AN INTEGRATED METHODOLOGICAL APPROACH REVEALS THE COEXISTENCE OF AFRICAN AND EUROPEAN BATS ON THE PELAGIAN ISLANDS

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Islands represent exceptional natural laboratories for investigating biogeographical patterns, particularly when located at the boundary between major bioregions. However, island bat communities remain poorly studied due to logistical constraints and related survey challenges. The Pelagian Islands (Lampedusa, Linosa and Lampione), lying at the interface between the African and European bioregions, offer a unique opportunity to investigate bat diversity, biogeographical affinities and conservation relevance at the southern margin of Europe, while updating limited and outdated information.

Between 2022 and 2025, we investigated bat communities on the Pelagian Islands using an integrated approach combining automatic acoustic monitoring, roost inspections, molecular species identification from guano, and captures. Acoustic data were analysed to assess diversity, activity patterns and the influence of habitat features on bat activity.

On Lampedusa, we documented at least eight bat species, including taxa with predominantly North African distributions and marginal occurrence in Europe, such as *Rhinolophus mehelyi*, *Plecotus gaisleri* and *Myotis* cf. *punicus*, substantially updating previous literature records. Moreover, we detected the Maghrebian bent-winged bat *Miniopterus maghrebensis*, representing the first record of this north western African species in Europe, confirmed by DNA barcoding. Bat activity and diversity were primarily associated with temporary ponds and remnants of natural scrubland linked to watershed areas. In contrast, Linosa exhibited markedly lower species richness, with only two species confirmed, likely reflecting its small size. Nevertheless, we captured several individuals of *Pipistrellus* cf. *deserti*, currently considered an African morphotype of *P. kuhlii*, representing its first detection in Europe and contributing to its molecular and morphological definition.

Overall, our findings highlight the Pelagian Islands as biogeographical reservoirs and potential crossroads for bat fauna, emphasising the importance of Mediterranean islands for bat conservation in Europe.