Sexual identification of *Galemys pyrenaicus*

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The absence of sexual dimorphism in Pyrenean desman *Galemys pyrenaicus* (E. Geoffroy, 1811) makes it difficult to sex live animals. This paper presents a method of sexing desmans observing their external genitals. Based in a sampling of 49 animals from the north of Spain, it was possible to identify the penis of males, independently of the age or season.

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The Pyrenean desman *Galemys pyrenaicus* (E. Geoffroy, 1811) is a small, semi-aquatic insectivore that does not exhibit sexual dimorphism in the body size (González-Esteban *et al.* 1999) or colouration (Richard 1986). The determination of sex in live animals is further hindered by the masculinisation of the external genitals in females. The female urinary papilla is long and narrow and its internal structure is similar to that of the penis in young males (Peyre 1955, 1962). Richard (1986) reported the possibility of distinguishing between the sex of adult animals during the reproductive season, as the open, pigmented vaginal orifice is easily visible in females at this time of the year. Some researchers (Palmeirim and Hoffman 1983, Juckwer 1990, Nores *et al.* 1998) have used the morphology of the pubic symphysis as a criterion to sex live desmans, according to the observations made by Peyre (1957) regarding the sexual dimorphism in the pelvic girdle. By palpating the abdomen it is possible to feel a hard arch joining the two ischio-pubic extremities of the pelvis in adult males, which is not found in adult females. This difference is not discernible in immature specimens as both males and females have a hard pelvic arch.

In order to assess the difficulty entailed in sexing live desmans, five trapping sessions were set in two streams located in the basin of the Bidasoa River (Navarra, northern Spain). These samplings were carried out in: February 1998, July 1998, March 1999, August 1999, and July 2000. Partially submerged wire-mesh eel-traps were used to capture desmans without harming them, following the method
described by Richard (1973). Age of the animals was estimated by observation of dental wear, based on the criterion developed by González-Esteban et al. (2002). This criterion is used to determine whether the animals are under 1 year of age, between 1 and 2 years of age or over 2 years old.

A total of 49 desmans were captured. We examined the anal-genital region of all the animals by (1) palpating the lower abdomen area to identify the pelvic arch, as described by Peyre (1957), and (2) applying light pressure to the urinary papilla, from both sides and downwards, in order to extrude the glans in males.

Thirty-one animals exhibited a hard pelvic arch. It was possible to expose the glans in 26 of them and the urinary papilla was identified as a penis. Seven were young specimens less than 1 year old and 19 were adults. This species has an elongated, cone-shaped, pink-coloured glans with smooth skin which, in adult males, is wider at the base (Fig. 1a, b). The remaining 5 animals, which did not exhibit a glans, were less than 1 year old and had a long, narrow urinary papilla (Fig. 1c), with an indentation in the distal part. These traits coincide with the

![Fig. 1. Lateral view of the external genitals of *Galemys pyrenaicus*: (a) young male (under 1 year of age), (b) adult male (over 2 years of age), (c) young female (under 1 year of age), (d) adult female (over 2 years of age). Abbreviations: ap – anal papilla, p – penis, up – urinary papilla. Scale bar: 1 mm. The prepuce was removed in males to expose the glans.](image-url)
description provided by Peyre (1962) of the urinary papilla in females. One of the specimens had an open vaginal orifice with no pigmentation.

The pelvic arch in 18 of the animals was not noticeable being identified as adult females (Fig. 1d). All these animals presented an urinary papilla morphologically similar to the young females above described. Furthermore, 15 of them had an open vaginal orifice with black pigmentation between the anal and urinary papillae. The remaining 3 specimens presented the vaginal orifice closed; however, their identification was easy due to the characteristic pigmentation and lack of fur.

Based on these observations, we may conclude that it is possible to distinguish between male and female desmans through the examination and exploration by palpation of the urinary papilla, regardless the age or the reproductive cycle. With a simple and harmless manipulation of the animal, the glands in males can be easily and unmistakable observed.

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References


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