

Chance Find Protocol for Fossil Discoveries—Example Document

Insert Proponent/Company or Operator Name

Date

Why are fossil discoveries important?

British Columbia is home to many globally significant fossil sites. Fossils are essential to the understanding of BC's natural history and geology, provide opportunities for scientific discovery and education, and help locate mineral, oil and gas deposits. Fossils constitute a valuable resource which is administered under the Land Act by the BC Fossil Management Office, Heritage Branch. All fossils on Crown Land are property of the province and may not be sold or removed from the province. Collection of fossils is prohibited without a permit, with the exception of recreational collecting of some common fossil types. Developers are asked to report any fossils unearthed on their site to the BC Fossil Management Office (Heritage Branch) or Royal British Columbia Museum.

The following information has been provided to assist you with recognizing fossils which may be present in your area of work.

What kinds of fossils occur in British Columbia?

Fossils are preserved remains of organisms such as bones, teeth and shells or impressions of organisms in the rock such as a plant leaf. Trace fossils are preserved biological activity such as dinosaur footprints or tracks and burrows. Fossils range from thousands of years old to hundreds of millions of years old and are often the remains of extinct species. Fossils are the historical record of the evolution and development of life on earth. They are important globally as well as in British Columbia for their scientific, heritage, educational and economic value.

Fossils are primarily found in sedimentary rocks from ancient marine and lake basins in the province. Volcanic rocks, such as ash, also may preserve fossils. The distribution of fossil resources remains poorly understood within British Columbia so there is always a chance that new fossil sites will be encountered. Known fossil site concentrations are found on Vancouver Island, Haida Gwaii, in the Princeton-Merritt-Kamloops area, in southeastern and northeastern British Columbia and the Central Interior Plateau.

What should you do if you discover fossils?

If any fossil sites or fossil remains are encountered or unearthed during development or industrial activity, the following steps must be taken:

1. Suspend work and all forms of ground disturbance in the immediate vicinity of the find and leave all possible fossil material in place.
2. Establish a protective buffer of at least 30 metres, around the extent of the find area. Demarcate the buffer in a highly visible way (e.g., with “No Work Zone” flagging).
3. Work at that location may not resume until the measures below are implemented.
4. Report your discovery to the site supervisor (*Insert name and contact phone number of Site Manager or Project Geologist or qualified Lead Paleontologist*).
5. Site supervisor will photograph the site and fossils using a scale, record the GPS location of where the fossils were found, and note how fossils were found. They then relay this information to the qualified Lead Paleontologist or the Fossil Management Office (Fossil.Management@gov.bc.ca).
6. Depending on the nature of the find, the qualified Lead Paleontologist will assess the find and may:
 - a. Document the site fully and relay the information (photographs, fossil information, stratigraphy, site locality information) to the BC Fossil Management Office and to (*Insert name of repository if this has been arranged*).
 - b. If the qualified Lead Paleontologist determines the fossil or the site is significant, they will contact the BC Fossil Management Office and the (*Insert name of repository if this has been arranged*). Work must not resume at the location until approved by the BC Fossil Management Office.
 - c. The qualified Lead Paleontologist will develop a mitigation plan in consultation with BC Fossil Management Office.
7. All images, data and samples collected will be reported to the BC Fossil Management Office.

What kinds of fossils may occur on-site?

Proponent should add photos here of the types of fossils expected to occur within the geological units being impacted by ground disturbance.

Contact the BC Fossil Management Office for assistance.

***Photos subject to change; photos courtesy of BC Fossil Management Office unless otherwise noted.*

Dinosaur Trackways: Preserved impressions or casts of dinosaur footprints on bedding planes are extremely important fossil sites. These trace fossils are used to analyze behavior such as herding patterns and how fast a dinosaur could move.



Dinosaur trackways near Hudson's Hope



Casts of dinosaur (Ornithomimid) tracks

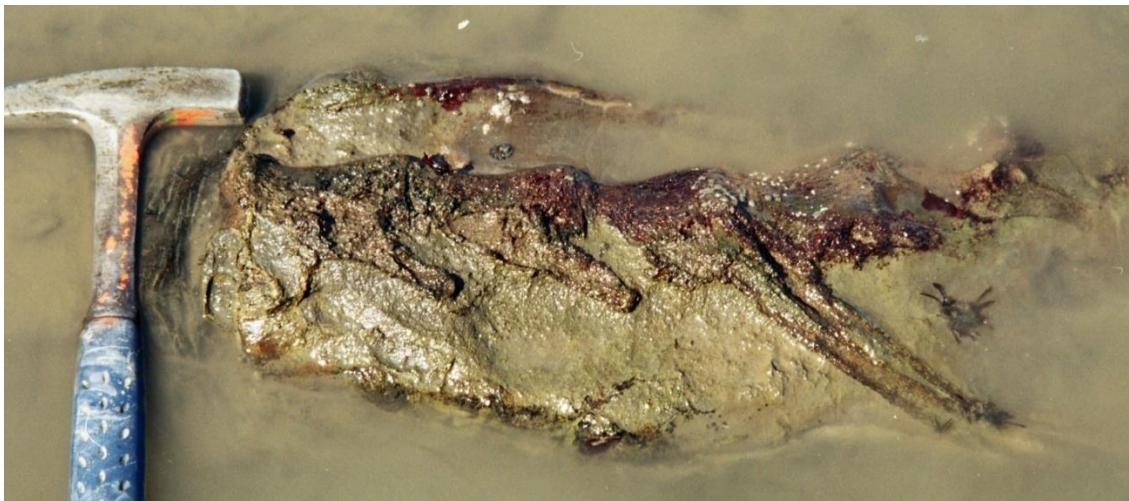
Dinosaur and Reptile Bones: While British Columbia has numerous trackway sites, sites with dinosaur bone remain rare. These are extremely important fossil sites as little is known about Cretaceous dinosaur species in British Columbia. Discoveries of marine reptiles are also rare.



Dinosaur bone (Theropod) and bony scute (Ankylosaur)



Partially exposed dinosaur bone



Marine reptile bone (mosasaur), photo courtesy of D. Bowen.



Marine reptile bone (mosasaur), photo about 1 metre wide for scale

Other Bones and Fossils: Although it is difficult for a non-specialist to identify what type of bone has been found, more than just dinosaur bones could be unearthed by project construction. Quaternary (ice age) remains from mammoths, bison, horses, camels and other mammals may be found within a project area. In B.C.'s coastal region, bones from sea mammals may be found buried far inland when the seas flooded the land at the end of the last glaciation. Bones of fossil fish occur in bedrock of many ages, as old as the Paleozoic Era, and mammal bones can be found in bedrock of the Cenozoic Era. These remains are all important fossils.



Mammoth tusks, measuring tape for scale is 1.8 metres.



Pleistocene walrus (60,000 years old), Qualicum Beach Museum



Fish death assemblage, Qualicum Beach Museum

Plant Fossils: Plants are commonly preserved where coal is found. Coal itself is fossilized plant material, although it is typically massive and individual fossils cannot be recognized. Where a coal layer meets a siltstone or sandstone layer, impressions of leaves, cones and flowers may occur. Plants provide valuable information about the past environment, plant communities and climate change. Significant fossil plant sites can occur in bedrock, Tertiary lake deposits and in Quaternary (surficial) deposits. Fossil plant sites can often contain remains of fish, insects and other invertebrates. It is important to report any occurrences of fossil plant remains to be evaluated by a resource specialist.



Plant fossils (Taxodiaceous leaves and cones)



Impressions of plant leaf and palm frond, Qualicum Beach Museum



Petrified tree stump

Shell Beds and Invertebrate Fossils: Well-preserved shells can provide valuable information about species diversity and distributions. Paleozoic rocks contain a variety of invertebrate body fossils such as corals, trilobites, nautiloids, brachiopods and others. Ammonoids and bivalves are common in Mesozoic rocks and can also occur in Paleozoic rocks. While some shells are common, a resource specialist is needed to evaluate the site and determine the significance of the fossils and the deposit. Shell beds potentially preserve vertebrate material such as dinosaur teeth and rare early mammal material.



Cretaceous ammonites and bivalves



Example of a shell bed, Courtenay and District Museum