Using scars to infer sexual selection in a polymorphic lizard

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In lacertid lizards, interactions during the breeding season and agonistic encounters within the activity season result in temporal body marks, which usually disappear within the following shedding. The polymorphic European wall lizard (*Podarcis muralis*) displays alternative ventral colours, encompassing up to three pure morphs (white, yellow, and orange) plus intermediate morphs. Within the same population, morphs have different frequencies and vary in microhabitat use, home range size and success in staged agonistic encounters, fact which was often interpreted in the light of sexual selection.

Based on digital images taking during the breeding season of 2018, we indirectly inferred (i) the intensity of male choice on females and (ii) male-male competition across multiple populations from Central Pyrenees under different environmental conditions and with variable morph frequency. The analysis of the frequency of body marks (inguinal copulation marks on females, and chest and head scars on males) considering population, sex, morph and body size based on Generalized Linear Mixed-Models (GLMM) revealed a complex interplay between natural and sexual selection, with scar intensity varying with both population and morph. If correctly recorded, scar patterns may represent a promising tool for recording and analysing large amounts of relevant data for life history, ecology and evolution.