The Early Cretaceous Dinosaur Tracksite at Clayton Lake: Sedimentological Observations on the Main Track Level


Students and instructors from CNM’s Applied Technology (UAS & GIS programs) and Earth & Planetary Sciences (E&PS)
“Sandflat/mudflat” close to the seashore

Source: State Parks
Construction: 1955-1958

Flooding: 1982
Unit 4
Sandstone, quartzose, fine-grained, moderately well sorted, silica cement...

Units 5-8
Thin, interbedded lithologies of silty shale and very fine grained sandstone
Main Track Surface – Features and Observations
Undertracks

- Poorly-preserved
- no skin impressions
- Some (or all?) tracks registered in thin overlying mud rock
Dinosaurs were walking on some combination of 4, 5, 6, 7, 8
Varying sediment viscosity across site

- “Firmer” to “Soupier”
- Deeper/wider tracks in soupier area
- Varying invertebrate activity
- Mudcracks and ripples
Orthoimage with contour lines
Varying invertebrate activity

Bioturbation indices after Miller and Small, 1997
Firmground (3-4)  Softground (1-2)
Invertebrate burrows cut dinosaur tracks

- No dinosaur tracks cut invertebrate traces
  - Dinosaurs walking on surface before invertebrate traces

- Scoyenia ichnoassemblage
  - shallow freshwater setting
  - *Arenicolites* and *Thalassinoides* are facies-crossing ichnotaxa suggesting possible marine influence
Sandstone mounds

- Topography on the track surface when dinosaurs present
No obvious spatial patterns
Field Measurements

<table>
<thead>
<tr>
<th>Mound</th>
<th>L cm</th>
<th>W cm</th>
<th>H cm</th>
<th>Az</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>106</td>
<td>70</td>
<td>11</td>
<td>E-W</td>
</tr>
<tr>
<td>B</td>
<td>136</td>
<td>59</td>
<td>11</td>
<td>N20°W</td>
</tr>
<tr>
<td>C</td>
<td>95</td>
<td>54</td>
<td>17</td>
<td>N20°E</td>
</tr>
<tr>
<td>D</td>
<td>117</td>
<td>77</td>
<td>11</td>
<td>N70°E</td>
</tr>
<tr>
<td>E</td>
<td>117</td>
<td>60</td>
<td>11</td>
<td>N70°E</td>
</tr>
<tr>
<td>F</td>
<td>100</td>
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<tr>
<td>G</td>
<td>98</td>
<td>47</td>
<td>9</td>
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<tr>
<td>H</td>
<td>68</td>
<td>45</td>
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<tr>
<td>I</td>
<td>124</td>
<td>47</td>
<td>13</td>
<td>N-S</td>
</tr>
<tr>
<td>J</td>
<td>230</td>
<td>115</td>
<td>16</td>
<td>N60°W</td>
</tr>
</tbody>
</table>

10 mounds
Length 68-230 cm
Width 45-115 cm
Height 9-17 cm
Cross sections and internal stratigraphy
~5,6,7,8? The surface of track registration was in this interval.
Mound avoidance?
Putting tracks, traces and mounds together...

- Topography (mounds) prior to tracks.
- Dinosaurs avoided stepping on the mounds.
Track surface not bioturbated by invertebrates until after the dinosaur tracks.

*Scoyenia* ichnofauna suggest shallow water of mixed salinity at the time of the burrowing.
Questions?