OR206

Are local adaptations possible in Polistes *wasps?*

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Colony founding stage in primitively eusocial wasps is characterized by complex and intertwined interactions among the wasps, their predators and intra and interspecific parasites. The result is a geographic mosaic of coevolution, where reproductive and social strategies are adapted to the presence of the parasite (Lorenzi & Thompson 2011). Most importantly, heavily parasitized populations can virtually lack the worker caste (Fucini et al. 2009), but the prevalence of both intra and interspecific parasites and the selection pressure they instigate varies widely among populations (Lorenzi & Thompson 2011). Adaptations for hosts to escape parasitism arise when local populations are spatially separated and lack important gene flow (Kaltz & Shykoff 1998). In this work, we studied whether local adaptations are possible in *Polistes biglumis* populations to escape parasitism from its social parasite *P. atrimandibularis*. We sampled both species from five well-separated mountain localities in the Alps (France, Italy, Switzerland). The prevalence of parasitism in sampled populations varied from zero to one fourth of the nests being parasitized and was roughly constant over years. We extended the study temporally by sampling same populations repeatedly between 2005 and 2013 and geographically by adding samples from southern Spain and central Italy. We evaluate the prerequisites of populations for local adaptations by assessing genetic variation and spatial structure in both host and parasite by using DNA microsatellites AFLP markers. From the genetic data, we explored how the parasite prevalence affects the level of genetic variation and demographic stability of host populations. Then we assessed how populations are connected by gene flow by using standard analysis and model-based Bayesian clustering.

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