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# PROGRAM & ABSTRACTS



**FORECASTING DISTRIBUTIONS AND COMPETITIVE INTERACTIONS FOR EUROPEAN VIPERS**

**DARÍO CHAMORRO**

Biogeography, Diversity and Conservation research team, Depto. de Biología Animal, Facultad de Ciencias, Universidad de Málaga, E-29071, Málaga, Spain.

**ANTONIO-ROMÁN MUÑOZ**

Biogeography, Diversity and Conservation research team, Depto. de Biología Animal, Facultad de Ciencias, Universidad de Málaga, E-29071, Málaga, Spain.

**RAIMUNDO REAL**

Biogeography, Diversity and Conservation research team, Depto. de Biología Animal, Facultad de Ciencias, Universidad de Málaga, E-29071, Málaga, Spain.

**FERNANDO MARTÍNEZ-FREIRÍA**

CIBIO/InBio, Centro de Investigação em Biodiversidade e Recursos Genéticos da Universidade do Porto, R. Padre Armando Quintas, 4485-661, Vairão, Portugal.

European vipers (*Vipera*) show parapatric distributions as result of distinct evolutionary trajectories and specific ecological requirements. Competitive interactions among species at range margins play an important role in the sustainment of distributional patterns. Taking into account the competition between species in a heterogeneous climate along their distribution areas, three biogeographical cases are predicted to happen: 1) autoecological segregation, when a low favorable climate is stronger than biological interactions; 2) sympatric coexistence, when an optimal climate for both species provides high abundance of resources, minimizing the effect of competitive interactions; and 3) sinecological segregation, when in sub-optimal areas, one species, better adapted to this conditions, could exclude the other by competition. Fuzzy logic distribution models provide a useful framework to analyze and identify these interactions. Using a presence/absence matrix for five western vipers (*V. aspis*, *V. berus*, *V. lataste* and *V. seoanei*) and a set of climate variables at ~10x10 km resolution, we studied species favorability for current and future climate scenarios. Regions of overlap between species pairs were analyzed to identify the three biogeographical cases in both periods of time. Results emphasize the generalist character of *V. aspis*, with a predicted range largest than the currently observed, and the strong competitive character of *V. berus*, *V. latastei* and *V. seoanei* at range margins, which might be limiting the expansion of the former species. Despite a high uncertainty in our predictions, future favorable areas are restricted to coastal and mountain regions, which is translated into important changes in species interactions.