

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

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Muscle scars, embryonic shell, colour pattern and intraspecific variation are known together in a very limited number of straight shelled cephalopods, leading to uncertainty in the classification of the subclass Orthoceratoidea. The newly 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 a weakly curved endogastric shell, but the shell becomes increasingly more curved throughout the Ludlow. The sculpture is characterized by distinctive longitudinal lirae or ridges, the number of which is variable and maintained during ontogeny. The embryonic shell of *Lepidoceras* is one of the largest in orthoceratids; it is conical or weakly curved in shape 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: septal crowding 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 in juveniles demonstrates high regenerative capacity. Orthoceratomorph muscle scars found only in adults show a pair of 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, is probably an expression of adaptive convergence of this feature in both groups. Shell pathologies, which have been observed in juvenile orthoceratids for the first time, are rare; an extensive pathology in a mature specimen illustrates a limit of survival in orthoceratids. *Lepidoceras* is an example of a demersal orthoceratid entering a niche inhabited predominantly by multiceratoids.

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

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