O18.
Ontogenetic aspects of morphological disparity in the cranium shape of lacertid lizards from the Balkan Peninsula

Urošević, Aleksandar[1]; Ljubisavljević, Katarina[1]; Ivanović, Ana[2]

[1]Department of Evolutionary Biology, Institute for Biological Research 'Siniša Stanković', University of Belgrade, Belgrade, Serbia
[2]Institute of Zoology, Faculty of Biology, University of Belgrade, Belgrade, Serbia

We used Procrustes-based geometric morphometrics to explore morphological variability in dorsal and ventral cranium shape of twelve lacertid

lizard species from the Balkan Peninsula (*Darevskia praticola*, *Dinarolacerta mosorensis*, *Iberolacerta horvathi*, *Lacerta agilis*, *L. trilineata*, *L. viridis*, *Podarcis erhardii*, *P. melisellensis*, *P. muralis*, *P. sicula*, *P. taurica* and *Zootoca vivipara*), at the juvenile (neonatal) and at the adult stage (females and males separately). These species differed in phylogenetic relatedness, overall size and habitat preference (terrestrial in overgrown habitats, terrestrial in sparsely vegetated habitats, saxicolous and semiarboreal). General pattern of shape variation appeared to be preserved throughout ontogeny, especially for the dorsal cranium - adult female and male morphospaces corresponded to the neonate morphospace. The inspection of morphospaces showed that the general pattern of shape variability was along the gradient from the smaller to the species with larger body size. Along this gradient, species clustered according to habitat preference. The main difference between neonates and adults was the position of semiarboreal species, which completely separated from the rest of the species at the adult stage. The overall morphological disparity (MD) increased during the course of ontogeny (from neonates to adult females and males). Ventral cranium, with its structures involved in mechanics of jaw movement and feeding, showed greater increase in MD, as well as the shift in the morphospace hyperplanes. On the generic level, *Lacerta* spp. showed significantly higher MD than *Podarcis* spp. In contrast to other ecological groups (terrestrial and semiarboreal) saxicolous lizards showed a tendency of decreasing shape disparity during ontogeny. The species from saxicolous group were phylogenetically heterogeneous but morphologically convergent due to the specific habitat constraints, and their distinctive MD pattern could be achieved by different allometric paths. The patterns of shape variation and MD were modified by ecology, functional constraints and different ontogenetic trajectories. Further studies on the ecomorphology, allometric diversity and morphological integration, as well as the reassessment of the problematic lacertid phylogeny are needed in order to shed more light on the complex relationships among morphology, ecology and phylogeny in lacertid lizards.

aurosevic@ibiss.bg.ac.rs