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shows discrepancies within the data set used and with the zonation of Sanfilippo & Riedel (1985); only the ranges of specific taxa documented by Schaaf (1985) are considered here. Biozonal data extracted from these studies, and others (particularly Taketani 1982, Baumgartner 1984, Yao 1984, Aita 1987; Thurow 1988 and Blome 1992), does, however, help in assigning an age to the Windalia Radiolarite based on radiolaria. Well-documented, biostratigraphically diagnostic taxa include *A. diaphorogona*, *A. ultima*, *G. cephalocrypta*, *H. barbui barbui*, *Pseudodictyomitra lodogaensis* PESSAGNO, *S. renillae-formis*, *T. antiqua* and *Xitus vermiculatus* (RENZ) whose concurrent ranges suggest an age of Late Aptian to Early Albian, equivalent to the lower part of the *A. umbilicata* Zone of Sanfilippo & Riedel (1985). Many of the above species, and including *Archaeospongo-prunum carrierensis* PESSAGNO, *Archaeodictyomitra sliteri* PESSAGNO, *A. vulgaris* PESSAGNO, *C. messinae*, *Napora dumitricai* and *N. durhami*, are all common in the *Kozorium zinguli* Zone (Zone 7) of Pessagno (1977a) and suggest only Early Albian time is represented. However, Pessagno (1977a, p. 18) expressed uncertainty with his positioning of the Aptian-Albian boundary in the California Coast Ranges sequence. It is probable that many of these species have ranges extending into the Late Aptian, as seems to be the case at Windalia Hill.

Specific identification of the radiolaria from the Windalia Radiolarite conforms with the original descriptions. Although variations do exist (see remarks for each taxon in the systematic section), placement of such taxa is considered acceptable either due to assumed intraspecific variation or that the original descriptions are sufficiently broad to allow incorporation. Many other forms are either only tentatively compared or left under open nomenclature because of large discrepancies in the ages of similar known species. The Late (latest) Aptian-Early Albian age for the Windalia Radiolarite also indicates that the published ranges of many radiolaria need revision, including *Archaeocenosphaera boria* PESSAGNO, *Mesosaturnalis hueyi* group (PESSAGNO), *Orbiculiforma depressa* WU, *O. mclaughlini* PESSAGNO, *Praeconocaryomma lipmanae* PESSAGNO, *P. prisca* PESSAGNO. These points highlight the current lack of detailed knowledge of many radiolaria in the early to middle Cretaceous, and, in particular, the difficulties in applying biozonations based on low-latitude radiolarian assemblages to the medium and high-latitude Austral region.

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REFERENCES

- AITA, Y. 1987: Middle Jurassic to Lower Cretaceous radiolarian biostratigraphy of Shikoku with reference to selected sections in Lombardy Basin and Sicily. *Sci. Rep. Tohoku Univ.*, Sendai, 2nd Ser.: Geol. 58/1, 1–91.
- ALIEV, K. S. 1965: Radiolyarii nizhnemelovykh otlozhenii severo-vostochnogo Azerbaidzhana i ikh stratigraficheskoe znachenie. Izdat. Akad. Azerbaidz. SSR Baku, 1–124.
- APTHORPE, M. C. 1979: Depositional history of the Upper Cretaceous of the Northwest Shelf, based upon foraminifera. *Aust. Petroleum Expl. Assoc. J.* 19, 74–89.
- BASOV, V. A., LOPATIN, B. G., GRAMBERG, I. S., DANJSHEVSKAYA, A. I., KABAN'KOV, V. Y., et al. 1979: Lower Cretaceous lithostratigraphy near Galicia Bank. In: *Init. Rep. Deep Sea Drill. Proj. 47* (Ed. by Sibuet, J., Ryan, W. B. F., et al.). U.S. Govt. Printing Office. Washington, D.C., 683–717.
- BAUMGARTNER, P. O. 1980: Late Jurassic Hagiastriidae and Patulibracchiidae (Radiolaria) from the Argoli Peninsula (Peloponnesus, Greece). *Micropaleontol.* 26/3, 274–322, pls. 1–12.
- BAUMGARTNER, P. O. 1984: A Middle Jurassic-Early Cretaceous low-latitude radiolarian zonation based on Unitary Associations and age of Tethyan radiolarites. *Eclogae geol. Helv.* 77/3, 729–837.
- BAUMGARTNER, P. O. 1992: Lower Cretaceous radiolarian biostratigraphy and biogeography off NW Australia (Leg 123: Sites 765, 766 and DSDP Site 261, Argo Abyssal Plain and Lower Exmouth Plateau. In: *Proc. Ocean Drill. Prog., Sci. Results 123* (Ed. by Gradstein, F. M., Ludden, J. N., et al.). Ocean Drill. Prog. College Station, Texas, 299–342.
- BELFORD, D. J. 1959: Stratigraphy and micropalaeontology of the Upper Cretaceous of Western Australia. *Sonder. Geologisch. Runds.* 47/2, 629–647.
- BLOME, C. D. 1992: Radiolarians from Leg 122, Exmouth and Wombat Plateaus, Indian Ocean. In: *Proc. Ocean Drill. Prog., Sci. Results 122* (Ed. by von Rad, U., Haq, B. U., et al.). Ocean Drill. Prog. College Station, Texas, 633–647.
- BRUNNSCHWEILER, R. O. 1959: New Aconoceratidae (Ammonoidea) from the Albian and Aptian of Australia. *Bur. Min. Res. Aust. Geol. Geophys. Bull.* 54, 1–19.
- CAMPBELL, A. S. 1954: Radiolaria. In: *Treatise on Invertebrate Paleontology, Part D, Protista 3, Protozoa (Chiefly Radiolaria and Tintinnina)* (Ed. by Moore, R. C.). Geol. Soc. Amer. and Univ. Kansas Press. Lawrence, Kansas, USA, D11–D195.
- CAMPBELL, A. S. & CLARK, B. L. 1944: Radiolaria from the Upper Cretaceous of middle California. *Geol. Soc. Amer., Spec. Pap.* 57, i–viii, 1–61.
- CASEY, R. 1961: A monograph of the Ammonoidea of the Lower Greensand. *Palaeontograph. Soc. (Monograph)*, pt. 1–3, i–xxxvi, 1–216.
- CAYEUX, L. 1897: Contribution à l'étude micrographique des terrains sedimentaires. 1. Etude de quelques dépôts siliceux secondaires et tertiaires du Bassin de Paris et de la Belgique. *Mem. Soc. géol. Nord, Lille* 4/2, 1–591.
- CONDON, M. A. 1954: Progress report on the stratigraphy and structure of the Carnarvon Basin, Western Australia. *Bur. Min. Res. Aust. Geol. Geophys. Rec.* 15, 163 p.
- CONDON, M. A. 1968: The geology of the Carnarvon Basin, part 3: post-Permian stratigraphy; structure; economic geology. *Bur. Min. Res. Aust. Geol. Geophys. Bull.* 77, 106 p.
- CONDON, M. A., JOHNSTONE, D., PRICHARD, C. E. & JOHNSTONE, M. H. 1956: The Giralia and Marilla Anticlines, North West Division, Western Australia. *Bur. Min. Res. Aust. Geol. Geophys. Bull.* 25, 85 p.
- CRESPIN, I. 1946: A Lower Cretaceous fauna in the northwest basin of Western Australia. *J. Paleontol.* 20/5, 505–509.
- DAY, R. W. 1969: The lower Cretaceous of the Great Artesian Basin. In: *Stratigraphy and Palaeontology, Essays in Honour of Dorothy Hill* (Ed. by Campbell, K. S. W.). Australian National University Press. Canberra, 140–173.
- DAY, R. W. 1974: Aptian Ammonites from the Eromanga and Surat Basins, Queensland. *Geol. Surv. Queensld., Public. 360, Palaeontol. Pap.* 34, 1–19.
- DE WEVER, P. 1984: Révision des radiolaires Mesozoïque de type Saturnalide, proposition d'une nouvelle classification. *Revue de Micropal.* 27/1, 10–19.
- DE WEVER, P. & THIÉBAULT, F. 1981: Les Radiolaires d'âge Jurassique supérieur à Crétacé supérieur dans les radiolarites du Pinde-Olonos (Presqu'île de Koroni; Peloponnes meridional, Grèce). *Geobios* 14/5, 577–609.
- DE WEVER, P., GEYSSANT, J. R., AZÉMA, J., DEVOS, I., DUÉE, G., MANIVIT, H. & VRIELYNCK, B. 1986: La coupe de Santa Anna (zone de Sciacca, Sicile): Une synthèse biostratigraphique des apports des macro-, micro- et nannofossiles du Jurassique supérieur et Crétacé inférieur. *Revue de Micropal.* 29/5, 141–186.