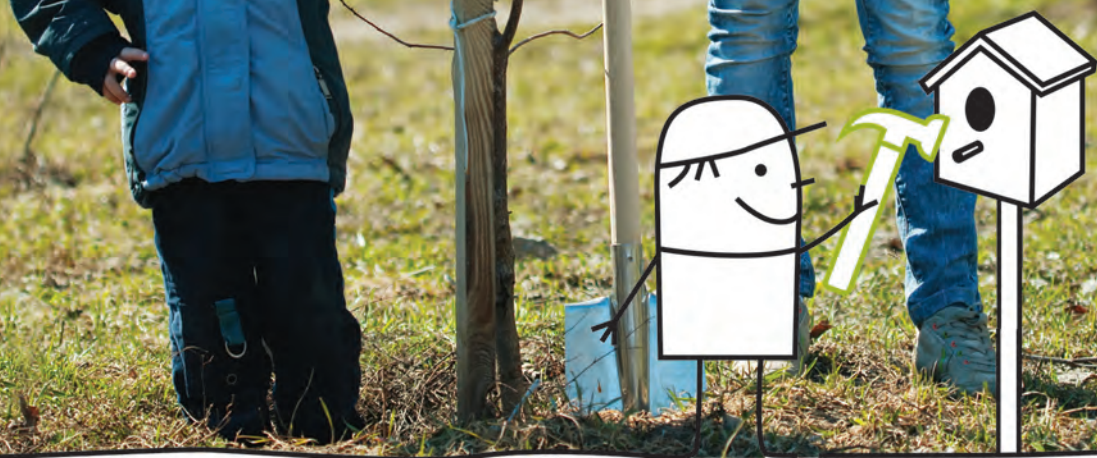


Creating Habitat



A GUIDE FOR COMMUNITY GROUPS





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Welcome to the next generation of 10,000 Trees for the Rouge. We are a very small but lively and dedicated volunteer group that hosts a large public tree planting event each spring in the Rouge River watershed.

It's time to celebrate! As April 27, 2014 marks our 25th Anniversary of hosting a spring tree planting for the community! Do you know what has kept us moving and motivated all these years? You guessed it; it's the thousands of volunteers who come out to plant trees that inspire us to improve forest habitat in the Rouge Watershed!

Our dedicated volunteers have been increasing in numbers since 1989 when we held our first tree planting near Leslie Street and 16th Avenue in the Rouge River watershed. Since then, we have hosted a large planting each year and many smaller ones with school classes, corporate groups, and church groups. All of our plantings are in the Rouge River watershed area and are intended to protect the water, reduce erosion, improve air quality, and provide a continuous natural corridor for wildlife. Each site that we have worked on has been planted with native trees, shrubs, and wildflower species that mimic nature and suit the soil conditions that are present.

Tree planting has always been a priority in our habitat restoration mandate. As many sites in the Rouge River become restored we are looking ahead and will continue to be good stewards of our planting sites by watching their growth, ensuring their survival, and protecting the wildlife species that now call this new habitat their home. Education and the opportunity to be involved in hands-on restoration is, and will continue to be, an important part of our work.

This guide book is a partnership project of Toronto and Region Conservation (TRCA) and 10,000 Trees for the Rouge. It provides step by step instructions on planting trees and creating homes and shelter for many important creatures that live in the Rouge River watershed. Pass it along to teachers, Scout and Girl Guide leaders, faith groups and community groups and even individuals who will use this guide to make a difference. For more information and to learn more about 10000 Trees for the Rouge visit our web site at www.10000trees.com.

Volunteer Recognition

We dedicate this guide book to everyone who has joined us on the first 25 years of our journey. Like many, we have overcome the inevitable hurdles to reach our goals and somehow the thought of future forests and meadows for future generations has inspired us to find solutions.

Like many volunteer organizations there is a core group of volunteers who work very hard behind the scenes throughout the year. At 10,000 Trees for the Rouge, our core group looks after fund raising and reporting, book keeping, planting design and multiple arrangements for event day including ordering trees, comfort stations, and traffic control.

Past and present, our sincere thanks to our core group, the Executive Members:

Of special mention is our Chairman, Colin Creasey, who has provided dedicated leadership to our group for many years. His enthusiasm and passion for the environment has kept us all inspired and focused. And when it comes to planting day you will find him out in the muddy field, in his signature hat, digging until the last tree is in the ground.

Current Executive Members: Allan Baker, Pam Bennett, Marshall Buchanan, Colin Creasey, Karen Cornell, Dawn Farara, Ross Gladwell, Willa Harris, Cathie Jeffery, Bob Kawano, Julie MacKinley, Cameron McIntosh, Carol & Alan Miller, Jannut Nadeem, Robert Roszell, Christian Patterson, Megan Spicer, Leslie Tan, Mandy Vandenberg, Tupper Wheatley, Edward Yu.

Past Executive Members: Daryl Bessell, Gail Brown, Nancy Clements, Randy Deffett, the late John Dunlop, Lea Francis, Christine Foster, Cam Gall, Ken Gillies, Christine Guenette, Chris Gynan, Paul Haight, Susan King, Dawson Li, Jim MacDonald, Robert Marshall, Stephen Marshall, Carla Oliveiva, Lea Ray, Sayed Raza, Jim Robb, Cindy Robinson, Marg Shanks, Doug Shaw, Bud Stoner, Kristjan Vitoles, Susan Wadsworth, April White.

In addition to our Chairman and Executive members we rely on our Field Support team to inform and help our community members on tree planting day. Thank you to our past and present members of the Field Support team:

Emma Adams, Susan Adams, Joseph Adamson, Laurie Andrechuk, Aimee Artinian, Bruce Bennett, Tony Bessell, Maxwell Bevan, JC Boilley, Jeffrey Briggs, Alexandra Bryski, Maureen Byrne, Linda Carscadden, Mimi Cheung, Ann Creasey, Albert Duffy, Karin Fawthrop, Larry Fawthrop, Diane Gladwell, Tim Gladwell, Anne Harris, Raimund Krob, Alyssa Lockhart, Bob Mansour, Rob Martin, Joan Matchett, Greg McGuire, Mary McKeigan, Karl Merrem, Garrett Peters, Bill Richardson, Gulshan Sethi, Mark Sample, Mary Stoner, Grant Stott, Tatyana Tyomkin, Brittany Whitehorn, Kyle Whitehorn, Tammi Whitehorn, Elita Wigoda, Jane Yeung, Sixth Pickering Venturer Scouts, Sixth Pickering Rover Scouts, 49th Pickering Ranger Guides, 49th Pickering Pathfinder Guides.

Thank you to our suppliers who have been able to provide the plant stock at reasonable cost. In-kind donations of labour, machinery and mulch have been much appreciated along with sponsorship funds. We are excited about the new directions we will be exploring in the future and would like to take this opportunity to thank the following sponsors who have supported us and ask you to join us as we move into the "Next Generation".



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What is Habitat?

Simply put, a bird or animal's habitat is much like the neighbourhoods that we live in. A good habitat provides food, like our grocery stores, shelter like our homes and places to be active and raise young, just like our parks and community gathering places. Like humans, each animal, bird, insect and amphibian is unique and requires different types of homes or habitat.

Why are We Creating Habitat?

The introduction of buildings, roads and utilities including hydro, sewers and water mains, has changed the landscape. If we step back in time 100 years ago this region was covered in trees, wetlands and meadows. All of these natural features or greenspaces provided an abundant supply of food and shelter for birds, animals, insects and fish. By building and installing habitat structures we can mimic those habitat conditions that were originally found in nature.

Toronto and Region Conservation (TRCA) and many community partners are making efforts to create habitat and provide the necessary habitat structures in areas where they are most needed. By providing necessary habitat, our wildlife, aquatic species and migrating birds will all have a higher chance of survival and the opportunity to maintain and increase their populations.

What's in This Guide?

This guide provides you with the basic information you will need to get started in order to create habitat. This is a simple step by step resource for community leaders and their volunteers to follow. You will find out how to:

- Create habitat features.
- Maintain habitat features to keep them in good working condition.
- Monitor your habitat features to find out who has made your site their new home!
- Organize habitat activities including community tree planting events.

What do You Need to Consider

The following steps are things you will need to consider in planning your community habitat project.

Step 1 – Choose Your Habitat Project

The most important first step is to think about why you want to do a habitat creation or restoration project. Think about what the needs are of the animals you are creating habitat for and what need you will be filling. Consider if what you are doing or creating is necessary. Working as a group and writing down your objectives and reasons why you are creating habitat is important. This exercise can help you to be sure you are clear about what you intend to create and that you are committed to maintaining it.

Many creatures need leaf litter, standing snags, rocks, live plants, dormant grass, twigs, puddles of water, mud, rotting logs, rain drops, little nooks and holes to hide in, store food in, and protect their babies during development. Especially in our cold winter climates, having all of these resources is the only way that they can make it through to the next spring.

Building more formal habitat structures like a man made nesting box requires careful thought and consideration. For bird habitat, a diagram or plan of the structure and construction steps are required. You will find additional information on habitat projects on the following pages and in the *Resources Section* at the back of the guide.

Step 2 – Find a Suitable Location

This guide is intended for community groups who are planning habitat creation or restoration projects on public lands. Regardless of where you would like to plan your project you will need to start with the permission of the landowner or land manager and be sure you have arranged for any necessary permits. We are here to help! Call TRCA at 416-661-6600. Each habitat project outlined in this guide includes its most suitable location.

Step 3 – Identify Your Supplies, Materials and Volunteers

Depending upon the habitat project you are going to create, have a list of what will be required to do the work, perform maintenance and track observations. Being very organized and carefully thinking of all the steps and what you will need is a critical part of a successful project. Some basic needs could include:

- A record keeping book
- Camera
- Field guide of your species (bird, bees, butterflies, frogs, toads, turtles)
- Repair materials (extra nails, screws, pre-cut pieces of wood)
- Materials you intend to plant

Record keeping is a very important aspect of data collection in order to track trends, changes and different species observed. The term “repeatability” is an important aspect of collecting information over a long-term period in order to understand where species live, what their actions are and understand how their behavior is being influenced.

Once you have engaged a group of volunteers, set up a list of tasks. Keep a record of steps taken and maintenance conducted as you go along. This will provide a clear understanding of what has been done and allow members to understand the importance of record keeping as it pertains to contributing information as “Citizen Scientists”. Sharing tasks, time commitments and working together will help your volunteers participate using their strengths and allow them to learn new skills. As volunteers change over time, tasks can be reassigned.

Step 4 – Health and Safety Considerations

The health and safety of you and your volunteers is top priority during all stages of your project.



Working outdoors in the heat and cold, working near water, uneven terrain and the equipment being used, all pose potential health and safety hazards. The best plan is to be prepared. During a pre-visit identify the hazards at your site and mark off the areas where your volunteers should not go. Ask your volunteers to arrive wearing appropriate clothes and foot wear and provide them with other personal protective equipment if it is required for the task (eye protection, hearing protection, and gloves).

Provide training by demonstrating the task you would like them to do, and how to do it safely. Ask if anyone has any questions before you get started. Finally, on the day of your event make health and safety a big part of your welcoming remarks. Let your participants know who has first aid, where the first aid kit is and what to do in case of an emergency that day. Have fun and stay safe.

Step 5 – Create Your Habitat Project

So, now you know what you are going to do, why you are going to do it, why it's important and how it's going to be accomplished it's time to get started. Maybe one last check with the landowner and a quick call to TRCA and you and your volunteers can head out.

Step 6 – Monitor Your Habitat Project

Once you've finished your project you need to be sure to check back so that you can watch it develop and also make changes as needed, so future project monitoring will be important.

When monitoring your habitat you need to go back to your site to check on your habitat feature to see who is using it. And don't forget to check in with the land manager of your project site – they too will be interested in knowing what's going on!

Step 7 – Maintain Your Habitat Project

Just like your home, ongoing regular maintenance of your habitat project is required to keep it in good shape and functioning as it was originally intended.



Think About the Materials

Constructed habitat projects should be made from materials that will pose no risk to the health of the species and adequately accommodate their needs. Treated or painted materials contain chemicals which can cause negative health effects



Planting Future Forests and Meadows

Planting native trees, shrubs and wildflowers are an important part of a healthy environment and provide habitat for a large variety of birds, mammals and insects. Native plants provide food, shelter, and nest materials that animals, birds, insects and amphibians know how to use in a natural way.

By definition, a native plant is one that occurs naturally in a particular region without human intervention. These plants were growing prior to the arrival of European settlers. Southern Ontario has its own collection of native species that have evolved together over thousands of years.

Large logs and piles of brush are often placed throughout a tree planting or wetland site to provide shelter for birds and small animals. These piles are meant to mimic the fallen dead trees and branches you would find on the forest floor. Brush piles keep the soil moist and over time provide it with nutrients as the wood decays.

Community Tree Planting Events

A community tree planting event is a great way to engage groups of volunteers of all ages, all at once, in forest habitat creation.

Getting Started

To get started you must identify a suitable planting site, contact the property owner or property manager for permission to plant the site, and then determine the best suited native species and number of trees and shrubs that will survive in the soil conditions.

In most cases, you can contact your local municipality and your local conservation authority to help you identify suitable sites for community planting events.



Choose a date well in advance and promote the event to your community members. Community tree planting events are commonly held in the spring and the fall. Spring is the best time for planting while the soil is moist and rain events are more frequent. This timing allows the newly planted trees and shrubs a chance to establish themselves before the summer heat and reduces the need for additional watering at the planting event.

Consider how you and your volunteers will access the site, especially if there will be many of you. If you are planning to park along the side of the road, the municipality that owns the road should be notified.

Event Day

It is important to care for your trees and shrubs during transport and upon arrival at the planting site. You may have ordered potted, bare root or balled and burlap trees and shrubs. If you have ordered bare root stock be sure to store them in a shaded area and cover them with a tarp to maintain moisture.

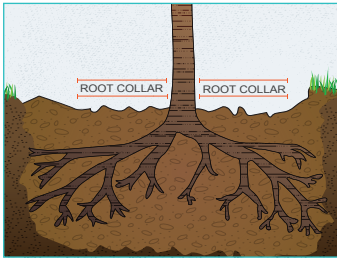
Share your knowledge with your community volunteers and start your event with a welcome and brief planting demonstration. It may seem simple enough, you want to plant the “green side up” but you also want your planting volunteers to consider the size and shape of the roots and dig the hole slightly wider and deeper than required. We also want the volunteers to imagine how big these trees and shrubs plants will grow over time and understand how far apart they need to be spaced to ensure survival.



Tree Planting Fun Fact

A fun and easy way to space your plants is to ask an adult to hold one arm out from their shoulder. This would be the spacing between shrubs. If they hold the other arm up like the letter “T” the distance between their fingertips is the spacing for a tree.

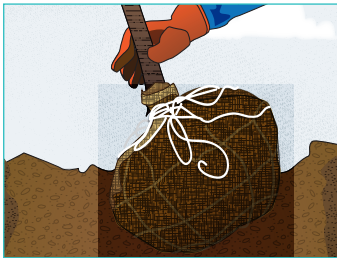
How to Plant Trees and Shrubs



Place your tree in the hole and spread the roots. Hold it straight upright at the same level that it was growing at before. Look for a line on the trunk (root collar) and make sure that it will be at ground level. Dig your hole deep enough to sit the plant down into the ground so the root collar is flush with the ground.



If you have bare root stock the roots will come in all shapes and sizes. Start by digging a hole wide enough and deep enough to hold the roots without curling them. Break up the soil that you have taken out.



If your tree is in a pot, or in a burlap ball, you will need to free the roots and loosen them if they have become coiled. Do this at the edge of your hole so that the valuable soil that was around the roots falls into the bottom.



Break up the soil and scoop it in and around the roots. Pack the soil fairly tight to eliminate the air. This is where a partner comes in handy! Pat down and level the soil out at the base of the tree. Give it a gentle “tug test” if it stays put then it’s a job well done!



Add a circle of mulch to the base of your newly planted tree or shrub. You want it to be a minimum depth of 8 – 10 cm (3 – 4 inches). This depth will help maintain moisture during dry spells. Make sure the mulch does not touch the tree stem.



Got Mulch?

Mulch is an integral part of any tree planting, providing nutrients to the soil as it breaks down, retention of moisture in times of drought as well as restriction of weed seed germination to prevent competition for water nutrients and in some cases light. Mulch also provides a microclimate for organisms from the microscopic up to small insects which form the fundamental base for food chains in the forest environment.

Cameron McIntosh, Owner, Green Circles Landscaping

Community Planting - Event Checklist

- | | |
|--|--|
| ☐ Pick a suitable site | ☐ Arrange for shovels |
| ☐ Site visit with the owner | ☐ Arrange for mulch buckets |
| ☐ Recruit planting volunteers | ☐ Have a planting plan |
| ☐ Complete utility locates | ☐ Welcome your volunteers |
| ☐ Understand the site conditions (soils, water) | ☐ Review Health and Safety |
| ☐ Pick well suited native trees and shrubs | ☐ Identify first aid volunteers |
| ☐ Order your trees and shrubs | ☐ Explain your habitat goals |
| ☐ Arrange for mulch | ☐ Have fun planting! |

Newly Planted Tree Maintenance

A newly planted tree faces many challenges. Two common challenges are being chewed by animals and drying out due to summer heat. To help the newly planted tree succeed, you can protect the bark by wrapping the lower trunk in plastic (called a rodent guard) and place a square of thick cardboard (mulch mat) or loose mulch at the base to keep the soil moist and prevent tall grasses from taking over and smothering the young tree.

You should visit your planting site on an annual basis. If you used them, check that the rodent guards and mulch mats are still in place. Replace mulch and tree guards that have deteriorated. In the second and third years, identify “infill” areas that need replanting.

New Tree Monitoring

Walk the site during the first year looking for signs of healthy growth, or failure to leaf out. Newly planted areas need to be monitored for 3 years, after which they should be self-sustaining.

Once a year, volunteers can visit the site to measure the width of the tree trunk, the height of the tree and the area of leave cover (canopy cover). By measuring what is changing in our forests we can begin to understand the impacts of humans and climate change on our trees. These local measurements of how much the trees grow each year are compared to measurements from across the country and the globe. This information informs scientists in finding patterns in tree growth compared to changing temperatures and rainfall.

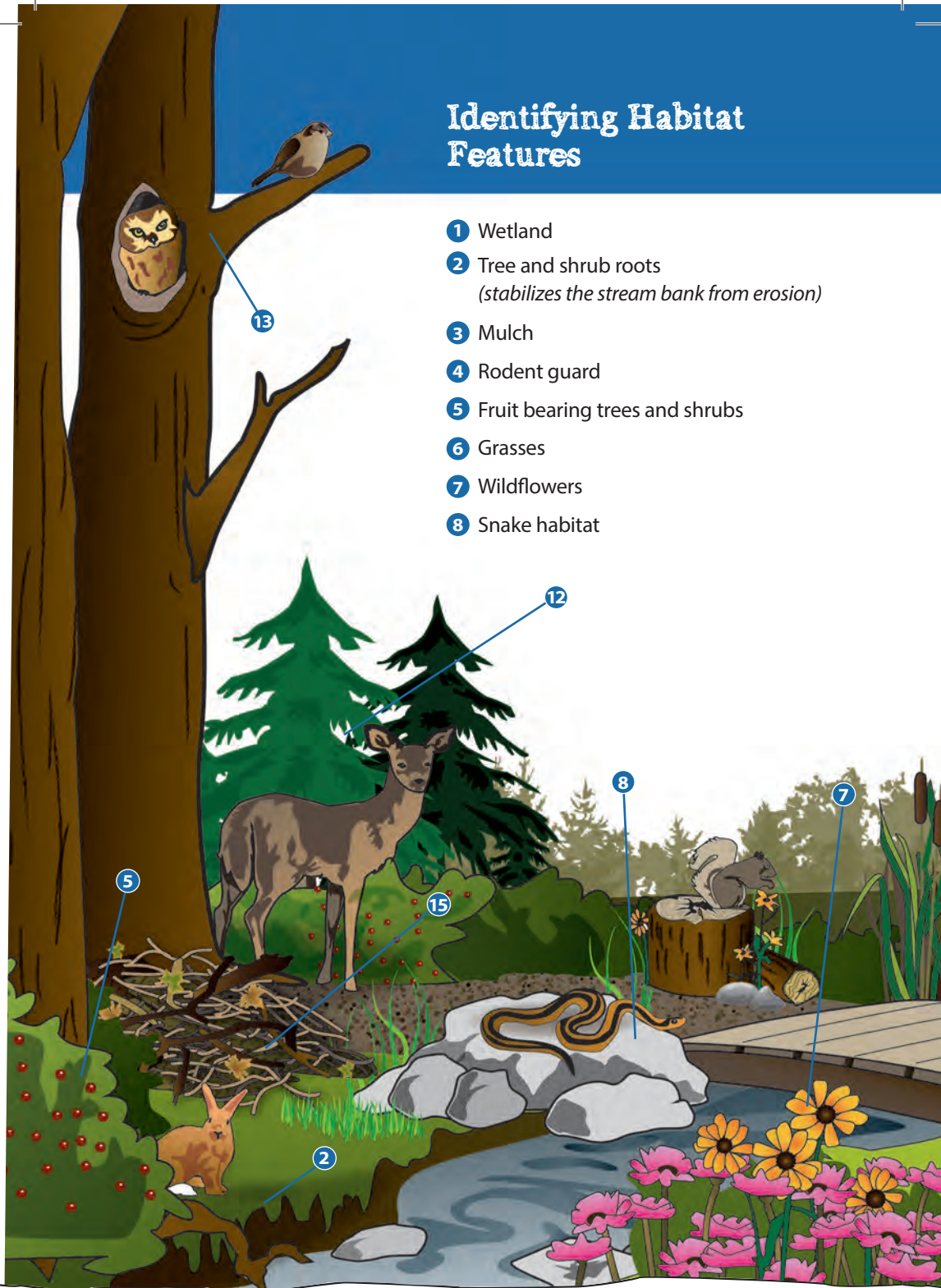
Annual regeneration reports completed one year after a planting can provide statistics on the survival rate of the trees and shrubs that were chosen for the site.



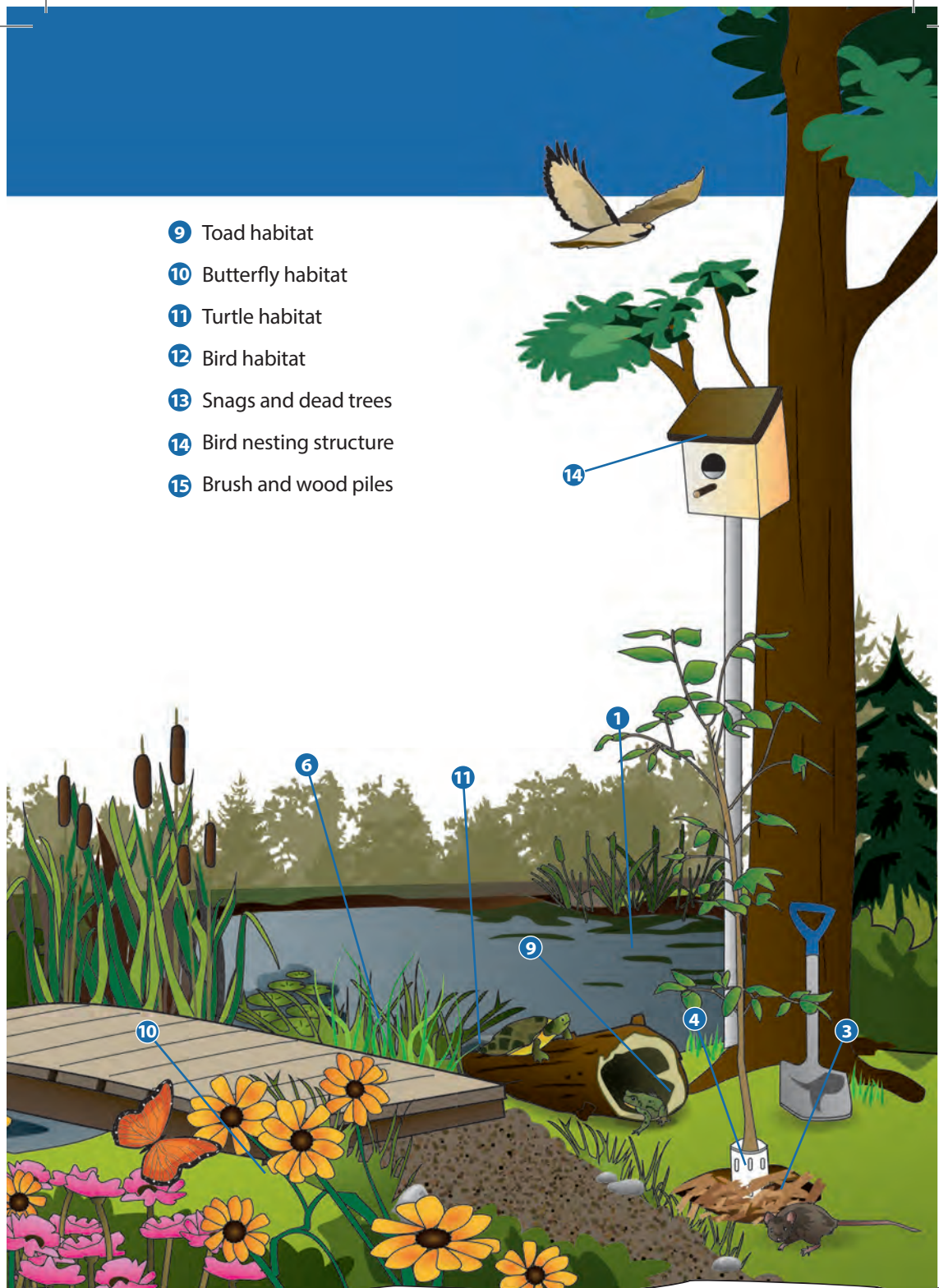
Be sure to use tree guards. Tree seedlings are highly vulnerable to browse and damage from deer, rabbits and rodents.

Identifying Habitat Features

- 1 Wetland
- 2 Tree and shrub roots (stabilizes the stream bank from erosion)
- 3 Mulch
- 4 Rodent guard
- 5 Fruit bearing trees and shrubs
- 6 Grasses
- 7 Wildflowers
- 8 Snake habitat



- 9 Toad habitat
- 10 Butterfly habitat
- 11 Turtle habitat
- 12 Bird habitat
- 13 Snags and dead trees
- 14 Bird nesting structure
- 15 Brush and wood piles





Bird Habitat

Step 1 – *What are their habitat needs?*

There is a wide variety of bird species here in Ontario and each species has its own habitat needs. Some eat berries, some eat seeds, and some nest in grass and some in holes in trees. So as you can imagine, there can be a wide range of habitat projects aimed to help bird populations.

Step 2 - *What you can do*

The simplest habitat project is putting up nest boxes for birds including bluebirds, wrens and owls. In most cases, these boxes can go in open areas; however, some species like owls prefer to live in large continuous forested habitat near open areas. There are several nest box designs available online or you can check with the TRCA for plans. Make sure that when you install the boxes you put them on fence posts or a T-bar and do not attach them to live trees. If possible, try and locate nest boxes in areas where they are protected from the sun and out of sight of people who might disturb them. Be sure you space the boxes apart – in most cases 75 m is adequate for spacing.

A second habitat project that is well suited to volunteers is the planting of shrubs and trees that will provide berries and shrubby nesting habitats for birds. In these cases, be sure to choose native shrubs including service berry, nanny berry and other fruit bearing shrubs as well as some trees that will provide nesting sites in the future.

Combining the nest box and shrub plantings into one project would be a great way to accomplish several habitat objectives at the same time.

Step 3 - *Maintenance*

It is important to thoroughly clean bird habitat structures after each breeding season. The best time to clean is in March, but it can be done throughout the fall and winter.



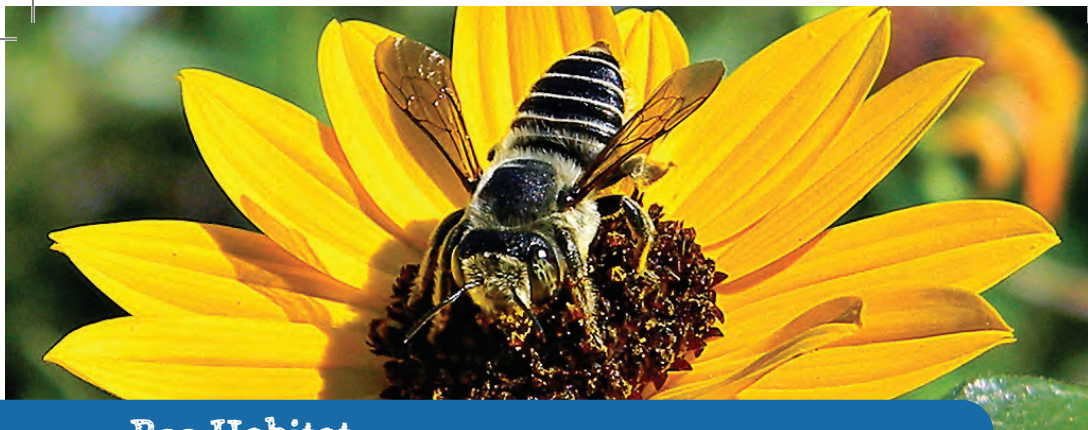
This step ensures that there is a clean structure for the beginning of each breeding season. In most cases, the nest boxes will be ready for the next year without too much difficulty – unless a wren or starling has used it and filled it with twigs. Repairs to nest boxes should also be done in March to ensure a safe habitat for the birds. Remember to securely close the panel of your nest box when you are finished and record your observations.

Step 4 – Monitoring

Monitoring bird boxes can be done periodically throughout the breeding season but it is important to observe the structure from a distance to determine signs of activity. If the adults are actively entering and exiting the structure do not approach. This is an indication there may be eggs, hatchlings or fledglings within the structure and disturbances may cause the adults to abandon the nest. When examining contents of the structures, it is best left until after the breeding season. This will help to minimize disturbance, determine species, clutch size, hatch rate, invasive species activity and/or parasites that exist.



About 80 species of birds nest in cavities and are candidates for using a nest box. If a particular species does not nest in a cavity in the wild, you're unlikely to find it using a nest box.



Bee Habitat

Step 1 – What are their habitat needs?

Everybody knows that bees are critical flower pollinators. But what most people don't know is that there are many kinds of bees that don't live in hives and don't sting like bumble and honey bees. It's those solitary, non-stinging bees that volunteers can help with habitat projects.

As long as there are different coloured flowering vegetation throughout the season, bees will be found. These species of bees usually live alone, in small holes in the ground or in fallen trees. Providing solitary bees with nesting sites near sources of water and food can help not only the bees themselves, but pollination of the flowers too.

Step 2 - What you can do

Creating habitat structures, also known as “Bee Condos” bee nests or nurseries (only the eggs and young larvae live there) simply requires varying diameter holes bored into an untreated block of wood to accommodate different sizes of bees.

You can build and install a structure called a bee nesting block or create one from a stem (bamboo) nesting bundle. These nesting blocks should be placed in areas near the shrubby edges of fields and areas such as hedgerows. Check out the *Resources Section* at the back of the guide for links to creating bee habitat.



Who Lives in a Bee Condo?

Solitary bees and wasps make the bee booth their home. In the wild, they create nests in hollow reeds or twigs, holes in wood, or in tunnels in the ground. The female typically creates a compartment (a “cell”) with an egg and some food for the resulting larva, then seals it off. A nest may consist of numerous cells. The adult does not provide care for the brood once the egg is laid, and usually dies after making a few nests.

Illustration from the book, “Bienen, Hummeln, Wespen im Garten und in der Landschaft.”

Step 3 - Maintenance

Blocks and bamboo bundles should be phased out every two years to ensure that the worst parasite and disease problems can be minimized or avoided.

To phase out the blocks or bamboo bundles:

1. Obtain a large, dark coloured and securely sealing container.
2. Make a single 1 cm exit hole at the bottom of the container.
3. Place blocks/bundles (removable from structure) inside of the container, ensuring minimal movement of the blocks/bundles and their secure placement within the container.
4. Securely hang container with occupied blocks/bundles adjacent to habitat structure containing the newly made blocks/bundles.
5. Nesting blocks/bundles should be left inside of the emergence box for a full year.
6. After all bees have emerged from the blocks, they can be cleaned and reused or replaced.

Step 4 – Monitoring

Monitoring of the bee structure is best completed prior to noon throughout summer months to observe the proportion of tunnels being used, and relate it to success of the structure. Nesting blocks and bamboo sticks inside an emergence box should not be disturbed or moved until late fall/early winter when adult bees are no longer active.



"Bee Condo" is a great way to monitor and listen to bees in a natural and safe setting.



Butterfly Habitat

Step 1 – *What are their habitat needs?*

To attract butterflies there needs to be sources of: water, food (larval and adult food sources), shelter, and nesting sites.

Step 2 - *What you can do*

Providing a home for butterflies and moths is easy!

Choose a sunny, sheltered location. Cold-blooded butterflies need warm temperatures to fly and feed. Rocks, placed in sunny areas, provide basking spots for butterflies to warm themselves. Shelter can be under leaves, in hollows of trees, in wood piles or anywhere they feel safe. Trees, shrubs and tall grasses can also provide shelter to butterflies.

Include a diversity of plants with bright, fragrant flowers that are tubular or flat-topped. These flower types are easier for adult butterflies to feed from with their long ‘tongue’ called a proboscis. Native plants are the best choice. These plants have evolved over thousands of year in response to the local climate, and in association with other native species. Native plants of exceptional importance to butterflies (in both their larval and adult forms) include:

- Aster species
- Bee Balm
- Big Bluestem
- Birch species
- Black-eyed Susan
- Blue Vervain
- Blazing Star
- Butterfly Milkweed
- Common Milkweed
- Dogwood species
- Goldenrod species
- New Jersey Tea
- Pale Purple Coneflower
- Pearly Everlasting
- Showy Tick-trefoil
- Spotted Joe-pye Weed
- Turtlehead
- Wild Bergamot
- Willow species

Leave small areas of exposed soil, or small depressions, where rainwater can collect for the creation of mud puddles. Butterflies will “puddle” in these areas, using them as a source of water and allowing them to obtain necessary nutrients from the soil.

Step 3 - Maintenance

Once your butterfly habitat is established, there is minimal maintenance required. The native plants used are well suited to local growing conditions and required little to no additional watering after they are established (2-3 years), and no fertilizing.

Many of the species we consider “weeds”, such as golden rod, Queen Anne’s lace and yarrow, are highly beneficial to butterflies. However, any non-native invasive species should be controlled in butterfly habitat, as they can easily out-compete native species and take over an area. For more information on invasive species, refer to the TRCA publication *A Quick Reference Guide to Invasive Species*.

Step 4 – Monitoring

At the onset of each season, take a walk through the site. Note its general condition and any outstanding maintenance required. Take photos before, during and at the end of the growing season to help record your progress. Inspect all tools and equipment to ensure they are in good shape and ready to use for the upcoming season.

During the growing season (June-September) perform regular site visit to make note of any butterfly species seen using the habitat. In particular, note any caterpillar activity to identify species that are using the site for breeding.

For detailed steps on maintaining butterfly habitat, including weeding, fall and winter care, and monitoring butterfly habitat, including species logging and disease control, refer to the TRCA publication *Maintaining your Pollinator Habitat: A Guide for Community Groups and Gardeners*.

Female monarchs have darker veins on their wings, and the males have a spot called the androconium in the center of each hind wing.





Turtle Habitat

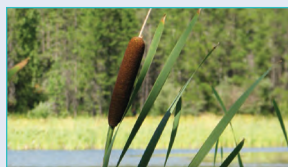
Step 1 – What are their habitat needs?

Turtles live along the shorelines of lakes, rivers, and ponds and spend time both in the water and on land. They need clean water to swim in and to eat in and safe places to bask in the sun.

During the summer, turtles leave the water to lay their eggs in soils that are easy to dig. Their habitat needs to be surrounded by native plants so that they can easily travel to their nests and their babies can safely travel back to the water.

Step 2 - What you can do

Carefully consider the appropriate training and lifesaving equipment requirements. If equipment is required to move logs or rock hire a professional and make sure that volunteers are not on site and not near any of the equipment.



A Note on Safety...

Often turtle habitat projects take place in or near water. It is crucial that you consider and prepare for the safety of everyone involved when working around water.

Turtle habitat can be created near any body of water such as a wetland, pond, river, or creek. It is very important to keep your project area as natural as possible.

Turtle habitat should have a 10 – 15 m wide unmown strip of native plants along the shoreline like dogwoods, Joe-pye weed, swamp milkweed, and shrub willows. This will allow the turtles to safely travel from the water to soils where they can lay their eggs and will protect their babies once they hatch.

Nearby fallen trees, logs or rocks can be submersed so that they are partially underwater and partially above water. Turtles will use these logs or rocks sticking out of the water as

places to bask in the sun. Do not bring wood or logs into your turtle habitat project from another area in case they are contaminated with chemicals or invasive species.

Ensure that the water in your turtle habitat area is free of chemicals, herbicides, or fertilizers. Educate volunteers, neighbours and maintenance staff about the plans for your project and encourage them to prevent any chemicals from entering the water.

Step 3 - Maintenance

Turtle habitat requires little maintenance and can be left to develop naturally. You can ensure that the area remains un-mown, and continue to add native plants, and nearby fallen logs into the turtle habitat area.

Invite other local groups to visit your turtle habitat site to learn more about turtles and to find out what they can do to help protect them.

If you spot a turtle in an unsafe area, near a road or trail, you can help it out of harm's way if it is safe for you to do so. Gently move the turtle across the road or trail in the direction it is heading. It is most likely heading out to find a nesting site!

If you find a nesting site, do not disturb it. You can cover it with a board for the first few days until the mother's scent is gone. This will prevent the nest from being dug up by raccoons. Make sure you remove the board after a few days so the baby turtles are able to dig their way out.

Step 4 - Monitoring

Visit your turtle habitat regularly to observe them in their habitat and get to know how they live! While you are visiting, check the area for disturbances such as litter that can be removed and raccoon activity.

The painted turtle lives in slow-moving fresh waters, from southern Canada to Louisiana and northern Mexico





Snake Habitat

Step 1 – What are their habitat needs?

To attract snakes there needs to be sources of water, food, shelter, and nesting sites. Snakes live in dens, which are also known as hibernacula. Hibernacula are important for snakes because they require a site below the frost line and close to the water table (so they do not dehydrate) to survive cold, dry winters.

Step 2 - What you can do

Building a hibernaculum will provide more overwintering opportunities for snakes in fragmented and isolated landscapes. Generally, snakes in Ontario forage in meadows and grasslands so locating the hibernaculum in these areas, especially on a warm, sun exposed south or west facing slope is best.

Be certain that you have the appropriate permits and that the landowner is aware that you will be using that equipment on their site. It would be wise to check with the TRCA if you are considering creating snake habitat.

A den can be easily created using fallen limbs from trees, logs, leaf litter or various sizes of rocks formed into rough piles. Most snakes will hibernate in groups in an area called hibernacula. These are an underground form of habitat and can also be created if the soil conditions allow. Providing basking areas will allow snakes to obtain their necessary sunlight requirements.



A Note on Safety...

Often a snake habitat project requires the use of construction equipment. If such equipment is required, hire professionals to move logs or rock and be sure that your volunteers are not on site at the time or near the equipment being used.

Step 3 - Maintenance

Make sure the entrance to the hibernaculum remains accessible. Prune any vegetation around the entrance to ensure the hibernaculum is open with interconnected passageways, but not too many openings that would allow the cold air to reach the lower depths.

Logs, rocks and brush piles can be added or replenished to help protect the emerging snakes from predators.

Step 4 – Monitoring

In the spring (mid April to late May) and early fall (September to early October), monitor your site to determine if your hibernaculum is being used. Don't get discouraged, it may take several years before snakes "discover" your hibernaculum.

Eastern Milk snakes are often mistaken for rattlesnakes since they will vibrate their tail rapidly when threatened, which can produce a buzzing sound if it contacts the ground.





Toad Habitat

Step 1 – What are their habitat needs?

Toads lay their eggs in warm, shallow ponds with healthy aquatic plants. When the toad tadpoles hatch, they live in the water for about 2 months. Then, they spend most of their adult life living on the land. One toad can eat up to 1000 insects in a day. Toads also eat worms, spiders, and pesky slugs. Toads are nocturnal which means that they are most active during the night. During the day, toads will find a place to hide under a flat stone, a fallen log, in a pile of wood or under leaves.

Step 2 - What you can do

Toad habitat can be created in wetland areas or on land. In wetlands, you can naturalize shorelines by planting native plants and preventing mowing. A healthy buffer strip of native plants around a wetland and in the water will provide excellent habitat for toads.

On land, you can provide hiding spots for toads by using nearby twigs, branches, logs and rocks to create toad dens. Toads will use these dens to hide and sleep during the day. Toad dens need to be moist and shaded from the hot sun. Try to find a location underneath a tree or bush for shade near the water. Add leaves to this area and allow them to slowly break down into compost. This compost will provide a source of beneficial insects for the toads to eat.

Step 3 - Maintenance

Check on your toad habitat on a regular basis. Make sure that the toad dens are not disturbed. Toads need areas where they are safe to hide during the day. Remove any litter that may accumulate in the area.

Step 4 – Monitoring

The best time for monitoring toads is between March and August at dusk when they are calling.



Resources

Bees

<http://www.xerces.org/pollinator-conservation/native-bees/>

<http://www.xerces.org/bringbackthepollinators/>

<http://www.xerces.org/pollinators-great-lakes-region/>

Birds

Bird Studies Canada, www.bsc-eoc.org

Cornell Lab of Ornithology, www.allaboutbirds.org

Project CHIRP, www.projectchirp.com

<http://trca.on.ca/dotAsset/58625.pdf>

Butterflies

Stokes Butterfly Book by Donald Stokes, 1991

The Butterflies of Canada by Peter Hall, 1998

100 Easy-to-Grow Native Plants for Canadian Gardens by Lorraine Johnson, 2005

Attracting Butterflies to Your Garden by John Tampion and Maureen Tampion, 2011

<http://crafting.squidoo.com/garden-butterfly-box>

<http://trca.on.ca/dotAsset/58627.pdf>

TRCA publication A Quick Reference Guide to Invasive Species.

TRCA publication Maintaining your Pollinator Habitat: A Guide for Community Groups and Gardeners.

Frogs and Toads

http://www.aquatic.uoguelph.ca/amphibians/amphib/amphib_frame.htm

https://www.naturewatch.ca/english/frogwatch/learn_frogs.html?Province=on

<http://www.torontozoo.com/adoptapond/frogs.asp>

<http://www.torontozoo.com/adoptapond/FrogwatchOntario.asp>

http://www.ontarionature.org/protect/species/backyard_frog_survey.php

Turtles

<http://kawarthaturtle.org/blog/get-involved/habitat/>

<http://www.torontozoo.com/AdoptAPond/WetlandGuardiansRegistry.asp>

Ontario's Reptile and Amphibian Atlas (http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php)

Ontario Turtle Tally

<http://www.torontozoo.com/adoptapond/>

Snakes

<http://www.torontozoo.com/adoptapond/snakehibernacula.asp>

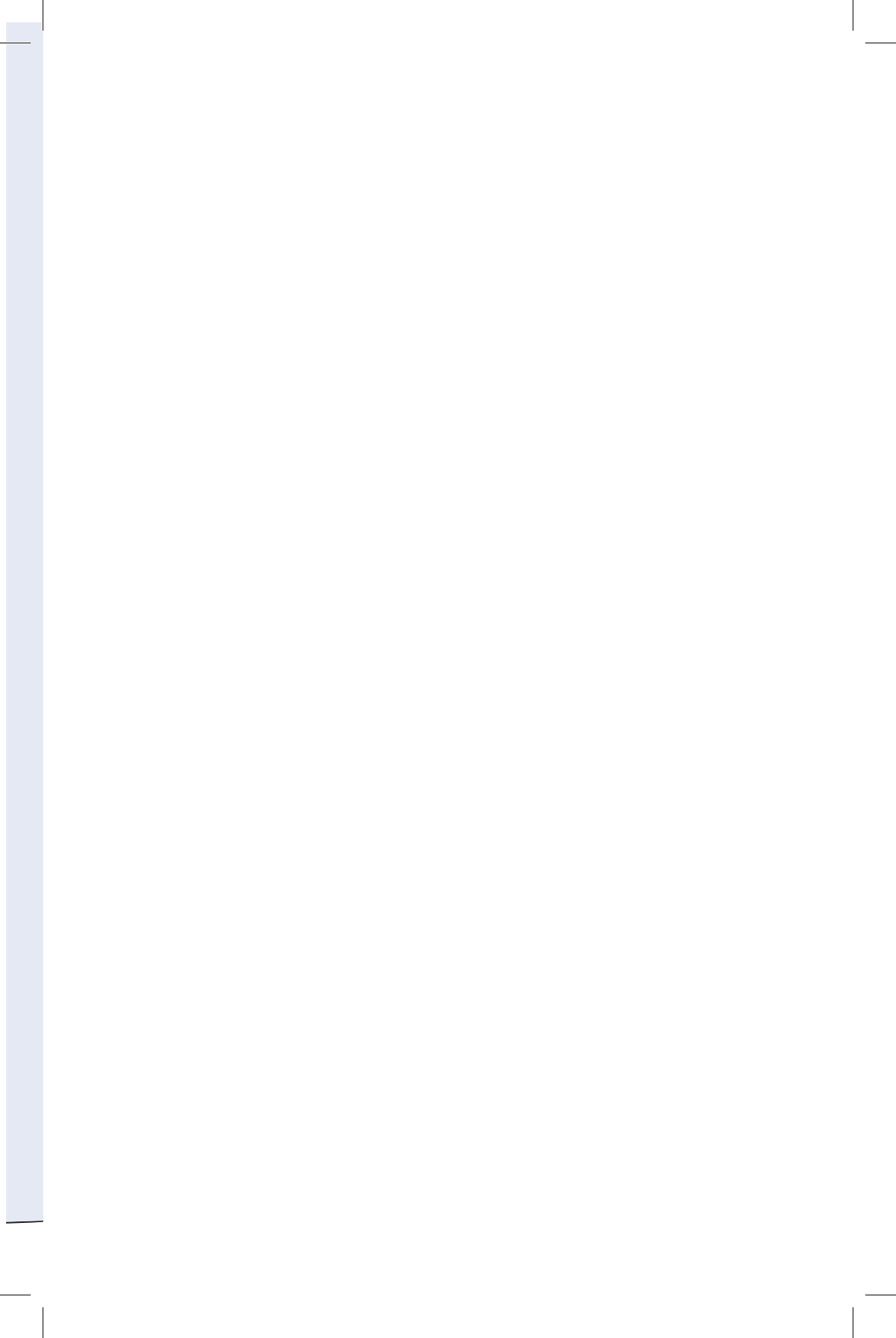
Planting Future Forests and Meadows - Related Information

<http://www.wikihow.com/Plant-a-Tree>

Association for Canadian Educational Resources (ACER) www.acer-acre.org

Local Enhancement and Appreciation of Forests (LEAF) www.leaftoronto.org

<http://trca.on.ca/get-involved/stewardship/healthy-yards-program/healthy-yard-connection/>





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