

## Late Toarcian marine gastropods from the Cleveland Basin, UK: systematics, palaeobiogeography and contribution to biotic recovery from the early Toarcian extinction event

Mariel Ferrari<sup>a</sup>; Crispin T. S. Little<sup>b,\*</sup>; Jed W. Atkinson<sup>b</sup>

<sup>a</sup> Instituto Patagónico de Geología y Paleontología (IPGP CCT CONICET–CENPAT), Bvd. Brown 2915, U9120CD, Puerto Madryn, Chubut, Argentina

<sup>b</sup> School of Earth and Environment, University of Leeds, Woodhouse Lane, Leeds, LS2 9JT, United Kingdom, e-mail: C.T.S.Little@earth.leeds.ac.uk

As part of a study to evaluate the recovery from the early Toarcian extinction event in the Cleveland Basin (see the Atkinson, Little and Dunhill abstract), 477 new gastropod specimens were collected from mid-late Toarcian rocks of the Ravenscar section, North Yorkshire, UK. The gastropods were preserved in two modes: 1) specimens preserved with recrystallized shells, mainly in the Whitby Mudstone Formation, but also some in the Blea Wyke Sandstone Formation; 2) specimens preserved as external moulds in mineralized patches of shells in the Yellow Sandstone Member. The fossil assemblage comprised fifteen species, of which three are new: *Katosira? bicarinata* sp. nov., *Turritelloidea stepheni* sp. nov. and *Striactaenonina elegans* sp. nov. Four species are described in open nomenclature, as *Tricarilda? sp.*, *Jurilda* sp., *Cylindrobullina* sp. and *Cossmannina* sp. The other species have previously been described: *Coelodiscus minutus* (Schübler in Zieten), *Procerithium quadrilineatum* (Römer), *Pseudokatosira undulata* (Benz in von Zieten), *Palaeorissina* aff. *acuminata* (Gründel), *Pietteia uncarinata* (Hudleston), *Globularia* cf. *canina* (Hudleston), *Striactaenonina* cf. *richterorum* Schulbert & Nützel, *Striactaenonina* aff. *tenuistriata* (Hudleston) and *Sulcoactaeon sedgvi* (Phillips). Most of these species are the earliest records of their respective genera and show palaeobiogeographical connections with contemporary gastropod associations from other regions of Europe and South America. The taxonomic composition of the late Toarcian Cleveland Basin gastropod assemblage differs substantially from the faunas of the late Pliensbachian and early Toarcian *Tenuicostatum* Zone, showing the strong effect of the early Toarcian mass extinction event on the marine gastropod communities in the basin. Only a few gastropod species are shared between the late Toarcian faunas and the much more diverse Aalenian gastropod faunas in the Cleveland Basin, suggesting there was a facies control on gastropod occurrences at that time. This is also a potential explanation for the taxonomic differences between the late Toarcian gastropod faunas in the Cleveland Basin and those in France, and Northern and Southern Germany.