Ber. Inst. Geol. Paläont. K.-F.-Univ. Graz	ISSN 1608-8166	Volume 7	Graz 2003

REMAKING OF CORALS SYMMETRY: VALUES FOR THEIR PHYLOGENY RECONSTRUCTION

Evgeny V. KRASNOV* & Elena E. KOSTINA**

* Kaliningrad State University, 236041 Kaliningrad, Russia; orlenok@geo.albertina.ru
** Institute of Marine Biology, Far East Branch of the Russian Academy of Sciences, 90041 Vladivostok, Russia; cnidopus@mail.primorye.ru

For the majority of researchers the radial and bilateral arrangement of mesenteries and skeletal septa is the invariable base for the establishment of the main subclasses of *Anthozoa.* But in the processes of individual and phylogenetic development the symmetry of corals presents as the integral population characteristic, changes of which show animal genotype transformation.

The arrangement of mesenteries and its retractors, tentacles and other morphological structures of soft body is of vital importance for the topological organization of coral polyp during their ontogeny and phylogeny (in accordance with the principle of topographical correlation). The swimming larvae have always well-defined bilateral symmetry, but at the adult animals, which are attached to substrate, the septa arrangement is radial. All corals have laterally compressed actinopharynx, which stretched in dorso-ventral plane, and another morphological structures, for example, retractors of mesenteries and siphonoglyphs of recent *Actiniaria*, are springing up in both direction from this plane and hardly bilateral.

The comparison of mesenteries and skeletal septa insertion sequence in different zones of growth of coral polyp allows to separate the morphogenetic fields, which are reflect species relationship and trends of their phylogeny. In two studied species of *Caryophyllia* (*C.clavus* and *C.cyathus*) the palingenesis field reflects the unity of septa insertion plan in the early stages of their individual development, but subsequent divergence of two plans called deviation field for middle stages. The field of anaboly (indicated by additional septa appearance) has been showed only at the final stage of *C.cyathus* development, which is evolutionary more forwarded. The change of symmetry transformation in of *Caryophylliidae* phylogeny has been traced from archallaxis and deviation at Mesozoic species to anaboly at Neogene and recent species (in accordance with A.N. Severtsov theory).

More than once the morphogenetic development of corals has been described as the way of the gradually separation of bilateral forms from its ostensibly radial ancestors (V.N. Beklemishev, A.V. Ivanov et al.). But B.S. Sokolov and M.A. Fedonkin convincingly showed that for ancient Vendian polyps concentric, spiral and bilateral symmetry are typical, but not radial. The diversity of septa symmetry types more increases in the Early Paleozoic branches of corals. Spiral-concentric symmetry even characterizes the formation of the epitecal structures of some Jurassic polyps, but in the following history this mode of development wasn't showed more.

The similar conformities of coral body plan symmetrization have been estimated by authors as a result of the ontogenetic evolution of Mesozoic *Scleractinia* and recent *Actiniaria.* Among these groups of corals frequently not only hexamerous patterns but also pentamerous, octamerous and decamerous forms happen. Their stable presence in the modern populations is an evidence of the of corals origin in ancient time. In accordance with published by S.Romano molecular data the roots of *Scleractiniamorphs* depart from Carboniferous or from the older-age time of Paleozoic. After N.N. Yakovlev's point of view we suggest to recognize sea anemone *Athenaria* as the most probable ancestors of *Anthozoa.* Octamerous pattern is typical for all *Alcyonaria* and some *Actiniaria* (*Edwardsia, Octineon, Segonzactis* et al.) in all ways of these corals development, and this possibly testifies to their parallel evolution.