

Supplementary Information 1: Geological context

The locality of Pavari (Figure 1), source of the majority of *Ventastega* specimens including all that are featured in the present paper, lies within the Upper Devonian (upper Famennian) Ketleri Formation and represents a natural outcrop of this formation on the left bank of the Ciecere river (Luksevics & Zupins 2004)⁴⁷. The Ketleri formation, which crops out in South-west Latvia and extends subsurface into Lithuania, is the youngest vertebrate-bearing Devonian formation of the Baltic region. It comprises some 45 m of sands, sandstones, clays and dolomitic marls, deposited in a partly enclosed basin that probably took the form of a shallow brackish-water bay. The locality of Pavari represents the middle part of the formation (the Pavari Member); the upper part (the Varkali Member) has also yielded tetrapod remains, though these are more fragmentary.

The outcrop at Pavari comprises a sandstone body more than 3 m in thickness, predominantly composed of very fine-grained to fine-grained, white or pale yellow, almost unconsolidated quartzose sandstone. In the lower part of the section (Figure 2) there is an erosional surface, interpreted as a shallow (about 0.5 m deep) and at least 8 m wide erosional channel formed by water flowing from NNE to SSW. The vertebrate fossils occur predominantly in the lower part of the channel infill, which is composed of cross-bedded sands containing some layers of clay pebbles. Above the vertebrate-bearing level the sediments become more fine-grained and appear to represent deposition in quieter environments. The bones show two preferred orientations, suggesting the influence of two distinct current directions, which may indicate tidal influence. One possible interpretation is deposition in a low-tidal terrigenous shelf environment between low islands, in a shallow channel formed by tidal processes. At any rate the deposits were not laid down in a continental freshwater or flood-plain environment. This contrasts with the emphatically non-marine localities yielding the elpistostegid *Tiktaalik*²² and the Devonian tetrapods *Hynnerpeton*, *Densignathus* (Cressler 2006) 48, *Acanthostega* and *Ichthyostega* (Olsen 1993) 49.

References

47. Luksevics, E. & Zupins, E. Sedimentology, fauna and taphonomy of the Pavari site, Late Devonian of Latvia. *Acta Universitatis Latviensis* **679**, 99-119 (2004).
48. Cressler, W. L. Plant paleoecology of the Late Devonian Red Hill locality, north-central Pennsylvania, an *Archaeopteris*-dominated wetland plant community and early tetrapod site. In Greb, S. F. & DiMichele, W. A. (eds.) *Wetlands through time: Geological Society of America Special Paper* **399**, 79-102 (2006).
49. Olsen, H. Sedimentary basin analysis of the continental Devonian basin in North-East Greenland. *Bulletin of the Grønlands Geologiske Undersøgelse* **168**, 1-80 (1993).

Figures

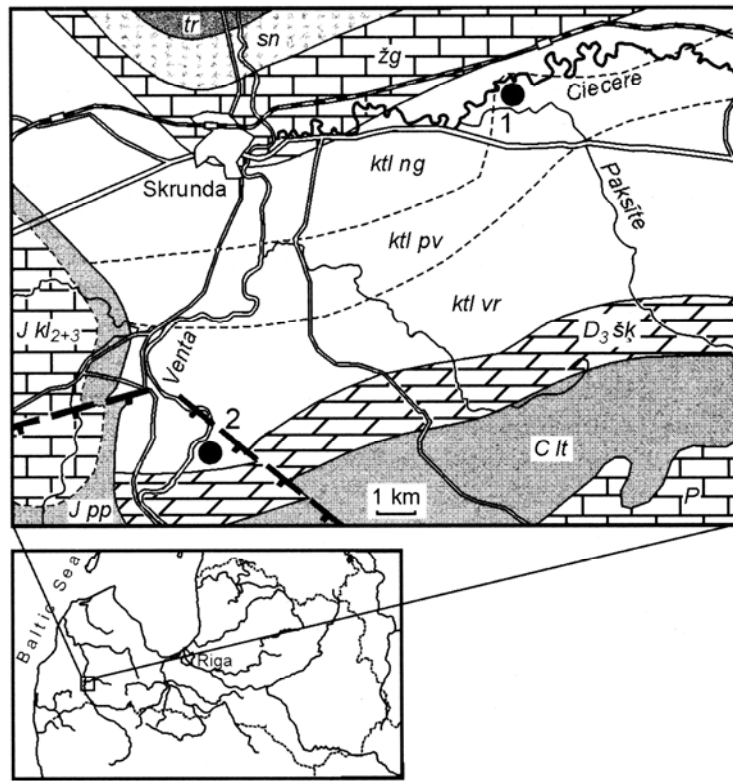


Figure 1. Map of Latvia showing fossil localities in the Ketleri Formation, from Luksevics & Zupins (2004). 1, Pavari; 2, Ketleri. Stratigraphic abbreviations (moving up section): tr, Tervete Formation; sn, Snikere Formation; zg, Zagare Formation; ktl ng, Nigrande Member of Ketleri Formation; ktl pv, Pavari Member of Ketleri Formation; ktl vr, Varkali Member of Ketleri Formation; sk, Skervelis Formation; C lt, Letiza Formation (Carboniferous); P, Naujoji Akmene Formation (Permian); J pp, Papile Formation (Jurassic, ?Lower Callovian); J kl₂₊₃, Jurassic, Middle-Upper Callovian.

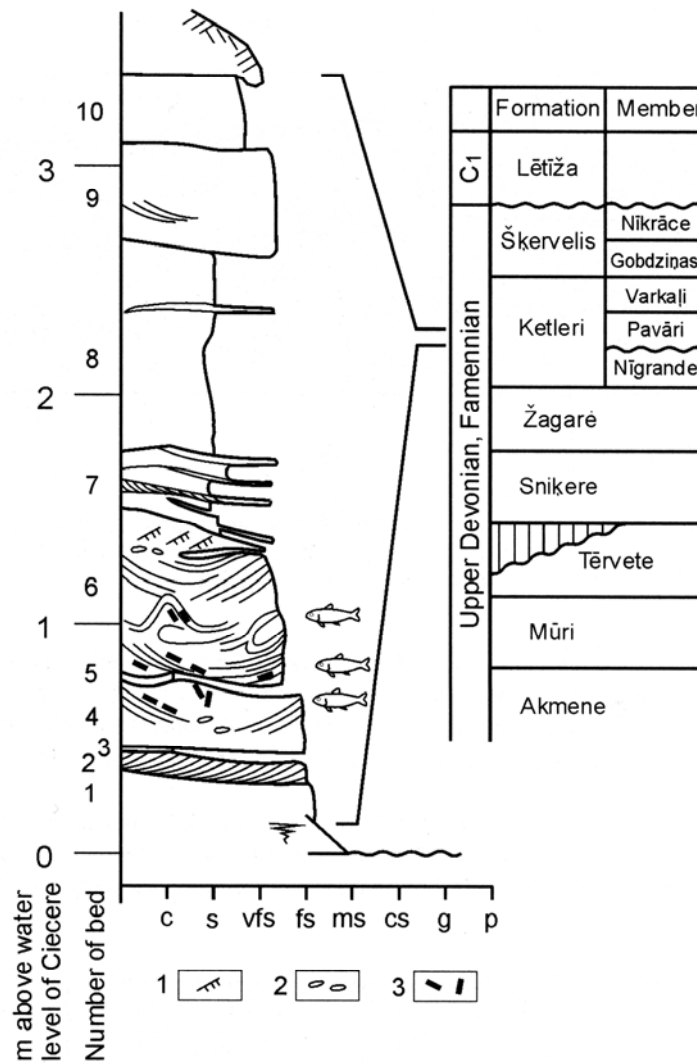


Figure 2. Geological section through the Pavari outcrop, with a stratigraphic diagram of the Famennian and Lower Carboniferous of South-western Latvia. Sedimentological abbreviations: c, clay; s, silt; vfs, very fine sand; fs, fine sand; ms, medium sand; cs, coarse sand; g, gravel; p, pebbles. Graphic symbols in boxes: 1, ripple marks; 2, clay pebbles; 3, vertebrate remains.