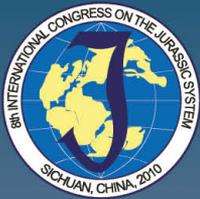


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## New Finds of Dinosaur Tracks in the Morrison Formation of Moab Area, Utah, USA

G.D. Gierlinski<sup>1,2</sup>, P. Szrek<sup>1</sup>, M.G. Lockley<sup>3</sup>

1. Polish Geological Institute – National Research Institute, Ul. Rakowiecka 4, 00-975 Warszawa, Poland

(E-mail: gierlinski@yahoo.com; piotr.szrek@pgi.gov.pl)

2. JuraPark, ul. Sandomierska 4, 27-400 Ostrowiec Świętokrzyski, Poland

3. Dinosaur Tracks Museum, University of Colorado at Denver, PO Box 173364, Denver, Colorado, 80217, USA

(E-mail: martin.lockley@UCDenver.edu)

Four new Late Jurassic dinosaur track discoveries are herein reported from the Morrison Formation of Moab area, Utah. Between 2004 and 2009, new Morrison tracksites were found north of Moab. These sites yield a large theropod footprint of *Megalosauripus* (Fig.1 A) and *Stegopodus*, a possible stegosaurian track (Fig.1 B). In addition, a small *Deltapodous* track of possible ankylosaurian affinity (Fig.1 C), was also discovered for the first time in this area. These three finds came from the area near the junction of the Primary Highway 191 and the Secondary Highway 313. Further to the north another site with tracks of small tridactyl bipeds was found in association with a crocodylian track and tail trace (Lockley and Foster, 2010, in press).

All sites appear to be in the Salt Wash Member of the Morrison Formation which is dominated by channel sandstones.

The large theropod footprint was found at GPS coordinates: N 38°40.341' and W 109°41.438'. This is 53 cm long, elongate, tridactyl, right pedal print. Digit II is slightly narrower and considerably shorter than digits III and IV. The ratio of the footprint length to length of digit III is 1.8. Metatarsophalangeal pad of digit IV is located far posteriorly from the base of digit III. Discrete phalangeal pads are distinguishable. These features strongly resemble those of *Megalosauripus*, according to the concept of this ichnogenus presented by Lockley et al.(1998).

The stegosaurian track is located at GPS coordinates: N 38°40.224' and W 109°41.299'. This moderately sized print of a right tridactyl, digitigrade pes. Footprint is 25 cm wide and 22 cm long, width > length,. The pes is asymmetrical, with the large proximal pad located posterolaterally. A single phalangeal pad occurs on each pedal digit, but the swollen pad of digit II is wider than those on digits III and IV. Pedal digit IV is the longest, but barely projecting beyond the hypex. Digits II and III are relatively shorter but more projecting beyond the hypex than digit IV. These fit directly the diagnosis of *Stegopodus sensu* Gierlinski and Sabath (2008). Thus, this is a second record of that type of track in the Moab area, since the discovery reported by Lockley and Hunt (1998).

The probable Ankylosaurian pedal print was found at GPS coordinates: N 38°40.366' and W 109°41.527'.

The footprint is 12 cm wide and 15 cm long, length > width. It is distinguished by very large triangular heel area and thick, extremely short three digits. In contrast to many dinosaur footprints its fourth toe is slightly larger than others. When this kind of tracks were first described and named as *Deltapodus* by Whyte and Romano (1994), authors thought they are sauropod prints. Later, Whyte and Romano (2001) have suggested their stegosaurian origin. However, several features discussed by McRea et al. (2001) support rather the ankylosaurian affinity of *Deltapodus* trackmaker. The typical *Deltapodus* configuration of pedal digits, which increase in length in the sequence of II, III and IV, evidently miss the stegosaurian formula IV, III and II.

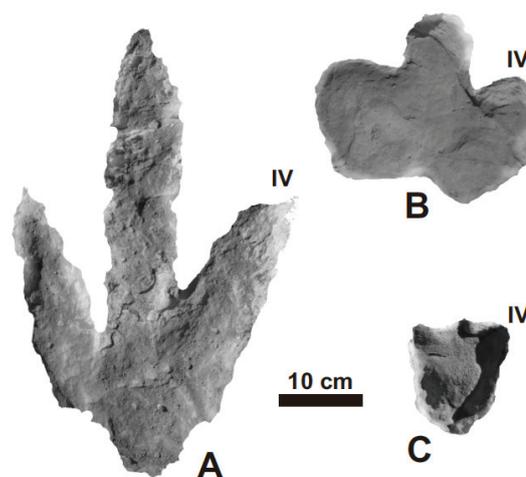


Fig 1 New dinosaur tracks from the Morrison Formation of the Moab area, near the junction of Highway 191 and 313, in Utah, USA

A, *Megalosauripus* sp., not collected specimen, left *in situ*;

B, *Stegopodus* sp., not collected specimen, left *in situ*;

C, *Deltapodous* sp., specimen CU 189.10.

Track and traces found at the northern locality include an assemblage of small bipedal tracks, one of theropodan origin and another of possible ornithopod affinity. They are associated with a tetradactyl crocodylian track (cf. *Hatcherichnus*: Foster and Lockley, 1999) and various tail traces presumably made while swimming.

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**Key words:** Dinosaur footprints; Theropoda; Stegosauria; Ankylosauria; Jurassic; Morrison Formation; Utah

**References:**

- Foster J.R., Lockley M.G. Probable crocodylian tracks and traces from the Morrison Formation (Upper Jurassic) of eastern Utah. *Ichnos*, 1997, 5: 121-129.
- Gierliński G., Sabath K. Stegosaurian footprints from the Morrison Formation of Utah and their implications for interpreting other ornithischian tracks. *Oryctos*, 2008, 8: 29-46.
- Lockley M.G., Foster J. An Assemblage of Probable Crocodylian Traces and Associated Dinosaur Tracks from the Lower Morrison Formation (Upper Jurassic) of Eastern Utah. *Bulletin: New Mexico Museum of Natural History and Science, Bulletin*, 2010 (in press).
- Lockley M.G., Hunt A.P. A probable stegosaur track from the Morrison Formation of Utah. *Modern Geology*, 1998, 23: 331-342.
- Lockley M.G., Meyer C.A., dos Santos V. F. *Megalosauripus* and the problematic concept of megalosaur footprints. *Gaia*, 1998, 15:313-337.
- McCrea R.T., Lockley M.G., Meyer C.A. Global distribution of purported ankylosaur track occurrences. In: Carpenter K. (ed). *The Armored Dinosaurs*. Bloomington: Indiana University Press, 2001: 413-454.
- Whyte M.A., Romano M. Probable sauropod footprints from the Middle Jurassic of Yorkshire, England. *Gaia*, 1994, 10: 15-26.
- Whyte M.A., Romano M. Probable stegosaurian dinosaur tracks from the Saltwich Formation (Middle Jurassic) of Yorkshire, England. *Proceedings of the Geologists' Association*, 2001, 112: 45-54.

