Towards thermal land evaluation for species distribution mapping; thermoregulation and use of microhabitat by *Timon lepidus* (Daudin, 1802)

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Habitat suitability of cold-blooded species can be expressed by the degree the thermal requirements of a species are satisfied by the thermal properties offered by the landscape. A conceptual framework for species suitability mapping based on this principle has been implemented in a Geographic Information System (GIS) and validated against field observations.

Field observations were collected at "Torcal de Antequera" (Malaga, Spain) where a sub-adult *Timon lepidus* (Daudin, 1802) was monitored during 2-4 October 2006. Lizard activity periods, air temperature, insolation, wind speed and relative humidity were recorded simultaneously at an interval of one minute. Surface temperature and lizard (skin) temperature were recorded using a thermal imager at up to 1 frame per 0.1s. Level measurements were taken to create a relief map of the area and used in conjunction with LAI measurements of the vegetation to simulate insolation at the surface. The surrounding area was mapped with a series of still-images stitched into one geo-referenced mosaic and ingested with the other observations into a GIS.

Lizard body temperature, and lizard activity periods were modelled using a Generalized Linear Model (GLM) and a Surface Energy Balance for Cold-blooded Organisms (SEBCO) to allow comparison against the field observations. GLM for surface and lizard temperature explains 95.72% and 93.01% of the variance respectively. SEBCO explains 89.4% of the variance. Sensitivity analysis show highest influence of surface temperature in the prediction for the GLM while solar radiation has the highest influence in the SEBCO. Future work will attempt up-scaling of the results to national and regional scale, and assess the predictive value of the framework in explaining distribution of amphibians and reptiles.