ECOMORPHOLOGICAL VARIATION IN RELATION TO WHOLE-ORGANISM PERFORMANCE IN TWO SYMPATRIC LIZARDS WITH HIGH COMPETITION POTENTIAL

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Functional performance linked with individual fitness has a major impact on population survival. In sympatric species where the potential for competition is high due to ecological resemblance, variation in performance may play an important role in facilitating species co-existence. Sexual selection also influences morphology. We aimed to examine the potential role of functional morphology and whole-organism performance in species co-existence patterns. We investigated functional traits of two sympatric species, *Iberolacerta horvathi* and *Podarcis muralis*. They exhibited a partial segregation pattern, but were found to co-exist in 18% of all populations in the study area. We captured between 24 and 28 females and males of both species to quantify morphological traits and performance (bite-force and speed). Observed variation in functional traits suggests four major mechanisms probably enhancing co-existence: (i) Head shape in connection with bite-force may determine trophic segregation and (ii) may influence success in agonistic social encounters. Males had higher bite forces than females, and *P. muralis* exerted higher bite forces than *I. horvathi* of the same sex. Relatively higher but narrower heads were associated with increased biting performance in *P. muralis*. (iii) Difference in head height may allow spatial segregation in the use of crevices that is potentially linked with different prey, egg-laying sites and predator avoidance. *Iberolacerta horvathi* had a flatter head than *P. muralis*. (iv) Size of female trunk-length may promote the relative size of a clutch and positively influence reproductive effort by clutch. Since higher climbing speed was associated to longer limbs and shorter trunks, females (especially *I. horvathi*) were the slowest climbers. In conclusion, head dimensions and bite force were observed to be ecomorphological traits potentially involved in promoting co-existence between species. We also found a connection between trunk length and climbing performance. However, its implication for species interactions is more difficult to understand, possibly because strong selection pressures for reproduction are involved.