



Pollinator behaviour was similar in both types of manipulated flowers, as well as in control flowers. However, we found a significant relationship between bull's eye relative size and pollen grains deposited on stigmas. We found that bees, flies and hoverflies can perceive bull's eyes patterns of *A. palmata*, thus they could use those patterns as cues for foraging. Our study strongly suggests that UV-colour patterns, invisible to human eye, are important in attracting pollinators, thus, enhancing pollen transfer.

S1.S6.P.29

Phenotypic plasticity of the genus *Alytes* sp. under different moisture conditions at metamorphic stage

Eduardo José Rodríguez-Rodríguez¹; Juan Francisco Beltrán¹; Rafael Márquez²; Miguel Tejedo³

(1) Facultad de Biología, Universidad de Sevilla; (2) Museo Nacional de Ciencias Naturales, Madrid; (3) Estación Biológica de Doñana (CSIC) edurodrodbio@gmail.com

Environmental variables are fundamental in niche selection of species. As ectotherm organisms, amphibian physiology is particularly affected by temperature and humidity. In this work, we wanted to determine how environmental moisture is affecting the growth rate, and in consequence fitness, in recent metamorphosed individuals of the five current species of midwife toads (*Alytes* spp.). We evaluated the reactions norms of individuals (N= 30-40/ species) of *A. cisternasii*, *A. dickhilleni*, *A. maurus*, *A. muletensis* and *A. obstetricans*, as phenotypic response under two experimental moisture conditions: "dry" and "humid". The experiment was carried out during nine weeks, at the same room temperature (24^o C), and ad libitum feeding. Our results show marked differences among moisture conditions, being for four of the species significantly larger and heavier the individuals raised in "humid" conditions. Besides, there was a phylogenetic signal in this response, with the most external species, the Iberian midwife toad (*Alytes cisternasii*) growing similarly at both treatments, and thus, showing an apparent adaptation to drier conditions.

S1.S6.P.30

A study of colour patterns leading to mimicry in bumblebees

Federica Rossetto¹; Paola Laiolo¹; Joaquina Pato¹ (1)

Research Unit of Biodiversity (UO, CSIC, PA)

federica.rossetto@csic.es



Bumblebees represent one of the best examples of Müllerian mimicry, the convergence of colour patterns among species that serve as warning signal to predators. The aim of this study is to identify the colorimetric variables that best indicate similarities in different body parts of these insects. We examined hair colour patterns with spectroscopy analyses and evaluated measurement error (intra-individual variability), inter-individual and inter-specific variation in three cryptic species (*Bombus terrestris*, *B. magnus*, *B. lucorum*) collected in the Cantabrian Mountains (North Western Spain). We obtained 23 reflectance parameters in four different segmental sclerites (collar, scutellum, second abdominal tergite and tail) in 10 individuals per species (totalling 27600 measurements). Our results showed that these species co-occur in 40% - 57% of sampling plots, being significant the positive association between *B. lucorum* and *B. magnus*. The variables that showed lower measurement error were “Mean brightness”, “Intensity”, “Chroma” and “Contrast” in all segments. With respect to biological differences, a high inter-individual variation in tail and scutellum were found through all species, especially in *B. lucorum* scutellum in the more repeatable variables. Differences between species were often of similar magnitude or only a bit higher than differences within species, especially for the variables associated with brightness and hue. Our study identifies the colour parameters and body segments that best reflect colour biological variability and that may serve to quantify the amount of convergence among species in studies of Müllerian mimicry.

S1.S6.P.31 Alpine meadows: Are there unknown hybrids out there?

Alba Sotomayor Alge¹; Andreas Tribsch²; Juan Luis García Castaño¹; María de los Ángeles Ortiz Herrera¹

(1) Department of Botany, University of Seville; (2) Department of Biosciences, University of Salzburg albsotalg@alum.us.es

The genus *Gentiana* L. exhibits a remarkable diversification in mountain ecosystems, in which plants tend to diversify more due to the formation of vacant niches and altitudinal zonation, among other factors. *Gentiana* sect. *Calathianae* encompasses several closed-related taxa mainly distributed in Europe. Some of these species (*Gentiana verna* L., *Gentiana brachyphylla* Vill., *Gentiana orbicularis* Schur, *Gentiana bavarica* L.) coexist in sympatry in some areas of the Austrian Alps and bloom simultaneously. However, within