Rocks of Ontario ᐅᑐᑌᓱᐃᓪᓕᐊᓪ ᐊᖏᑭᓵ ᐊᓂᔨᓵ

ONTARIO BENEATH YOUR FEET ᐅᑐᑌᓱᐃᓪᓕᐊᓪ ᐊᖏᑭᓵ ᑲᑕᑯᑲᑕᒪᑐ

GEOLOGY IS THE STUDY OF THE EARTH • **MINERALS** ARE SOLID MATERIALS THAT OCCUR NATURALLY • **ROCKS** ARE MADE UP OF TWO OR MORE MINERALS

ᐊᒥᖏᐅᐁ· ᐊᓂᔨᐃ· ᓀᓇᑐᑭᒋᑫᐃ·ᑐ ᑲᑐᕆᑌᑕ ᐊᖏᑭᓵ • ᐊᓂᔨᓵ ᒪᖏᑲᐊ·ᐱᑭᓂᐊ·ᕀ ᐁᐱᒥᐅᔨᖏᐅᐊ·ᓗ • ᐅᑫ·ᔨᐊ·ᕀ ᑐᑲᑐ ᐊᓂᔨᓵ ᔨᖏᕀ ᐃᔨᐸᐸᑲᔨᐊ·ᕀ

Rock Types ᑐᑲᔨ ᐊᓂᔨᓵ

Igneous rocks cool from magma (inside the Earth) or lava (outside the Earth).

ᐃᕀᑲᕃᑎ ᐊᒥᐅᑫ·ᔨᐊ·ᕀ ᑐᑲᑐ ᐊᓂᔨᓵ ᑲᔨᑕᑲᒪᐱᓂᐊ·ᓗ ᐊᓇᒪᑭ ᑲᓴᐊ·ᓗ ᓇᑐᑕ ᐊ·ᑭᑕᑲᒥᐠ ᑲᐱᕿᑭᑎᐊ·ᕀ ᑲᐃᖃᓂᐊ·ᑲᒥᓗ ᐊᓂᔨᓵ.

Metamorphic rocks are rocks that have been changed by heat and/or pressure.

ᒣᑕᒪ·ᓭᐱᕀ ᐅᑫ·ᔨᐊ·ᕀ ᐊᓂᔨᓵ ᐊᒥᓇᓂᔨᐊ·ᕀ ᑲᑭ ᑭᓴᐱᑭᓂᐊ·ᓗ ᓇᑐᑕ ᒥᓇ ᑲᑭᑕᑯᓂᔨᐊ·ᓗ.

Sedimentary rocks are formed from bits of other rocks or shells of marine life laid down in water bodies.

ᑲᒪᐊ·ᑐᐊ·ᐱᑭᓴᐠ ᐅᑫ·ᔨᐊ·ᕀ ᑐᑲᑐ ᐊᓂᔨᓵ ᐱᒥᒪᐊ·ᑐᐊ·ᐱᑕᐊ·ᕀ ᓂᑕᑭᔭᕀ ᐊᓂᔨᓵ ᓇᑐᑕ ᐁᕀᕀ ᐊᓇᒥᐱᕀ ᑲᐊᔭᐊ·ᓗ.

Quartzite

Hard, light-coloured rock changed from sandstone under high heat and/or pressure.

ᑲ·ᓭᐟᕀᔭᐟ

ᒪᑲᑌᐊ·ᐱᑭᓂ, ᐊ·ᐱᐢᑲᐱᑭᓂ ᑲᑭᑕᑕ ᑲᓄᑭᓂᐠ ᑲᑭᑕᑯᓂᔨᐊ·ᓗ ᐁᑭᑕᓂᔨᐊ·ᑲᒥᓗ ᐁᑭᑕᑯᓂᔨᐊ·ᓗ.

Rhyolite

Light-coloured rock, with small mineral grains, cooled from lava erupted from volcanoes.

ᓭᐊᔪᓵᐊᔪᐟ

ᐊ·ᐱᐢᑭᓂᔨ ᐊᓂᔨᐃ ᐊᒪᑕᑯᐊᐊ·ᐠ ᑐᐊ·ᑯᐃ, ᑲᑭᑕᑲᒥᐠ ᑲᐱᕿᑭᑎᐊ·ᕀ ᑲᐃᖃᓂᐊ·ᑲᒥᓗ ᐊᓇᒥᐱᕀ ᑲᐃᖃᓂᐊ·ᑲᒥᓗ ᐊᓂᔨᓵ ᐁᑭᑕᑯᓂᔨᐊ·

Rocks of Ontario ᐅᑐᐱᐃᓴ ᐊᖏᑭᑦ ᐊᓯᓂᑦ

THROUGH FIRE, EARTH AND WATER ᐃᒪ ᐃᓕᕿᑫ ᐃᕐᑯᑌᓗᑦ, ᐊᖏᑭᓗᑦ ᒥᓇ ᓂᐱᓗᑦ

Ontario Geological Timeline ᑲᑭᐱᔑᐱᒪᓄᑲᑌᑦ ᐅᑐᐱᐃᓴ ᐊᓯᓂᐃ· ᓇᓇᑕᐃ·ᑭᑫᑎᑫᐃ·ᔅ

4600 ····· 4000

HADEAN
Oceans of Fire
ᖁᐊᑎᐊᑐ
ᑲᐃᕐᑯᑌᐊ·ᑦ
ᑭᑎᑲᑐ

4000 ····· 2500

ARCHEAN
Life is Small
ᐊᐳᑎᐊᑐ
ᐊᖃᓕᑐ ᐱᒪᑎᓯᐃ·ᔅ

Canadian Shield:
Large region made of granites and greenstone rocks – the oldest rocks and middle age rocks of Ontario.

ᖃᓄᑎᖅ ᐊᓯᑐ ᖃᒥᓯᑌᐊᐱᖅᓗᓪᓕᐅᑦ:
ᒥᓯᑌᐊᐱᖃᐱ ᐊᓯᑐ ᑐᖃᓯ ᐊᓯᓂᐊ·ᑕᐊ·ᑦ ᒥᓇ ᐊᓇᒪᖃᒥᑦ ᐊᓯᓂᑦ – ᒪᐊ·ᓗ ᑭᒋᑫᑌ ᐊᓯᓂᑦ ᒥᓇ ᐊᐱᑕ ᑫᑌ ᐊᓯᓂᑦ ᐅᒪ ᐅᑐᐱᐃᓴᓯ.

Granites: The first crust.
ᐊᓯᓂᐊ·ᑕᐊ·ᑦ: ᒪᐊ·ᓗ ᓂᑦᑕᑦ ᖃᓂᒪᖃᐱᐃ·ᓯᓗ

Greenstone Rocks:
Formed from Ontario's first volcanoes – often contain valuable mineral resources.
ᓇᓂᖅᐊ·ᓯᓂᑦ: ᒥᑦᐃᒪ ᑲᑭᑎᐅᔑᑦᐳᐊ·ᓗ ᒪᐊ·ᓗ ᓂᑦᑕᑦ ᐅᑐᐱᐃᓴᓯ ᐊᓇᒥᐊ·ᑎᑦ ᐃᑫᑌ ᑲᐸᑌ – ᑭᓴᐊ·ᑦ ᓇᓂᖅᐊ·ᓯᓂᑦ.

2500 ····· 1850

PROTEROZOIC
We Can Breathe
ᑊᐳᑐᑐᐳᓯᒧᑦ
ᑲᑭᐸᑭᑕᓇᒧᒥᑐ

Emerging Earth: The land was pushed and pulled into pieces, creating oceans, volcanoes and mountains. Early life created oxygen.
ᑲᑭᓴᓂᒧᑭᑕᒪᑦ ᐊᒥᑭ: ᐊᒥᑭ ᑭᐸᐠᑎᐱᖃᐃᑫ ᐁᑭᓴᑭᑭᑎᑫᑦ, ᐁᑭᓇᒪᐊ·ᑦᑐ ᑲᐸᑌᑭᑐ ᒥᓇ ᐊ·ᑦᑐ. ᓂᑦᑕᑦ ᐱᒪᑎᓯᐃ·ᑐ ᑲᓂᑕᒃ·ᑦ ᑭᐅᔑᒥᐅᒪᑲᑐ ᑲᐅᑭᑦᑕᓇᒧᓇᓄᐊ·ᑦ.

1850 ····· 541

Weathering: Wind, water, ice, heat and pressure break down rocks.
ᑲᐊᐃᔑᐁᐊ·ᐸᑦ: ᐁᒃ· ᐃᒪ ᑲᓄᑎᑦ, ᓂᐱᒃ, ᒥᑲᒥᒃ, ᑲᑭᔑᑌᑦ ᒥᓇ ᑲᒪᔑᖏᑫᒪᒃᑦ ᑲᑭᑎᑦᐸᐊ·ᓴᐊ·ᓪ ᐊᓯᓂᑦ.

Erosion: Movement of broken rocks. This wearing away of the rocks is why Ontario no longer has mountains as high as the Himalayas.
ᑲᑭᐱᖃᑲᑭᖃᒃᓪ: ᑲᑭᓂ ᐱᒥᐊ·ᑲᐃ·ᖃᑲᐊ·ᓪ ᑲᐱ·ᑲᐱᑭᖃᑲᐊ·ᓪ ᐊᓯᓂᑦ. ᐁᒃ· ᑲᑭᐊ ᑲᐱᒥᐱᐊᑲᐊ·ᓪ ᐊᓯᓂᑦ ᐊᒥ ᐅᑐᐱᐃᓴᓯ ᐁᒃ ᑲᐅᑎ ᐊᖏᒪᑎᓂ ᑲᑭᓕᑲᑭ ᑭᑎᐊᑲᑭ ᑲᐃᒪᖃᐃᑫ ᐁᒃ ᑲᐅᑎ ᐊᖏᒪᑎᓂ ᑲᑭᐊᓯᓂᑦ ᐁᒃᑎ "ᐃᒪᓴᐁᖏᑎ ᐊᑊᑦ.

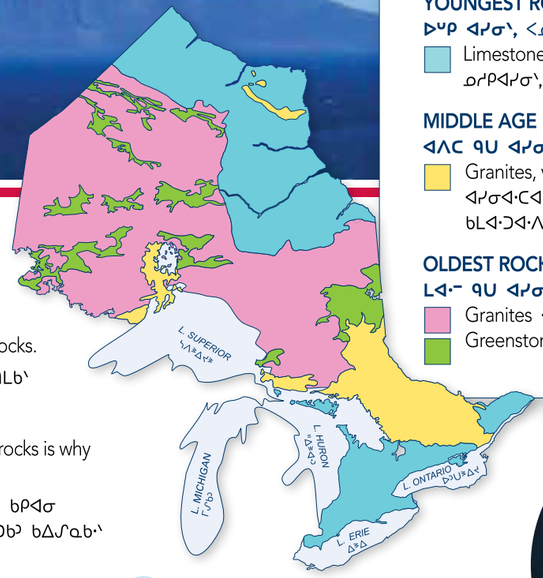
541 ····· 252 ····· 66

PHANEROZOIC *Life Gets Big* ᐸᑐᐱᐅᓯᑦ ᒥᓯᐁ· ᐊᓂᑕᒃᓪ ᐱᒪᑎᓯᐃ·ᔅ

Paleozoic ᐸᓴᐁᐅᓯᐃᑦ						Mesozoic ᒣᓯᓯᐃᑦ			Cenozoic ᓴᓄᓯᐃᑦ		
Cambrian ᑲᑕᐳᐃᔭᑐ	Ordovician ᐅᓴᑐᐱᓂᑐ	Silurian ᓯᓴᐅᔑᐃᔭᑐ	Devonian ᑎ>ᓂᔭᑐ	Carboniferous ᑲᓴ>ᓂ>ᓴᐃᑎ	Permian ᐱᓴᒥᔭᑐ	Triassic ᑊᐃᐊᒥᑦ	Jurassic ᔨᓴᐊᒥᑦ	Cretaceous ᑊᓴᐁᑌᓂᑎ	Paleogene ᐸᓴᐃᐅᑎᑐ	Neogene ᓂᐅᑎᑐ	Quaternary ᑲ·ᑐᓴᑐᓴᐃ

OLDEST ROCKS (age, million years) ᒪᐊ·ᓪ ᑭᑫᑌ ᐊᓯᓂᑦ (ᑕᓯᔭᑫᐃ·ᔅ, ᒥᐃᔭᑐ ᑕᓯᔭᑫᐃ·ᔅ)

YOUNGEST ROCKS (Today) ᐅᑦᑫ ᐊᓯᓂᑦ (ᓄᐃᑕ ᑲᑭᑦᑲᑦ)



YOUNGEST ROCKS, Phanerozoic
ᐅᑌᑫ ᐊᓯᓂᑦ, ᐸᓄᖅᐅᓯᐊᑦ
Limestones, sandstones
ᓄᓯᑫᐊᓯᓂᑦ, ᖃᐊ·ᑯᐊᓯᓂᑦ

MIDDLE AGE ROCKS, Proterozoic
ᐊᐱᑕ ᑫᑌ ᐊᓯᓂᑦ, ᑊᐳᑐᐱᐅᓯᐅᓯᑦ
Granites, volcanic rocks, sedimentary rocks
ᐊᓯᓂᐊ·ᑕᐊ·ᑦ, ᐳᓴᑲᓂᑦ ᐊᓯᓂᑦ, ᑲᒪᐊ·ᑐᑐᐊ·ᑦ, ᐃᓕᐊ·ᑐᐊ·ᐱᑌᑲᒻ ᐊᓯᓂ

OLDEST ROCKS, Archean
ᒪᐊ·ᒻ ᑫᑌ ᐊᓯᓂᑦ, ᐊᑊᑎᐊᑐ
Granites ᐊᓯᓂᐊ·ᑕᐊ·ᑦ
Greenstone rocks ᓇᓂᖅᐊᓯᓂᑦ

Coral
ᑲ·ᑊᐊᓴ

Trilobite
ᑊᓴᐃᓴᐅᑊᐳᓯ

Tropical Seas: Warm, shallow ancient seas periodically covered most of Ontario, leaving behind many animal and plant remains seen today as fossils.
ᑲᐯᒥᐃ ᑲᓂᑭᓇᐊ·ᑲᒥᑦ ᓯᐱᑐ: ᑫᑲᓯ ᒥᓯᐁ· ᐅᑐᐱᐃᓴᓯ ᑭᐱᒧᐃᑯᓪ ᑲᐯᒥᐃ ᐁᑭᑭᑭᑎᐊᑲᑲᑦ ᑲᑭᐃ, ᐁᒃ· ᐊᐱᑐ ᑲᑭᓂᑕᑌᑦ ᒥᓯᐁ· ᐊᓯᐸᑕᑲᑌᐊ·ᑐ ᐊᐃ·ᓴᓂᒻ ᐅᑲᓇᑐ ᒥᓇ ᑭᑎᑲᐃ ᐅᒪᓯᐃᓴᓯᑫᑐ ᓄᑫᑕᑲᒪᑦ.

Ice Ages: During the most recent ice age, glaciers covered most of Ontario, up to 4 km thick! As glaciers moved forward, they carved out the Great Lakes. Evidence of the melting of glaciers is seen today on land as striations and erratic boulders.
ᑲᑭ ᒥᐻᒥᐊ·ᑦ: ᐃᒻᑲ·ᓴᒻ ᑲᑭ ᒥᐻᒥᐊ·ᑭᓪᑕ, ᑫᑲ′ ᒥᓯᐁ· ᐅᑐᐱᐃᓴᓯ ᑭ ᑭᑎ ᒥᑲ·ᒥᐊ·ᑐ ᐁᑲ· ᑫᑲ′ 4 ᑭᐠᐊᑐᐳᓯᑎ. ᐁᑲ· ᐊᐱᑐ ᑲᓂᐱᒥ ᐊ·ᑲᐃ·ᐅᑲᒻ ᑭᑎᑲᑲ·ᑕ ᐊᒥᑊᐃᒪ ᑲᑭᓴᑲᑭᐅᑐᐳᓯᑎᑲᑭᓂ ᑭᑎᓴᑲᐃᐅᓴᑐᓪ. ᓄᑦᑕ ᓇᑲᓐ ᑲᑭᐱᐱᔑ ᓇᓂᑭᓯᓪ ᑭᑎᑲᑲ·ᑕ ᑲᐃᔑ ᑲᐅᑲᑭᐱᐃᑲᑲᑦ ᐊᓯᓂᑦ ᒥᓇ ᑲᑭᒪᒪᑎᐅ·ᐱᐃᓯᐊᓯᐊ·ᒻ ᑭᑎᐊᓯᓂᑦ.

Erratic Boulder: Boulder moved to different area by glaciers. The rock type of the erratic boulder and the rock under the boulder are often different.
ᑲᑭᒪᒪᑎᐅ·ᐱᐃᓯᐊᓯᐊ·ᒻ ᐊᓯᓂᑦ: ᑭᑎᐊᓯᓂᑦ ᑭᒪᒪᑎᐅ·ᐱᐃᓯᐊᓯᐊ·ᑦ ᑲᑭ ᑭᑎᒥᑎᐊᑦ. ᐅᑫ·ᓂᐊ·ᑦ ᑐᑲᓐ ᑭᑎᐊᓯᓂᑦ ᑲᑭᒪᒪᑎᐅ·ᐱᐃᓯᐊᓯᐊ·ᒻ ᒥᓇ ᐊᓇᒥᑦ ᑲᑭᐊᓴᐊ·ᒻ ᐊᓯᓂᑦ ᐸᐸᑲᑭᓯᐊᓯᐊ·ᑦ.

Striations: Long, straight parallel lines or gouges formed as glaciers scratched the underlying rock.
ᑲᑲᐱᐃᑭᑲᐊ·ᒻ: ᑭᑲᑲᐱᐃᑭᓯᐊᓯᐊ·ᑦ ᐊᓇᒥᓯᓇ ᑲᑭᔑᐊ·ᐸᑦ ᐊᓯᓂᑦ ᒥᓇ ᑭᐸᐠᑫᐃᑭᓯᐊᓯᐊ·ᑦ.