

'X' marks the spot: Transferring dig site coordinates from maps to Google Earth

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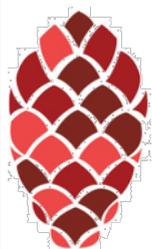
Abstract

Dinosaur Provincial Park has been a popular site for palaeontological digs for many years. Over time, the many quarries and bone beds uncovered have had their locations marked on large paper topography maps. Unfortunately, many dig sites have been lost due to poor documentation. Some sites have been abandoned for years. The high erosion levels of the park (2 – 4 mm yearly) continually both destroys dig sites and uncovers new fossils. To help recover old, unused dig sites, the coordinates of the sites marked on the old paper maps were uploaded to Google Earth Pro for easy access. Unfortunately, the points had to first be transferred to clear mylar maps, because the original paper maps lacked longitude and latitude measurements. This was accomplished by matching the topography when the scale of the maps differed, and by overlaying the clear maps on the paper maps when they did not. The distance of each point from a line of longitude or latitude was found using a ruler (each mm measured on the map representing 10 m in the park) and used to calculate their coordinates. After the coordinates were found, they were recorded in a Google SpreadSheet. Once this was completed for all 462 points, they were uploaded to Google Earth Pro. The purpose of this project was to provide more easily accessible records of dig sites and prevent further record loss as the old paper maps age and their condition deteriorates. The massive paper maps are unwieldy and impractical to use in the field, and something more compact is needed. Google Earth is easily accessed on a computer or cell phone, and the points will not be lost due to physical damage, degradation, or misplacement of the records. In addition, it takes up far less space in digital form, and thus is better for field work than the original maps.

Key words:

Dig sites, points, coordinates, maps, Google Earth, transfer, topography

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'X' Marks the Spot: Transferring Dig Site Coordinates from Maps to Google Earth

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Introduction

- Historically, record keeping of palaeontological dig sites has been unreliable; many quarries have been lost over the years (Tanke 2005).
- To keep track of the various dig sites, quarries, and bone beds at Dinosaur Provincial Park (DPP), metal stakes with the site's data on the head are drilled into the ground by the site (Leiggi and May 1994), and the location marked on a large paper map.
- These maps are impractical to use in the field.
- To locate and record the sites more efficiently, the coordinates of the old points were taken and uploaded into Google Earth.

Methods

- We first sorted through the paper maps to find which ones had points on them.
- Some of the old maps that had points marked. They were placed separately from blank maps to differentiate them.
- As the old maps had no coordinate measurements shown, the points were first transferred to clear mylar maps.
- A smaller mylar map, scaled back to show the entirety of DPP, was used to match old paper maps to the section of DPP they depict.
- The corresponding mylar map was used to re-mark the points by matching the topography of the maps if the scale differed, or by overlaying the clear mylar map on the paper map to copy the points if the scales matched.



Figure 1: Some of the old maps that had points marked. They were placed separately from blank maps to differentiate them.



Figure 2: The small mylar map laid by an old paper map. The small map was used to match sections of paper maps with the corresponding mylar map (each mylar map depicts only a section of DPP).



Figure 3: Mylar maps overlaying a paper map. The mylar maps were carefully matched to the paper maps and taped in place.

- Once all points were marked on the mylar maps, their coordinates were found by matching the lines on grid paper to the marks depicting longitude and latitude. A ruler was used to measure the distance from the line to each point.
- The measured distance was either added or subtracted from the nearest line of longitude or latitude depending on placement, using the calculator app on a cell phone.
- The calculated coordinates were then recorded into a Google Spread Sheet.
- From there, the coordinates were entered and saved as pins into Google Earth Pro.



Figure 4: A ruler being used to find a point's coordinates. 1 mm on the map represents 10 m in the park.



Figure 5: Step One: Quarries on a paper map. The points on the original map.



Figure 6: Step Two: Quarries on a mylar map. The points have been transferred to the corresponding mylar map.

Point ID	Longitude	Latitude
1	109.5123	50.1234
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5	109.5123	50.1234
6	109.5123	50.1234
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