Late Eocene silicoflagellates from Oamaru, New Zealand

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In previous studies, the Oamaru diatomite was dated using diatoms and radiolarians and placed in the late Eocene-early Oligocene. At that time, Oamaru was located about 50km offshore. The excellent preservation of these deposits allowed us to investigate the taxonomy and morphology of the Oamaru silicoflagellates. Silicoflagellates have been under-utilized in biostratigraphic and paleoenvironmental reconstructions due to problems in their classification. Both living and fossil silicoflagellates exhibit a wide range in skeletal morphologies, and skeletal aberrations are quite common. Sometimes, end-member morphologies and aberrants have been described as distinct taxa. In order to improve silicoflagellate taxonomy, it is necessary to document the full range of morphologies exhibited by each taxon. In this study, two outcrop samples from the Schulz Collection were observed and photographed using a light microscope. At Jackson's Siding, the assemblage was dominated by four genera (*Corbisema*, *Naviculopsis*, *Distephanopsis*, and *Dictyocha*), each representing about 20–30% of the total assemblage. At Totara, the assemblage was dominated by *Corbisem*a and *Naviculopsis*, representing 42% and 28%, respectively. Aberrant skeletons provided clues about the order in which skeletal growth occurs, with the basal sides and basal spines being the final steps. Most aberrations occurred in these final steps, rather than at the beginning, as skeletons with aberrant apical structures were much rarer. A morphometric study of the *Naviculopsis* spp. in our Oamaru sample collection revealed that longer specimens tended to have narrow bridges, whilst shorter specimens exhibited a wide range in bridge width. Average spine length and average window length vs. skeleton length showed clear linear trends, but the points in the plots of average spine length and skeleton length vs. skeleton width were more scattered, albeit grouped in a linear trend. This suggests that skeleton width is less constrained than other skeletal dimensions.