Fossils of Ontario DULD OTE ALAGE

OLD ROCK - ANCIENT LIFE . T'b - 476 - . T'b FOSSILS: PRESERVED REMAINS OR OTHER EVIDENCE OF ANIMALS AND PLANTS FOUND IN ANCIENT SEDIMENTS AND SEDIMENTARY ROCK $\cdot \nabla^{\circ} b^{-}$ $\Lambda \cdot \Delta \sigma b$ a: b $I' C \cdot \Delta \cap P$ A' I' D' $A' \Delta b D'$ $\Lambda \cdot \Delta \sigma b$ a G' A D' A'

·◁⁴° 360 Гσ-৮° ∧>╸ ▷Co`

Ancient Sea Life Legend Stromatolites Bivalves ^/2LJcΔ/^ **Tabulate Corals** Brachiopods Crinoids **¹5₽₽**•<⁄^^ \~2 D △ / C'45/ 69T1 Bryozoans 👊 🦹 Gastropods **Trilobites** داح∆ ک b^/2.</^ ′۸ے<Δ′۲ Cephalopods Rugose Corals .49' Pe. ^′>۰</^

LEGENDP^Po·4CYaAb Mesozoic JUP44/

۷۱⊳۶۰۵۵ Devonian Silurian

Ordovician P571479 ۹۵۱۳۹۵ Cambrian

Precambrian ' 9c' 42

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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.

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.

- 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!

420 mya .⊲4° 420 Γ Λ>σ ⊳(σ_γ . 44° 445 Γ_σρ° Λ>σ ⊳Cσ_γ Fossils are found across Southern Ontario. in bedrock outcrops such

as the Niagara Escarpment. ᠂·∇°b⁻ ∧·△σba Γ^₽ЬU·⊲ 5.4₽, P304₽, CVA-[₽] Β ΤυδΥυν 46°9 476 6°46 ¹d™ ∆U9x

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4600 mya

mya: million years ago רלים ∧>ם ⊳כם׳ ∧>ם ⊳כם׳

Geological Time Scale: A system of time measurement that subdivides the Earth's history

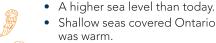
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DEVONIAN Age of Fish and Forests

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- 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.
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- ΔC·⊲\ PLPL/*

SILURIAN World Underwater



- Shallow seas covered Ontario and the climate
- First land plants started growing near sea coasts.
- First land habitats appear: near-river and wetland.
- Early fish and wingless insects appear.
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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.
- ·△¬P¬ Þ¬∩¬P Þ¬P Þ¬P Þ¬P Þ¬P Þ¬P
 ·△¬P¬ Þ¬P Þ¬P \triangleleft $^{\circ}$ $^{\circ}$
- P Pr Cbb° 500.000 Λ>' Δσδ' ·∇r P ≼n «LUr" 85% $\Delta \sigma d' = \Delta \sigma d' = \Delta$

CAMBRIAN Explosion of Life

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PRECAMBRIAN Life is Small ι^μ θει^μΦ, 6 ΦΥ<mark>γ</mark>Ρ, ΥΓUΥ·Φ,



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.

$C_{0}\Omega \cdot \Delta U \cdot V \cdot \nabla_{0}P_{-} \cdot \nabla_{0}P_{-} \cdot \nabla \cdot \nabla \Phi P \sigma^{*}$

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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.

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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 ∨¬▷ንጔበ፡ ቖ ፈር∆ የኅዋርነፀሀ` ∙ጆነҕ ለ∙ሏውቴን ፌፕር ላተራታ\ ላኀር ቴ የ ሏያ ΓኅይՐ` ፣ ቖ ላተራ•∆<ውՐነ፡ ቖ Γተር•∆ውቴሀ\ ዓ•ኔ› (ላያግየ ፌፕር Lե ኤቴ›) የቦ ▷ያ▷′ ቖ Ľቴ•∆ተ⁄ ላተራ - ቴ ፈር•∆ቦ\ ላተራታ\፡ ላተራታ\፡ ላተራታ\ ቴ የ ▷ያ▷ቦ\ ቖ 止•ላተፈ<ውየ ቴ የ ፊር•∆Lኑየᠷ

Fossils of Ontario

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TRACE FOSSILS P <.ΔU, V·∇ΦP,</p>



Preserved evidence of animal or plant activities.

Time: 550 mya to present.

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

9·6° 6 σC·ΔP\x

Cσ[^]Λ b ΔC·b[']: · 44^{''} 550 Γσ·b['] Λ>α ▷Cα['] ∧₀⁻ҳ

BIVALVES - Pelecypods (Mollusc) ∇ $\sigma \sim 6.9 \Gamma^{\setminus} - \sqrt{25} \Delta^{0} < 10^{\circ}$



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.

Cσ[^]Λ b ΔCΓ[^]: · √4° 540 Γσ+³ Λ>α ▷Cα[^] ^ح′ مه⁻

TU^CC♭∧♭ ▼ **4<CP**_x

BRACHIOPODS '**ና**ቦ⊳•<′^



Time: 540 mya to present.

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

Life/Habitat: Filter feeder.

Modern Relatives: Brachiopods.

Cσ[^]Λ b ΔC′: ·<4′ 540 Γσ+³ Λ>σ ▷Cο[^] ^ح که `

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BRYOZOANS 194 P43



Time: Possibly 488 mya to present.

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

those of corals.

Life/Habitat: Filter feeder. Modern Relatives: Bryozoans.

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CEPHALOPODS (Mollusc) ^′>د⊳۲



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.

P ∇2σ95. CV.9- L<PP, ΔυC V9 UU<Φσ95. **△** △ LJO·♥ ·♥∀√× $PV = \sigma_0 / P$ $PV = \sigma_0 / P$ $PV = \sigma_0 / P$ LJS669° L·d- 6 P GC 'C[ab/ J·b- 6

₽ PL LJJP∩el,

CRINOIDS \u2>△/



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.

Cσ^Λ b ΔC′: ·◁4° 485 Γσታ³ Λ>α\ Λσ[°]

'Γ126U' ∇ ▷Λ·◊·Δ' 6 Δ\$ P\$ΛΥ'* ▷·◁₫┖₽₠·◁° ◁Φ፫: ФФ₽。 ₺ኒ₽ኒ, ፭·∇ዖኒዮ,

GASTROPODS (Mollusc) $P_{\cup} S \cdot S \cdot A \cdot (\Delta_{\cup})$



Time: 510 mya to present.

Description: Coiled shell houses the animal.

Life/Habitat: Filter feeder, algae eater or detritivore. Modern Relatives: Snails and slugs.

^₽° **⟨**₽⁻

4.77.27×

PVΓUS-VP Φ2 C23L: SSCF P LLL. 444 $^{\circ}$ $^{\circ}$

RUGOSE CORALS ·494 P214



Time: 462 mya to 251 mya.

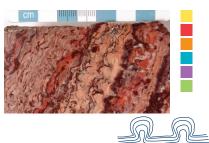
Description: Hard cone shaped skeleton; the interior is divided by vertical walls.

Life/Habitat: Filter feeder. Modern Relatives: Corals.

UVAL < \. \Jubus \quad \cl ⊳∨ΓU≺·∇°°, P ∇₹ C₹dL: ΥΥ<C·Γ, P LLL,

P·4dLbσ·4° 4⊅⁻: b5™

STROMATOLITES $^{\prime\prime}$ PLD $^{\prime}$ $^{\prime}$ $^{\prime}$ $^{\prime}$ $^{\prime}$ $^{\prime}$ $^{\prime}$ $^{\prime}$ $^{\prime}$



Time: 3500 mya to present.

Description: Colonies of

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

Modern Relatives: Stromatolites.

Cσ[^]Λ b ΔC′: · √4′ 3500 Γσ+³ Λ>_α ▷Cα³ ۸۰ م۰۲

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▷・◁╛┖┕σ・◁° ⟨□² : ^²┖⊃с∆² (∇ ◁▸ዮር・△)

TABULATE CORALS C'45/ 65TA



Time: 488 mya to 251 mya.

Description: A skeleton of vertical tubes further divided horizontally.

Life/Habitat: Filter feeder. Modern Relatives: Corals.

∧>• **⊳**C•⁄ ×

 \triangle VLL $\cdot \triangleleft \cdot \triangledown < b^{\times}$

⊳∨Γ∪5.∇°6./P ∇℃ C℃6L: ¬¬¬<C.Γ, P LLL,

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TRILOBITES ^**ک**>د_



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.

ρ ∇℃σ٩٢៤/: LJ·C ΦυΣ Vυδυς، ∙∇ρ·∇·Φ/ $\Delta'' \wedge \Gamma' \quad \nabla d \quad \Gamma b \quad \wedge \Gamma^{-_{\star}} \quad \cdot \nabla'' b^{-} \quad \Gamma b \cdot \Delta \quad \triangleright \cap b \cdot \Delta \quad \nabla$ < ∧·∇ Γ^PbUPx

₽ለLNd·Δσ°/6 Δ\$ C\$9f: ·∢N9°, ·∇Λσ6c LLour JCLT > CLT > -JC TPPLd.* L.PLA, DCT<ah. Duc 9Cb.

LEGEND P^Pa·ACYaAb

Mesozoic

ال⊳،م⊲، Devonian ۲₁⊳۳⊲۵ Silurian Ordovician P₂D₁∇₁Q₃ Cambrian 9دا∿⊲۵

¹∿ 9°¹∿**⊲**° Precambrian

mya: million years ago רלים 🔨 🗘 🗘 ראים אין אין אין אין איי

J°⊳d△\





English and Cree