

Road structures and bat conservation

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Introduction

Roads are infrastructures that are increasingly present in our landscape, so there has been a growing effort in the **construction and adaptation of structures** like **underpasses, overpasses, agricultural, adapted for crossing fauna, culvert, bridges and viaducts**. Many of these structures, in addition to providing crossing points, can also represent **suitable roost for bats**.

Since 2014, **10 species of bats** have been identified in the A4 motorway structures.

Objective

The evaluation and identification of the suitability of different structures as a roost for different species of bats.

Methodology

In northern Portugal, the monitoring of ecological systems on the **A4 motorway** has been carried out since 2014, which has allowed the identification of the suitability of different structures as a roost for different species of bats. Monitoring took place in **viaducts and bridges (total=7)** and **underpasses of different types (n=59)**.



Fig 1. A4 motorway location (Google Earth) and underpasses of different types.

Results



Fig 2. *Myotis daubentonii* in a fissure in a culvert.



Fig 3. Breeding colony of the *Rhinolophus hipposideros* in a viaduct box girder.



Fig 4. *Myotis myotis* in a viaduct box girder.

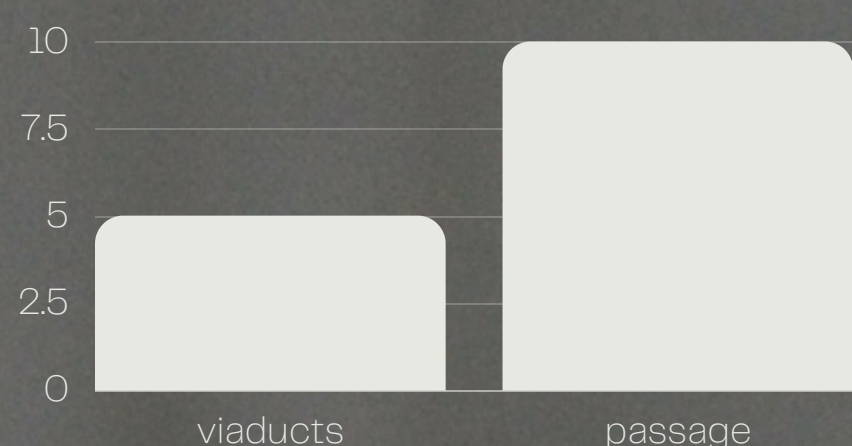


Fig 5. Number of species registered in viaducts and underpasses.

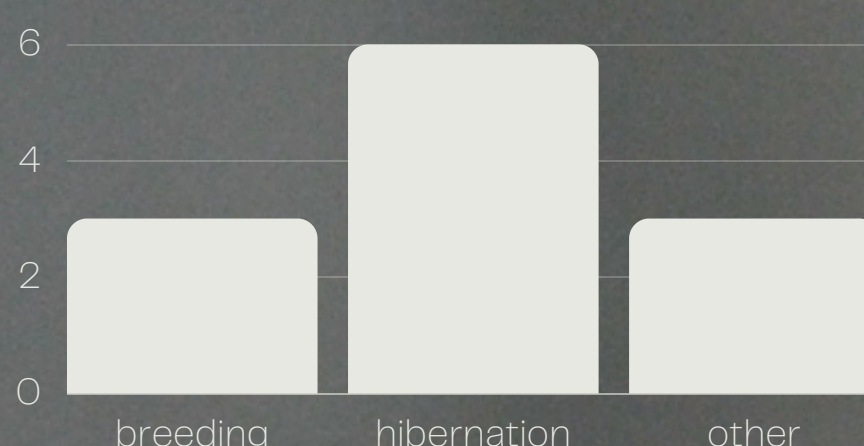


Fig 6. Number of species registered in breeding, hibernation and other period.



A breeding colony of *Rhinolophus hipposideros*



A breeding colony of *Plecotus austriacus*



A breeding colony of *Tadarida teniotis*

Bat species registered

Rhinolophus ferrumequinum (VU)
Rhinolophus hipposideros (VU)
Myotis myotis (VU)
Myotis daubentonii (LC)
Miniopterus schreibersii (VU)
Pipistrellus pipistrellus (LC)
Pipistrellus pygmaeus (LC)
Plecotus austriacus (LC)
Barbastella barbastellus (DD)
Tadarida teniotis (DD)

Conservation status according to the LVV Portugal, 2005.

Conclusion

Although these structures are used by bats, it is of **great interest** that they are built in such a way to maximize their use, in this sense, it is **necessary to avoid sealing the crevices with expansive foam**. But it is also **essential to determine which characteristics enhance its occupation** (size of passages and crevices, etc.), **to be considered in future projects**.