Reducing ecological footprints - protecting our world for the plants, animals and people of tomorrow.
A Message from CEO John Tracogna

Toward sustainability:

An over-riding objective of the 21st century zoo or aquarium is to demonstrate to visitors the connection between wildlife conservation and human sustainable living through experiential learning. World class zoos include more than just unobstructed viewing of rare and endangered species – they include physical evidence that exhibits, facilities and the grounds as a whole have a small carbon footprint, and, in the best cases, evidence that the site is contributing to a sustainable planet. Urban and suburban zoos have large land areas and we can contribute to sustainable community development.

Education and passing on our passion for biodiversity conservation is something at the heart of the Toronto Zoo mission, and the Toronto Zoo is proud to support sustainable development in the region and beyond. The pre-eminent zoo in Canada, at 287 hectares, Toronto Zoo is among the largest in the world - a leader in advancing knowledge about wildlife and how animals interact with their environment. We are uniquely situated in the Rouge Park, Canada’s largest urban wilderness park, and we understand that our ecological footprint in the Park and the region must be small. This document outlines some of the programs and projects that we have implemented to help lower our footprint, and to help raise awareness about what we can all do to create a sustainable planet.

Thank you for your support, and for sharing our belief that we can all make a difference.

John Tracogna
Chief Executive Officer, Toronto Zoo
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Toronto Zoo and Wildlife Conservation: International Excellence


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Natural Areas Management

Energy Management

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Introduction

The Toronto Zoo has a strong record of environmental protection and of energy efficient operation management.

The Toronto Zoo has stimulated staff, volunteers and the public to live sustainably in balance with nature. We understand and accept that climate change is a real threat to earth’s biodiversity, perhaps most acutely to our own species. We accept that humans are largely responsible for global warming as a result of our use of non-renewable energy resources and the emission of greenhouse gases. We encourage people to lessen their ecological footprint on the earth.

Realizing a small ecological footprint at the Toronto Zoo includes:

Strong Corporate Social Responsibility
Recognized National Leadership
Efficient Operations and Procedures

Our Vision for a Small Footprint
The Toronto Zoo is an active member with the International Union for the Conservation of Nature (IUCN) and Toronto Zoo staff play important roles in the development and implementation of international animal conservation policy and programs.

The Toronto Zoo is a nationally (CAZA.org) and internationally (AZA.org) accredited institution for care of and education for wildlife, many of which are critically endangered. Currently, the Toronto Zoo is involved in 40 Species Survival Plans (SSP).

The Toronto Zoo participates in many captive breeding and reintroduction programs, which involve breeding endangered species, and if possible, releasing these animals back into their natural habitats. By doing this, we hope to help increase wild populations of animals that are, right now, struggling to survive on their own.

For example, the Toronto Zoo has championed the recovery program for the endangered black-footed ferret since 1992, producing hundreds of ferret kits with animals being reintroduced to the United States, Mexico, and in 2009 the first Canadian reintroduction.
Creating the Green Plan 2007 included representation from all staff and volunteers. This strategic document set both short and long-term goals that would result in a lower ecological footprint and a more efficient and productive environment.

The plan listed 27 sustainability goals that we wished to achieve by 2010. Broadly, these related to:

- Employee Culture
- Policies and Procedures
- Communication and Education
- Water, Waste and Energy Management

We have achieved great success in attaining the goals set out in 2007, as demonstrated in the tables that follow:

**Toronto Zoo Green Plan**

Achievements 2007 – 2010

<table>
<thead>
<tr>
<th>1. Rewarding personal green initiatives by:</th>
<th>2. Elevate green policies by:</th>
<th>3. Incorporate green responsibilities into job descriptions and human resource practices by:</th>
<th>4. Provide appropriate funding for green projects by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 recruiting staff stewards from all divisional areas that will monitor green practices and techniques and sit as members of the Green Eco-Zoo Committee</td>
<td>2.1 revising the Toronto Zoo environmental policy to reflect Green Plan strategies</td>
<td>3.1 revising job descriptions and interview questions, and awarding union and exempt review processes to include green initiatives</td>
<td>4.1 creating an operating budget for initiatives and projects related to the Green Plan</td>
</tr>
<tr>
<td>1.2 recognizing positive efforts by the Toronto Zoo staff toward green personal initiatives</td>
<td>2.2 assisting relevant departments on environmentally sound purchasing practices</td>
<td>3.2 updating staff information and orientation policies</td>
<td>4.2 reinvesting all revenues generated by green initiatives and projects back into other Green Plan related projects</td>
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<tr>
<td>1.3 implementing the ‘Get a G.R.I.P.!’ – Green Reward Incentive Program - award initiative</td>
<td>2.3 implementing consequences for not following policies</td>
<td>3.3 applying relevant Green Plan strategies to contractors and their staff</td>
<td>4.3 applying to external grants and government programs</td>
</tr>
</tbody>
</table>

Completed  In Progress

| 1.1 | ✓ |
| 1.2 | ✓ |
| 1.3 | ✓ |
| 2.1 | ✓ |
| 2.2 | ✓ |
| 2.3 | ✓ |
| 3.1 | ✓ |
| 3.2 | ✓ |
| 3.3 | ✓ |
| 4.1 | ✓ |
| 4.2 | ✓ |
| 4.3 | ✓ |
5. Communicate the Toronto Zoo’s green efforts and programs by:

   5.1 exhibiting new environmental ideas, conservation practices, facilities and technologies to Toronto Zoo visitors
   5.2 participating with government and non-government groups in local, regional and international conservation programs and projects
   5.3 organizing lunch and learn sessions for staff and volunteers, and publishing articles on the Toronto Zoo green initiatives for internal and external media

6. Establish a green education program by:

   6.1 hiring a full-time sustainability coordinator to create and deliver sustainable development solutions and curriculum to staff, volunteers, visitors and the broader community.
   6.2 renovating and using the Conservation Connection Centre as an interim location for Green Learning and Living programs on-site
   6.3 establishing a contemporary Centre of Excellence for Sustainable Life and Learning on-site to serve regional and national communities

7. Provide support and expertise to preserve the Rouge Valley Park, the Great Lakes basin and other Ontario ecosystems by:

   7.1 empowering staff, volunteers and visitors to be environmental stewards of the Park, including the Toronto Zoo site
   7.2 focusing local and regional habitat conservation messages on the health and status of the Rouge Valley Park, Great Lake basin and other Ontario ecosystems
   7.3 continuing to study and implement the Toronto Zoo’s goose control research program, and elevating the Toronto Zoo’s invasive species research and control program

8. Develop green project management standards by:

   8.1 quantifying all material and energy inputs and outputs, and illustrating to staff, volunteers and visitors the amount we consume and waste
   8.2 implementing an external Environmental Management System assessment, for example an ISO 14001 Gap Analysis
   8.3 adopting the City of Toronto Green Development Standard (January 2007) for applicable development features at the Toronto Zoo

Achievements 2007 – 2010
9. Invest in renewable energy generation by:

- building renewable energy generation facilities or modular components on-site
- developing research programs for emerging renewable energy generation technologies
- purchasing locally sold renewable energy

Achievements 2007 – 2010

9.1

- Building renewable energy generation facilities or modular components

9.2

- Developing research programs for emerging renewable energy generation technologies

9.3

- offsetting electricity demand by purchasing locally sold renewable energy
Education for Sustainable Development

In December 2002, the United Nations declared 2005 to 2014 the Decade of Education for Sustainable Development. Education for sustainable development gives people the knowledge to make informed decisions to live in a manner that allows the planet to provide us with the resources needed today, and the ability to meet the needs of future generations.

Education and passing on our passion for biodiversity conservation is something at the heart of the Toronto Zoo mission. By informing visitors about the amazing animals we have in our collection, engaging them in discussions on conservation issues and providing tangible solutions to people, we hope to foster an appreciation of all living things and an attitude towards ecosystem stewardship that benefits ecological, social and economic sustainability.

We offer education to visitors at every given opportunity, through a roster of public programs and camps, animal shows, keeper talks and a variety of interpretive areas throughout the site operated by our extensive volunteer group. Teachers can download curriculum resources from our website and school groups can partake in workshops and guided tours at the Zoo site.
Operation Conservation is a grant-funded program offered to grade six students from low income neighbourhoods. A select group of students visit the Toronto Zoo to learn about conservation issues and receive a VIP experience.

The Toronto Zoo is a registered private school, and is able to award high school credits. We incorporate learning about environmental issues and equip students with the knowledge they need to live sustainable lives. Having the Zoo as their classroom provides a unique experience for students to learn about current environmental issues.

The Toronto Zoo leveraged our expertise and influence of Canada’s Great Lakes conservation issues and developed the award winning Aqua-Links program. This program connects students and researchers between our Great Lakes and those of East Africa. By linking students in North America and East Africa, they learn together that local water issues are also global concerns.

Every year specially trained Zoo Camp counsellors take 2,000 campers under their wings. Through games, songs, behind the scenes tours and animal interactions, campers are taught about biodiversity and the need to protect it.

The Great Lakes Program takes the Toronto Zoo’s conservation messages to the classroom reaching over 13,000 students in Ontario each year, teaching them about sustainable water use practices.
This unique sustainability workshop engages senior level management from the corporate world by connecting biodiversity to their bottom line. Executives visit the Zoo for inspirational behind the scenes tours, lessons on sustainability issues and green technologies and a professionally facilitated workshop. Participants leave motivated and armed with tools to return to their businesses and implement the action plan created.

Toronto Zoo’s Turtle Island Conservation programme (TIC) respectfully shares the hopes and goals of First Nation partners in our commitment to the preservation of biodiversity.

TIC partners with First Nation communities to preserve community knowledge and significant natural and cultural landscapes.

Education for Sustainable Development in Action
The Toronto Zoo understands that the stewardship of our natural lands and water is critically important.

Policies restrict the use of pesticides onsite, and the Toronto Zoo staff actively use ecological control methods for landscaping. Bio-control helps keep pests under control in pavilions and greenhouses, and areas on the Zoo site once mowed for lawn are now diverse meadows. Our horticulture team provides beautifully wild and ecologically sustainable spaces for staff and guests.

The Toronto Zoo works closely with international partners to advocate for the preservation of wild habitat in all corners of the world. Toronto Zoo staff has travelled to eastern Africa to help freshwater fishes, to the Canadian tundra to help polar bears, and to the islands of Indonesian archipelago and Papua New Guinea to help orangutans. Saving habitat is the first step to saving biodiversity.
When the Toronto Zoo was moved from the downtown location in the early 1970s to the Rouge Park, the site was arranged geographically around a 12 hectare forest known as the Core Woods.

The Africa Pavilion and Savanna to the west, the Indo Malaya area to the south, the main entrance and Discovery Zone to the east and the Americas and Eurasia areas to the north. The Toronto Zoo has stewarded and maintained this natural Carolinian forest block and the ecosystems and native flora and fauna it contains.

The Toronto Zoo is located in Rouge Park, a vast stretch of protected urban wilderness in the northeast corner of Toronto, Ontario.

The Rouge River watershed spans more than 336 km² from headwaters in the Oak Ridges Moraine and Ontario’s Greenbelt to the shores of Lake Ontario. The Toronto Zoo occupies 287 hectares of valley, river, forest, field and meadow ecosystems, and has public pathways within 130 hectares of the property. The Toronto Zoo is represented on the Rouge Park Alliance, a committee that includes three municipalities, the Province of Ontario and the Canadian Federal Government, that is responsible for overall management of the Park.

Invasive alien species are a major threat to biodiversity. There are over 186 invasive species in the Great Lakes basin, and as many in our local forest and meadow ecosystems. Dog strangling vine and garlic mustard are two invasive species the Toronto Zoo has to actively manage. These plants have to be physically removed from the site. We engage the help of many local community partners for our annual garlic mustard pull. Since 2007, we have uprooted 5,000 kgs and replanted over 2,000 native ephemeral plants.

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The Adopt-A-Pond Wetland Conservation programme was developed over 20 years ago in response to the global amphibian crisis – frogs and salamanders were disappearing world wide.

Adopt-A-Pond staff lead three general areas of programming: the award winning Frog Watch Ontario Program, the Ontario Turtle Tally, and the Wetland Guardian Registry.

Rouge Park benefits greatly from the projects conducted by the Adopt-A-Pond staff in the park, including radio tracking and habitat mapping of the threatened Blanding’s turtle.
The First Nations Art Garden houses the works of Aboriginal artists. The artworks found here are visual narratives of Aboriginal cultural teachings depicting the Creation Story and the 13 Luna Moons Calendar.

The garden is planted with native plant species important in First Nations Culture. Plants found here include ceremonial, sustenance and medicinal varieties, examples include; woodland strawberry considered the heart berry and important in ceremony, shagbark hickory used in the production of lacrosse sticks and bows, and wild bergamot used as a respiratory medicine.

The Toronto Zoo aims to increase native plant coverage wherever possible. The Americas picnic area has been planted with native species including black oak and sassafras, and several wetlands have been created supporting native species.

Trees absorb the greenhouse gas carbon dioxide, and planting more trees helps in the fight against climate change. The Toronto Zoo is committed to planting more native trees onsite and has already planted two acres of saplings in the African Savanna. Driven by Wildlife Care staff and Polar Bears International, the “Acres for the Atmosphere” program will continue to restore onsite areas.

Native Plant and Tree Restoration

First Nations Art Garden

Stewardship of the Land
Looking after 5,000 animals every day and accommodating 1.3 million visitors every year requires a lot of energy. It requires 11,000,000 kWh of electricity every year; that’s equivalent to the electricity use in 4,000 homes!

The Toronto Zoo is committed to lowering its carbon footprint by producing renewable energy onsite and reducing energy usage. Initiatives such as fitting lights with motion sensors and equipping the washrooms with low energy hand dryers are just a few of the examples of how we lower our energy consumption.

We are phasing out two-stroke power equipment and replacing them with cleaner four-stroke engines. On smog alert days energy management procedures are followed and vehicle use is kept to a minimum.

We are committed to conform to ISO 14001 (International standards regarding environmental management). We have completed an organization-wide gap analysis and have budgeted for pre-registration work. An internationally recognized Environmental Management System will allow us to improve our operations and reduce the impact of our activities on the environment.
Energy use and carbon dioxide emissions at the Toronto Zoo

Total $2,523.7 million (Data from 2009).

Toronto Zoo’s high standard for wildlife care requires a lot of energy.

The cost of energy at the Toronto Zoo

- Natural Gas: 3,578 tonnes (53.8%)
- Electricity: 2,587 tonnes (38.9%)
- Other: 467 tonnes (7.3%)
- Heating Energy: 29.2%
- Vehicle Fuel: 4.6%
- Water: 22.3%

Toronto Zoo carbon dioxide reduction targets (2007): “we understand ambitious goals are necessary”

- 50% below 1990 levels by 2017
- 75% below 1990 levels by 2022
- 95% below 1990 levels by 2027

6% below 1990 levels by 2012 *Kyoto targets
The three Ice Bears at the Toronto Zoo are helping to save polar bears. Through a unique partnership with the Province, our Ice Bears are air conditioning the Caribou Café. The units freeze water to ice at night, when electricity is less expensive and demand is low. The “ice” then cools the building during hot summer days, using very little electricity.

How do you keep a 120m² area of outdoor exhibit space for monkeys clear of snow and ice in the winter?
You heat the ground! Our three tonne, 75m deep geo exchange system provides clean heat energy to the lion-tailed macaques from November – April. All other energy requirements for the exhibit are sourced from wind energy. This exhibit is 100% carbon neutral.

Connecting onsite exhibits to alternative energy provides a powerful message.
The roof of the Toronto Zoo Administrative Support Centre has been equipped with 50 solar thermal panels. The system transfers the energy from the sun to the hot water supply for the building – reducing carbon dioxide by 40 tonnes per year and natural gas use by 50%.

The Toronto Zoo vehicle fleet is large and includes heavy trucks, pick-up trucks, vans, Zoomobiles, golf carts and all terrain vehicles. Moving from conventional diesel and gasoline to electric is a smart financial move. Currently we have 21 electric vehicles, propane-powered Zoomobiles, and a dual purpose electric garbage truck/snowplow – and we will continue to expand our electric powered fleet.

Alternative Energy Saves Money

Solar Energy

The Toronto Zoo solar thermal installation provides hot water for all staff showers.

Electric Vehicles

The Toronto Zoo vehicle fleet is large and includes heavy trucks, pick-up trucks, vans, Zoomobiles, golf carts and all terrain vehicles. Moving from conventional diesel and gasoline to electric is a smart financial move. Currently we have 21 electric vehicles, propane-powered Zoomobiles, and a dual purpose electric garbage truck/snowplow – and we will continue to expand our electric powered fleet.
Looking after the 500 species of animals and the 1.3 million visitors each year requires a vast amount of water, and produces significant amounts of waste.

The Toronto Zoo requires water for a variety of purposes including animal husbandry and supply to visitor washrooms.

All the animals at the Toronto Zoo and their human visitors produce a large amount of waste. Organic, plant and animal waste and all onsite and office green bin waste is taken to our composting facility, giving us a continuous supply of organic fertilizer.

Garbage produced onsite by our guests and staff is separated into recyclables, organic waste and landfill trash. Every year the amount we divert from landfill increases (see figure on page 39). Sending garbage to landfill sites creates methane, a greenhouse gas, so by reducing landfill we can help in the fight against climate change.

The Toronto Zoo retail department is a leader in providing ecologically sensitive products, being one of the first institutions in Greater Toronto to offer stainless steel reusable water bottles. Many more sustainable gifts, including paper made from elephant poo can be found in the “Shop Green” section of the Zootique gift store. Our award winning onsite restaurants use sustainable consumer products including 100% biodegradable cutlery and plates.
The Toronto Zoo water use per year is

~136

olympic sized swimming pools

Reducing our water usage is one of the biggest challenges we face, and we are always looking for new ideas:

- improved filters on aquaria and animal pools
- controllable water hoses
- rain water sequestration
- low flow toilets

This chart demonstrates how we are constantly improving our recycling program. Each year the amount of waste that we divert from landfill grows. Landfill sites are responsible for a significant proportion of greenhouse gas emissions. By diverting waste from landfill we are reducing these harmful emissions. The goal of the Toronto Zoo is to eventually send zero waste to landfill.

Toronto Zoo water reduction targets (2007): “we understand ambitious goals are necessary”

5% below 1990 levels by 2012
10% below 1990 levels by 2017
20% below 1990 levels by 2022
40% below 1990 levels by 2027
The Toronto Zoo has been a pioneer in the cell phone recycling world. Since 2006 we have collected over 15,000 phones, and raised over $10,000 for gorilla conservation.

The story is simple: raw minerals are mined in central Africa to supply the growing demand for the metals required in cell phone manufacturing. The greater the demand for these metals, the more habitat lost in Africa. Join our growing team, and recycle your old phone with Phone Apes.

Future plans for the Toronto Zoo include large scale energy production. We are going to make good use of our animal waste: a biogas facility is in the planning.

Organic waste from our animal onsite collection will be mixed with restaurant organic waste and an equal amount of offsite grocery store waste to produce electricity, heat and high-grade fertilizer.

Planning is underway to build a 500 kW biogas plant – this size plant would require three hectares of land east of Meadowvale Road, and would produce a third of the electricity demand at the Toronto Zoo.

Connecting visitors to the potential of organic waste systems in urban environments will be an extraordinary educational experience.

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Toward a Sustainable Zoo

Future Goals

The Green Plan 2007 set out 27 short-term action steps, outlined on pages 11-16. The Toronto Zoo staff and volunteers embraced the plan, and, as outlined, achieved 23 of these 27 actions. The Green Eco-Zoo team will continue to meet and discuss new initiatives and monitor existing ones, including our water and energy use, and waste production.

We have learned a great deal about our ecological footprint since 2007. Our efforts toward sustainable living beyond 2011 will focus on nine strategic objectives, as outlined on the following page:

**Green roofs** insulate buildings, decrease storm-water runoff and provide habitat for wildlife. The Toronto Zoo has installed more than 865m² of greenroofs since 2007.
Beyond 2011

• Managing and Monitoring our Environmental Impacts

• Creating Energy from Zoo Organic Waste
  Building a 500 kW to 1 MW (equivalent to 4,000 – 8,000 homes) biogas facility, offsetting a third of the Toronto Zoo electricity needs.

• Capturing the Energy from the Sun
  Continuing with our solar projects, with the goal to offset a third of the Toronto Zoo electricity needs.

• The Centre for Sustainable Life and Learning
  A LEED Platinum facility to host our growing programs and staff, and our partners.

• Corporate Canada and Conservation
  Developing partnerships with business leaders to protect and assist biodiversity.

• Animal Outreach and Distant Learning
  Bringing the magic of the Zoo to classrooms in Ontario, and through technology, to classrooms all over the world.

• Water Conservation
  Reducing our water use and capturing and directing available rain and grey water will demonstrate leadership and sustainable living.

• Land Stewardship and Restoration
  The Toronto Zoo is part of the Rouge Valley ecosystem and our role is to actively maintain and improve the quality of wetland, forest and meadow habitat.

• Energy Efficient Operations Management
  Exceeding standards for wildlife care will require continuous expansion and improvement to our facilities, and we will build and retrofit spaces with the environment a top priority.
Since opening in 1974 the Toronto Zoo has formed many partnerships. Partnerships have been diverse with many sectors of the community being involved. Examples include universities and public and private corporations. These partnerships help us to create a more sustainable Zoo. For more opportunities to get involved with the Zoo see: Torontozoo.com/SupportTheZoo.
Greening This Book

We are grateful to the many foundations, sponsors and grant providers for choosing to support the Toronto Zoo.

This book is printed on paper which is EcoLogo, FSC and Processed Chlorine Free (PCF) certified, and manufactured in Canada with 100% post-consumer waste using biogas energy (methane from landfill site). This alternative green energy source is supplying the paper mill with 83% of its thermal needs. Manufacturing this paper produces 85% less greenhouse gas emissions than the average 100% recycled paper and 94% less than the average 100% virgin paper.

By choosing environmentally friendly paper, made with 100% post consumer recycled content, we have achieved the following savings:

- 10 trees
- 531 kg of waste
- 16 GJ of electricity
- 35,073 litres of water
- 1,381 kg of CO₂
- 4 kg of smog

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