

DEVONIAN BRYOZOAN EXTINCTION AND DIVERSIFICATION

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The names proposed world-wide for Devonian bryozoans have been evaluated with respect to replaced names, synonyms, and nomina dubia [Horowitz and Pachut (1993), *Journal of Paleontology*, in press]. The resulting list contains 1738 specific names assigned to 199 genera in 45 families. Approximately 75% of Devonian bryozoan species are reported from a single stage. Not more than 10%, and usually 4-6%, of the species reported in any Devonian stage are also reported in the succeeding stage.

The largest decrease in observed bryozoan diversity occurs between the Givetian and Frasnian stages, reducing the number of species by 77%, genera by 64%, and families by 42%. These values are less than those reported for the range-through method for the entire fauna of the Permian mass extinction (Raup, 1979) but larger than percentage extinctions (presumably based on range-through data) for four other Phanerozoic mass extinctions tabulated by Valentine and Walker (1987).

The range-through method dampens the observed differences in taxonomic diversity among Devonian stages at all taxonomic levels. The range-through number of species/stage is based upon both direct applications of the range-through method and on the assignment of ranges known only to early, middle and late Devonian to include appropriate Devonian stages. Generic and familial diversity increases monotonically from Lochkovian through Givetian stages. Thereafter (Givetian to Frasnian), range-through values for specific (69%), generic (31%), and familial diversity (10%) decrease. Specific and familial decreases across the Givetian-Frasnian boundary are comparable to those reported for non-Permian mass extinctions by Valentine and Walker, but the generic decrease is not as great. These results are consistent with Valentine and Walker's random mass extinction model.

Observed bryozoan diversity across the Frasnian-Famennian boundary increases while values calculated using the range-through method decrease by approximately 5-15%. This does not suggest a major bryozoan extinction event. Conversely, the decrease in bryozoan diversity across the Givetian-Frasnian interval is similar to an important Devonian extinction among rugose corals. The reason(s) for these extinctions is not yet clear. With respect to Devonian bryozoans, our inadequate understanding of the cause(s) of mass extinctions and the relatively coarse resolution of the stadial timescale does not permit differentiating between gradual or catastrophic scenarios.