ACTA PALAEONTOLOGICA POLONICA

Ontogeny, muscle scars, colour pattern and predation marks in a Silurian orthoceratid cephalopod

Štěpán Manda and Vojtěch Turek
Acta Palaeontologica Polonica 70 (3), 2025: 517-541 doi:10.4202/app.01243.2025

Muscle scars, embryonic shell, colour pattern and intraspecific variation are known together in a very limited numberof straight shelled cephalopods, leading to uncertainty in the classification of the subclass Orthoceratoidea. Thenewly described genus *Lepidoceras* from the Silurian of Bohemia, interpreted as a demersal orthoceratid similar to *Kionoceras*, shows all relevant diagnostic characters. The earliest late Wenlock populations of *Lepidoceras* have aweakly curved endogastric shell, but the shell becomes increasingly more curved throughout the Ludlow. The sculptureis characterized by distinctive longitudinal lirae or ridges, the number of which is variable and maintained duringontogeny. The embryonic shell of *Lepidoceras* is one of the largest in orthoceratids; it is conical or weakly curved inshape beginning with a smooth non-accretion initial shell. Hatching is manifested by growth walls in some specimens;hatchlings were apparently demersal. Adults are usually characterized by mature modifications of the shell: septalcrowding and shell wall thickening. A high proportion of adult specimens indicates low mortality in palaeopopulations.Healed repairs indicate a lower predation pressure, which decreases after the juvenile stage. Extensive shell repair injuveniles demonstrates high regenerative capacity. Orthoceratomorph muscle scars found only in adults show a pairof dorsal retractor imprints that gradually expanded laterally. The colour pattern consists of irregular transverse bands,which have never been detected in orthoceratids before. The pattern, which is similar to that in curved oncocerids, isprobably an expression of adaptive convergence of this feature in both groups. Shell pathologies, which have beenobserved in juvenile orthoceratids for the first time, are rare; an extensive pathology in a mature specimen illustrateslimit of survival in orthoceratids. *Lepidoceras* is an example of a demersal orthoceratid entering a niche inhabitedpredominantly by multiceratoids.

Key words: Cephalopoda, Orthoceratida, ontogeny, variability, palaeoecology, predation.

Štěpán Manda [stepan.manda@geology.cz; ORCID: https://orcid.org/0000-0002-4939-2063], Czech Geological Survey, Klárov 3, 118 21 Praha 1, Czech Republic. Vojtěch Turek [vojtech.turek@nm.cz; ORCID: https://orcid.org/0000-0001-7366-8229], National Museum, Department of Palaeontology, Václavské náměstí 68, 115 79 Praha 1, Czech Republic.

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see creativecommons.org), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.


Full text (1,998.1 kB)