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(135–137) With a bow to ICZN, proposals for a new approach to the typification of fossil palynomorph names

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(135) Amend Art. 8.5 by adding the following text and footnote:

"However, for names of plant microfossils, the validating illustration of the type (Art. 38.1) may serve as surrogate for it. The type remains the specimen itself, but the illustration can serve the nomenclatural functions of the type, including its clarification by epitype illustrations. If the type specimen is lost, disintegrated, or cannot be found in the type preparation, the illustration becomes its surrogate for all nomenclatural purposes."

Add the following footnote to the words "plant microfossils" in the above amendment to 8.5:

" "Plant microfossils" here refers to fossil microscopic plants or microscopic plant parts, found dispersed in sedimentary rocks. Such microscopic fossils, for investigation, are located on microscope slides in various mounting media, or on SEM stubs, or are parts of other sorts of preparations that must be studied by light, electronic, or other kinds of microscopy at a magnification of at least 100X."

(136) Add the following Note after Art. 9.7:

"*Note 3bis.* An illustration of the type of a plant microfossil can serve as its surrogate for all nomenclatural purposes (see Art. 8.5), including designation of an additional illustration as an epitype."

(137) Add to Art. 38.1:

For plant microfossil names published before 1 January 1912, the earliest effectively published illustration of the holotype specimen showing its defining characters, is accepted as the equivalent of this illustration for purposes of interpretation, including recognition as a surrogate (Art. 8.5).

As I have previously pointed out (Traverse in Taxon 47: 757–759. 1998; Paleopalynology, ed. 2: 612. 2007; Traverse & al. in Taxon 53: 849–858. 2004), paleopalynology's botanically oriented, non-mineral microfossils (fossil spores, pollen, acritarchs, dinoflagellate and other algal cysts) are named under the rules of *ICBN*, but present serious and unique difficulties regarding typification. The types for about 25,000 paleopalynological names are mostly not available. The reasons for this problem are their invisibility (without a microscope), the fact that sporopollenin and chitin of which most palynomorphs consist degrade in storage on microslides, and that the microfossils can change position on the slides. There is also a basic problem that type specimens are, with very few exceptions, designated on slides containing hundreds, or more typically, thousands of other specimens. This makes the types inherently difficult to locate, even when techniques for designation of position work. In addition, there are obvious curatorial problems with microscopic particles of reactive organic matter on small and fragile glass microslides or easily damaged SEM stubs.

Attempts at the XV and XVI International Botanical Congresses to permit the use of illustrations for microfossil typification were rejected, largely because megafossil paleobotanists dislike the idea of a "foot in the door" for use of illustrations, instead of specimens, which they have always opposed, and because some palynologists were against any action that might encourage sloppy systematic procedures.

I next advocated a new tack at IPC-XII/IOPC-VIII (Traverse in Terra Nostra 2: 285. 2008 – abstract): that we modify *ICBN* by using an approach for plant microfossils that palynologists already can employ for chitinozoans, scolecodonts, and other palynomorphs that are derived from animals, and are thus governed by the *International code of zoological nomenclature (ICZN).* That *Code* provides that where there is a problem with preservation of specimens, a designated illustration may serve as a surrogate (my term) for the type—although the specimen remains the actual type, even if it "… no longer exists or cannot be traced." – wording employed in several places in the *ICZN* (e.g., Art. 73.1.4 in Ride & al., Int. Code Zool. Nomencl., ed. 4, 1999 and http://www.iczn.org/iczn/index.jsp).

I here propose that for plant microfossils the same principle be applied as is now accepted for animal-derived microfossils. Type specimens must be designated, and they remain the types, even though they may disintegrate or disappear. However, the validating illustration of a type can be cited in nomenclatural procedures as a surrogate for it. Proposal 136 makes clear that this includes designation of epitype illustrations for further clarification of the type, which in many instances would be very helpful. Furthermore, lectotypes and neotypes for plant microfossil names will never be necessary if these proposals are adopted, because the original illustration plus designated epitype illustrations fully serve the functions of typification.

A distinct advantage of this proposal is that it is in accord with what paleopalynologists now do – use the illustrations in the literature for their systematic work – but it puts the stamp of legality on it and therefore restores respect for typification in paleopalynology. When it is feasible, study of the type specimens themselves would obviously continue to take precedence over all information derived from illustrations.

Because validating illustrations are not required in *ICBN* for names of plant microfossils published before 1912, an emendation to Art. 38.1 is proposed to provide for illustrations that can serve as surrogates for the holotypes.