Draft proposal to emend the Code with respect to trace fossils: request for comments

Markus Bertling[1]*, Simon Braddy[2], Richard G. Bromley[3], Georges D. Demathieu[4], Radek Mikuláš[5], Jan K. Nielsen[6], Andrew K. Rindsberg[7], Michael Schlirf[8] and Alfred Uchman[9] (Addresses on p. 142)

The Code covers not only names for biological taxa but those for the 'fossilized work of organisms (ichnotaxa)' as well (Article 1.2.1). In ichnology, an ichnotaxon is considered to be the name attached to a trace fossil (e.g. Bromley, 1990; Magwood, 1992; Pickerill, 1994)—a term that is used ambiguously in the Code's Glossary only for 'fossilized trails, tracks or burrows'. In fact, many other biogenic structures are trace fossils as well and the obsolete term 'work of an animal' is not used in modern ichnologic literature. This contribution aims at a future clarification of the meaning of the term 'ichnotaxa' and the meaning of the terms used for related taxa that are frequently confused with ichnotaxa.

A trace fossil may generally be defined as a morphologically recurrent structure resulting from the life activity of an individual organism (or a monospecific group of organisms) that modifies the substrate (e.g. Bromley, 1996). This means that 'fossilized work of organisms' in which a substrate is not modified qualifies neither as a trace fossil nor as an ichnotaxon. Fossil eggs and plant galls are the work of animals, but are not trace fossils. Secretions produced by organisms are not trace fossils. It follows that such 'work of animals', e.g. spider webs, cocoons, pupal cases, pearls and calculi, likewise, are not trace fossils. As representatives of most of these groups have received names governed by the Code, they are currently classified in a parataxonomic scheme. Trace fossils, on the other hand, are not objects of parataxonomy; ichnotaxa do not compete in priority with names for their producers (Article 23.7.3). Some other structures that are occasionally listed as trace fossils, e.g. stromatolites, pathologic structures and soils as well as signs of human technology, are neither ichnotaxa nor the 'fossilized work of an organism' and should not be covered by the Code.

This discussion underlines the discrepancy in the terminology of the Code as opposed to the one generally used in the relevant scientific subdiscipline. This discrepancy may result in misunderstandings and contradictory claims about the legal standing of names established for biogenic structures that are not trace fossils. For this reason we propose refinement of the wording of the Code and the use of less ambiguous terms to distinguish between various animal products and true trace fossils. We propose that the Glossary definition of 'work of an animal' be emended to read: 'trace fossils (including burrows, borings and etchings, tracks and trackways, coprolites, gastroliths, regurgitaliths, nests, leaf mines, bite and gnaw structures), as well as secretions such as eggs, cocoons, pupal cases, spider webs, embedment structures and plant galls'. With this definition, it will not be necessary to replace the term 'work of an animal' in Articles 1.2.1, 10.5, 12.2.8 and 72.5.1 by 'trace fossils'.

An additional point independent of the above proposal relates to the nomenclatural treatment of ichnofamilies. It is illogical to demand criteria for their establishment that differ from those for other ichnotaxa. Also, with ichnotaxa being treated in very much the same way as biological taxa, we recommend that the principle of typification be extended to the naming of ichnofamilies. This would be consistent

with the current provisions for the typification of ichnogenera and ichnospecies (Articles 13.3.3, 42.2.1 and 42.3.2).

In addition, we propose the deletion of an unnecessary sentence dealing with ichnotaxa based on recent traces (Article 1.3.6). This article allows usage of ichnotaxa erected on recent traces prior to 1931, but there seem to be no grounds for this provision. We are not aware of any case where names based on recent traces are actually used. If they had been validly established they would no longer be available due to their status of nomina oblita, anyway.

Finally, numerous new ichnotaxa have been established in the last decades by their authors using the abbreviations 'igen.' for ichnogenus and 'isp.' for ichnospecies. We advocate that 'igen.' and 'isp.' be approved as the legitimate abbreviations for ichnogenus and ichnospecies, respectively, for use in open nomenclature and for the designation of new ichnotaxa. In relation to this, Recommendation 16A of the Code should be emended to include reference to 'igen. n.', 'isp. n.', etc. for ichnotaxa.

Comments on this draft proposal are invited and should be sent to the Executive Secretary, I.C.Z.N., c/o The Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

References

Bromley, R.G. 1990. *Trace fossils: biology and taphonomy*. 280 pp. Unwin Hyman, London.

Bromley, R.G. 1996. *Trace fossils: biology, taphonomy and applications*. 361 pp. Chapman & Hall, London.

Magwood, J.P.A. 1992. Ichnotaxonomy: a burrow by any other name? Pp. 15–33 *in* Maples, C.G. & West, R.R. (Eds.), *Trace Fossils*. Palaeontological Society Short Courses in Palaeontology, **5**.

Pickerill, R.K. 1994. Nomenclature and taxonomy of invertebrate trace fossils. Pp. 3–42 *in* Donovan, S.K. (Ed.), *The palaeobiology of trace fossils*. Johns Hopkins University Press, Baltimore.

(1) *Geological and Palaeontological Institute, University of Münster, Corrensstr. 24, D-48149 Münster, Germany* (*corresponding author).

(2) *Department of Earth Sciences, University of Bristol, Bristol BS8 1RJ, U.K.*

(3) *Geological Institute, Øster Voldgade 10, DK-1350 Copenhagen K, Denmark.*

(4) *Earth Sciences Centre, University of Burgundy, 6 boulevard Gabriel, F-21 100 Dijon, France.*

(5) *Institute of Geology, Academy of Sciences of the Czech Republic, Rozvojová 135, CZ-16500 Praha 6, Czech Republic.*

(6) *Geological Museum, Øster Voldgade 5–7, DK-1350 Copenhagen K, Denmark.*

(7) *Geological Survey of Alabama, P.O. Box 869999, Tuscaloosa, AL 35486–6999, U.S.A.*

(8) *Institute for Palaeontology, Pleicherwall 1, D-97070 Würzburg, Germany.*

(9) *Institute of Geological Sciences, Jagiellonian University, ul. Oleandry 2a, PL-30 063 Kraków, Poland.*