

Presence of two different theropod footprints in the Valanginian-Hauterivian (Lower Cretaceous) of Villanueva de Huerva (Zaragoza, Aragón, Spain).

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“El Paso” site is an ichnological locality proposed by the Regional Government of Aragón as a Unesco World Heritage site. Its main interest is paleogeographic and lies in being one of the few well-known Valanginian-Hauterivian tracksites in the Iberian Peninsula as well as the first locality with dinosaur tracks in Zaragoza province. It is located in the Aguilón Basin, in which the outcrop of Weald facies are represented by sandstones and limestones of Villanueva de Huerva Formation (Valanginian - Hauterivian) and limestones with ostracods of Aguilón Formation (uppermost Hauterivian - basal Barremian), dated with carophytes. The studied locality is placed in the top of the Villanueva de Huerva Formation in its type section. Litologically the uppermost part of this formation is a calcareous succession with small marl levels. In the limestones there are abundant the algal laminations. The deposit is interpreted as a brief carbonated lacustrine system, generally of very low energy (Soria de Miguel, 1997).

The fossiliferous level is about 80 cm thick and presents tubular structures possibly produced by plants. In the upper surface, which is little exposed, shallow depressions can be observed (undertracks), as well as three theropod footprints, two grouped in one trackway (1.1 and 1.2) and another one isolated (2.1). Although there are no signs of skin impression, the footprint preservation does not suggest that the level with tracks is not the one where the trackmakers stepped on. Otherwise, all footprints present an abrupt edge, a wide mud trim and a good preservation indicating that they could be real footprints (no undertracks)

Trackway 1 is composed by two tridactyl and mesaxonic footprints. In the first one (1.1) only the anterior prints of digits II, III and III are preserved, and the second (1.2) is almost complete. Digits II and IV show great marks of claws strongly projected medially and laterally, respectively. Both footprints lack the anterior end of the digit III, which allow us to estimate a slightly greater length than the 46 cm measured in the most complete footprint (1.2). Width of footprint 1.2 is 50 cm. Digital pads can be observed in digit II, but not in digits III and IV. There is no *hallux* marks. Finally a quite short heel impression is observed (total footprint length / length of digit III ratio is around 1,4). Trackway 1 does not allow any taxonomical assignation up the moment.

Although functionally the trackmaker was tridactyl, the footprint 2.1 is a right tetradactyl one, because the *hallux* impression, small and medially projected, can be observed. The digit II is wide in the middle portion, acuminated at the tip and shows a single pad. The digit III is broad proximally but tapering distally, and slightly curved laterally. Digits II and III present marks of claws. The deep impression of the digit IV only allows to observe traces of digital pads. The footprint length and width are 44 and 37 cm, respectively. The heel impression is quite long, showing this footprint a total length / length of digit III ratio of more than 1,9. The features of this footprint are similar to those characterizing the ichnogenus *Buckeburgichnus* from the Berriasian of Germany (Lockley, 2000), and also present in the Aptian of La Rioja province (Spain), allowing us to suggest a preliminary assignation of the footprint 2.1 of “El Paso” locality to the this ichnogenus.

The marked differences between the two trackways of the ichnological site of “El Paso” allow to suggest that they belong to two different trackmakers, which implies the presence of two different taxa of theropod dinosaurs in the Valanginian-Hauterivian of the Zaragoza province.

References

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