DIET OF GALEMYS PYRENAICUS (GEOFFROY, 1811) IN THE NORTH OF THE IBERIAN PENINSULA

by

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ABSTRACT

In this study data about the trophic ecology of Galemys pyrenaicus in the north of the Iberian peninsula are reported, based on analysis of the digestive tracts of 46 specimens from the Quinto Real mountain range (Navarra). Diet composition, trophic niche width and seasonal variations are described. The total number of prey identified was 2,629. The diet almost completely consisted of aquatic prey. The greater number of prey corresponded to Ephemeroptera larvae (46.6%), Trichoptera larvae (23.1%), Diptera larvae (13.3%) and Plecoptera larvae (9.0%). Trichoptera larvae provided 56.8% of the biomass, Diptera larvae 17.9% and Ephemeroptera larvae 16.1%. Galemys pyrenaicus does not select its prey by size, however a positive selection towards Ephemeroptera and Trichoptera larvae and a negative one towards Amphipoda was found. The results obtained mean that Galemys pyrenaicus can be characterised as a stenophagous species in which energy input is obtained from not-very-mobile invertebrates with a large amount of biomass (Trichoptera larvae), and other small but numerous and accessible taxa (Ephemeroptera larvae).

KEY WORDS: diet, trophic ecology, Iberian peninsula, Galemys pyrenaicus.

INTRODUCTION

The Pyrenean Desman (Galemys pyrenaicus) (Insectivora, Talpidae) is a species found in mountain fluvial stretches, distributed throughout the Pyrenean environment (RICHARD, 1976, 1984; CASTIÉN & MENDIOLA, 1984) and through the highlands of the W, NW and centre of the Iberian peninsula (NIETHAMMER, 1970; NORES, 1986; SANTAMARINA & GUITIAN, 1988; QUEIROZ et al., 1992).

The trophic ecology of this species is scarcely known. Its diet has been studied in the Pyrenees (PUISSEGUR, 1935; NIETHAMMER, 1970; SAINT-GIRONS, 1973; RICHARD, 1984). SANTAMARINA and GUITIAN (1988) report detailed information on the contents of the digestive tract in eight specimens from the NW of the Iberian peninsula.

This study reports data on the quantitative composition of G. pyrenaicus feeding, thus characterising its trophic ecology. The relation between availability of resources and their exploitation by G. pyrenaicus is also studied.
STUDY AREA

The area studied is at the western end of the Pyrenees, in the Quinto Real mountains (in the north of the Iberian peninsula). The watercourses which drain this surface give rise to the Arga river (tributary of the Ebro). They are formed by 34 km of streamlets that, for most of their course, contain water throughout the year. The rock substrate is acidic. The area studied is between 660 m and 1458 m above sea level. Annual average precipitation is about 2138 mm with the highest levels in spring and autumn. Annual average temperature is 8.8°C. The highest average temperature is in August (16.6°C) and the lowest in January (2.9°C). The vegetation of the Quinto Real area may be attributed to the *Saxifrago hirsutae-Fagetum sylvaticae* association (BRAUN-BLANQUET, 1967) or to the regressive series linked to it.

MATERIAL AND METHODS

The fluvial macroinvertebrates were captured on a particular stretch of the river by a 1-foot-square cross-section Surber net (SOUTHWOOD, 1966). Eight samples were obtained every three months from different parts of the river. All the macroinvertebrates captured were measured and conserved in 60% alcohol for later use as a comparison collection. The volume of macroinvertebrates was calculated considering each animal as a revolution cylinder.

All animals were handled in compliance with the international policies of animal care and welfare. *Galemys pyrenaicus* is present in the 34 km of watercourses in the area studied, although ignorance of its density and the fact that it is a protected species nowadays argue against capturing more than two specimens per month. Captures per month (male/female) were: September 2/2, October 2/2, November 1/1, December 1/3, January 0/1, February 4/2, March 2/2, April 2/1, May 1/1, June 3/4, July 4/4, August 3/2, total 25/24. The analysis of the digestive tracts gave a result of 2629 prey items.

The digestive tract of each *G. pyrenaicus* was kept in 60% alcohol until it was analysed. Identification was done by direct analysis via binocular microscope. The minimum number of prey captured per tract was estimated on the basis of the series of remains identified in stomach and intestine. To express the importance of the different prey items, a matrix was made (table I). Rows represent different types of food and columns the distinct variables: appearance frequency in number (N) and percentage (%N), percentage of stomachs with a certain type of food (%P) and Simpson's dominance ratio \( D = \Sigma P_i^2 \) \((1 \leq i \leq z; z = \text{total number of digestive tracts})\). \( P_i \) is the probability of a food unit from stomach \( i \) to belong to a certain type of food. \( D' = D/z \times 100 \)