

LIFE HISTORY

Metamorphosis rate of paedomorphs in a natural newt population

M. DENOËL¹; J.P. LENA² & P. JOLY²

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

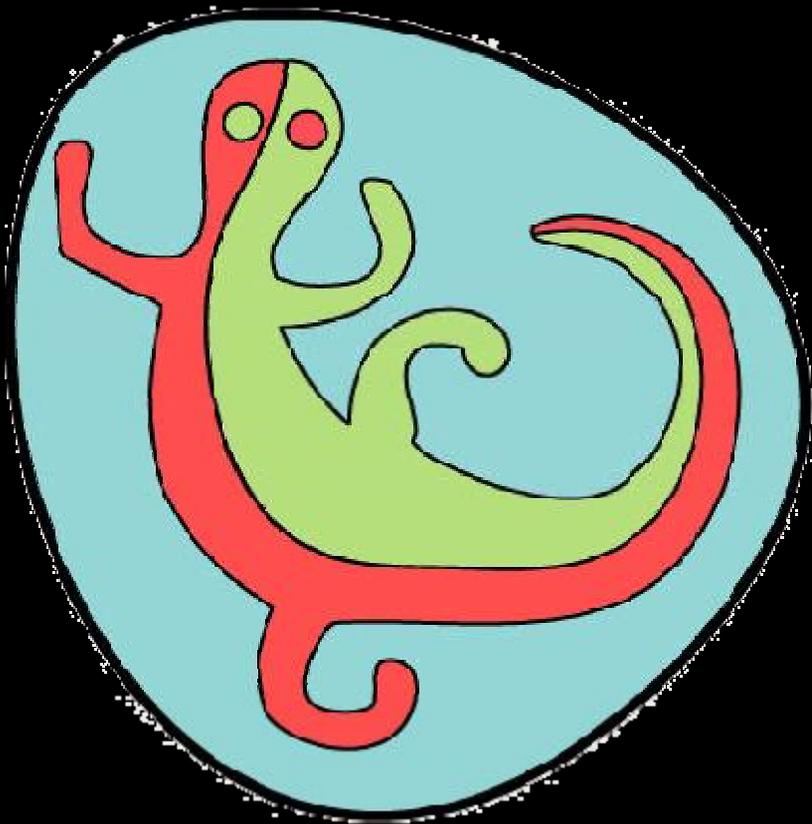
² UMR CNRS 5023, Ecology of Fluvial Hydrosystems, Claude-Bernard Lyon I University, 69622 Villeurbanne, France

Facultative paedomorphs is a developmental process in which larvae opt for metamorphosis before maturity or reach sexual maturity while retaining larval traits (e.g., gills). Although metamorphosis is not reversible, the paedomorphic state is not a dead end as branchiate adults are able to metamorphose. However, the extent of this process has never been quantified in the wild. Our aim was then to estimate switching rate by carrying out a 3-year monitoring survey of a population of Alpine newts (*Triturus alpestris*) inhabiting an alpine lake. The data were analysed using a multi-state capture-recapture model. While morph switching did occur in this population, it involved only 12% of the paedomorphs each year (i.e., 17% of recaptured individuals), suggesting that metamorphosis was not favoured in this population during the study period. This rate is lower than in laboratory experiments during which newts from the same population were placed in water drying conditions, but as shown previously paedomorphs can avoid metamorphosis in migrating to permanent water bodies when their pond dries out. These results are in agreement with other studies showing an advantage of a dimorphism in heterogeneous habitats. The ontogenetic pathway of wild Alpine newts is thus characterised by two forks in the developmental pathway. The first occurs during the larval stage, and the second occurs in paedomorphic adults. Such a two-level decision process may allow individuals to cope with environmental uncertainty. This may be particularly adaptive as aquatic conditions can deteriorate over time as shown by yearly changes in body condition of newts.



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