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Mitochondrial DNA sequence analysis of the spectacled salamander, *Salamandrina terdigitata* (Urodela: Salamandridae), supports the existence of two distinct species

MARCO MATTOCCIA[1], ANTONIO ROMANO[2] & VALERIO SBORDONI[3]

[1] Università di Roma "Tor Vergata", Dipartimento di Biologia, Via della Ricerca Scientifica 1, I-00133 Roma RM, Italy; e-mail: marco.mattoccia@uniroma2.it

[2] Università di Roma "Tor Vergata", Dipartimento di Biologia, Via della Ricerca Scientifica 1, I-00133 Roma RM, Italy; e-mail: antonioromano1@libero.it

[3]Università di Roma "Tor Vergata", Dipartimento di Biologia, Via della Ricerca Scientifica 1, I-00133 Roma RM, Italy; e-mail: valerio.sbordoni@uniroma2.it

ABSTRACT

Salamandrina is a monotypic genus of the family Salamandridae endemic to Italy. Forty five individuals of the spectacled salamander, *Salamandrina terdigitata*, representing 11 populations throughout the whole distribution range were examined for sequence variation of three mitochondrial DNA genes encoding the 12S and 16S ribosomal RNA's and cytochrome *b* (1324 bp). The results indicate the existence of two genetically distinct and geographically non-overlapping mtDNA lineages. The first lineage includes the southern populations and the second one comprises the central-northern populations. The degree of genetic divergence between the two groups is high and comparable to distances calculated from homologous sequences available in GenBank between other Salamandrid species. As a result, the genus *Salamandrina* probably requires splitting into two species. We also compare substitution rates associated with the mitochondrial genes employed across all Salamandrids studied so far, and discuss two possible palaeogeographic scenarios which could have shaped the splitting of the two *Salamandrina* lineages. These findings have also important implications for management and conservations of the spectacled salamander, which is protected under several international and regional conventions and directives.

Key words: *Salamandrina*, phylogeny, mtDNA, 12S, 16S, cytochrome *b*, genetic divergence

INTRODUCTION

The genus *Salamandrina* Fitzinger, 1826 is the sole extant representative of an ancient lineage of the family Salamandridae (cf. Thorn, 1969), whose phylogenetic relationships are still questioned, even if it appears to be more related to the "newts" rather than to the "true

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