

tkint, T., Verheyen, E. & Adriaens, D. (2010) **Liem's Paradox Extrapolated: Is There Also a Trade-off Between Mouth Brooding and Feeding in Cichlids?** *Annual Meeting of the American Society of Ichthyologists and Herpetologists* (Providence, USA) (oral presentation).

When Liem published his research on 'modulatory multiplicity' in the late seventies, it seemed to contradict previously formulated hypotheses on the functional performance of highly specialized phenotypes. The fact that some morphologically specialized cichlids retain a wide array of prey capture techniques even became known as Liem's paradox. After initially being written off as laboratory artifacts, his findings were later supported by field observations and an extension of optimal foraging theory explained in what evolutionary context such 'Jack of all trades' specialists could evolve. From a functional morphological perspective the combination of different feeding modes without much compromise was unexpected, but experimental data have shown that in some cases the expected trade-offs can be avoided. We investigated if a similar trade-off is avoided at another level, i.e. whether oral apparatus functionality for feeding is affected by its function for mouth brooding. We determined the theoretical bite force, kinematical transmission coefficient of the anterior-jaw four-bar linkage and several other feeding related aspects for two different trophic types of cichlids from Lake Victoria (*Haplochromis piceatus*, a 'suction feeder' and *H. fischeri*, a 'biter'). By comparing the theoretical performance of males and females of these maternally mouthbrooding cichlids, we could get an idea of how the added constraint of holding as much eggs as possible could affect the functioning of the oral apparatus in food gathering. We also performed a geometric morphometric analysis, which allowed us to visualize any morphological differences between the sexes that might have functional implications.