Semi-automated morphometric system for early Eocene *Naviculopsis* spp. (Silicoflagellata)

Hideto Tsutsui
Yamagata University, Department of Earth and Environmental Sciences, Faculty of Science, Yamagata, Japan; blacksand@mail.goo.ne.jp

Richard W. Jordan
Yamagata University, Department of Earth and Environmental Sciences, Faculty of Science, Yamagata, Japan; sh081@kdw.kj.yamagata-u.ac.jp

A recently published morphometric study of the early Eocene silicoflagellates *Corbisema apiculata* and *C. triacantha*, which are often confused with each other, reached three conclusions: (1*) C. apiculata s.l.* has short radial spines, a large basal ring, and may or may not bear pikes, (2) *C. triacantha s.l.* has long radial spines, a small triangular basal ring, and lacks pikes and, (3) the ratio of radial spine length to basal ring diameter of *C. triacantha* is very similar to those of modern silicoflagellates, e.g., *Stephanocha speculum* (formerly *Distephanus speculum*), *S. medianoctisol*, and Group B in Tsutsui *et al*. 2009 (Tsutsui *et al*., 2017, submitted). The measurement algorithms, database management system, and data formats were transported from the *Corbisema* metric system (Tsutsui & Jordan, 2016) and applied to *Naviculopsis* spp., which were also well preserved in the Mors diatomite from Denmark. The major species in the diatomite was *N. constricta* (although some specimens may belonged to *N.* cf. *biapiculata*). A test run on *N. constricta* showed similar trends to those of modern silicoflagellates. This suggests that early Eocene silicoflagellates produced skeletons in a similar way to their modern counterparts.

References

Tsutsui, H. & Jordan, R.W. 2016. A semi-automatic two-dimensional image system for studying the skeletal design of the silicoflagellate genus *Corbisema* (Dictyochales, Dictyochophyceae). *Journal of Nannoplankton Research*, **26**(2): 139–147.

Tsutsui, H., Jordan, R.W., Nishiwaki, N. & Nishida, S. submitted. Morphometric analysis of early Eocene Corbisema skeletons (Silicoflagellata) in Mors, Denmark. *Journal of Micropalaeontology*.

Tsutsui, H., Takahashi, K., Nishida, S. & Nishiwaki, N. 2009. Intraspecific morphological variation with biometry of *Distephanus speculum* (Silicoflagellata). *Marine Micropaleontology*, **72**: 239–250.