organizations are very specific about where the funds they provide can and cannot be allocated, and that some organizations require that you are, or must partner with, a non-profit organization.

How do we choose what goes into our garden?

Start by characterizing your site. Some of the things you and your students need to consider include determining what areas are shaded, what are partially shaded, and what have full sun, and whether some areas are predominantly wet or predominantly dry. You also need to consider what type of habitat you will be re-creating (e.g. prairie, wetlands), what kinds of wildlife you want to attract (and deter), and whether or not you will include artificial elements such as benches, bird baths, bat houses, artificial ponds, salt licks, etc. Decide if you want to incorporate, for example, a butterfly garden. You may wish to include a shaded area in your natural habitat garden, as is required by some funding sources. The references you have collected can help you answer your design questions.

The habitat of the area and characteristics of the site determine the actual species of plants you will want to include in your garden. Draw on your resources, including the Toyota Evergreen website, for ideas. If you are growing plants from seeds, you may wish to grow them in a greenhouse during the winter months. To ensure that they are easily plantable, use containers that are long enough to accommodate and keep separate complex plant roots. A local greenhouse, such as that found on a university campus, or at a store that sells bedding plants in the spring may be able to rent space. It might be possible to get grow lights or to grow seedlings on window ledges. This phase allows students to nurture the plants through their various stages of growth and increases the educational opportunities.

Native plants often require scarification (rasping the seed coat, usually with sandpaper) or cold layer stratification (refrigerating the seeds, then planting in cool damp soil). The Native Plant Society (www.npss.sk.ca) and Nora Stewart (e-mail address is prairiemt@sk.sympatico.ca) have information on how to grow some native plants from seed.

How do we prepare the site?

Soil preparation is essential to the success of your natural habitat garden. There are two ways to prepare the site: 1) cultivation, and 2) black plastic solarization. Cultivation is used if you are planting in an old field, or your site has a lot of invasive weeds. Using garden forks, or a rototiller if available, clear away any turf grass and/or unwanted vegetation. Sift through the soil to remove grass roots. Allow weeds to grow

to a height of 10 to 15 centimeters and then manually remove them with a hoe. Repeat this until the weeds are under control. Do NOT remove plants from another area, nor add nitrogen, topsoil, compost, or manure. Add topsoil only if the area is too sandy or full of clay, remembering as you add that topsoil will have weed seeds in it.

If you are planting in a turf grass area, use the black plastic solarization method, which is less time consuming for schools. Here, a sheet of heavy black plastic is placed over the area you wish to plant. Leave the plastic on for six to 12 weeks to ensure the grass has been killed. Remove the black sheet and clear away any remaining turf grass.

Once the soil has been prepared, you can plant. There are three different sources of plants: one is garden plugs, or bedding plants. If you are using plugs, plant them directly in the soil. A second is seeds. If you are planting seeds, till the area lightly with a hoe. Weed manually for the first few weeks while your plants get started. Once plants are established, there will be less weeding involved, but weeding must be kept up, with either garden plugs or seed starts for several years. It is only when the plants are dense, forming a matrix that covers the soil, that weeds will find getting started very difficult. A third way to start your garden is by “grafting” sod from native prairie, much as a skin graft is done on an injured person. If there is an area of native prairie nearby that is being dug up, ask for the sod. Piece it together on the prepared soil, give it some water, and leave it to establish itself.

It typically takes two to five years for a natural habitat garden to grow to maturity.

During planting, make sure you are following the proper propagation methods for each species. Here are a few guidelines to follow for planting.

- 1) Plant one dominant grass per square meter.
- 2) For every square meter of dominant grass, choose four cool season forbs and four warm season forbs.
- 3) For every ten square meters, plant a shrubby prairie flower.
- 4) By clumping plants, you minimize plant aggression, create better shelter, and provide food concentrations for wildlife.

The garden will need a higher level of care, including frequent watering, during its first year. Make sure maintenance routines are in place during the summer months when the school is closed. Address aggressive plant growth immediately (e.g. purple loosestrife, brome grass, babies breath, leafy spurge, and caragana are non-indigenous plants, are invasive, and are hard to get rid of once established.)

You may need to erect a temporary fence around the site during the planting process to circumvent unintentional (or deliberate) damage to young plants. During the planting process, and later, you will need to establish how to access your site.

Where can I find native plant materials for my garden?

Draw on your resources to locate suppliers of native plants and seeds. We found Nora Stewart of Prairie Mountain Roots in Arcola, Saskatchewan (prairiemt@sk.sympatico.ca) particularly helpful and knowledgeable, offering a variety of wild-type grasses and forbs seeds priced around \$30-\$40/lb for grass and \$100/lb for flowers. Some native grass seed can be found at local nurseries. The SaskPower Shand

Greenhouse in Estevan (greenhouse@saskpower.com) has a native plant program that provides trees, shrub seedlings, and Western red lilies for qualifying schools. If you decide to include Western red lilies in your natural habitat garden, note that they require moist areas, so select low ground and shaded areas. Good companion plants for Western Red Lily are the pink-flowered onion, harebell, saline shooting star, northern bedstraw, American sweet vetch, meadow blazingstar, star-flowered Solomon's seal, early blue violet, smooth camas, and meadow parsnip. To access teaching materials about the Western Red Lily, visit this web site, or the Saskatchewan Teachers' Federation Stewart Resource Centre web site.

The Native Plant Society's website includes a list of suppliers and services (www.npss.sk.ca/listing_service/supservice.html). All you have to do is type in the common or Latin name of the species you are looking for, and they provide you with a list of potential suppliers. You can also contact the Native Plant Society of Saskatchewan directly for further suggestions. The Meewasin Valley Authority also has people with considerable knowledge about native plants.

To save sowing and growing time, it might be possible to have clumps of native grass pulled up from elsewhere (e.g. housing development subdivisions) and grafted onto your area.

Unless you know what the native plants you are looking for look like and their common names, you should not seek help from local nurseries. Nursery personnel are very knowledgeable about beautiful or useful plants for cultivated gardens – but generally have little knowledge about native plants.

How do we incorporate First Nations' perspectives?

A natural habitat garden provides an excellent resource for exploring and teaching about First Nations perspectives regarding traditional uses of plants, relationship with the land, and our interconnections with nature. Suggestions for curriculum tie-ins can be gleaned from a First Nations educator, an elder, and/or Internet lesson plans (<http://www.schoolnet.ca/aboriginal/science> and <http://www.schoolnet.ca/aboriginal/science2>). The SaskLearning document "Diverse Voices: Selecting Equitable Resources for Indian and Métis Education, found at <http://www.sasked.gov.sk.ca/docs/policy/diverse/need.html>, has useful information for language and cultural biases, so you will know what kinds of resources are more likely to reinforce rather than overcome stereotypes.

What other things do we need to consider when building our garden?

Your garden plan should include information about any pathways you wish to include. Leaving a natural pathway is possible, but you may have to deal with muddiness when it rains, and overgrowth by plants. You might consider a gravel pathway that is two to three inches deep to allow proper drainage during rains. You should also consider making the pathway wide enough to accommodate wheelchairs and for other special needs visitors. More than one entry and exit point to the area should be planned.

Include signs in your garden that identify different plant species. These can be as simple as tongue depressor sticks with indelible marker. Acknowledgement of financial

and/or in-kind support can also be done through signage posted right at the site. Stakes for mounting signs can be obtained from the Saskatchewan Abilities Council.

Consider whether you need to include lighting. At the very least, ensure clear sight lines to all path areas of the garden for safety purposes. Further safety is ensured by not having tall bushes near the path, or near school doorways.

How do we promote our project?

Inform and keep your community up to date about your project through word of mouth, presentations, and/or newsletters. Acknowledge supporters publicly. Have signage at your site. Contact the media (print, television, radio) for free publicity. Document the whole process, from barren ground to planting-day to growth milestones, through photographic stills and video. The more people in your community who know about the project, the more it will be favorably looked upon, valued, and protected; and the more willing people will be to provide their time and resources to help bring your project to fruition.

by S.R. Meadows, with contributions by S. Kinal, S. Lennox, and M. Tasche