

BOLETÍN

DE LA ASOCIACIÓN HERPETOLÓGICA ESPAÑOLA

Núm. 18 - 2007



New data on the presence of the smooth snake *Coronella austriaca* Laurenti, 1768 (Serpentes: Colubridae) in “Els Ports de Beseit” (northeastern Spain)

Daniel Escoriza,¹ Daniel Espejo,² Salvador Carranza³ & María del Mar Comas⁴

¹ C/ Fastenrath, 35. 08035 Barcelona. España. E-mail: daniel_escoriza@hotmail.com

² C/ Federico García Lorca, 24, 7º, 2ª. 08042 Barcelona. España

³ Departamento de Biología Animal. Universitat de Barcelona. Avda. Diagonal, 645. 08028 Barcelona. España

⁴ C/ Via Italiana, 7. Fontpineda. 08753 Pallejà. Barcelona. España

Key words: *Coronella austriaca*, biogeography, mitochondrial DNA, isolated population.

Resumen: Nueva localidad para la culebra lisa europea en la vertiente sudoccidental de “Els Ports de Beseit”, Castellón. Genéticamente esta población es idéntica a las poblaciones pirenaicas y del Sistema Ibérico. Se discuten aspectos sobre la ecología y biogeografía de esta población.

The smooth snake *Coronella austriaca* Laurenti, 1768 is widely distributed across the Palaearctic, from Portugal in the west, to the Russian Federation in the east, and from the Balkan, Iberian, Italian Peninsulas and Sicily in the south, up to south Scandinavia in the north (Gasc *et al.*, 1997). Although being homogeneously distributed across most of central and northern Europe, the smooth snake presents a patchy distribution in the southernmost regions of the Mediterranean peninsulas, usually isolated in the Supra-Oromediterranean bioclimatic zones (Galán, 2002) as “Els Ports de Beseit” mountain range. The habitat and ecology of *C. austriaca* in “Els Ports de Beseit” is poorly known, as the information on this population is scarce and

based only in few observations: UTM 10x10 Km BF71, BF70, BF72, BF62, BF61 (Llorente *et al.*, 1995).

In October 2006 one dead specimen of *C. austriaca* was found at 1082 masl and UTM 10x 10 Km BF40 in the southwestern side of “Els Ports de Beseit” mountain range (Castellón province, Tinença de Benifassà Natural Park), where this species had not been previously recorded. The specimen was a male (tail length/snout-vent length quotient = 28%; Reading, 2004) with a total length of 35.4 cm. This specimen has been deposited in the Museo de Ciencias Naturales de Barcelona accession number MCNC 2007-0001.

The habitat where the specimen was found is a mountain pasture mosaic of xerophilous

nature (Al. *Aphyllanthion* Braun-Blanquet) combined with secondary forest formations of clearly Submediterranean elements as *Pinus nigra salzmannii* and *Buxus sempervirens* (Figure 1). This vegetation is favoured by a temperate oceanic submediterranean bioclimate transitional to the Mediterranean pluvisseasonal oceanic bioclimate (Rivas-Martínez, 2004) defined by an average year temperature of 11.6° C and 726 mm of average rainfall per year (data obtained by a climatic model, Ninyerola *et al.*, 2004), with almost regular rainfall during all the year attenuating a brief summer arid period. As a whole, the vegetation indicates that the area is located in a interesting blurred border between the montane zone of the Eurosiberian biogeographic region and the Supra-mediterranean zone of the Mediterranean region, also shown by the mixed presence of reptile species with Eurosiberian chorology as *C. austriaca* and others more characteristic from the Mediterranean region as *Podarcis hispanica*, *Psammodromus algirus*, *Coronella*

girondica and *Vipera latastei*. Due to the arbitrary use of the terms *latastei* and *latasti* it has been proposed to the International Commission on Zoological Nomenclature to fix *latastei*.

It has been suggested that during Pleistocene glacial maxima, Eurosiberian taxa like *Pinus sylvestris* or *Betula pendula* might have been widely distributed across Iberia and relegated to Supra-Oromediterranean refuges after the climatic recovery of the Holocene, some 10 000 years ago (Costa *et al.*, 2001) and it is likely that similar range fluctuations have been occurred in other Eurosiberian species with relict Mediterranean distribution as *C. austriaca* or *Podarcis muralis*. Tissue of the specimen was used to extract DNA and to amplify and sequence a region of the mitochondrial cytochrome b gene following methods described elsewhere (Carranza *et al.*, 1999; 2000). The DNA sequence was compared to other Iberian specimens and showed that the sample from “Els Ports de Beseit” was genetically identical to all the



Figure 1. Habitat of *Coronella austriaca* in “Els Ports de Beseit”.

samples from the Pyrenees, on the other side of the Ebro River valley, and to the samples from Soria, in the opposite extreme of the Sistema Iberico (Santos *et al.*, in press). The results confirm the hypothesis that this isolated population of *C. austriaca* from "Els Ports de Beseit" probably had a large continuous range across the Ebro River valley during the cold phases of the Pleistocene and became definitively isolated very recently, probably as a result of the Holocenic climatic amelioration.

C. austriaca should be regarded as a rare species in "Els Ports de Beseit" Mountains and probably endangered. This is supported by the scarcity of records of this species in a well prospected area and the global increase in temperatures that favour the more thermophilous species as *C. girondica* also present in the area and occurring in a similar ecological niche (Salvador & Pleguezuelos, 2002). Other possible threats for this population are the habitat loss by the conifer reforestations. Thus the priority for the conservation of the smooth snake in "Els Ports de Beseit" lies in the appropriate management and preservation of the montane pastures.

Acknowledgements: Thanks to Felix Amat and Pedro Galán by their generous help with the bibliographic references.

REFERENCES

- Carranza, S., Arnold, E.N., Thomas, R.H., Mateo, J.A. & López-Jurado, L.F. 1999. Status of the extinct giant lacertid lizard *Gallotia simonyi simonyi* (Reptilia: Lacertidae) assessed using mtDNA sequences from museum specimens. *Herpetological Journal*, 9: 83-86.
- Carranza, S., Arnold, E.N., Mateo, J.A. & López-Jurado, L.F. 2000. Long-distance colonization and radiation in gekkonid lizards, *Tarentola* (Reptilia: Gekkonidae), revealed by mitochondrial DNA sequences. *Proceedings of the Royal Society of London, B*, 267: 637-649.
- Costa, M., Morla, C. & Sainz H. (eds.), 2001. *Los bosques ibéricos*. Ed. Planeta. Barcelona.
- Galán, P. 2002. *Coronella austriaca*. 272-274. In: Pleguezuelos, J.M., Márquez, R. & Lizana, M. (eds.), *Atlas y Libro Rojo de los Anfibios y Reptiles de España*. Dirección General de Conservación de la Naturaleza-Asociación Herpetológica Española (2ª impresión). Madrid.
- Gasc, J.P., Cabela, A., Crnobrnja-Isailovic, J., Dolmen, D., Grossenbacher, K., Haffner, P., Lescure, J., Martens, H., Martínez-Rica, J.P., Maurin, H., Oliveira, M.E., Sofianidou, T.S., Veith, M. & Zuiderwijk, A. (eds.), 1997. *Atlas of amphibians and reptiles in Europe*. Collection Patrimoines Naturels, 29. Societas Europaea Herpetologica, Museum National d'Histoire Naturelle & Service du Patrimoine Naturel. Paris.
- Llorente, G.A., Montori, A., Santos, X. & Carretero, M.A. 1995. *Atlas dels Amfibis i Reptils de Catalunya i Andorra*. Ed. El Brau. Figueres.
- Ninyerola, M., Pons, X. & Roure, J.M. 2004. *Atles Climàtic Digital d'Ibèria*. Departament de Geografia. Unitat de Botànica. Universitat Autònoma de Barcelona. Barcelona. <<http://magno.uab.es/atles-climatic/index.htm>> [Consulta: 10 enero 2007].
- Reading, C.J. 2004. Age, growth and sex determination in a population of smooth snakes, *Coronella austriaca* in southern England. *Amphibia-Reptilia*, 25: 137-150.
- Rivas-Martínez, S. 2004. *Global Bioclimatics*. Phytosociological Research Center. Universidad Complutense de Madrid. Madrid. <http://www.ucm.es/info/cif/book/bioc/global_bioclimatics_1.htm> [Consulta: 10 enero 2007].
- Salvador, A. & Pleguezuelos, J.M. 2002. *Reptiles Españoles*. Canseco Editores. Talavera de la Reina.
- Santos, X., Roca, J., Pleguezuelos, J.M., Donaire, D. & Carranza, S. In press. Biogeography and evolution of the Smooth snake *Coronella austriaca* (Serpentes: Colubridae) in the Iberian Peninsula: evidence for Messinian refuges and Pleistocenic range expansions. *Amphibia-Reptilia*.

