

A genetic approach for monitoring and conserving the Pyrenean desman (*Galemys pyrenaicus*)

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Context and objectives

In the Pyrenees and northwestern Iberian Peninsula lives a small, **endemic, semi-aquatic** mammal, **threatened** with extinction : the **Pyrenean desman** (*Galemys pyrenaicus*).

Its elusive behavior and population decline limit conventional monitoring, highlighting the need for complementary approaches such as genetic tools.

As part of a thesis work carried out on the **Réserve Nationale de Chasse et de Faune Sauvage d'Orlu**, located in the Ariège department of France, we applied molecular tools to:



Identify species based on faeces (mitochondrial barcoding)



Genotype individuals (11 microsatellites profiling)



Assess seasonal **dietary** patterns (NGS metabarcoding)

Study design

2

Captures + telemetry campaigns (Autumn 2023 & Spring 2024)

93

Samples collected

320

Meters of river stretch surveyed

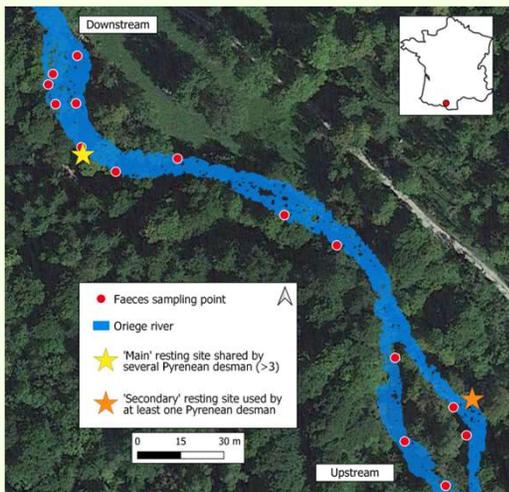


Fig. 1: Map of the sampling area (RNCFS d'Orlu, Ariège, France) and resting sites of genotyped individuals.

Key results

Species Identification

Pyrenean desman DNA was successfully detected in **85.7%** of faecal samples collected, confirming the reliability of field sampling (Fig.1).

Non-desman samples included *Neomys* sp. or were too degraded for identification.

Individual genotyping

5 distinct genotypes identified across both campaigns
Autumn 2023: **2** individuals (1 ♀, 1 NA);

Spring 2024: **3** individuals (2 ♂, 1 ♀).

Microsatellite genotyping revealed **low genetic variability** between individuals.

Several individuals occupied a **short-shared stretch of river**, deposited faeces in **common locations**, and, as confirmed by telemetry, used the **same resting site** (Fig. 1).

Diet analysis

Although a wide range of aquatic macroinvertebrate taxa were identified, **only a few occurred frequently**, suggesting **selective feeding** by the Pyrenean desman at a given time.

Seasonal variation in prey composition (Fig. 2) suggests flexible foraging behaviour in the Pyrenean desman, likely driven by macroinvertebrate phenology and habitat use dynamics.

Among the identified taxa, **23** were shared across seasons, while **12** were exclusive to Autumn and **13** to Spring.

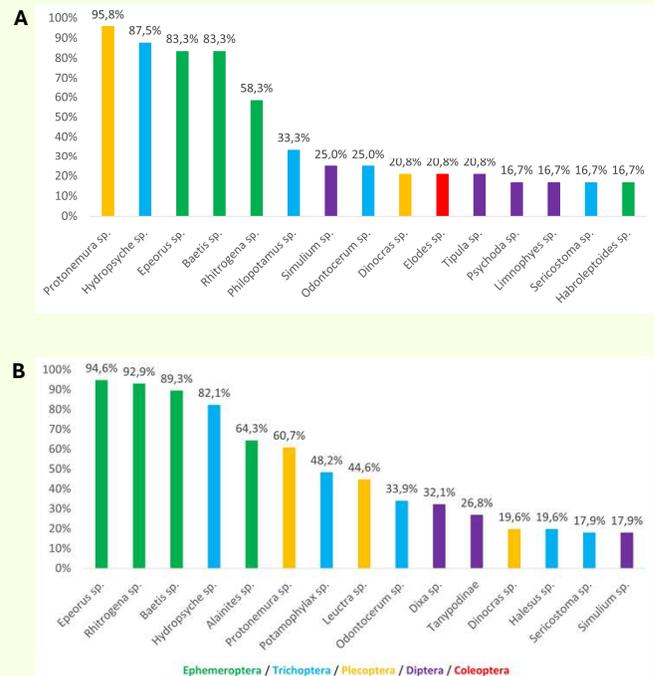


Fig. 2: Relative frequency of top 15 dietary taxa across both seasons. **A** : Autumn 2023 (n=24 faeces). **B** : Spring 2024 (n=56 faeces).

Conclusion and perspectives

Non-invasive genetic tools have proven effective and complementary to other monitoring techniques for detecting and monitoring *G. pyrenaicus*.

The integration of genetics into monitoring studies of the Pyrenean desman provides additional information on the **sharing of a territory** by multiple individuals as well as their **diet**.

Seasonal diet data, combined with ecological characteristics of prey and their availability, will improve knowledge of the Pyrenean desman's spatial use (study in progress).

Want to know more ?

Don't miss our **oral** presentation by Loan Arguel !



More **questions** ? Contact the first author :

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