

## Introduction

In early summer 2017, a first systematic excavation on Paleozoic tetrapod footprints in Austria was organized by the Geopark Carnic Alps in cooperation with the Urweltmuseum GEOSKOP / Burg Lichtenberg (Pfalz), Germany. The oldest tetrapod footprints of Austria come from Permian red-beds of the Laas Formation in the Gailtal Alps north of Kötschach-Mauthen, Carinthia (Fig. 1), and have long been known by a single slab with tracks of cf. *Ichniotherium* Pohlig, 1892 (Niedermayr and Scheriau-Niedermayr, 1980; Fig. 2). A couple of years ago, systematic ichnofossil exploration in the study area resulted in the discovery of a more productive site close to the cf. *Ichniotherium* spot (Voigt and Marchetti, 2014).

## Results

Excavated in 2017, this new site yielded several hundred isolated tracks, imprint couples and short trackways of five different tetrapod track morphotypes (Fig. 3): *Amphisauropus* Haubold, 1970, *Batrachichnus* Woodworth, 1900, *Dromopus* Marsh, 1894, *Tambachichnium* Müller, 1954 and *Varanopus* Moodie, 1929. The tetrapod footprints are associated with fossil desiccation cracks, ripple marks, raindrop impressions, microbially induced sedimentary structures, root traces, various arthropod traces and conchostracans as the only recorded body-fossil remains (Fig. 4).

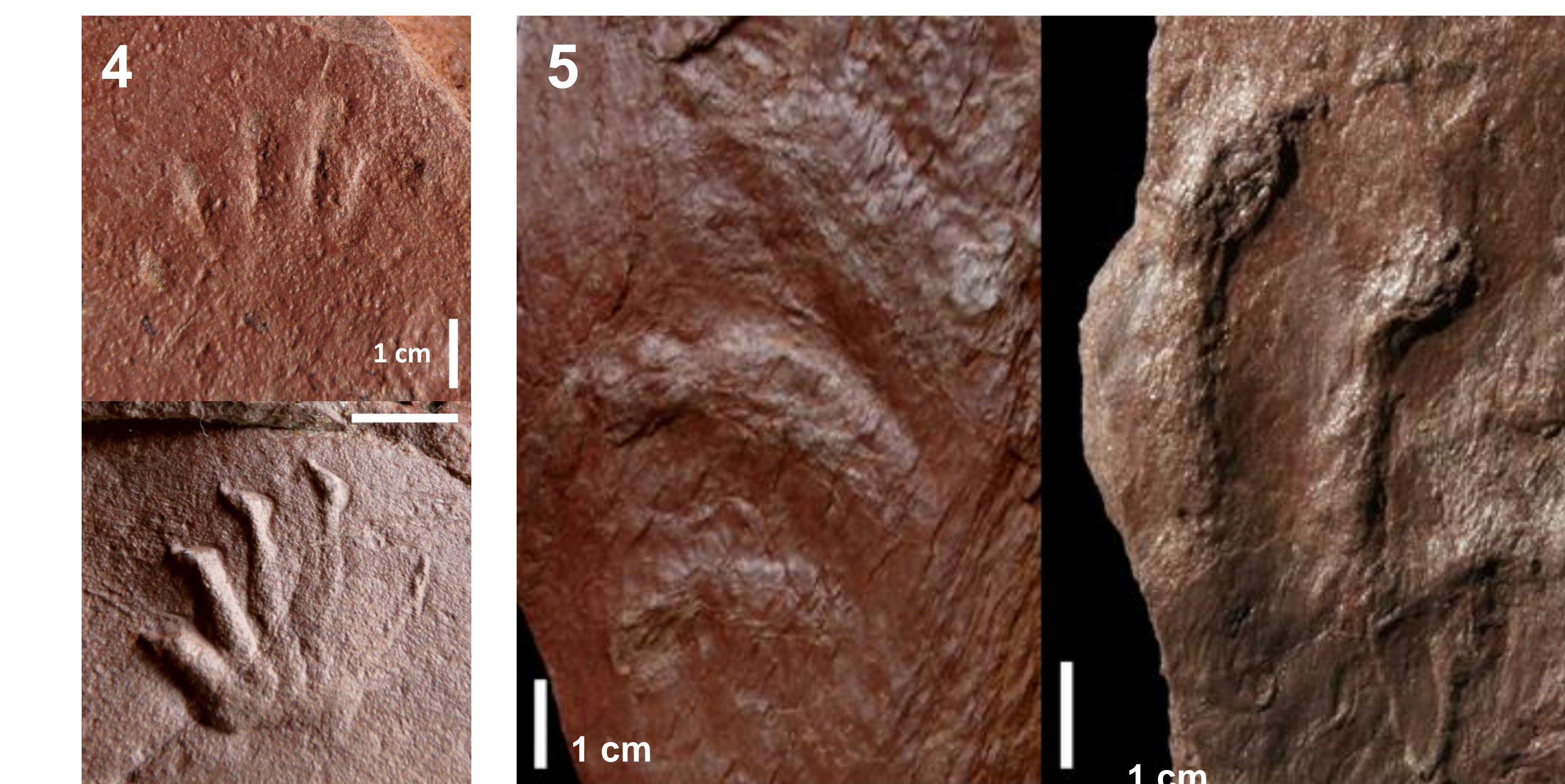
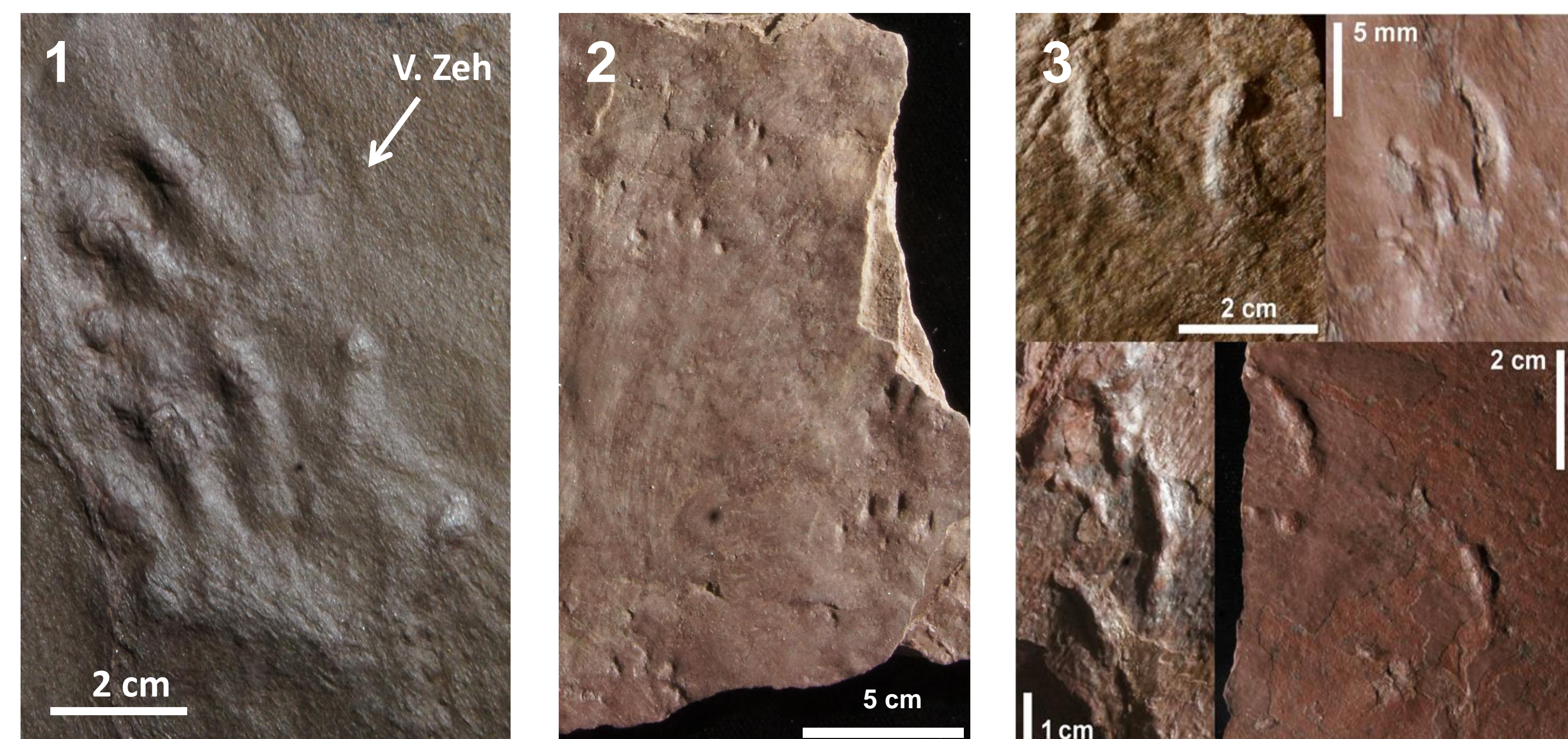


Figure 3: Five different tetrapod track morphotypes excavated in 2017, from left to the right: 1) *Amphisauropus*, 2) *Batrachichnus*, 3) *Dromopus*, 4) *Varanopus*, 5) *Tambachichnium*.

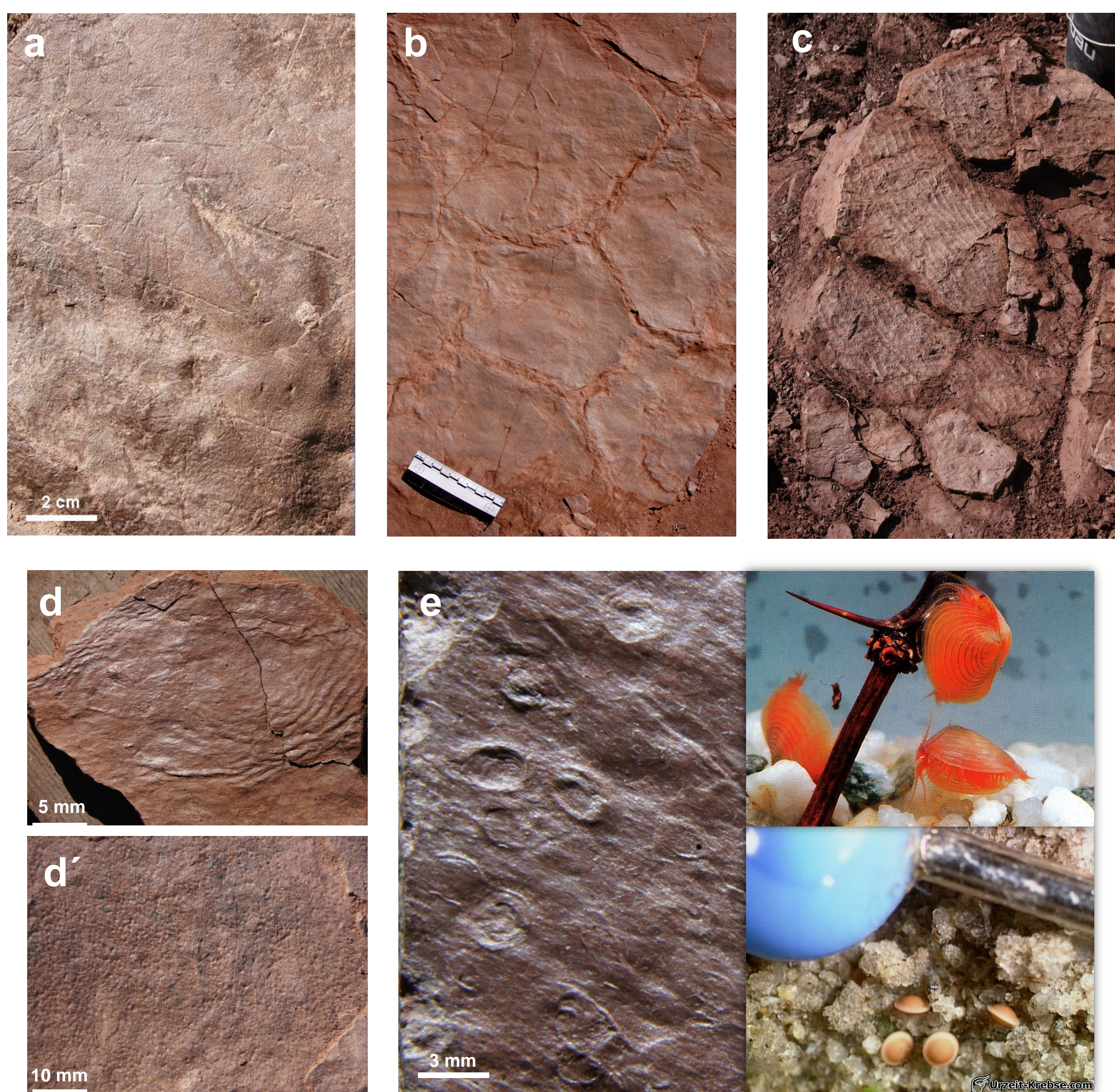


Figure 4: Few recovered ecological marks, from left to the right: a) root marks, b) desiccation cracks, c) ripple marks, d) mats of algae (disturbed and undisturbed), e) conchostraca.

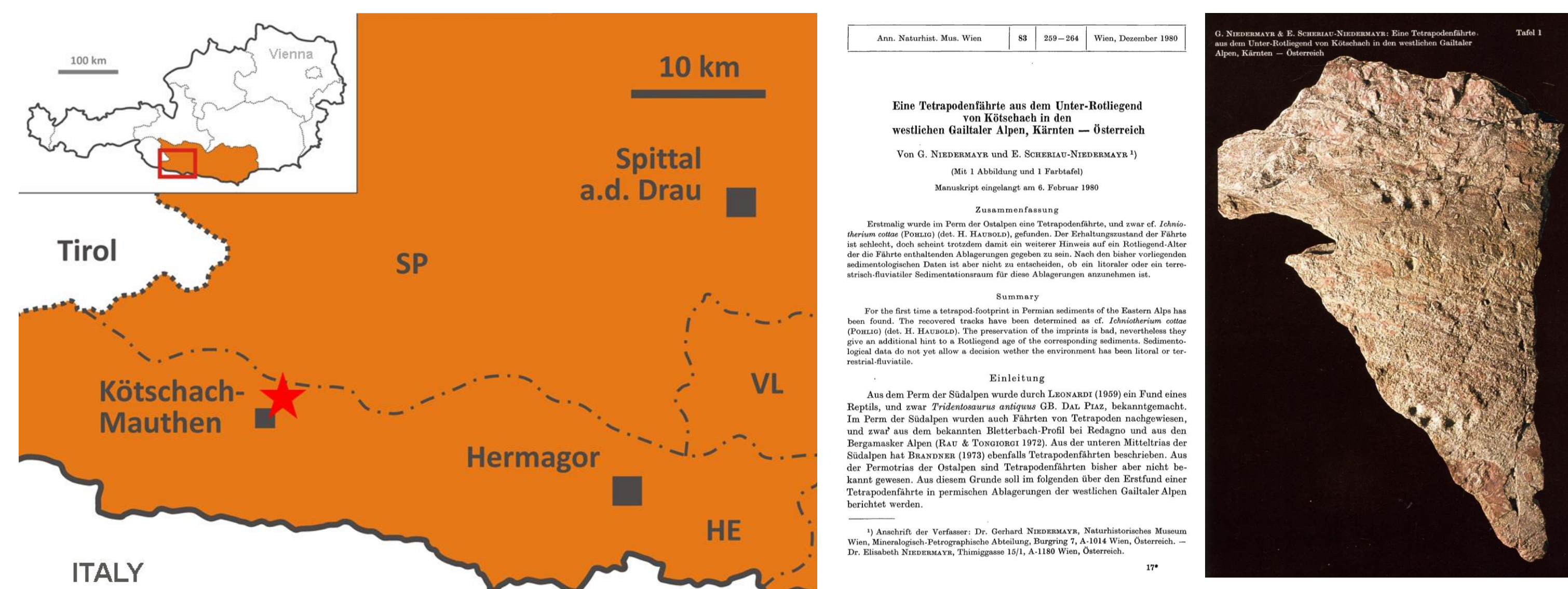


Figure 1: The red star marks the location of the excavation in 2017.

Figure 2: Published tracks of *Ichniotherium* Pohlig, 1892, published by Niedermayr und Scheriau-Niedermayr 1980.

## Interpretation

According to these finds, the tetrapod footprints were formed in a vegetated floodplain environment that has once provided favourable living conditions for amphibians (*Batrachichnus*), reptiliomorph amphibians (*Amphisauropus*, cf. *Ichniotherium*) as well as reptiles (*Dromopus*, *Tambachichnium*, *Varanopus*) (Fig. 5). The tetrapod footprint assemblage is in accordance with the *Dromopus* biochron of Voigt and Lucas (2018) and strongly suggests an early Permian age for the Laas Formation (Fig. 6).

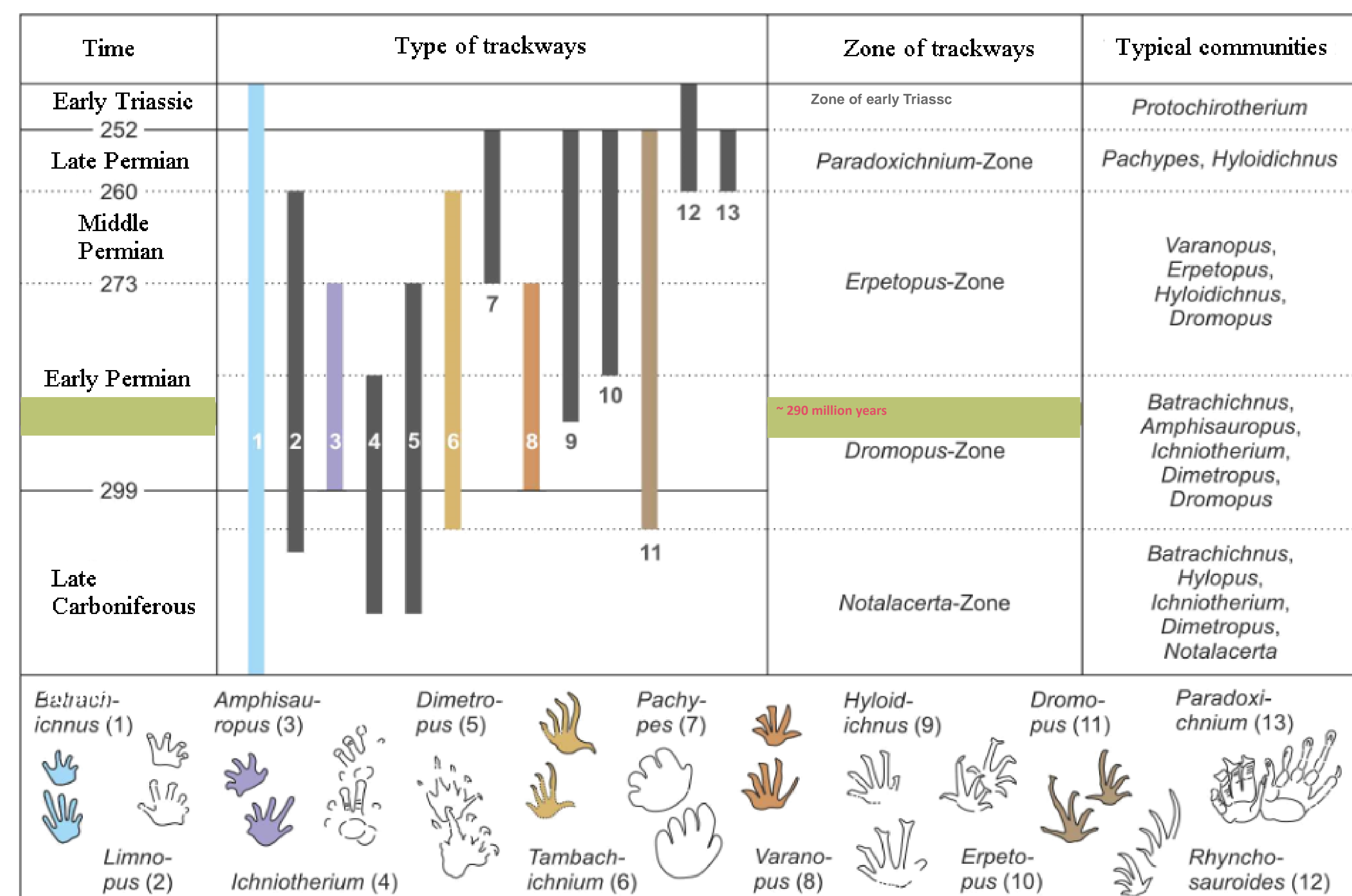


Figure 6: The assumed age of the Laas Formation based on the relative frequency of the recovered track morphotypes.



Figure 5: Reconstruction of the Permian Gailtal Alps ~ 290 ma age ago. Illustration after F. Messner.