lethal alternative to dissection. However other non-lethal methods, such as faecal analysis, may be used to study amphibian diet. In this study, we compared the information obtained through stomach flushing and faecal analysis from the same individuals of the European cave salamander *Speleomantes strinatii*. After performing stomach flushing in the field, thirty-one cave salamanders were kept at constant humidity and temperature to obtain faecal samples. Prey items were identified by the same researcher under a stereomicroscope, using identification manuals and reference collections. There were no differences in the number of taxa or in the number of prey items, but Simpson's diversity and equitability indexes calculated from stomach flushing were significantly higher in comparison to those obtained from faecal analysis. Moreover, Pianka's index (O_{jk} = 0.58) suggested a relatively low overlap between the two samples. This is the first study comparing stomach contents and faeces from the same individual salamanders. Results show that the information obtained from these two methods is different. Stomach flushing is more informative and should be preferred, in particular when specific relationships between salamander predators and their invertebrate prey have to be investigated.

M. Cvijanovic, A. Ivanovic, N. Tomasevic Kolarov & M. Kalezic

Do closely related Crested newt species diverge in larval development?

Exploring larval development and the pattern of size and shape changes during the ontogeny of closely related species provides an important insight into the processes that lead to the evolutionary diversification among species; for such studies the monophyletic clade of crested newts (*Triturus cristatus* superspecies) is an excellent model system. We analysed interspecific variations in the larval development by comparing larval developmental stages as well as the ontogenetic changes in body size and shape during the larval development of four crested newt species (*T. cristatus*, *T. dobrogicus*, *T. macedonicus*, *T. arntzeni*). Our results revealed significant variation in the larval developmental rate, as well as differences in the size and body shape among the analysed species. These divergences are concordant with interspecific differences in adult body form and species-specific ecological preferences. The differences in body shape that we found (wider and higher tail fin in *T. dobrogicus* and *T. cristatus*) may indicate that the body forms of larvae are subject to selection in aquatic environments, resulting in the same pattern of interspecific differences among species as in metamorphosed individuals.

M. Denoel, B. D'Hooghe, E. De Pauw, P. Kestemont, J.P. Thome & G.F. Ficetola

Making more with standard ecotoxicological tests: Using sets of behavioural markers to test the effect of Endosulfan on amphibian tadpoles

Short-term assessments of the effect of pollutants are mainly based on survival rates, providing reference values such as LC50. A variety of other sublethal biomarkers are available,

particularly in the field of behavioural ecotoxicology, but they are little used in this framework. In this study, we aimed at determining the complex behavioural responses of organisms in function of concentration and time, but also after removal of the pesticide. To this end, we used 240 amphibian tadpoles (*Rana temporaria*) placed by groups of ten in 24 tanks (days 1-4: 4 pesticide treatments: 0.5 - 0.0005 mg/l Endosulfan, 1 control and 1 vehicle-control: ethanol; days 5-8: recovery period with solvent and pesticide). We used generalized mixed models (GLMM), assuming binomial error distributions, to evaluate effects of the six treatments on the frequency of behavioural traits and survival. The six analyzed behaviours were affected by Endosulfan. Two were only displayed at the highest concentrations of pesticide: abnormal movement (swirling) and position (lying on the flank) whereas the others were differently exhibited. Particularly, exposed tadpoles moved, fed and breathed at water surface less than control tadpoles. They also remained in a more central position within their tanks. The six behavioural biomarkers detected effects for different concentrations and times of exposure. Lag effects were also found after removal of the pesticide. On the one hand, this study highlights that Endosulfan is highly toxic to amphibians at environmental concentrations in the days following introduction into water bodies. On the other hand, it shows that behavioural assessment can be done within the framework of typical LC50 tests, thus maximizing test efficacy, and minimizing cost and animal use in laboratory research.

A.R. Di Cerbo, M. Dino, S. Milesi & C.M. Biancardi

Long term monitoring of yellow-bellied toad populations in Italy

Long-term studies of population dynamics are of great interest for life history theory, population ecology, wildlife management and conservation biology. The yellow-bellied toad (Bombina variegata) is reported to be a long-living and a long-breeder amphibian species, which uses temporary ponds or low-.ow river pools as spawning sites. The reproductive success strongly depends on the availability and duration of suitable ponds, and therefore on climatic and environmental conditions. In Italy, the distribution of the species is limited to the northern regions with the western side of its range falling in Lombardy. In that region yellow-bellied toad populations are highly fragmented and relatively smaller than in other parts of its geographic range. Two monitoring programs started in Lombard Prealps on two populations living in temporary ponds (Parco dei Colli di Bergamo, PBC) and in low-.ow river pools (Albino, ALB), since 1988 and 1994 respectively. During monitoring activity, the yellow-bellied toads have been captured, photographed, sexed and measured. Photos of the ventral pattern have been used for individual identi.cation during recaptures. On the .rst occurrence, newly metamorphosed and young individuals have been aged (0-1 years old), while a minimum estimated age of 2 years has been assigned, at the .rst capture, to the sexually matured toads (SVL > 30 mm) by considering our observations and literature. Life tables, survival rates and the age-speci.c estimation of the minimum life expectancy of the populations have been calculated. A total of 94 yellow bellied toads (46 males, 34 females, 14 immature) were identi.ed at the site PCB during the period 1988-2009 and 102 yellow-bellied toads (38 males, 46 females, 18 young toads) were recorded at site ALB between 1994 and 2011. In both sites, 79.8% and 67.7% of the

Societas Europaea Herpetologica – SEH
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SEH European Congress of Herpetology & DGHT Deutscher Herpetologentag

Luxembourg and Trier, 25th to 29th September 2011

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Universität Trier

Thursday, 29th September 2011			
	Luxembourg, Neumünster Abbey Salle Robert Krieps		
	INVITED TALK chair: E. Engel		
10:00-10:45	A. Storfer: Landscape genetics: Insights into amphibian ecology and evolution		
10:45-11:00	SEH Mapping Committee & SEH Council: A map of maps of European amphibian and reptile distribution: First step towards a new European atlas		
11:00-11:30	Coffee break (MNHN, cafeteria)		
	Luxembourg, Neumünster Abbey Salle Robert Krieps	**Luxembourg, Neumünster Abbey Salle Edmond Dune**	
	AMPHIBIAN ECOLOGY 2 chair: S. Lötters	**ALL HERPS: PHYSIOLOGY chair: P. Lymberakis**	
11:30-11:45	M. Denoel, B.D'Hooghe, E. De Pauw, P. Kestemont, J.P. Thome & G.F. Ficetola: Making more with standard ecotoxicological tests: Using sets of behavioural markers to test the effect of Endosulfan on amphibian tadpoles	S. Jordan & C. Nowack: Show me yours – I'll show you mine! Lectinhistochemical comparison of the olfactory epithelia of *Bombina orientalis* (Discoglossidae) and *Xenopus muelleri* (Pipidae)	
11:45-12:00	M. Cvijanovic, A. Ivanovic, N.T. Kolarov & M. Kalezic: Do closely related Crested newt species diverge in larval development?	A. Zagar, N. Osojnik, A. Vrezec & M.A. Carretero: Does presence of con- or hetero-specific male influence preferred body temperatures of two sympatric lacertids? The case of *Podarcis muralis* and *Iberolacerta horvathi*	
12:00-13:30	Lunch break (Restaurant Melusina)		