GET OUT! Kids' Club

Finding Fossils

Ages 4 and up

Fossil Hunting is a great outdoor activity for families, with benefits for everyone. It encourages a child's natural curiosity about what came before us, connecting the past to the present. Fossil hunting takes patience and perseverance. Using tools in varying settings improves risk management skills. Managing the found treasures enhances sorting and ordering skills, and encourages reading about and researching the finds. Hunting for fossils, like all time spent in nature, has a positive effect on mental and physical well-being for the whole family.

While fossil hunting success depends on a bit of luck, a little preparation before heading out can improve your odds for a rewarding adventure. There are lots of tips available on what to look for and where to look. Here are few suggestions.

Pebble beaches are a wonderful place to get started. No tools are required, just sit among the pebbles and gentle move and sift through them. Practice searching for small treasures including fossils, beach glass, and colourful minerals. The longer you spend hunting, the more chances you have of finding something cool.

Look at the bottom of cliffs, where you see layers of rock. Sedimentary rock, like sandstone, limestone, and shale, will flake apart easily with a gentle hammer tap. Never hammer on a cliff, only on rocks that have fallen free of the cliff. Look for crinoids, brachiopods, trilobites, leaf prints, and gastropods. See the reference charts on pages 2 and 3.

A few tools help make the experience safer and feel genuine.

Hammer – A fossil/rock, mason's or any small hammer makes the fossil hunting experience more of an adventure. It offers an opportunity for independence and responsibility. Be sure to always talk about safety and supervise children while they are using tools.

Eye Protection – If you use a hammer, or are smashing and chipping away at rocks, safety goggles are important to protect the eyes from flying bits and debris.

Collection Container – A little tin or a small bag so the children can collect and look after their own treasures.

Small Paint Brush – Optional, but useful for clearing away dust and debris.

Magnifying Glass – Helpful for close inspections of findings.

Water – It can be exciting to wash off dust, or highlight colourful minerals.

Once home, extend the experience by sorting, researching, and displaying your treasures. Create collection boxes or display stands. Try a resin cast with a kit from the local hobby store.

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PRINCE EDWARD POINT BIRD OBSERVATORY

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Fossils of Ontario

OLD ROCK – ANCIENT LIFE

FOSSILS: PRESERVED REMAINS OR OTHER EVIDENCE OF ANIMALS AND PLANTS FOUND IN ANCIENT SEDIMENTS AND SEDIMENTARY ROCK

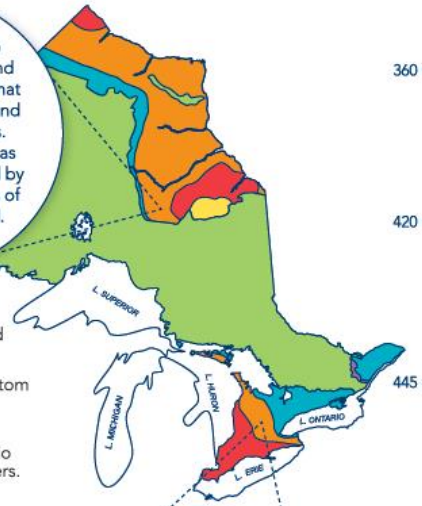
Ancient Sea Life Legend

- Bivalves
- Brachiopods
- Bryozoans
- Cephalopods
- Crinoids
- Gastropods
- Rugose Corals
- Stromatolites
- Tabulate Corals
- Trilobites

LEGEND

- Mesozoic
- Devonian
- Silurian
- Ordovician
- Cambrian
- Precambrian

In Northern Ontario fossils are mainly found in sedimentary rocks that underlie the Hudson and James Bay Lowlands. Fossils from these areas have been transported by glaciers to other areas of the Canadian Shield.



Fossils are found across Southern Ontario, in bedrock outcrops such as the Niagara Escarpment.

FOSSIL FACTS

- Ontario Precambrian bedrock is covered by **Cambrian, Ordovician, Silurian, Devonian** and **Mesozoic** aged rocks.
- These rocks originally began as **mud** at the bottom of shallow tropical seas between **500 and 360 million years ago**.
- These seas periodically **covered** most of Ontario and had **sediments** transported to them by rivers.
- Most of these sediments originated from the erosion of **mountains** and **previous glaciers**.
- Limestone comes from **marine plants** and **animals:** eroded shells, skeletal material and/or excrement.
- Life was **abundant** in these tropical seas.
- When the animals and plants died, their bodies would settle to the **bottom of the sea**.
- The sediment transported by the rivers would then **cover** and **preserve** the animal/plant parts.
- Over time, the sediments and the animal/plant parts have undergone **burial** and **lithification** to become **rocks** and **fossils** that **now lie under our feet!**

mya: million years ago • **Geological Time Scale:** A system of time measurement that subdivides the Earth's history

360 mya

DEVONIAN ***Age of Fish and Forests***

- 85% of the Earth was covered with oceans and the climate was warm.
- Life got big, and modern fishes appeared in the oceans.
- First forests and amphibians appeared on land.

420 mya

SILURIAN ***World Underwater***

- A higher sea level than today.
- Shallow seas covered Ontario and the climate was warm.
- First land plants started growing near sea coasts.
- First land habitats appear: near-river and wetland.
- Early fish and wingless insects appear.

445 mya

ORDOVICIAN ***Tropical Seas. Deep Freeze***

- Ontario was located near the equator and was periodically covered by shallow, tropical seas.
- A 500,000 year long ice age contributed to an extinction of 85% of marine life and marked the end of the Ordovician.

485 mya

CAMBRIAN ***Explosion of Life***

540 mya

PRECAMBRIAN ***Life is Small***

4600 mya

How are fossils preserved?

To become preserved as fossils, animals and plants should be buried quickly in mud or sand, escape erosion and be deposited in suitable environments (e.g. deep marine, lagoons). Hard bones and shells are more likely to be preserved than soft tissues.

Why are fossils so important?

They help scientists reconstruct Earth's past environments including: land and water, fresh and saltwater, arctic, temperate and tropical climates. Different fossils evolved at different times in the Earth's history. The relative age of sedimentary rocks can be identified through the fossil record.

Paleontology: The study of fossils and the rocks they occur in • **Lithification:** Changes sediments (mud and sand) into hard rock • **Sedimentary rocks:** Rocks produced by lithification of sediments

Fossils of Ontario

ONTARIO BENEATH YOUR FEET

TRACE FOSSILS

Preserved evidence of animal or plant activities.

Time: 550 mya to present.

Examples: Burrows, footprints, tracks, plant root networks (roots not preserved).

BIVALVES - Pelecypods (Mollusc)

Time: 540 mya to present.

Description: Each has two shells (often symmetrical to each other), hinged together and held closed by strong muscles.

Life/Habitat: Filter feeder.

Modern Relatives: Modern clams, mussels, etc.

BRACHIOPODS

Time: 540 mya to present.

Description: Two shells that are symmetrical along the center of each shell.

Life/Habitat: Filter feeder.

Modern Relatives: Brachiopods.

BRYOZOANS

Time: Possibly 488 mya to present.

Description: Many different forms, including branching twig-like structures and lacy networks. Openings to individual chambers are smaller than those of corals.

Life/Habitat: Filter feeder.

Modern Relatives: Bryozoans.

CEPHALOPODS (Mollusc)

Time: 520 mya to present.

Description: Cone - or coil - shaped shell divided into chambers.

Life/Habitat: Predator or scavenger. Top predators in the Ordovician.

Modern Relatives: Nautilus, octopuses, squids and cuttlefish.

CRINOIDS

Time: 485 mya to present.

Description: Animals resembling flowers with a grouping of feathery arms at the top of a stem.

Life/Habitat: Filter feeder.

Modern Relatives: Sea lilies, starfish and sea urchins.

GASTROPODS (Mollusc)

Time: 510 mya to present.

Description: Coiled shell houses the animal.

Life/Habitat: Filter feeder, algae eater or detritivore.

Modern Relatives: Snails and slugs.

RUGOSE CORALS

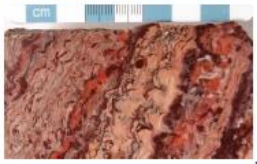
Time: 462 mya to 251 mya.

Description: Hard cone shaped skeleton; the interior is divided by vertical walls.

Life/Habitat: Filter feeder.

Modern Relatives: Corals.

STROMATOLITES



Time: 3500 mya to present.

Description: Colonies of bacteria. They trap grains of sediment, forming layers and building mounds.

Modern Relatives: Stromatolites.

TABULATE CORALS

Time: 488 mya to 251 mya.

Description: A skeleton of vertical tubes further divided horizontally.

Life/Habitat: Filter feeder.

Modern Relatives: Corals.

TRILOBITES

Time: 520 mya to 251 mya.

Description: Often have three distinct sections lengthwise and crosswise. Fossils found are often pieces of the external skeleton.

Life/Habitat: Burrower, detritivore, possibly predator and scavenger.

Modern Relatives: Horseshoe crabs, scorpions, spiders, etc.

LEGEND

- Mesozoic
- Devonian
- Silurian
- Ordovician
- Cambrian
- Precambrian

mya: million years ago

Mining Matters

Ontario