

Egg sizes and life histories of the copepod family Eucalanidae

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It has been well known that egg sizes of marine calanoid copepods are different between two spawning strategies, namely broadcast-spawners that release their eggs freely into the water and sac-spawners that carry their eggs until hatching. In general, broadcast-spawners produce relatively smaller eggs, compared with sac-spawners. In this study, egg sizes of the family Eucalanidae are examined to investigate whether there are no differences in egg sizes among broadcast-spawners. We conducted egg size measurements and egg production experiments on eleven Eucalanidae species collected from Sagami Bay, Japan. Our result clearly indicates that egg diameters relative to prosome lengths (PL) of adult females were different among the four genera in the family. Egg sizes of five *Subeucalanus* were relatively larger in contrast to their smaller body sizes (ave. egg size = $8.2 \pm 0.7\%$ of PL), whereas four *Eucalanus* and three *Rhincalanus*, including two high-latitude species reported by previous studies, produced consistently smaller eggs regardless of their larger body sizes ($4.0 \pm 1.4\%$ of PL). In contrast, egg production rates (EPR) of *Subeucalanus* were relatively lower than those of *Eucalanus* and *Rhincalanus*. The other genus, *Pareucalanus* spp., showed intermediate egg sizes between the two groups (5.8% of PL). Our result suggests that the subtropical and tropical surface species of *Subeucalanus* are “K” reproductive strategists, i.e., larger egg sizes and lower EPR, while the species performing ontogenetic vertical migration such as *Eucalanus* and *Rhincalanus* are “r” reproductive strategists, i.e., smaller egg sizes and high EPR.

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