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*Name: Claudia Baumgartner-Mora et al.

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Rafting on macro-algae (*Sargassum*) of symbiont-bearing Larger Benthic Foraminifera, key to their dispersal in recent and ancient oceans

Claudia Baumgartner-Mora ¹, Antonino Briguglio ², Laszlo Kocsis ³, Goran Andjic¹ and Peter O. Baumgartner ¹

¹ Institute of Earth Sciences (ISTE), Université de Lausanne, Géopolis, CH-1015 Lausanne, Switzerland. claudia.baumgartner@unil.ch, peter.baumgartner@unil.ch

² Dipartimento di Scienze della Terra, dell'Ambiente e della Vita, Università degli Studi di Genova, Corso Europa, 26, I - 16132 Genova, Italy. antonino.briguglio@unige.it

³ Faculty of Science, Dept. of Geoscience, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong BE1410, Brunei Darussalam. LaszloKocsis@hotmail.com

The examination of a m-sized macro-algal thallus of *Sargassum aquifolium* recovered in the South China Sea 60 km off Brunei Daroussalem, revealed a rafting community of numerous living, symbiont-bearing, Larger Benthic Foraminifera (LBF) clearly adapted to epiphytic life. The dominant species are: 1. *Amphisorus hemprichii* that shows both flat growth on "leaves" and curved, "encrusting" growth, folding around stems of *Sargassum*. 2. Encrusting Formaminifera *Planorbulina acervalis*, well known to be epiphytic. We also found *Calcarina calcar*, *Baculogypsina* sp. and small Benthic Foraminifera in minor numbers. The collected juveniles show with a flat morphology and adults progressively warpe as chambers are added to adapt to the surface of algal stems.

Sargassum aquifolium is an epilithic macro-alga common in the tropical Indo-Pacific. Rocky shores are, however, rare along the N-Borneo coast, where this algae has not been reported. It is likely that the thallus has drifted for a long time in the off-shore currents of the South China Sea.

SEM-observation of algal rods with attached LBF, fixed in ethanol on board ship, reveal a rich epiphytic diatom community dominated by *Cocconeis* spp., *Amphora* sp. and several other taxa. Many frustules are embedded in a bacterial mat. We found numerous diatom frustules engulfed in pseudopodial protoplasm extending from the apertural face of *Amphisorus*, suggesting feeding by external digestion of diatom soft parts.

Our observations suggest that symbiont-bearing LBF can feed, grow and possibly reproduce in an auto-sufficient, floating, epiphytic community, which potentially allows them to disperse along the major surface currents of the world oceans. Once stranded in a suitable shallow-water environment,

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the community may have a sufficiently large gene pool to settle and evolve, adapting to the local environment.

This observation may be key to the dispersal of shallow dwelling LBF, both in the Recent and the Late Mesozoic-Cainozoic, which has been poorly understood. Largely unconstrained hypotheses of the direction of LBF- migration, between the Tethyan, the American and the Indo-Pacific provinces, were based on supposed ancestor-descendant relationships between related taxa in the respective provinces.