

## Letter to editor

Comments regarding Marco *et al.*, 2015, 'The two sides of border disease in Pyrenean chamois (*Rupicapra pyrenaica*): silent persistence and population collapse'

Dear Editor

The recent paper of Marco *et al.* (2015) requires clarification regarding the origin of the Aragon data. Secondly, but no less important to us, rectification is needed regarding certain aspects of the *Rupicapra pyrenaica pyrenaica* subspecies, its management and its distribution.

**Pestivirus, Pyrenean chamois *Rupicapra pyrenaica pyrenaica* and Aragon.** Pestivirus has affected Pyrenean chamois *Rupicapra p. pyrenaica* in the eastern Pyrenees (Principality of Andorra, Ariège and Catalonia regions) since 2001–2002 (Alzieu *et al.*, 2004; Arnal *et al.*, 2004; Hurtado *et al.*, 2004; Frölich *et al.*, 2005). The disease agent is spreading to the western Pyrenees and was detected in Aragon in 2011, producing high mortalities (Arnal *et al.*, 2013b).

**Chamois pestivirus in Aragon.** We detected border disease in Benasque Game Reserve (Arnal *et al.*, 2013b), in the frame of a long term monitoring of the Pyrenean chamois in the Aragon region (Arnal *et al.*, 2013a). Although Marco *et al.*, mentioned these unpublished data, they did not cite the source of information from the Spanish region of Aragon, Game Reserves 8 and 9, Benasque and Los Circos (Fig. 1 of Marco *et al.*, 2015), which was from our abstract in the II International *Rupicapra* Symposium (Arnal *et al.*, 2013b).

**Additional information about the Pyrenean chamois, *R. p. pyrenaica*.** The subspecies affected is Pyrenean chamois *R. p. pyrenaica*, which is a commonly used name in English following the Caprinae Action Plan (Shackleton 1997). Following the same Action Plan, *R. pyrenaica* is considered the Southern chamois, with three subspecies: Pyrenean chamois *R. p. pyrenaica*, Cantabrian chamois *Rupicapra pyrenaica parva* and Apennine chamois *Rupicapra pyrenaica ornata*.

Pyrenean chamois are not only found along the border between France and Spain. They also occupy areas far away from the border, including isolated massifs (Herrero *et al.*, 2013).

When considering the entire mountain range, Pyrenean chamois subspecies are managed mostly by local hunters, especially on the French side of the mountain chain, rather than mostly in game reserves and national parks. Such game reserves belong exclusively to Spain and Andorra (Pita *et al.*, 2012; Solà and

Riba, 2013). There are no game reserves as such in France, where most chamois populations are hunted and the majority of them are managed by local hunter societies. In Herrero *et al.* (2013), there is an update of the numbers and distribution of the subspecies in the whole Pyrenees.

There are important ecological barriers along the Pyrenees, and some massifs are not connected with the main mountain chain, which limits animal dispersal rather than annual seasonal migrations.

Figure 1 of Marco *et al.* (2015) showed only two Protected Areas: (1) Orlu Wildlife Reserve and (2) Aigües Tortes and Lake of Sant Maurici National Park. The former has the number 7, which was a mistake. The rest of the areas are game reserves, not protected areas.

We hope these clarifications will help the readers to better understand authorship and certain aspects of Pyrenean chamois biology and management.

Sincerely

M. C. Arnal *et al.*

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