

## ENCrustING AND INTERGROWTH SYMBIOSES BETWEEN *STYLOSMILIA CORALLINA* AND CALCIFIED SPONGES (LATE JURASSIC)

Bogusław KOŁODZIEJ

Institute of Geological Sciences, Jagiellonian University, ul. Oleandry 2a, 30-063 Kraków, Poland;  
[bogdan@ing.uj.edu.pl](mailto:bogdan@ing.uj.edu.pl)

Mesozoic macrosymbioses with corals are rarely reported in comparison with Palaeozoic and fossil Cenozoic examples, including Palaeozoic coral - calcified (coralline) sponge associations (see Darell and Taylor, 1993).

Encrusting symbiosis has been recognized in an exotic of Stramberk-type limestones (mainly formed during the Late Tithonian), Polish Flysch Carpathians. All branches (about 50) of phaceloid (pseudocolonial) scleractinian coral *Stylosmilia corallina* (suborder Stylinina) are overgrown by undetermined calcified sponge attributed to the family Milleporellidae. Encrustations, directly on corallites, attain thickness up to 3 mm (usually about 1 mm). Two corallites show minor skeletal distortions. Between coral branches some columns of Milleporellidae not associated with coral also occur.

At Bukowa (SW margin of the Holy Cross Mts., Poland) in the Lower Kimmeridgian shallow water carbonates containing coral meadows, the coral cf. *Stylosmilia corallina* intergrew with chaetetid sponges. Coral determination is uncertain, because corallites are poor preserved, mostly dissolved. Associations have been recognized in 7 of approximately 60 cut specimens. Corals have not developed typical growth form of *S. corallina*. Transverse sections through chaetetid skeletons exposed sparsely and irregularly distributed corallites (from 1 to 32 in the largest chaetetid specimen). Vertical section through compound columnar (branching) chaetetid revealed that the coral was able to form lateral branches.

It can be supposed that in the first described association, although the early stage is not known, the coral was a host. (Other corals from studied limestones are rarely encrusted by macrofauna. Microbial crusts and microencrusters were more effectively encrusters, but possibly on dead coral surfaces.) *S. corallina* was a common species during the Late Jurassic, however similar encrustations (interpreted as chaetetids) have been recognized and illustrated only by Turnšek (1975) in some specimens from the Upper Jurassic of Croatia.

In the intergrowth symbiosis from the Holy Cross Mts. chaetetids were hosts and corals their „guests”. Two scenarios are possible: coral larvae settled on live chaetetid tissue or on dead surface and became overgrown by renewed growth of chaetetid. The growth of coral kept pace with upward host growth. Epizoans, except for worm-like organisms, are very rare within the studied chaetetid skeletons, suggesting that the sponges possessed defense mechanisms preventing other organisms from colonizing their surfaces. The growth form of some individuals have been modified by associated corals.

Costs and benefits of described symbioses, similarly as in many modern examples, remain unclear.

### Reference

- Darrell, J.G. & Taylor, P.D., 1993. Macrosymbiosis in corals: a review of fossil and potentially fossilizable examples. *Cour. Forsch.-Inst Senckenberg*, 164:185-198.  
Turnšek, D., 1975. Malmian corals from Zlobin, southwest Croatia. *Palaeontol. jugosl.*, 16: 1-23.

The studies were supported by PaLSIRP Sepkoski Grant.