

Brachiopods and their response to the Early-Middle Frasnian biogeochemical perturbations on the South Polish carbonate shelf

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The brachiopod faunas from deposits recording the Early-Middle Frasnian transition of Poland are poorly known. The present report describes these faunas that were recovered from Wietrznia and Kostomłoty (Holy Cross Mountains) and Dębnik (Silesian-Cracow Upland) regions positioned on the southern Polish carbonate shelf. The brachiopod distribution was analysed relative to a significant $\delta^{13}\text{C}$ excursion, referred recently to as *Palmatolepis punctata* Event. The sporadic occurrence of brachiopods at Dębnik makes it difficult to analyse the biotic response to this geochemical anomaly. However, higher brachiopod frequency in the topmost part of the section coincides with a gradual decrease of $\delta^{13}\text{C}$ down to the Frasnian background values. At two studied sections at Wietrznia the greatest taxonomic diversity and abundance of brachiopods (*Flabellirostrum-Coeloterorhynchus* assemblage) are confined to the *Palmatolepis transitans* Zone. In the following *Pa. punctata* Zone brachiopods are rare (*Biernatella lentiformis* assemblage) or absent, which suggests a serious deterioration of the environmental conditions linked probably with periods of benthic anoxia-dysoxia and oligotrophic conditions in the basin. In two Kostomłoty sections brachiopods faunas of this age are members of the mostly monospecific rhynchonellid-dominated *Phlogoiderhynchus polonicus* assemblage which inhabited deeper-water environments characteristic of intrashelf oxygen-depleted basins of Łysogóry-Kostomłoty region. In some horizons large shells of *P. polonicus* were frequently colonised by discinoid *Romerella* ? sp. Among 28 species described in this report new forms include: *Flabellulirostrum kielcensis* sp. nov., *F. rackii* sp. nov., and *Thomasaria ventosa* sp. nov.

Key words: Brachiopoda, carbon isotopes, diversity dynamic, *Flabellulirostrum*, *Thomasaria*, Frasnian, Poland.

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