ecological (functional) diversity of these hyper-diverse amphibian communities.

L. Russell & T.J.C. Beebee

The effects of landscape on the population genetics of the sand lizard *Lacerta agilis* in the southern United Kingdom

The sand lizard *Lacerta agilis* reaches the western edge of its range in the where it is restricted to habitats on sandy soils and consequently has a limited and patchy distribution. This has left the sand lizard particularly vulnerable to the effects of habitat loss and fragmentation and the species has suffered significant declines. Sand lizards were sampled from a number of sites within the species' UK stronghold of Dorset and genotyped at 15 microsatellite loci. Individual populations were identified using Bayesian assignment methods. Populations exhibited relatively high levels of genetic differentiation over small geographical distances and differentiation patterns could not be explained by isolation by distance. The effect of the landscape on genetic population structure was investigated at a fine scale in two scenarios: across a series of isolated/fragmented sites separated by natural and artificial barriers to dispersal; and, within a large area of forestry plantation where small patches of suitable habitat are present among larger areas of less suitable habitat. Remotely sensed habitat data was used to create a resistance surface and least-cost path analysis was used to explain genetic population structure within both scenarios.

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Homeward bound: which factors influence the homing ability of the common wall lizard *Podarcis muralis*?

To test the homing ability of *Podarcis muralis*, we conducted an experiment in two different areas of Northern Italy during 2009 and 2010. The first study area (Cesano Maderno: CSM) is a wall surrounding a city park with a linear and very simplified habitat; the second one (Castelseprio: CSS) is an archaeological park in a natural area including stone walls remains, open areas and woods. The lizards were captured by noose, measured, photographed and marked with dorsal paints for individual recognition and then translocated at increasing distances (50-100-150-200 m). We considered a lizard successfully homed when we sighted it within 20m from the capture site. We translocated 491 lizards, 203 from CSM (132 males and 71 females) and 288 from CSS (145 males and 143 females) using cloth bags that did not allow the lizards to use landmarks to find their way back home. Data were analysed by means of GLM, using return as dependent variable, sex, distance, season (reproductive: March-June; post-reproductive: July-September), regenerated tail (regenerated/intact), study site as fixed factors and SVL and morph as covariates. Since, *P. muralis* is a polymorphic species (white, yellow and red coloured bellies and hybrids), we speculated that its polymorphism could be based on a two alleles system and we evaluated the morph as the number of *y* (ny) and *r* (nr) alleles for

each individual (e.g., a red individual was coded as 2*r*/0*y*, a white-red individual as 1*r*/0*y*). In this scenario, we used these codes as covariates in the analysis. *P. muralis* was able to home, since 56.7% of CSM lizards and 35.1% of CSS lizards successfully returned to their original home-range. The optimal model obtained by GLM extracted distance, study site, n*y*, and SVL as significant variables. Homing ability was inversely correlated with distance, but grows as lizard size and n*y* increase. Homing success was significantly higher in the CSM site than in CSS site, while no effect was found for sex, season, regenerated tail and n*r*. The lizards can successfully home when they are translocated up to 50m, but their homing ability rapidly decreases at longer distances. The effect of size could be explained by territoriality, because smaller individuals could have not established yet their territories or they could have lower quality territories and the risk of facing a long travel to home could be too high. The number of *y* alleles seems related to alternative reproductive strategies highlighted during previous studies: yellow lizards behaves as territorial individuals and they could be more motivated to return to their territory resources with respect to other morphs. Habitat complexity negatively affects homing ability and lizards can return more easily to their home-ranges when they can use visual cues in a linear habitat.

L.M. Schulte, S. Lötters & M. Veith

The smell of death: How poison frogs recognize their offspring's enemies by means of chemical cues

Parental care is a common strategy among vertebrates to assure successful reproduction. Especially anuran amphibians have evolved a remarkable diversity of reproductive methods, often associated with parental care such as egg guarding and tadpole transport. Among the most derived strategies are those of the Neotropical poison frogs (Dendrobatidae). In these frogs parents deposit tadpoles singly into different phytotelmata (small water bodies that form in plant leaf axils). The exploitation of these small pools is advantageous as it lowers the risk of predation, but it is more costly because of limited resource availability. Additionally, poison frog larvae are often cannibalistic, so the identification and avoidance of conspecifics represents an adaptive behaviour for these amphibians. Here we report that parental *Ranitomeya variabilis* frogs are able to recognize the presence of tadpoles in phytotelmata without invoking visual or physical stimuli, but are able to accurately determine the presence of tadpoles via chemical cues. Furthermore, it appears that these frogs can distinguish between different kinds of cues, produced by tadpoles of different species. We tested the response of the frogs to tadpoles cues of different poison and non-poison frog species, either predatory or non-predatory. While the conspecific cannibalistic tadpoles were strongly avoided by the frogs, tadpoles of other species (except of one) were not avoided (or were even preferred) for tadpole depositions, but were avoided for egg depositions. Current research is focused on the identification of the specific chemical cues produced by tadpoles that elicit responses in adults. Current experiments involve changing the cues chemically (for example using polar or non-polar passive filters) and seeing if this influences deposition decisions made by adults.