

Alexandre Roulin – project summary

Most species live in spatially and temporally heterogeneous environments, and local adaptation allows organisms to better exploit them by maintaining intra-specific genetic and phenotypic variation. Color polymorphic species are ideal to study the selective pressures maintaining diversity, as well as the adaptive functions of the polymorphic trait. We investigate the mechanisms maintaining colour polymorphism in the common barn owl *Tyto alba* at different scales and under different environmental conditions. We study resource selection using GPS tracking data of breeding barn owls in Switzerland. This is also useful to examine the role of moonlight in hunting success in differently coloured barn owls. Furthermore, we are using accelerometers to measure the energetic cost of hunting and to determine the exact place where prey are captured. We intend to use light-sensitive sensors to record the impact of light pollution on hunting success in differently coloured birds.

With respect to genomic our goal is to identify genes implicated in the production of melanin-based traits. This will be useful to understand the genetic basis of the association between coloration and other phenotypic traits. We are also interested to understand the population history of barn owl at the worldwide scale using population genomics approaches.