

Paedomorphosis in *Tachypleus rotundicauda*

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Based on the results of the current investigations of the horseshoe crabs during the last ten years, two different dendrograms for the recent horseshoe crabs, *Limulus polyphemus*, *Tachypleus gigas*, *Tachypleus rotundicauda* and *Tachypleus tridentatus*, can be proposed as follows:



The dendrogram A is reconstructed mainly based on external morphology. On the contrary, the dendrogram B is led from the data of biochemical and developmental studies.

The dendrogram B seems to show the reasonable genealogical relationships of the horseshoe crabs. Judging from this point of view, a reason for misleading us to reconstruct the dendrogram A is considered that paedomorphosis occurred in the lineage of *T. rotundicauda*: The ancestor of *T. rotundicauda* had been derived from that of *T. tridentatus* by means of paedomorphosis after the derivation of the lineage of *T. gigas* from the common ancestor of the Asian horseshoe crabs. In this case, paedomorphosis occurring in the lineage of *T. rotundicauda* is supposed to be progenesis as stated by Gould (1977).

Some circumstantial evidences for progenesis in *T. rotundicauda* lineage can be seen in the characters as follows: the size of body, shape of claspers of male, feature of marginal spines, mode of oogenesis, size of eggs, and so on. On the other hand, a few negative evidences for progenesis in the lineage of *T. rotundicauda*, e. g. the length of unmovable spines on dorsal surface of body, are also proposed.

According to Gould (1977), progenesis is a life-history strategy for *r* selection. However, *T. rotundicauda* cannot be certified to be associated with *r* strategy in all steps of its life cycle.

More detailed discussions are left for the future study.

Reference

Gould, S. (1977). *Ontogeny and Phylogeny*, 501 pp. Harvard University Press, Cambridge.