

Biogeography of *Algyroides marchi*: small range but complex patterns

M. A. Carretero¹, N. Sillero², E. García-Muñoz^{1,3}, F. Ceacero^{3,4},
A. Perera¹, D. J. Harris¹ and J. L. Rubio⁵

¹CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Campus Agrário de Vairão, 4485-661 Vairão, Portugal

e-mails: carretero@mail.icavi.up.pt; engamu@gmail.com

²CICGE, Centro de Investigação em Ciências Geo-Espaciais; Universidade do Porto, Rua do Campo Alegre, 687, 4169-007 Porto, Portugal

e-mail: neftali.pablos@fc.up.pt

³Asociación Giennense de Herpetología. c/ Pintor Miró 6, 23700 Linares, Spain

⁴Departamento de Ciencia y Tecnología Agroforestal, Universidad de Castilla-La Mancha. Campus Universitario s/n, 02071 Albacete, Spain

e-mail: francisco.ceacero@uclm.es

⁵Departamento de Ecología, Universidad Autónoma de Madrid, C/ Darwin, 2. Cantoblanco, 28049 Madrid, Spain

e-mail: joseluis.rubio@uam.es

Abstract: Among the relict species assigned to the genus *Algyroides*, the Iberian *A. marchi* is the most restricted, occupying a small range in the Prebetic Mountains (SE Spain). The biogeographic patterns were investigated by 1) updating the knowledge on its distribution; 2) producing models of potential distribution; 3) extrapolating such models to the past and to the future; 4) making estimations of local abundance; and 5) evaluating the degree of genetic substructuring. As a result of the work carried out in 2009, considerable progress in the chorological knowledge was attained due not only to new localities within previous range but also to the detection of peripheral populations. Ecological niche models indicate that the species depends on mountains, low temperatures, high precipitation and good forest cover at large scale, and on terrain roughness and closure minimising radiation and evaporation, at small scale. The temporal extrapolation of such models suggests a progressive range contraction during the Pleistocene which is inferred to end up with the complete species extinction if some scenarios of climate change are confirmed. Three mtDNA lineages separated since the Early Pleistocene are not coincident with current geographic barriers: the first, highly diverse and stable, distributed along the main range axis; the second occupying a small area in the NW; and the third extending throughout several isolated nuclei in the east resulting from historical retraction. Nevertheless, nDNA markers indicate recent gene flow between these lineages. The importance of such evidence for the species conservation and management is discussed.