

The Ediacaran succession and fauna of the Digermulen Peninsula, northern Norway

J.O. EBBESTAD^{1*}, A.E.S. HÖGSTRÖM², S. JENSEN³, G. MEINHOLD⁴, W.L. TAYLOR⁵, T. PALACIOS³, M. HØYBERGET⁶, L.K. NOVIS² AND Z. OU²

¹*Museum of Evolution, Uppsala University, Norbyvägen 16, SE-752 36 Uppsala, SWEDEN*
(*jan-ove.ebbestad@em.uu.se)

²*Tromsø University Museum, UiT the Arctic University of Norway, Tromsø, N-9037, NORWAY*

³*Area de Paleontología, Universidad de Extremadura, Avenida de Elvas s/n, Badajoz, 06006, SPAIN*

⁴*Geoscience Center, University of Göttingen, Goldschmidtstr. 3, Göttingen, 37077, GERMANY*

⁵*Department of Geological Sciences, University of Cape Town, Private Bag X3, Rodenbosch, 7701, SOUTH AFRICA*

⁶*Rennesveien 14, Mandal, N-4513, NORWAY*

First discovered in the late 1980's, the Digermulen Peninsula in Finnmark, northern Norway, is the only locality in Scandinavia with Ediacara-type fossils. The Ediacaran to Lower Ordovician sedimentary succession here consists of over 3000 m of siliciclastic-rich deposits formed in a foreland basin marginal to Baltica. Since 2011, studies by the Digermulen Early Life Research Group have recorded significant new finds, promising to establish the site as a new key Ediacaran biota locality. The Ediacaran succession is close to 1000 m thick. It starts with interglacial sediments of the Nyborg Formation (tentatively earliest Ediacaran), followed by the glaciogenic diamictites of the Mortensnes Formation (~60 m thick), probably representing the ~582 Ma Gaskiers glaciation. Ediacara-type fossils occur in the Innerelva Member of the succeeding Ståhpogiedde Formation. This is followed by the Lower Cambrian Breidvika Formation. The Ediacaran–Cambrian boundary is located within the Manndraperelva Member of the Ståhpogiedde Formation, identified by the trace fossil *Treptichnus pedum*, associated trilobed trace fossils and microfossils. The Ediacaran assemblage is dominated by discoidal fossils, the nomenclature of which is currently under study. The 2015 field season brought to light the first specimen of a multi-ved Ediacara-type fossil, so far unidentified. In addition, well-preserved *Hiemalora* are found, and *Palaeopascichnus* occur near the base of the Innerelva Member. This makes them the oldest non-stromatolite macroscopic fossils in Scandinavia. Hitherto the Innerelva Member has not yielded microfossils.