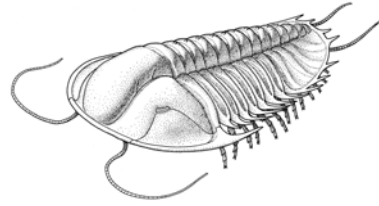


## INTRODUCTION: THE BURGESS SHALE A WORLD HERITAGE SITE

Illustration of Olenoides by Larry Isham  
Courtesy of Smithsonian Institution (BS-SB 1)



High on a mountain ridge in Canada's spectacular Yoho National Park, are the remains of one of Earth's most ancient marine ecosystems, frozen in time within the rock layers. These are the famous Burgess Shale fossils, discovered in 1909 by Charles Walcott, an American scientist. They are a treasured part of Canada's Heritage, and one of the world's most important fossil sites. The protected status of Yoho National Park has made it possible to visit the site today, and still see many fossils. Their global significance was recognised in 1981 when they were proclaimed a World Heritage Site. Later, in 1984, UNESCO designated the Rocky Mountain World Heritage Parks (including Yoho National Park), so that the fossils now are a protected site within a larger protected area.

The fossil remains show evidence of a rich community of ancient marine animals, that flourished in a warm tropical ocean, *half a billion years ago*. They provide a window into one of the most remarkable periods of biological innovation in Earth's history, the *Cambrian Explosion*, also called the "Big Bang" of evolution. The Burgess Shale fossils are still the subject of intense scientific research today.

The Burgess Shale fossils are very important to scientists for three main reasons: **their great age, their exceptional preservation, and their great diversity**. The fossils are currently estimated to be 505 million years old, from the Middle Cambrian time period, making them some of the oldest fossils of complex animals in the world. The fossils are extremely well preserved, providing scientists with critical evidence of what many of these ancient creatures looked like, and in some cases even showing what their last dinner might have been! The Burgess Shale animals lived a short time (geologically speaking) after a great number of fossilised animals appear suddenly in the rocks, at the beginning of the Cambrian period, reflecting a time of increased evolutionary rate. Roughly 170 different species of marine plants and animals have been found at Walcott's quarry, with representatives of all of the major animal families known today, but also other creatures that have long been extinct. The Burgess Shale fossils put on full display the incredible diversity of life that occurred with the Cambrian Explosion, providing scientists with insights into the mysterious process of evolution.

The remarkable story of the Burgess Shale is summarised here - a tale of life, death, burial, quiescence, upheaval, scientific discovery, puzzlement, insight, celebration, and ongoing fascination.



Illustration of Vauxia by Larry Isham  
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