Ice Age Fossils at Cowichan Head
Island View Beach, Saanich Peninsula, Vancouver Island

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The Ice Age (Pleistocene Epoch) lasted from 2.8 million to just 10,000 years ago. It transformed British Columbia. Cowichan Head bluffs south of Island View Beach on the Saanich Peninsula record the dramatic geological changes experienced during the last 80,000 years and yield fossils of the life that went along for the ride.

The bluffs are like a geological layer cake with sediment beds forming the layers. The cake is somewhat lop-sided (tipped) downward to the far (south end) of the beach so that the oldest layers are exposed in the face of the bluff just south of the parking lot. These grey sandy and silty beds may extend to 90,000 years ago. The oldest beds contain a few bits of wood but no other big fossils. Microscopic pollen grains in them reveal that conifer forests including spruce, fir, hemlock and pine grew in the area.

Higher up the face and further along the beach these grey beds turn silty and even stony. This unit is called the Dashwood Drift. Abundant sea shells poke out from the upper part of these layers estimated to be 70,000 years old. These shells reveal that the ocean once stood many metres higher than today. Several hundred metres along the bluff you can see and pick many different kinds of shells. Barnacle bits are common as are soft-shell clams, cockles and scallops. Small nestling (Hiattella) and nut (Nuculana) clams are widespread suggesting cold waters. Lucky visitors may unearth a large whelk snail. Pollen and spores from this layer reveal that the climate was much cooler than today and glaciers may have been nearby.

The marine layer is covered by up to 10 m of reddish brown sand and gravel suggesting that the ocean retreated and a stream or river delta may have formed here during the Olympia Interglacial Period. Above, fine silts and sands preserve plant debris and rest upon coarse sands and gravels. Up to 7 m thick, this layer is best seen at the south end of the bluffs and spans from at least 35,000 to about 22,000 years ago. Fossil mammal bones erode from the upper face of this bed and sometimes tumble to the beach. People have found mammoth teeth and short-faced bear bones on the slope and beach. Look carefully and you too may find fossil bones. These animals lived in a cool to cold tundra landscape as a major ice sheet began to spread from the north.
Near the top of the bluffs, loose sands cover these fossil bearing layers and are thought to have been deposited in front of the advancing glaciers during cold conditions about 20,000 years ago. When the ice sheet passed over the area about 15,000 years ago it plastered a firm stony layer called a glacial till on top of the surface, like the icing on the layer cake.

The ocean washed over the entire pile about 12,500 year ago but left little behind. Since then, sea waves have cut at the base of the bluff and every once in a while wash out wonderful fossils for us to study and learn about these ancient times and environments.

**Figure 3.** Bivalves and gastropods from the Dashwood Drift. Mollusk identifications by Tom Cockburn, Research Associate, and photos by Fran Benton, Volunteer, Royal BC Museum.

**Figure 4.** Tusk fragment recovered by Grant Keddie, Royal BC Museum from the Cowichan Head exposure on the slope below the Quadra Sand. A white tusk fragment is at centre. Bedded Quadra Sand Unit 6 is visible at upper right. Photos by Grant Keddie, Royal BC Museum.

**Figure 5.** Leg bone of a short-faced bear (*Arctodus simus*) found on the beach below the Cowichan Head cliffs. Photo by Grant Keddie, Royal BC Museum.