# 2022 Environmental Initiatives Report

Presented to the Board of Management of the Toronto Zoo

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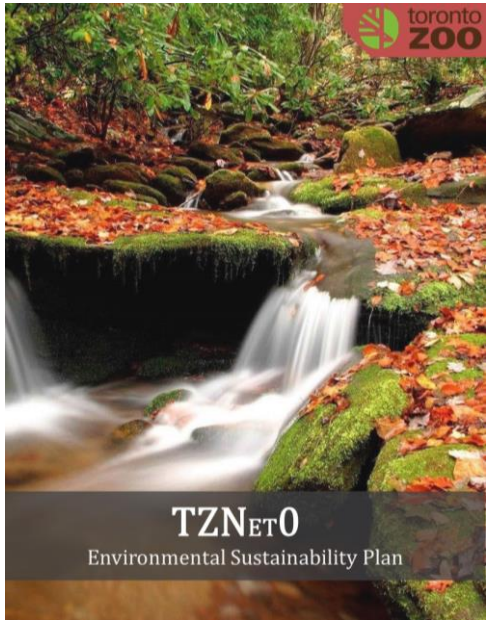
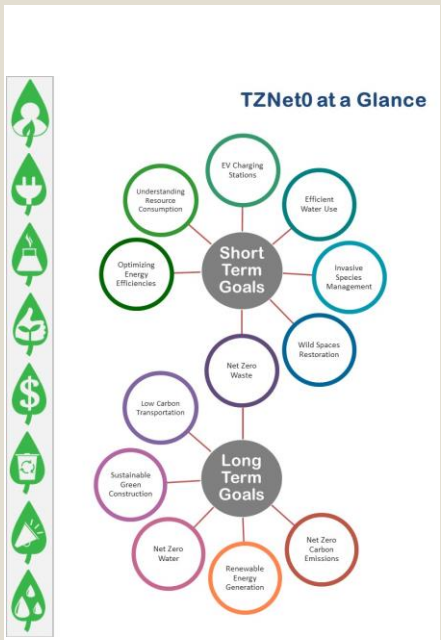
April 2023




# TZNet0 Plan

| | PROGRESS | GOAL | WHAT SUCCESS LOOKS LIKE |
|---|---|---|---|
| $CO_2$ Emissions | 28% Below 1990 levels | 30% by 2021<br>45% by 2022<br>50% by 2023<br>60% by 2024<br>*Below 1990 Levels | Net Zero $CO_2$ emissions by 2030 |
| Water Consumption | 42% Below 1990 levels | 45% by 2021<br>55% by 2022<br>65% by 2023<br>75% by 2024<br>*Below 1990 Levels | Net Zero water consumption by 2030 |
| Waste Diversion | 78% Diverted from landfill | 80% by 2021<br>84% by 2022<br>87% by 2023<br>90% by 2024 | Net Zero to landfill by 2027 |
| Habitat Restoration | Habitat inventory complete | 5% by 2021<br>10% by 2022<br>15% by 2023<br>20% by 2024 | 200 acres of habitat restored by 2030 |



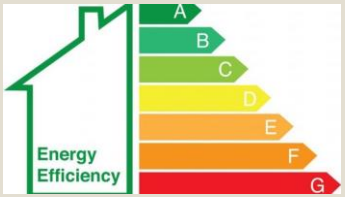

By reducing its operational footprint, working to increase biodiversity to stabilize ecosystem integrity, and collaborating with the local community, partners, and staff to create a sustainable world for the future, the Toronto Zoo is demonstrating leadership in environmental sustainability. The Zoo released the TZNet0 Environmental Sustainability Plan in order to carry out its new 2022 vision and align with the TransformTO goals of the City of Toronto, Sustainability Development Goals of the UN, and the Paris Agreement goals. In order to rebuild a world where wildlife and wild spaces flourish, we will be a zoo whose activities only produce gains on the natural environment that are beneficial. This new plan broadens the zoo's strategy to accept climate resiliency for the zoo by updating current targets for GHG emissions, water use, and waste to net zero by 2030 and establishes new targets for restoring 200 acres of natural habitat and collaborating with the neighbourhood to meet community-wide climate resiliency goals. Going forward, the Environmental Initiatives Report will provide metrics on the actions done to realize the goals of the TZNet0 Plan.

# Sustainability at a Glance

Installation of **10** water refill stations saved over **185,050** single-use plastic bottles from being used

**22** EV Charging Stations installed for guests and staff

**3** Zoo staff trained in Energy Efficiency for Building Operators & Maintenance




**31 acres** of aquatic and terrestrial land restored


Awarded one of Canada's Greenest Employers for a second year

Significantly reduced plastic packaging on products carried in our gift shop


**4419** cellphones recycled through PhoneApes

**49** Climate Leaders trained through the CALL program

bullfrogpowered

WITH 100% GREEN ELECTRICITY

**165 MWh** of renewable energy purchased

**2000 tonnes** of manure converted to renewable electricity for the Ontario hydro grid

# Sustainability at a Glance

**800** trees planted

**10,752 kg** of electronics were recycled through PhoneApes


Recycled **420 kg** of latex gloves

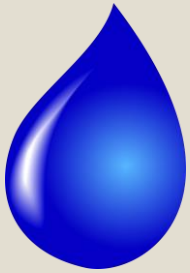
**20** Zoo Staff trained in LEED

Reduced greenhouse gas emissions by **105 tonnes**


Recycled **180 kg** of face masks diverting from landfill

**4,428** volunteer hours committed to climate resiliency

**20** alternative waste recycling programs earning **$9,876** buy-back revenue



Reduced potable water consumption by **4,233,332 Litres**

Diverted more than **58%** of waste from landfill

# Environment Management System Environmental Incidences Update

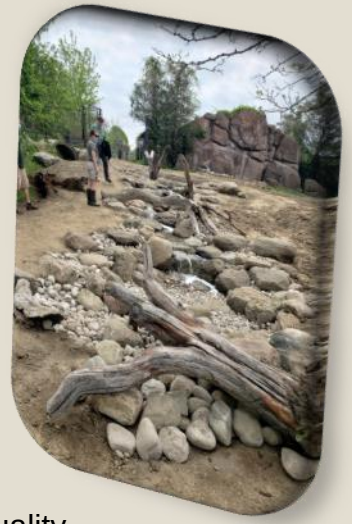
As part of the Environmental Management System, incidences on site that have had or may have a negative impact on the environment are to be reported to the Conservation & Environment Office and Board of Management of the Toronto Zoo.

There were four environmental incidences on site in 2022.

- Approximately 4 litres of diesel fuel spilled on the paved service road between the Polar Bear House and Tundra Zoomobile Station. The driver immediately contained the spill and worked to clean up the fluid preventing it from entering any water courses or soil. The spill resulted from the driver failing to secure the fuel tank cap after filling the vehicle.
- A sink-hole formed near the fire hydrant on the service road behind the Arctic Fox House. Rain after HVAC drilling activities caused loose soil to shift. The contractor in charge of the project responded and filled in and secured the sink-hole.
- Keepers reported that the wallow within the Yak enclosure was blue-green in colour. Water quality testing identified small quantities of cyanobacterium which is the most likely cause of the discolouration. The wallow was drained and left to sunbake following Ministry of the Environment protocols for cyanobacterium and refilled.
- Four separate sink-holes formed within Waterside Theatre and the Front Courtyard during heavy rain and snow melt. Each area had been a site of recent ground excavation work. Zoo staff and contractors responded to fill in and secure the sink-holes.

# Creating an environmentally sustainable zoo

The Zoo is conducting a site-wide Net Zero Emissions Feasibility Study, a Fleet Transition Feasibility Study, and Water Audit in 2023 to direct an achievable action plan for facility upgrades, new installations and changes in operating procedures that meet the TZNet0 Environmental Sustainability Plan goals by 2030. The Toronto Zoo implemented a number of efficiency initiatives in 2022.



The hyena habitat showcases as new waterfall feature with a specific function. The waterfall consists of four main wetland tiers that utilize beneficial bacteria and algae to naturally filter the water. The stones, bacteria and algae remove excess nutrients and add oxygen to the water within this recirculating system providing a clean water feature to the exhibit and fresh water for the hyenas. The feature will also become a sanctuary for dragonflies, birds and butterflies.

Floating wetlands are a prime example of nature-based solutions to mitigate pollution, climate change and water quality issues within stormwater management and natural ponds. With the generous support of the local community six floating wetlands were installed at the entrance and proudly display the Zoo logo. The wetlands and logo are lit at night by solar lights.

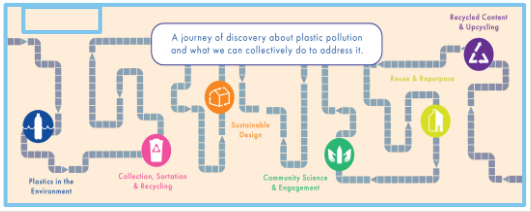
The Americas Pavilion's heating system is being replaced as part of the Energy Retrofit Project with Ecosystem Energy Services, which was authorized by the Board of Management on February 15, 2019. Five new heat pumps, new radiators in the Costa Rican Aviary, and two new hot water boilers were installed to replace the outdated steam boilers, radiators, and distribution system. The pavilion will be heated primarily by air-sourced heat pumps, with emergency backup provided by the new furnaces during particularly harsh winter days. **The new system is anticipated to cut 162 tonnes from annual greenhouse gas emissions.**


Peak Shaving and Hippo filtration systems engineering planning has started. The construction process will be completed in 2023.

The Toronto Zoo committed in 2012 to using only sustainably sourced palm oil by 2023. Since then, we have been performing audits and acquiring products that either don't contain any palm oil or have palm oil that can be verified to be sustainable. The assessment from 2022 found that the Zoo has succeeded in its objective. **Every aspect of the Zoo's activities, including food service and retail, uses only sustainably sourced palm oil.** The Zoo supports manufacturers who make steady progress towards their own sustainable palm oil commitments and acknowledges that this transition takes time. However, in order to meet our standards, we consciously choose products that are either verified to contain sustainable palm oil or do not contain palm oil.

PLASTICS
pathway

Explore the Issue.
Discover Solutions.
End Plastic Pollution.





Honourable David Piccini
Minister of the Environment, Conservation & Parks
Opens Plastics Pathway
December 1, 2022

Plastic pollution is now one of the most widely known environmental problem in the world due to its effects on animals and aquatic ecosystems. The Plastics Pathway will take visitors on a journey along the value chain, from point of manufacturing to the point at which the plastic is no longer useful, emphasizing how plastic can be a useful resource when used responsibly at each stage. It offers a chance to highlight significant environmental plastic pollution initiatives now under progress and to raise awareness of the need to switch to a more circular method of using plastics.

To do this, the Plastics Pathway:

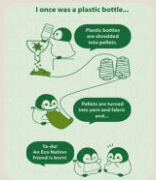
- explains what a circular economy means for plastic waste;
- highlights actions taken by the Zoo to reduce plastic use;
- describes what is being done by government, organizations and the plastic industry;
- showcases how industry is reducing plastic use through product development and innovation; and
- showcases innovative technologies and products.

The Plastics Pathway is a partnership between Pollution Probe, GREENMANTRA Technologies and the Toronto Zoo, and is supported by the Ministry of Environment, Conservation & Parks.

# 6 key elements of the Plastics Pathway

## Sustainable Design

Restaurants and gift shops offer guests with products that contain more recycled plastic, less plastic, or alternatives to plastics.



## Recycled Content & Upcycling

Incorporating innovative recycled plastic goods raises demand for recycled plastic and increases product lifespan.

## Reuse & Repurpose

Reusing plastic items for animal behavioural enrichment.

## Community Science & Engagement

Featuring the work of organizations such as Pollution Probe and the Toronto Zoo to decrease plastic in the natural world. Using Seabins and LittaTraps to capture stray plastic in the environment.


## Collection, Sortation, & Recycling

Engage the public in proper disposal of plastics by offering recycling waste receptacles and the OSCAR Sorting Stations.

## Plastics in the Environment

Explaining how plastics enter the natural ecosystem and the effects they have.

# Interesting Features of the Plastics Pathway

Every single one of us can change the world in 3 seconds, and it begins with a decision you and I make every single day. A decision that is often confusing, rushed and almost always unintuitive. Everyone feels self-conscious while sorting waste. The OSCAR Sort will gamify waste diversion at Peacock and Caribou Cafés by assisting guests in appropriately recycling their waste items properly at the waste bin. The Zoo is working to educate our guests in a fun and participatory way so that they can make the correct decision more than 90% of the time. OSCAR Sort will also collect waste metrics for transparent ESG reporting, automate waste audits, and aid with the generation of operational insights for waste management.


When Goat World was built in 2020 the Zoo used cutting-edge technologies. The shingles on the house's roof are part of the pathway's Recycled Content & Upcycle element. These shingles contain plastic beads made from recycled plastic bags and single-use bottles. The Zoo is also exploring the use of plastic-infused asphalt on its pathways. The use of recycled plastic in these products increases the product's lifespan while also increasing the demand for recycled plastic.

The Toronto Zoo now has a new play area for children to enjoy during their visit. The Sustainable Playhouse at the Zoo serves as a learning environment for adults while their children engage in natural play. Primarily constructed as a play space for children, the Sustainable Playhouse is designed and constructed following green construction practices. The playhouse repurposes barn timber for the building's frame, repurposes materials to build the kitchen and washing machine, incorporates recycled plastic trim and railings, has an electric free air conditioner, green roof, drought resistant garden, rain barrel, rain garden, and photovoltaic solar panels. We want to showcase you how simple it is to implement these green features into your own home.







# Engaging Visitors and Staff in Sustainability

Throughout the summer, Waste Free Wednesday educates guests on the effects of garbage on our ecosystem as well as ways they may limit the amount of waste they produce. Five external organizations joined Zoo personnel to talk about the circular economy and share waste-reduction recommendations. Guests were challenged to find the 11 Trap the Trash art sculptures on display throughout the Zoo, which were constructed by local students from plastic waste collected in Seabins and LittaTraps in Ontario. Over 425 guests returned their scavenger hunt finds and pledged to reducing waste.

## Zero-Waste Zoo Employee Program Expands

The Toronto Zoo launched a pilot project to develop a zero-waste employee program in 2019. To educate staff about the amount and type of waste they produce, as well as what is recycled at the Zoo, garbage cans were removed from office space and centralized sorting stations were installed. We expanded the program to all workspaces in 2022. We will collaborate with Restaurant Associates next year to extend sorting within the restaurants.

# Waste, Water and Greenhouse Gas Emissions

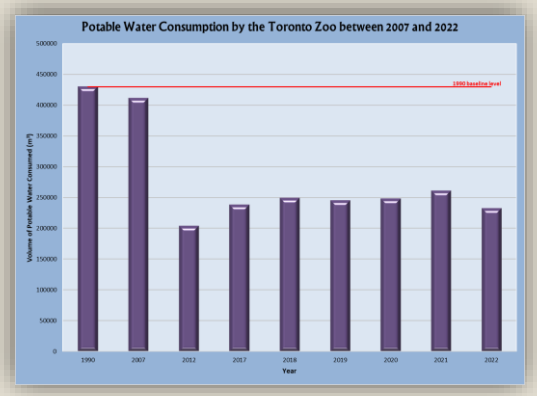



Figure 1. Actual potable water consumption at the Toronto Zoo in 5-year increments 2007 to 2017 and annually 2017 to 2022. Water consumption has been reduced to 46% below 1990 levels.

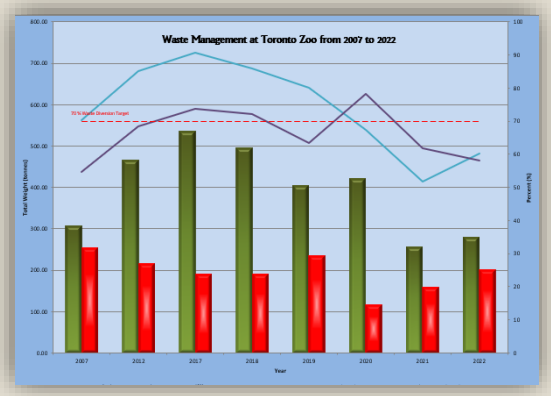



Figure 2. Actual waste generation and diversion at the Toronto Zoo in 5-year increments 2007 to 2017 and annually 2017 to 2022. 2022s waste diversion rate is 58%.

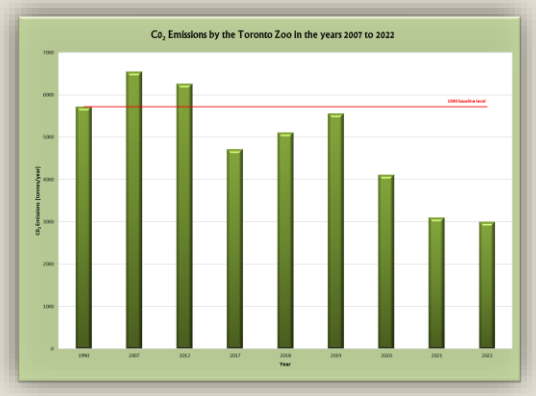
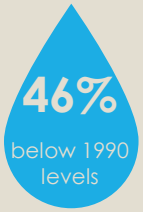
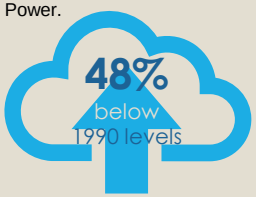



Figure 3. Annual greenhouse gas emissions in 5-year increments 2007 to 2017 and annually 2017 to 2022. GHG emissions are based on energy consumption and are adjusted for carbon offsetting practices of the Toronto Zoo through the purchase of renewable energy from Bullfrog Power.








The volume of potable water consumed in 2022 did not significantly from that in 2021. The Zoo began a water use assessment in order to identify excessive water consumption facilities, which will be finished in 2023. The audit's goal is to identify areas where we may reduce water use through behavioural changes, facility state of good repair projects, facility renovations, and the use of innovative technologies in order to meet our 20230 net zero water target.

In 2022, waste diversion decreased due to a large-scale clean up of storage rooms, holding facilities and office space throughout the Zoo. Despite efforts to provide more recycling facilities for the clean up, this revamp necessitated the disposal of a substantial quantity of non-recyclable goods, resulting in us accomplishing only 58% waste diversion rather than making progress towards our net zero waste target.

In 2022, there was a modest decrease in GHG emissions due to lower natural gas usage. To achieve larger GHG emission reductions in the future, the Zoo has initiated a feasibility study to target overall energy consumption reductions, GHG emission reductions, and fleet transition to low-carbon vehicles. The Zoo's greenhouse gas emissions are 48% lower than 1990.

# Improving biodiversity for a sustainable planet

## Network of Nature Mini Forest

For Canadian insect life, wildlife, and ecological integrity, we must restore native plants and trees. The Toronto Zoo teamed with the Royal Canadian Geographical Society and Dougan & Associates to plant 700 trees as the first micro forest for the RCGS Network of Nature Program near the main entrance. This unique program engages Canadians in restoring native biodiversity and implementing nature-based climate solutions. The Network of Nature's goal is to create a cross-country network of healthy ecosystems, particularly in urban areas. Over 500 hours were contributed by employees from RCGS, Dougan & Associates, and Pierre Fabre Group for the planting.


Hypena caterpillar feeding on dog-strangling vine

## Invasive Species Management

Staff at the Zoo continued to manually eradicate phragmites, dog-strangling vine (DSV), and garlic mustard. In 2022, approximately 20 kg of these invasive species were removed. Ongoing monitoring of the Japanese knotweed and DSV biocontrol research projects shows that plants are still being defoliated by Psyllids and the hypena moth, respectively, as well as having less growth this year. In addition, in conjunction with the University of Toronto, the Zoo expanded its biocontrol research program to include phragmites.

# Communities, partners, and the Zoo working together

The CALL Program remains a popular youth leadership training development program. This year, 49 teenagers (aged 13 to 16) participated in two-week programmes to learn vital skills for facilitating climate action in their communities. These incredible young people from our community partners – Toronto Community Housing, Woodgreen, Storefront, and Native Child & Family Services – completed ten community projects on the effects of pollution on communities and environments, the importance of proper recycling habits, the impact of deforestation on animals, the impact of climate change on arctic wildlife, the Toronto Zoo Conservation initiatives, and the benefits of Sustainable Palm Oil.

The Trap the Trash Art Challenge drew fifteen schools from across Canada. Participating classes received a bag of plastic trash collected by Pollution Program LittaTraps and Seabins installed throughout Toronto. Teachers and students were challenged to make art out of the garbage that represented a solution to the problem of plastic pollution. From July to August, eleven pieces of art were displayed at the Zoo, each with a write-up describing their masterpiece. As part of the Waste Free Wednesday activities, zoo visitors could go on a scavenger hunt to find all 11 pieces.