Regreening Program

Annual Report 2013









2013 Partners

Regreening Program























Ugliest Schoolyard Contest

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2013 Highlights

This year was a quiet celebration of 35 years of Regreening Program progress and year 3 of implementing the **Biodiversity Action Plan** through the **5 Year Plan 2011-2015**.

In 2013, the Regreening Program created 28 temporary employment opportunities, reclaimed 6 hectares of barren land north of Wahnapitae and planted over 75,000 tree seedlings and over 30,000 shrubs/understory trees throughout Greater Sudbury. External funding, material and in-kind contributions enabled the implementation of the third year of the **5 Year Plan 2011-2015**. The table below outlines the various Regreening components followed by the 2013 achievement and the accumulated total since 1978.

Regreening Component	2013	To Date (since 1978)
Tree Planting	76,004	9,424,231
Shrub Planting	31,575	159,496
Area Limed	6.0 ha	3,445 ha
Area Fertilized		3,217 ha
Area Seeded		3,145 ha
Forest Floor Transplants	0.20 ha	1.06 ha
Program Cost	\$803,480	\$28,460,669
Temporary Employment Opportunities	28	4,620
Awards	_	14
Number of Schoolyards Regreened	3	34
Volunteer Tree Planters	437	10,711
Trees Planted by Volunteers	12,467	363,154
Trees Provided for Residential		
Plantings	706	424,806

VETAC's Urban Landscape sub-committee continued with the 9th annual "Ugliest Schoolyard Contest". The grand prize winner was École Notre Dame in Hanmer. In all, 14 local businesses, corporations, special interest groups as well as numerous private citizens provided funding, materials and offered services to complete the schoolyard Regreening project. Corporate funding from Sudbury Integrated Nickel Operations (INO), a Glencore Company and formerly known as Xstrata Nickel, in the amount of \$50,000 enabled the Committee to extend the prize package to two runner-up schools: École St-Joseph in Hanmer and Adamsdale Public School in Sudbury. Schoolyard transformations occurred from late August until the end of October.

The operational scale forest floor transplant project proceeded again in 2013 thanks to continued partnership with KGHM International who are developing the Victoria Mine site near Fairbank Lake. This year, 13 sites received understory forest floor mats totaling an area of 0.188 ha. Additionally, 4 sites received exposed vegetation, one site received lichen transplants and another site was transplanted with marsh blue violet. All transplants totaled 0.2 ha.

Field Interns were engaged in monitoring shrubs for climate change and past forest floor mats to assess their health and suitability. They also continued to explore the flora of barren and semi-barren areas and conducted additional plant community succession investigations.

Tree Planting

Spring and fall planting activities resulted in 76,004 tree seedlings and 31,575 shrub/understory trees planted throughout Greater Sudbury. Since 1978, a total of 9,424,231 trees and 159,496 shrub/understory trees have been planted by the Program.

Tree Canada provided funding for 57,278 trees and shrubs this year and Vale donated 43,604 seedlings (jack pine, red pine, and white spruce).

A total of five species of deciduous understory trees, ten shrub species and ten tree canopy (conifer and deciduous) species were planted. Of these, three new species were added to the mix this year to increase plant diversity throughout Greater Sudbury including common juniper (*Juniper communis*), purple-fruited chokeberry (*Aronia prunifolia*) and ironwood, also known as hop hornbeam (*Ostrya virginiana*).

Vale aerial seeded 181 hectares of barren land located 5 km north of Wahnapitae in the fall of 2012. This was the main planting site for the crew this spring. Species planted included the typical first phase planting mix of jack pine, red pine, white pine and green alder. Red oak was also added to the mix this year.

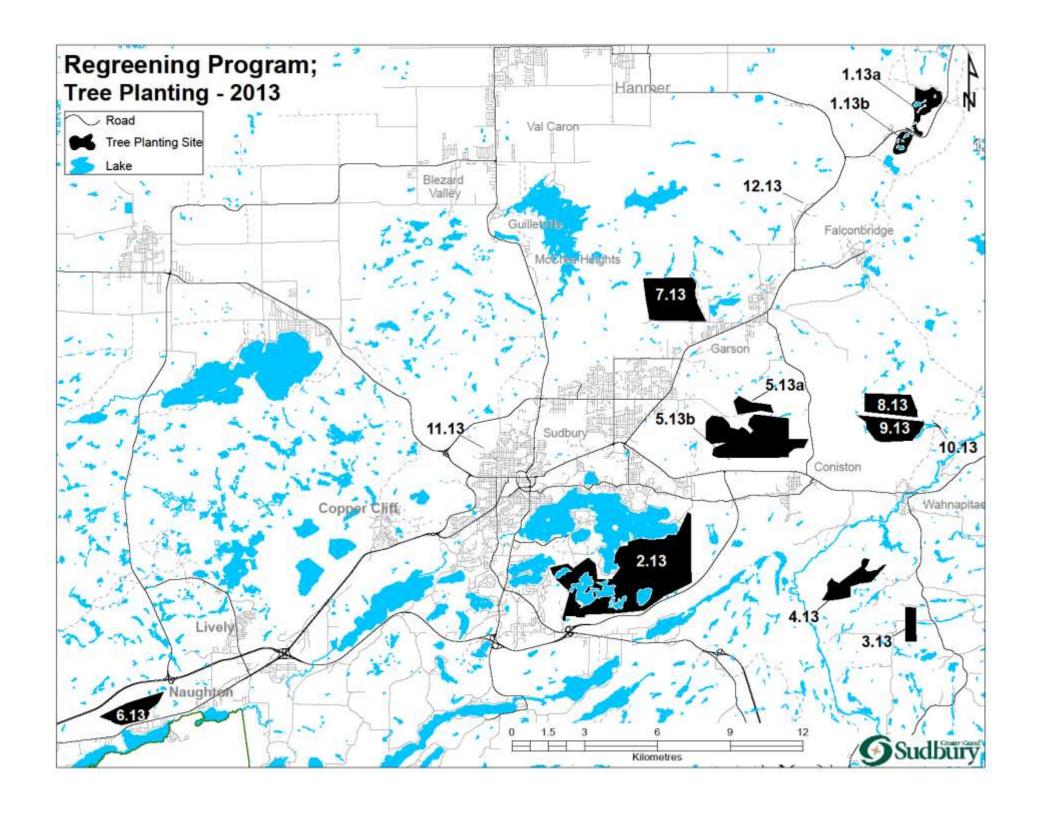
Working from the **5 Year Plan 2011-2015**, other planting sites included the Kettle Lakes, the 2011 aerial lime site, the 2012 manual lime sites, Lasalle/Savannah swamp, O'Neil Drive, Lake Laurentian Conservation Area (LLCA), Finni Road, Penny Lane, Walden Ski Club and Frood Road.

Refer to the tree planting map on the next page for locations of the planting sites.



Survival Assessments

Collège Boréal partnered with us to provide Tree Canada with survival assessments of past planting sites. In a five year old plot it was found that jack pine had a 95.7% survival rate, white pine had 98.4% and tamarack had 94.2% survival rate. In a two year old plot, jack pine had a 98.9% survival rate and green alder had a 93.9% survival rate. In a one year old planting site, white pine survival rate was 98.3%, green alder was 96.9%, yellow birch was 96.5% and smooth serviceberry was 92.9%.



Volunteers

This year, ten volunteer groups involving over 400 individuals planted almost 12,500 tree seedlings throughout Greater Sudbury. The following is a list of ten groups that participated in tree planting activities this year:

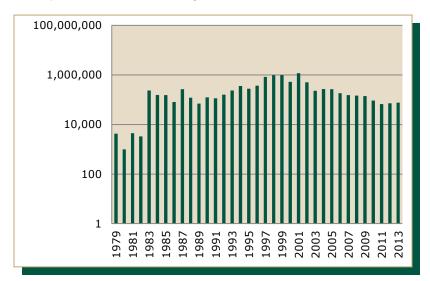
- Sudbury Game and Fish Club
- Capreol Ski Club
- Walden Trails Ski Club
- Walden Trails Bike Club
- Junction Creek Stewardship Committee (JCSC)
- BioSki Club
- Silver Lake Stewardship Group
- Roots & Shoots
- Living with Lakes Centre (LLC) staff
- Private Residents

The Regreening Program is able to offer seedlings, planting equipment and direction to any local group wanting to participate in the Regreening effort. The volunteer program provides educational opportunity on environmental issues, information on the City's Regreening Program, tree planting experience as well as a sense of community pride and ownership of the natural environment.



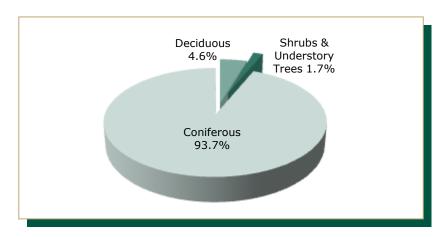
Number of Trees Planted 1979 to 2013

The bar graph below indicates the number of trees planted each year since 1979 for a grand total of 9,424,231 trees.



Percent of Species Planted 1979 to 2013

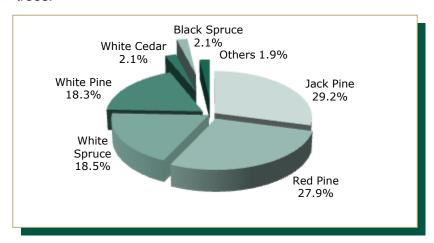
The pie graph below illustrates the percentage of each type of species planted since 1979 for a grand total of 9,583,727 plants.





Percent Coniferous Species Planted 1979 to 2013

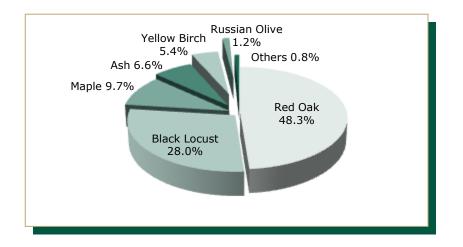
The pie graph below illustrates the percentage of each coniferous tree planted since 1979 for a total of 8,985,493 trees.



Others Include: tamarack 1.3%, Norway spruce 2.0%, larch 0.2%, hemlock 0.1%, balsam fir 0.1% and Austrian pine <0.1%.

Percent Deciduous Species Planted 1979 to 2013

The pie graph below illustrates the percentage of each deciduous tree planted since 1979 for a total of 438,738 trees.

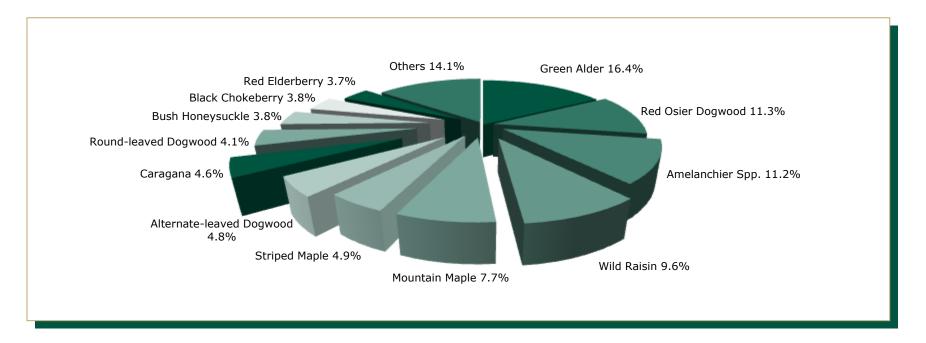


Others Include: bur oak 0.5%, bitternut hickory 0.1%, American beech 0.1%, ironwood 0.1%, basswood <0.1% and white oak <0.1%.



Percent Shrubs and Understory Trees Planted 1979 to 2013

The pie graph below illustrates the percentage of each type of shrub or understory tree planted since 1979 for a total of 159,496 plants.



Others include: high-bush cranberry 1.7%, common elderberry 1.4%, mountain-holly 1.3%, mugho pine 1.2%, winterberry holly 1.1%, nannyberry 1.0%, staghorn sumac 0.6%, buffaloberry 0.6%, narrow-leaved meadow- sweet 0.6%, bearberry 0.5%, ninebark 0.5%, pin cherry 0.5%, swamp rose 0.5%, common juniper 0.5%, hobblebush 0.5%, hardhack 0.4%, prickly wild rose 0.3%, sweet gale 0.2%, broad-leaved meadow- sweet 0.2%, wintergreen 0.2%, choke cherry 0.1%, buttonbush 0.1%, smooth wild rose 0.1%, sandcherry <0.1%, Canada plum <0.1%, purple-fruited chokeberry <0.1%.

Assisted Migration

The intent of assisted migration in the context of the Regreening Program is to plant native species a little farther north than their current growing range in anticipation of climate change effects on vegetation.

Over the past few years, species that are found occasionally in the southern part of this growing zone which extends as far south as Parry Sound were selected for assisted migration including; white oak (pictured to the right), bitternut hickory, buttonbush, hobblebush and American basswood. Other species selected whose northern limit is at or just to the south of Greater Sudbury include; black chokeberry, alternate-leaved dogwood, round-leaved dogwood, common elderberry, swamp rose and hardback.

Monitoring of these species this year revealed that white oak had a high percent survivability at 95%. The lowest success rates for survival were observed for alternate-leaf dogwood at less than 50% survivabilty. Round-leaf dogwood and hobblebush were also considered species with relatively low survival rates with overall mean of approximately 60%. This value appeared to be dependent on the site in which it was planted.

The degree to which each species was browsed varied and the values ranged from 0% to almost 90%. Species which experienced the greatest amount of herbivory were round-leaf dogwood, American basswood, and bitternut hickory. The overall means for these species in terms of the percent browsed ranged from 67% to 87.7%. Species displaying the least amount of herbivory were swamp rose with an overall

mean below 10%. The remaining species have intermediate values for percent browsed, ranging from 17% to 57%.

The average height of the 10 species monitored ranged from 9 cm to 45.9 cm. The tallest species were alternate-leaf dogwood, black chokeberry and round-leaf dogwood. These species all had a mean height greater than 40cm. The shortest species included bitternut hickory, hobblebush and American basswood.

Monitoring will continue and new species will be added to the list as deemed appropriate.



Seed Collecting

Seeds and berries of a variety of species (listed in the table below) were collected and shipped directly to the nursery for propagation in the coming years. There was an excellent crop of green alder seeds which were collected in abundance. This seed will be held in storage to meet our goals for future years. Also, about 30% of the bristly sarsaparilla seeds were set aside as back-up as germination can be tricky. The bearberry seed was received too late to process at this time but will be treated for production in the following year. All other seeds were both cleaned and sown right away or remain in stratification for sowing in the spring.

Species	Calculated # of Seeds
Green Alder (Alnus crispa)	758,000
Bristly Sarsaparilla (Aralia hispida)	32,800
Bearberry (Arctostaphylos uva-ursi)	11,500
Black Chokeberry (Aronia melanocarpa)	19,000
Mountain-holly (<i>Nemopanthus mucronatus</i>)	51,600
American Mountain-ash (Sorbus americana)	19,600
Showy Mountain-ash (Sorbus decora)	7,100
Snowberry (Symphoricarpos albus)	2,500
Canada Yew (Taxus canadensis)	280
Hobblebush (Viburnum alnifolium)	1,400
Wild Raisin (Viburnum cassinoides)	46,500
Total Number of Seeds Collected	950,280

A citizen collected seeds of wild columbine (*Aquilegia* canadensis) and pale corydalis (*Corydalis* sempervirens). These seeds were broadcasted within the Lake Laurentian Conservation Area and will be monitored next year.

Cuttings of Canada yew were also collected at the beginning of December. Although a small quantity of seeds was collected earlier in the season, the preferred method of propagation is from cuttings. Approximately 950 cuttings were taken and shipped to the nursery for propagation.



Crushed Limestone, Fertilizer and Seed

The liming activities this year focused on an area of barren land located just north of Wahnapitae. In total, 6 hectares of barren land were manually limed using crushed dolomitic limestone. No fertilizer or seed was applied this year. Refer to the following page for lime site location.



To date, 3,445 hectares of barren land have been treated with crushed limestone by the City's Regreening Program.

Vale is committed to following the recommendations set out in the **5 Year Plan 2011-2015** and again aerial seeded 210 hectares of barren land located north of Wahnapitae in September. The more native seed mixture selected in 2012 was altered slightly due to seed availability for little bluestem (*Schizachyrium scoparium*). This year's aerial seed mixture consisted of:

40% Fall Rye (Secale cereal)

30% Canada Wildrye (Elymus canadensis)

20% Slender Wheatgrass (Elymus trachycaulus)

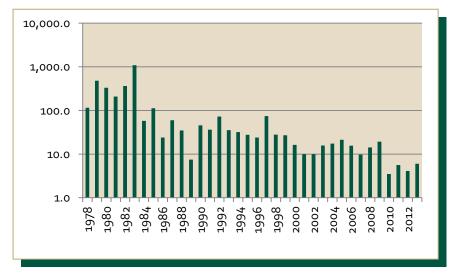
10% Alsike Clover (Trifolium hybridum)

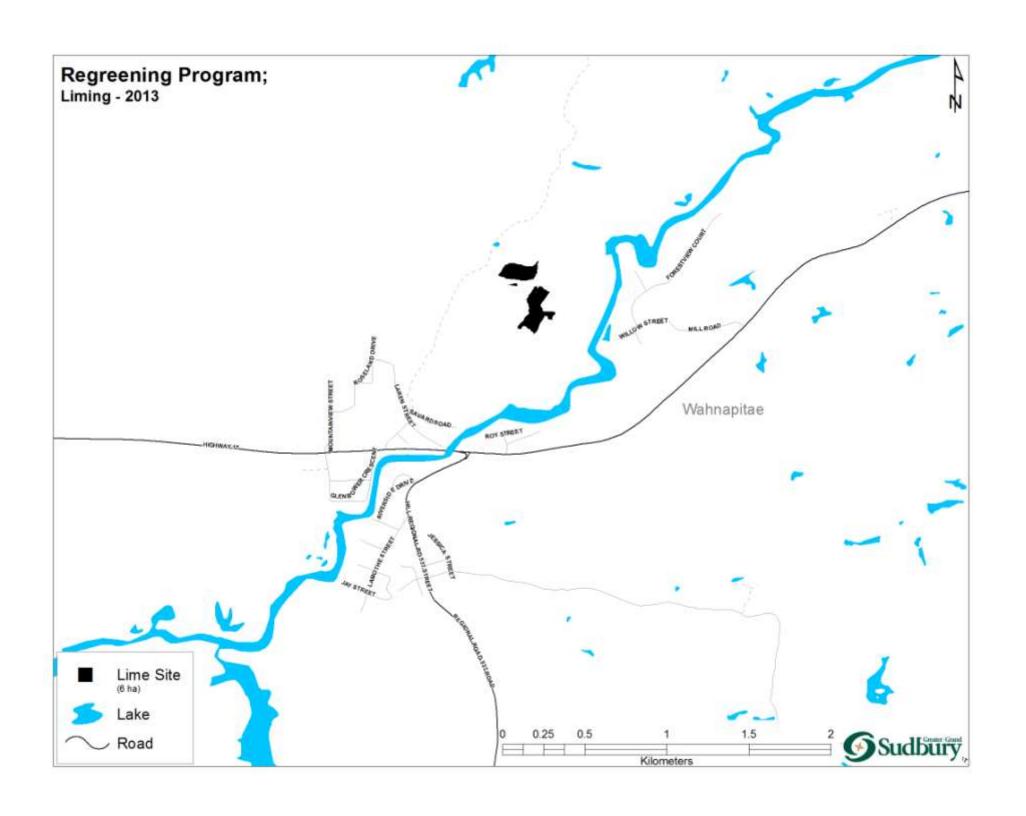
Vale used a fertilizer rate of 200 kg/ha which was half the normal or original rate used by the Regreening Program. The higher fertilizer rate was designed for agricultural grasses and likely not necessary for the more native seed mix chosen.

This area will be monitored to find out how the seed mixture did and if there was any indication that the lower level of fertilizer is sufficient enough to initiate grass growth. This site will also be the main focus for planting in the spring of 2014.

Area Limed 1978 to 2013

The bar graph below indicates the area in hectares per year that were limed by the municipal Regreening Program since 1978 with a grand total of 3,445 ha limed to date.





Forest Floor Transplants

Continued partnership with KGHM International allowed for the ongoing forest floor transplants in 2013. From June to October vegetation was harvested from the Victoria Mine site near Fairbank Lake.

As in the past, Regreening crews dug up the top 4 inches (10 cm) of soil containing plants, seeds, microorganisms and invertebrates from the donor site. The vegetation was then watered over night and transported to reclamation sites in Greater Sudbury for transplanting. There were two main sites this year: understory sites (for shade tolerant species) and barren or exposed sites (for sun loving species).

Understory Transplants

Criteria for selecting receptor sites for the understory transplants included sufficient canopy cover, low understory species diversity, sufficient soil depth and organic layer (>5cm) and large enough areas to allow the species to spread. Plots were established measuring approximately 4m by 4m.

In 2013 approximately 0.188ha of understory floor mats were transplanted into 13 forest locations and one wetland. Locations selected were spread out across the Greater Sudbury area within barren and semi-barren zones. Some focus was placed on forested areas with public usage, such as those adjacent to Rainbow Routes trails and schools.

Over the season, 5279 trays of understory vegetation were dug up and transplanted into 114 plots at 14 different sites. Since 2010, a total of 569 plots (104 sites) received understory transplants, covering an area of 0.91 ha.



Monitoring Understory Transplants

Understory floor mat monitoring has been ongoing for eleven sites since the first mass transplanting exercise in 2010. Field interns have been examining species coverages, invasion or emergence of previously unrecorded plants, flowering, and migration outside of plot borders. While there is some site variation, consistent trends are being noticed with plant success following transplant.

Generally most understory plants have responded well to transplanting, with the exception of some non-vascular plants and clubmosses, which generally have died off in years following transplant. Several species maintained their abundance within a plot from 2010 to 2013 including:

starflower (*Trientalis borealis*), bunchberry (*Cornus canadensis*), low sweet blueberry (*Vaccinium angustifolium*), and Canada mayflower (*Maianthemum canadense*).

Emergence and survival of native understory plants has been excellent thus far. Since 2010 the plants that have most commonly emerged include seedlings of serviceberry (Amelanchier spp.), common raspberry (Rubus idaeus), wild raisin (Viburnum nudum var. cassinoides), white birch (Betula

papyrifera), pines (*Pinus spp.*), red oak (*Quercus rubra*), and pin cherry (*Prunus pensylvanicum*), and graminoids including mountain rice grass (*Oryzopsis asperifolia*) and wood rushes (*Luzula spp.*).

The range and amount of spread has increased greatly for all species from 2012 and was especially pronounced in sites which had *Polytrichum* moss surrounding plot edges. Canada mayflower and starflower were found to be spreading most often in 94% and 78% of all plots respectively, with an average spread of 37 cm and 28 cm respectively. Wintergreen (*Gaultheria procumbens*) showed a great deal of seasonal variation in amount of spread but the overall average spread was 14 cm.



Exposed Area Transplants

As in forest understory, the successional patterns of exposed areas are often delayed. These exposed habitats generally do not permit the ideal growing conditions required by most plants. Key aspects such as temperature fluctuations, low water holding capacity, limited soil formation, soil erosion and substrate type are some examples of factors that could influence a plant species' ability to colonize and establish.

One of the more recent initiatives of the Regreening Program has been to increase diversity in these exposed barren areas by introducing mats of vegetation that are adapted to open conditions. The vegetation targeted for transplants this year included reindeer lichen (*Cladina rangiferina*) and poverty oat grass (*Danthonia spicata*).

In total 223 trays of exposed vegetation were collected and transplanted at three sites, covering an area of approximately 0.008 ha. One additional site received 51 trays of lichen covering a total area of approximately 0.002 ha. Since 2010, 19 sites received exposed transplants covering an area of 0.15 hectares.

Monitoring Exposed Transplants

The first exposed floor mats were established among some of the barren rocky outcrops in 2011. Two monitoring locations were established in the areas of Mount Ramsey (five plots) and Coniston Hydro Road (ten plots).

Monitoring began in the spring of 2012 and was repeated this year in the spring of 2013. The monitoring sites at both Mount Ramsey and Coniston Hydro Road were re-visited to

determine if the transplanted species had successfully established and to determine the status of their health.

Overall, exposed vegetation is doing better at the Mount Ramsey site compared to the Coniston Hydro Road site. Species are healthier, larger in size and reproducing at the Mount Ramsey site. The exposed mats also seemed more resistant to invasion by non-desired species and weedy species.

The long term monitoring will continue in the future to assess the viability and the overall condition of the transplanted plants in these areas.



Biodiversity Inventory

Plant Community Succession

Brian Amiro in 1978 was one of the first to examine the plant communities and the vegetation patterns in relation to Sudbury and the surrounding area. The main purpose of his Masters study was to provide a base for future vegetation studies in terms of the successional pathways of plant communities in areas impacted by industry and development. A total of 142 sites were examined and importance values were determined from quantitative vegetation data for each species encountered in three different layers (i.e. tree, shrub and herb stratums). Based on his findings from the tree stratum analyses, he identified nine major community types that reflected the dominant tree species present.

Andrea Sinclair performed a follow-up study 15 years later (1996) where she re-examined 46 of Amiro's original sites and also added 22 new sites. She followed similar methods outlined by Amiro. However, Sinclair only indentified six main community types and these communities, similar to Amiro, reflect the dominant tree present. She found that red maples (*Acer rubrum*) were far less abundant across the plant communities. In addition, changes were observed in the tree layer due to tree planting and the vegetation within the herb layer had changed over time due to revegetation efforts (i.e. seeding).

This year, 35 years after Amiro's initial investigation, 33 sites were re-visited and examined using Amiro techniques and methods. Coupled with the eight sites sampled last year

(2012), a total of 41 sites have been re-evaluated. Various changes over time can now be examined in regards to these plant communities.

Overall findings show significant differences in vegetation composition between years and between the impact zones (barren, semi-barren and non-impacted). Major changes occurred in all strata (forest floor, shrub layer and tree canopy), largely due to increased species richness and species distribution. Within the tree and shrub stratums, the average abundances for all species have increased over time. Many positive changes in species composition were observed, such as successful establishment of white pine as a result of regreening activity, reappearance from pollution sensitive mosses and lichens, and the reduction of some historically dominating pioneer species such as tickle grass (Agrostis scabra) and Pohlia nutans moss. In 2013, it appears that semibarren sites are now more similar to comparative nonimpacted sites, compared to sites within the barren zone which demonstrates a slower rate of recovery. Sites within the barren zone will still need more assistance from re-greening efforts to encourage increased distribution and richness in vascular understory plants.

Additional Amiro sites will be visited next year to complete the data set.

A Flora of the Barrens and Semi-barrens

In 2012 vegetation exploration of Sudbury's forests and wetlands within the barren and semi-barren zones began. The continual aim of this project is to create an inventory of the plant species of Greater Sudbury's forests and wetlands. Community types are described based on the relative abundance of plant species present, the soil substrate, and the heights of canopy trees within an area. Records are made of sightings of wildlife and rare (or rare for Greater Sudbury) plant species encounters.

In 2013 vegetation surveys were conducted at 43 locations. Because some of these locations had more than one forest type, more than one survey was conducted. Fourteen community types were categorized, two of which were wetlands (Marsh and Floating Fen). Mixed Deciduous Forest and Mixed Deciduous/ Conifer Forests were the most commonly surveyed community this year.

In total 256 plant species in both Forest and Wetland habitats were encountered, including approximately 7 unidentified plants (mainly graminoids, mosses, and herbs from the *Asteraceae* family). When combined with the plant list collected in 2012, there are now a total of 445 plant species recorded. This includes approximately 79 new species that were added to the inventory this year. However, approximately 30 of the 445 plants include unidentified graminoids and herbs that may or may not be a unique species in the inventory.

The species encountered most often included: low sweet blueberry (*Vaccinium angustifolium*), white birch (*Betula papyrifera*), wavy-hair grass (*Avenella flexuosa*), red maple

(Acer rubrum), false pixie cup lichens (Cladonia chlorophaea), Polytrichum moss, red oak (Quercus rubra), Canada mayflower (Maianthemum canadense), bracken fern (Pteridium aquilinum), bush honeysuckle (Diervilla lonicera), and Pohlia nutans moss.

Less than a dozen plant species that are rarely seen within the impacted area were also encountered. The most common fauna signs recorded include snowshoe hare and moose scat. Several bird, frog and insect species were also observed.

Data compiled from this survey can be used to better compare community types based on their location within the barren limits. This information can be used to describe Greater Sudbury's unique forest types and to monitor advancement of succession. It is beneficial to continue these vegetation surveys in the future to obtain the most information possible for species inventory and regeneration in the Greater Sudbury area.



Ugliest Schoolyard Contest

The Canadian Biodiversity Institute and Earth Day Ottawa initiated the Ugliest Schoolyard Contest in 1998 in Ottawa. VETAC's ninth annual version of this Contest was another overwhelming success thanks to the tireless efforts of Mr. Wayne Hugli, Co-chair of VETAC's Urban Landscape Subcommittee and the generous support of numerous sponsors. Sudbury Integrated Nickel Operations (INO), a Glencore Company, and formerly known as Xstrata Nickel provided the major cash donation in the amount of \$50,000 to run this contest again in 2013.

In addition to the Sudbury INO funding, all schools also received a voucher for the purchase of concrete materials from Brown's Concrete Products, and topsoil donated by Vale.

Of the eight schools who entered the contest, the winner selected by VETAC was *École catholique Notre Dame* in Hanmer. Two runner-ups were chosen as well; *École catholique St-Joseph* in Hanmer and *Adamsdale Public School* in Sudbury. Preliminary plans were made with the schools prior to the end of the school year.

Grand Prize Winner – École Notre Dame, Hanmer

From mid August to the end of September the barren landscape at this school on Dennie Street in Hanmer was transformed into a new park-like setting for the students and teachers. Vice Principal Sylvie Bazinet spearheaded extensive planning with the staff and students in advance and had very definite ideas as to what work should be done. Leon Vezeau

from the French Catholic School Board was extremely cooperative in securing water access, providing paver stones and approving the plan.

Financial support from Sudbury INO, in the amount of \$20,000 was pooled with invaluable in-kind support from Vale, Hollandia, Botanix Azilda Greenhouses, Southview Greenhouse Growers, Canadian Tire on Regent Street, Ashley's Landscape Supplies, North Range Sod, Brown's Concrete Products, Echo Rentals, Sudbury Horticultural Society, Sudbury Master Gardeners, City of Greater Sudbury Regreening Program and VETAC. Supporting financial contributions of \$250 from the Sudbury Master Gardeners and \$600 from the Sudbury Horticultural Society were also used to enhance the schoolyard at École Notre Dame.



The first renovation was to resurface an unsafe soccer field, pitted with lumps and depressions making running on the surface very hazardous. Planning and site preparation was conducted by Hollandia and topsoil was provided by Vale. Hollandia also hydro seeded and fertilized the area and within 2 weeks lush grass cover was growing in the area. Using only \$5,000 of the funding from Sudbury INO, this phase of the project was valued at \$20,000 once all donations were added together.

In late August, Botanix Azilda Greenhouses planted 5 silver maple trees and 5 Autumn Blaze maple trees. The school purchased an additional Autumn Blaze maple that was also added to the schoolyard. With equipment donated by Echo Rentals, staff from Botanix Azilda Greenhouses dug the holes for the trees and along with a community volunteer moved soil in preparation of planting beds and laying sod.

Tree guards and concrete pavers were installed around the trees by the City's Regreening crew to help protect the trees

and provide low seating for younger students. In early September, three circular planters were constructed by the City's Regreening crew and Sudbury Horticultural Society members using concrete pavers donated by Brown's Concrete Products and the School Board. Seating in the form of 20 large limestone boulders were placed throughout the yard, half of which were donated by Ashley's Landscape Supplies.

The Sudbury Horticultural Society prepared the garden beds at the beginning of September filling the planters with triple mix and top-dressing the new flowerbeds with triple mix and composted manure that was purchased from funds supplied by the Sudbury Horticultural Society and Sudbury Master Gardeners. Donations of plants were gathered from Canadian Tire on Regent Street, Botanix Azilda Greenhouses, and Southview Greenhouse Growers as well as from Linda Hachez and Colombe Charest, both Sudbury Horticultural Society members. On September 12, a team of volunteers from the



Horticultural Society and Master Gardeners worked with and enthusiastic group of older students from the school to plant the large collection of hardy shrubs and perennials that were donated.

On September 25, volunteers from the Sudbury Horticultural Society and the City's Regreening crew returned to the school to work with the students to lay sod, install a pathway and mulch all the new flowerbeds. Cardboard was laid under the mulch to try to keep weed grow to a minimum for the first few years until the shrubs and perennials become well established.

Although the school received \$20,000 in financial support from Sudbury INO, for this project through the Ugliest Schoolyard Contest, the additional in-kind donations more than doubled the value of this schoolyard regreening project.





Runner-up Winner - École St-Joseph, Hanmer

An enthusiastic parent and principal worked with Joe Reid from Southview Greenhouse Growers to plant 5 Glenleven lindens and 5 Autumn Blaze maples in the schoolyard. Tree guards were installed by the City's Regreening Crew to help protect the trees. The amount of \$5,000 in funding dollars went towards the construction of a covered sandbox, which the School Board has taken on responsibility of building and financing the remainder of the costs associated with it. Tires were donated by OK Tires on Algonquin Road and a climbing apparatus was constructed from them. Valley Nursery Sod Inc. donated 425 rolls of the sod required to create a grassed area for the students, an additional 125 rolls were purchased. Vale donated the topsoil required to prepare for the sod area. Another two trees were later installed in the schoolyard for added shade.



Runner-up Winner – Adamsdale Public School

Adamsdale Public School had an eager team of principal, custodian and two teachers who planned and implemented the project. They worked with Joe Reid from Southview Greenhouse Growers to plant 5 honey locust, 5 Glenleven linden and 5 Autumn Blaze maple trees in the schoolyard. The City's Regreening Crew then installed tree guards around the trees to help protect them. Using a \$200 voucher from Brown's Concrete Products, a planter was constructed. An area was transformed into an outdoor classroom by spreading pea gravel and adding large stones for seating.

Past Contest Winners and Runner-ups

On June 10 several VETAC members and staff participated in a re-evaluation of past winning and runner-up schools from 2005 to 2009. Nine schools were visited in all. At the end of the tour members selected the best two schools to receive additional funding to help with the upkeep of their schoolyards. Carl A. Nesbitt received \$3,500 and Pinecrest Public School received \$1,500 in additional funds. These schools showed great upkeep and commitment to a greener schoolyard. Plans are in the works to continue with this initiative in the coming years.



Sponsors

Sudbury INO (a Glencore Company)'s generous funding and the additional donations received for this project enabled VETAC to provide greatly improved environments for the students and teachers at these schools.

Since the inception of the contest, thirty-four schools have been provided support for their Regreening projects and VETAC looks forward to assisting more schools in the future. Generous financial support and donations from local businesses and organizations in our City will ensure the continuation of this Contest well into the future.

Media

An aggressive communication strategy was implemented to promote the Contest; a public service announcement was released March 21st (which can be found here: http://www.greatersudbury.ca/living/newsroom/newsreleases/greater-sudbury-schools-invited-to-participate-in-ugliest-schoolyard-contest/, information was posted on Facebook and Twitter, and announcements were made on CTV Broadcasting and Closed Captioning.

On June 12, the City issued a News Release announcing the winning schools for the year, which can be found here: http://www.greatersudbury.ca/living/newsroom/newsreleases/ecole-catholique-notre-dame-hanmer-winner-of-the-ugliest-schoolyard-contest/

During the second week of October, newspaper ads were published in the Sudbury Star, Northern Life and Le Voyageur thanking all sponsors of the contest.



Ugliest Schoolyard Contest

The City of Greater Sudbury gratefully acknowledges the support of the following organizations and businesses in the schoolyard makeover at École Notre Dame, Hanmer:

- · Ashley's Landscape Supplies
- Botanix Azilda Greenhouses
- Brown's Concrete Products
- · Canadian Tire on Regent Street
- Echo Rentals
- Holla's Produce and Greenhouses
- Hollandia Land and Environmental Solutions
- North Range Sod
- Southview Greenhouse Growers
- · Sudbury Horticultural Society
- Sudbury Master Gardeners
- Vale

Special thanks to our major corporate sponsor,

SUDBURY
INTEGRATED NICKEL
OPERATIONS
-GLENCORE IMPAGE

To view the results of the schoolyard regreening effort, visit www.greatersudbury.ca/VETAC





Labour

Program staff included one foreperson, four crew leaders, two field interns and fifteen worker positions. There were a total of six summer students involved in regular reclamation activities as well. Three student positions were partially funded by YMCA Summer Job Service for a period of 10 weeks.

In total 28 temporary positions were created in 2013. To date, 4,620 temporary positions have been created.

The table below outlines the temporary positions created and the number of weeks worked, with a total of 28 positions created in 2013.

Program	Positions	Weeks	Cost to City	Activity
CGS Temporary Staff	22	32 30 31 25	100%	Foreperson (1) Crew Leader (4) Field Interns (2) Workers (15)
CGS Summer Students	6	17	95%	Tree planting, liming, transplanting
Total Positions	28			

Partners

The success of the Regreening Program depends heavily on the support of its many partners. Long time support from the two major mining companies, Vale and Sudbury Integrated Nickel Operations, a Glencore Company, through in-kind and financial assistance has grown substantially since the release of the Sudbury Soils Study in 2009. Tree Canada has been a partner since 1997 contributing over 3.6 million trees to the Program. The Sudbury earthdancers have contributed over \$26,000 in cash since 1999. MTO and KGHM International have provided access to some of their properties for Regreening crews to salvage forest floor plants. Collège Boréal has been conducting survival assessments on trees sponsored by Tree Canada and is participating in the creation of a local seed bank. Laurentian University has provided support to the Regreening Program's Field Interns in terms of expertise and use of facilities. NDCA continues to allow longterm vegetation monitoring plots to be established in the Lake Laurentian Conservation Area and occasionally is able to provide financial assistance towards the purchase of trees. The YMCA has been offering partial financial support of student wages.

Funding

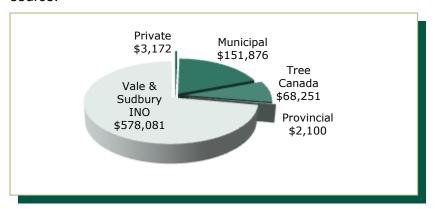
The Regreening Program relies on donations to operate the yearly Program. Many successful partnerships have been developed over time and new opportunities are always being investigated.

The table below outlines the program contributors and the dollar amount associated with their contributions in 2013.

Program Contributors	Weeks	Number	Source	Amount
Labour				
YMCA - SJS	10	3	Provincial	\$2,100
Cash				
Vale			Mining Co.	\$250,000
Sudbury INO, a Glencore Company			Mining Co.	\$265,000
Sudbury earthdancers			Private	\$1,900
CenturyVallen			Private	\$257
Materials				
Vale		43,604 seedlings	Mining Co.	\$13,081
Tree Canada		57,278 seedlings	Private	\$68,251
Private Citizen		550 seedlings	Private	\$165
Ugliest Schoolyard Contest (Does not inclu	ude material, equip	ment and other in-kind dona	ations provided by other sponsors)	
Sudbury INO, a Glencore Company	Cas	h Contribution	Mining Co.	\$50,000
Sudbury Horticultural Society	Cas	h Contribution	Private	\$600
Sudbury Master Gardeners	Cas	h Contribution	Private	\$250
Sub Total				\$651,604
City of Greater Sudbury				\$151,876
Grand Total				\$803,480

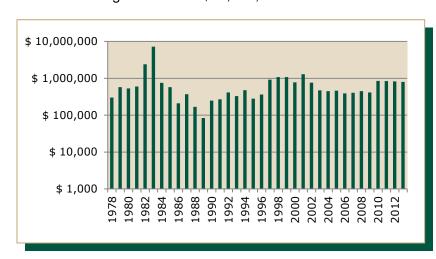
Percent Funding Contributions by Source 2013

The graph below illustrates 2013 funding contributors by source.



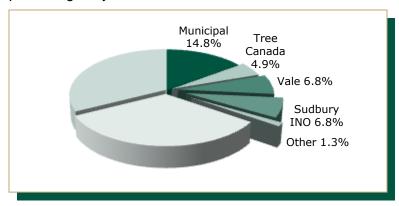
Yearly Program Costs 1978 to 2013

The bar graph below indicates yearly program costs from 1978 to 2013 with a grand total of \$28,460,669.



Percent Funding Contributions by Source 1978 to 2013

The graph below illustrates funding contributions in percentages by source from 1978 to 2013.



Since 1978, the City's contribution to the Program has averaged 14.8% of the total costs with 85.2% coming from external sources. To date, the Program costs exceed \$28 million.

Events

Environmental Week

CenturyVallen's Environmental Week celebration took place May 14th, 2013. They raised \$257 which was donated to the City's Regreening Program to support tree planting initiatives during the Roots and Shoots Conference May 15 and 16.

Roots and Shoots

Science North held its annual Roots and Shoots Conference on May 15 and 16. Tree planting field trips were organized by VETAC members at Laurentian University (LU) and the Nickel District Conservation Authority (NDCA) at Lake Laurentian Conservation Area (LLCA). The City's Regreening Program provided the trees for the event at both locations. CenturyVallen provided \$257 towards the purchase of trees and a local resident provided over 500 white spruce seedlings. Over 350 local area elementary and secondary students participated in the event, planting 2,062 trees.



TC/CN Helicopter Rides

On May 22 an event was hosted to acknowledge the generous donation of 20,000 seedlings by the Canadian National Railway (CN) through Tree Canada (TC) sponsorship. The City's Regreening Program has been partners with TC since 1997. In that time, over 3.6 million trees have been donated through TC and their numerous sponsors.

The event was held at the air strip in Coniston where dignitaries, media and VETAC members were given helicopter rides to view a historical smelter site and regreening efforts in the area. Attendees included: Debra Beattie, Marketing & Development Manager, Tree Canada; Jim Feeney, Director, Public & Government Affairs, CN; and Scott Mumby, Assistant Superintendent, CN. Local dignitaries included Mayor Marianne Matichuk, MPP Rick Bartolucci, and Councillor Terry Kett, numerous VETAC members and Junction Creek Stewardship Committee (JCSC) members were also in attendance.



Annual Tree Giveaway

On May 25 the annual Garden Festival was held at the YMCA where VETAC hosted its annual Tree Giveaway. A display booth was set up and native shrubs were provided to the public free of charge. Residents were provided with a total of 706 seedlings which included round-leaved dogwood and high-bush cranberry.

Bridge Opening Ceremony

On July 15 at the Living with Lakes Centre (LLC), a bridge named after former General Manager of Growth and Development, and long time member of VETAC, Bill Lautenbach, was officially opened. John Gunn, Director of the LLC at Laurentian University, thanked Bill for his contributions to the LLC and restoration of the Sudbury landscape. The new bridge is situated at the beginning of the Restoration Trail at the LLC.



Communications

Communicating the successes of local regreening efforts continues yearly, to both local audiences and groups abroad. Media coverage was widespread with positive comments on initiatives associated with the Program and VETAC. Presentations, tours and field trips were also provided to a wide range of audiences.

Publications

Traditional Knowledge and Biodiversity

The United Nations University Institute of Advanced Studies (UNU-IAS) produced a publication entitled *Innovation in Local* and Global Learning Systems for Sustainability: Traditional Knowledge and Biodiversity - Learning Contributions from the Regional Centres of Expertise (RCE) on Education for Sustainable Development in January of 2013.

The Education for Sustainable Development Programme at UNU-IAS has worked with RCEs worldwide to create this new publication showcasing a series of case studies regarding just and sustainable ways of life now and into the future as they pertain to traditional knowledge and biodiversity.

Chapter One, 'RCE Greater Sudbury: Biodiversity Planning and Management' was written by Stephen Monet, Manager of Environmental Planning Initiative and Tina McCaffrey, Supervisor of Regreening Program, and can be downloaded here:

http://www.ias.unu.edu/resource_centre/TKB%20Book%20FINAL%20Jan%202013_1.pdf

Top 115 Unusual Things to See in Ontario

This third edition, revised and expanded by author Ron Brown in 2012, includes Chapter 107 'A Green Sudbury' on page 230-231. Described in the text are a brief history of environmental devastation in Sudbury and the work of the community to regreen Sudbury. The picture in the book is of the three millionth tree planted at the Big Nickel Site (now Dynamic Earth).

Vale Report to the Community

In May, Vale released its *Report to the Community* which was delivered as part of the *Northern Life Newspaper*. Reference to the partnership shared between Vale, VETAC and the City's Regreening Program were highlighted in the report as well as recent accomplishments.

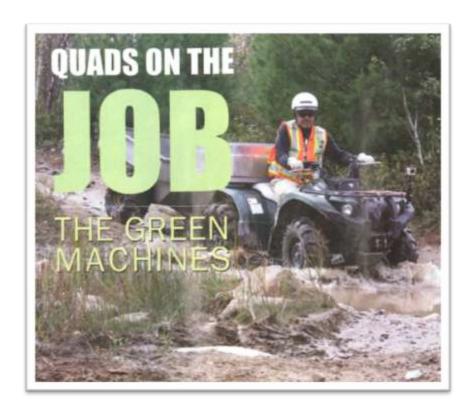
Landscape Ontario Magazine

The Program's contracted tree and shrub grower was featured in an article of the October issue of *Landscape Ontario Magazine*. There John Verbinnen made reference to the Regreening efforts taking place in Greater Sudbury. The article can be viewed here:

http://issuu.com/landscape ontario/docs/october lo mag 201 3_for_web/5?e=1143604/5048620

Go Riding Magazine

On September 9, Regreening Program Foreperson, Christine Hurst was interviewed by Mark Lang of *Go Riding TV* as he filmed a segment on 'Quads on the job, the green machines' at the worksite. An article of the same title was published in the October edition of *Go Riding Magazine*. The article recaps the history of Sudbury as well as the activities of the Regreening Program, and of course, highlights the all terrain vehicles at work!



Presentations/Tours

Haiti Visit

The week of February 18, Peter Beckett, Reclamation, Restoration and Wetland Ecologist at Laurentian University and Chair of VETAC was invited for a 10 day visit to Haiti. Speaking at various venues to several environmental organizations, research institutes and three universities, Peter discussed how the lessons of Sudbury could or could not be applied to re-afforestation in Haiti. He handed out 7 copies of Healing the Landscape books to Universities, Foundations and Government officials, including the Haitian Minister of Energy.

Cambrian College Students

In February, Peter Beckett provided a presentation and tour near Coniston for students in Environmental Monitoring and Impact Assessment Graduate Diploma, Cambrian College.

Colombian Mining Officials

On March 5, Liam McGill of the Greater Sudbury Development Corporation (GSDC) provided an overview of Sudbury's Regreening story to a delegation of mining officials from Colombia consisting of the national Minister of Mines & Energy, Colombian Ambassador to Canada, Vice-Minister of Mines, and their respective entourages. They were in Canada for the Prospectors & Developers Association of Canada (PDAC) show in Toronto. The Colombian government is in the process of overhauling their mining industry and how it's regulated by the government. They have singled out Ontario as the model to emulate and met with the Ministry of Northern Development and Mines to better understand Ontario's

legislative/regulatory framework for mining. Another area of interest was mining's environmental impact and how this can be mitigated or, if necessary, remediated. Greater Sudbury's Regreening Program was a perfect example to showcase remediation efforts.

Sudbury – Russian Exchange

Peter Beckett informed a delegation of Russians about 35 years of regreening success on March 10. They hail from the second oldest mining school in the world: National Mineral Resources University - University of Mining, St. Petersburg, Russia. They have roughly 15,000 students and are recognized internationally for their expertise.

West Virginia Mine Drainage Task Force

In early Spring, Peter Beckett gave a half-day tour to the West Virginia Mine Drainage Task Force who were on an extended tour of mine and smelter sites in Ontario.

Science Café

On April 23, Stephen Monet and Peter Beckett participated in the Science Café panel on Regreening at the Laughing Buddha, hosted by Science North.

Ugliest Schoolyard Contest

On April 26, Stephen Monet and Wayne Hugli, Co-chair of VETAC's Urban Landscape Sub-committee and member of the Sudbury Horticultural Society, presented an overview of the 2012 Ugliest Schoolyard Contest to the staff at Sudbury INO (formerly Xstrata Nickel), the Contest's major corporate sponsor since 2007.

Canadian Ecology Centre, Mattawa

Our education connections with the Canadian Ecology Centre in Mattawa were active again this year. Peter Beckett provided a Regreening Presentation given as part of the Student Mining Tour to Canadore College students on Earth Day, April 22, at the Ecology Centre. A tour of the Jane Goodall Reclamation Trail was provided by Peter Beckett for Grade 12 Earth and Space Science students on July 9. And finally, a Regreening Tour with Peter Beckett and Graeme Spiers, Laurentian University and member of VETAC, was also provided on July 30 to approximately 30 Teachers as part of the Mining Teachers Course.

Citizen-led Recovery Story Reaches New Zealand

Graeme Spiers delivered a Post-Graduate Colloquium to the Department of Earth and Ocean Sciences, University of Waikato, New Zealand on May 2. Graeme's presentation entitled 'Landscape Restoration in the Smelter City of Sudbury, Ontario, Canada' was delivered to a full house of 150 people from across the University community. The afternoon was an enjoyable opportunity for many to learn of the tremendously successful citizen-led landscape recovery initiatives in one of the more heavily smelter impacted landscapes on the planet.

Sudbury Biologists Teaching Russians about Regreening

Peter Beckett and Graeme Spiers travelled to Moscow State University in Russia to give a presentation on June 2 regarding the community effort to regreen Greater Sudbury. Faced with similar environmental damage from mining activities, the Russians are interested in how the Greater Sudbury community overcame their degraded environment. This is the fourth trip to Russian the pair have made so far to discuss this issue.

Biodiversity and Youth

Jennifer Babin-Fenske, Coordinator of EarthCare Sudbury, was busy assisting with the communication of biodiversity to local students. On May 13, she visited the Walden Youth Group and discussed Greater Sudbury's past, the Regreening Program, biodiversity and becoming involved with the programs.

On June 11, Jennifer visited St. Charles School in Chelmsford to discuss biodiversity and natural environment to classes from SK to Grade 8. And on June 24 she visited Bell Park with JK/SK/Gr5/6 students from Alexander Public School to discuss biodiversity and natural environment while catching and examining insects.

South Korean Foresters

On July 18, Stephen Monet and Tina McCaffrey lead a group of 8 South Korean Foresters through the Jane Goodall Reclamation Trail in Coniston. The group was in Sudbury investigating how to reclaim industrially damaged lands. A follow-up breakfast meeting with Peter Beckett helped answer any further questions from the group.



Mohawk College

On October 22, Peter Beckett and Graeme Spiers lead 35 mining students from Mohawk College in Hamilton on a Regreening Tour.

Ryerson University Students

On October 28, Tina McCaffrey and Jennifer Babin-Fenske lead a group of five Ryerson University's School of Urban and

Regional Planning, second year Urban Development (Master of Planning) students on a tour along the Jane Goodall Reclamation Trial in Coniston. The students were in Sudbury learning how communities became established in mining towns and the environmental progress of Greater Sudbury's landscape.

Restoration Ecology Undergraduates

Several presentations and tours led by Peter Beckett and Graeme Spiers were provided to Restoration Ecology Undergraduate students from Sir Sandford Fleming College/Trent University and Laurentian University in October and November 2013.

Radio

- April 23 Peter Beckett was interviewed by CBC Points North for an article entitled 'Regreening Efforts continue in Sudbury' which appears on their website: http://www.cbc.ca/pointsnorth/episodes/2013/04/23/regreening-efforts-continue-in-sudbury/
- April 26 Stephen Monet and Wayne Hugli were interviewed by CBC Radio (Megan Thomas) about the Ugliest Schoolyard Contest. The interviewed aired May 7 on CBC Morning North with Markus Schwabe. http://www.cbc.ca/morningnorth/past-episodes/2013/05/07/sudburys-ugliest-school-yard/
- May 23 The CBC's Steve Howard spoke about the regreening efforts with Stephen Monet. http://www.cbc.ca/player/AudioMobile/Morning%2BNort h/ID/2386980234/

- May 22 The CTV's Gord Nicholls reported on how the regreening project in Sudbury received a boost from a national transportation company. http://northernontario.ctvnews.ca/video?clipId=932067
- May 22 Stephen Monet interviewed regarding Tree Canada/CN regreening event by: Radio-Canada (Yvon Therriault), CBC Radio (Steve Howard), CTV (Gord Nichols), Le Voyageur (Catherine Levac), and Le Loup.
- May 24 Points North with Jason Turnbull interview with Peter Beckett regarding Russian visit. http://www.cbc.ca/player/Radio/Local+Shows/Ontario/Points+North/ID/2387438079/
- September 16 CBC Morning North aired 'Growing Old Ungracefully: Sudbury's transformation' with Benita
 Hart who mused on the transformation of Sudbury from the butt of all ugly city jokes to an award winning regreened area. http://www.cbc.ca/morningnorth/past-episodes/2013/09/16/growing-old-ungracefully-sudburys-transformation/

Newspapers

- February 28 'Planning for a drier future Regreening gives the city a head start in dealing with climate change' by Darren MacDonald, The Northern Life, page 3.
- March 22 'Ugly Schoolyard? Prove it' by Shanice Colley, Cambrian College student, The Northern Life. http://www.northernlife.ca/news/localNews/2013/03/22-ugliest-schoolyard-sudbury.aspx

- Spring/Summer 2013 Green Living compliments of The Northern Life, featured Articles on 'Xeriscaping, gardening without water' by Bill Bradley, as well as articles on the FrogFind and Whippoorwill surveys.
- May 29 'Le programme de reverdissement continue de prendre de l'ampleur' by Catherine Levac, Le Voyageur, page 15.
- July 25 'City's re-greening efforts still verdant' by guest columnist, The Northern Life, page 9. http://www.northernlife.ca/news/columns/guests/24-regreening-efforts-sudbury.aspx

Websites

- June 10 'Sudbury: the Journey from Moonscape to Sustainably Green' posted on ActiveHistory.ca website written by Krista McCracken. http://activehistory.ca/2013/06/11360/
- September 17- CBC radio website posted the article 'Sudbury school celebrates green playground Years of fundraising by parents bring grass to Alexander Public'. http://www.cbc.ca/news/canada/sudbury/sudbury-school-celebrates-green-playground-1.1856727
- The VisionarEase Inc. & Associates webpage posted an article entitled 'Environment Success Stories: Greater Sudbury' that can be viewed here: http://www.find-great-leaders.com/environmental-success-stories.html

VETAC Members 2013

Chair

Dr. Peter Beckett, Laurentian University

Co-Vice Chairs

Dr. Stephen Monet, CGS, Environmental Planning Ben van Drunen, Hollandia Land & Environmental Solutions

Members

Jacques Barbeau Councillor, Ward 2

Tony Fasciano Citizen

Enzo Floreani Master Gardener

Jim Found Citizen

Joe Fyfe Sudbury INO

Jennifer Harvey CGS

Marc Hebert Collège Boréal

Wayne Hugli Horticultural Society

Jim Ilnitski Citizen

Terry Kett Councillor, Ward 11

Lisa Lanteigne Vale
Bill Lautenbach Citizen

Lisa Léger Sudbury INO

Shirley Makela Citizen

Tina McCaffrey CGS, Regreening Program

Samantha McGarry Sudbury INO

John Negusanti Citizen
Mike Peters Citizen
Paul Sajatovic NDCA

Kierann Santala LU Graduate Student Dr. Graeme Spires Laurentian University

Sarah Woods JCSC



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