

**Ecological thresholds and estimates of breaking points in newt populations:
a useful tool to categorise habitat use and apply conservation measures**

M. DENOËL¹ & F. FICETOLA²

¹ F.R.S.-FNRS Research Associate, Behavioural Biology Unit, University of Liège, Belgium;
Mathieu.Denoel@ulg.ac.be

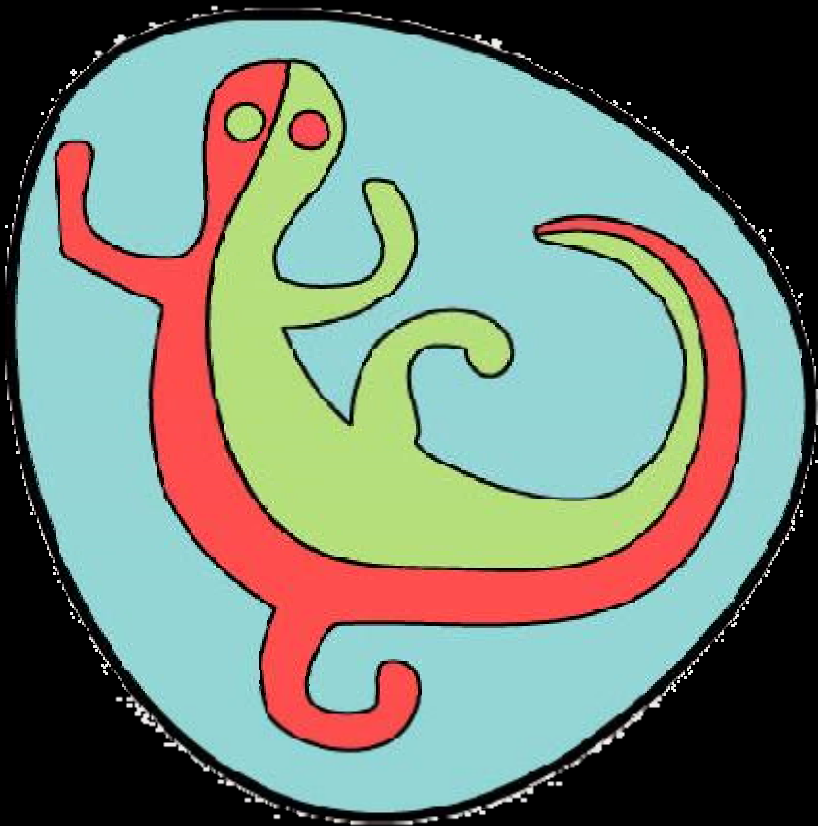
² Laboratoire d'Ecologie Alpine, Université de Savoie, Chambéry, France

Ecological thresholds are defined as points at which a rapid change occurs from one ecological condition to another. Their determination in species–habitat relationships has important implications because they allow to understand ecological requirements of species and to provide efficient conservation measures. However, there is a lack of concordance across studies and this method was not yet applied to newts. In this study, we sampled 371 ponds to gather occurrence data on the palmate newt *Triturus helveticus* and the Alpine newt *Triturus alpestris*. We tested for the existence of significant thresholds for three variables: distance to forest, forest and crop covers. We found significant thresholds for both landscape configuration and composition, with relationships between distance to forest and occurrence of *Triturus alpestris* and *T. helveticus*, and forest and crop cover and *T. helveticus*. Both species require breeding ponds within a given distance from the forest, but *T. helveticus* is more dependent on forest availability than *T. alpestris*: its ecological threshold is located at lower distance from forest edge, and requires also higher values of forest cover. Crops have a negative influence on palmate newt distribution with a significant breaking point, but not for *T. alpestris* in the studied area. These results indicate that thresholds can be a useful concept from which tools may be developed. They are particularly pertinent to focus conservation effort for threatened species and their habitats as quantitative measures of the most required habitats for species can be obtained from statistically determined breaking points.



14th european congress
of herpetology
and SEH ordinary general meeting

19-23 september 2007
porto, portugal



Organizing Committee

Miguel A. Carretero (Portugal)
José C. Brito (Portugal)

Scientific Committee

E. Nicholas Arnold (UK)
José C. Brito (Portugal)
Carles Carreras (Spain)
Miguel A. Carretero (Portugal)
Ylenia Chiari (USA)
Nuno Ferrand (Portugal)
D. James Harris (Portugal)
Ulrich Joger (Germany)
Petros Lymberakis (Greece)
Adolfo Marco (Spain)
Marcio Martins (Brazil)
Robert W. Murphy (Canada)
Göran Nilson (Sweden)
Johannes Penner (Germany)
Anton Stumpel (The Netherlands)

Secretariat

Bárbara Mendonça (Portugal)

Executive Commission

Diana Barbosa (Portugal), Silvia Carvalho (Portugal), Miguel Fonseca (Portugal), Antigoni Kaliontzopoulou (Portugal), Alexandra Lima (Portugal), Alexandra Marques (Portugal), Fernando Martínez-Freiria (Spain), Ana Perera (Portugal), Catarina Rato (Portugal), Raquel Ribeiro (Portugal), Sara Rocha (Portugal), Nefthalí Sillero (Portugal), Claudia Soares (Portugal), José Teixeira (Portugal), Raquel Vasconcelos (Portugal)

14th European Congress of Herpetology, Porto (Portugal), 19-23 September 2007. *Abstract Book*.

PUBLISHED BY

CIBIO, Campus Agrário de Vairão, R.ua Padre Armando Quintas, 4485-661 Vairão, Portugal.

PRINTED BY

Tipografia Camões. Póvoa de Varzim, Portugal.

LEGAL DEPOSIT

September 2007