

## First record of free-ranging fallow deer (*Dama dama*) in Mallorca (Balearic Islands, Spain)

Primera cita de gamo (*Dama dama*) en Mallorca (Islas Baleares, España)

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Mediterranean islands have witnessed dramatic changes in the composition of their mammal communities, with humans being directly responsible for these changes (Vigne & Alcover 1985, Dobson 1998, Vigne *et al.* 2014). Since Neolithic times, people have directly or indirectly caused the eradication of some native species and the introduction of other alien ones (Vigne & Alcover 1985, Groves & Di Castri 1991, Vigne *et al.* 2014). This is particularly important in the Balearic Islands, where their terrestrial species of mammals were all introduced at different points in the archipelago's history (Alcover 2010).

Only two species of the Family Cervidae have been reported in the Balearic Islands: the red deer *Cervus elaphus* Linnaeus, 1758, and the fallow deer *Dama dama* (Linnaeus, 1758), (Alcover 1979, 2010). *D. dama* is known to have had stable populations in the past, although recent observations of this species suggest new introduction events. Here, we provide new updated information on the documented occurrence of fallow deer in recent decades.

*Dama dama* was introduced to Mallorca between the end of the Talayotic period (1500-123 BC) and the early Roman era (Davis & MacKinnon 2009). The species was present on the island through to the Byzantine period when it died out (Valenzuela *et al.* 2016), although it reappeared in the 17<sup>th</sup> century. In fact, during this century, a licence was

required to hunt fallow deer (Bover & Rosselló 2016), indicating that *D. dama* was common and could be hunted. From then on, it is not documented in any records until 1997, when a small herd was observed in Pollença which probably escaped from captivity (Mayol *et al.* 2007). Since 2002, the species has been recorded as being seen up to 8 different times in various sites on the island (Table 1, Fig. 1). In particular, during last decade there were two observations of one and three individuals in Son Tries (Esporles), the same area where a small herd was documented in 2002 by Mayol *et al.* (2007). Five years later, four different individuals were observed in three places on the island. Furthermore, in 2017 a dead individual was found in the municipality of Inca, a young pair was observed in Selva, and a third individual caused a traffic accident between Lluçmajor and Porreres (Table 1, Fig. 2).

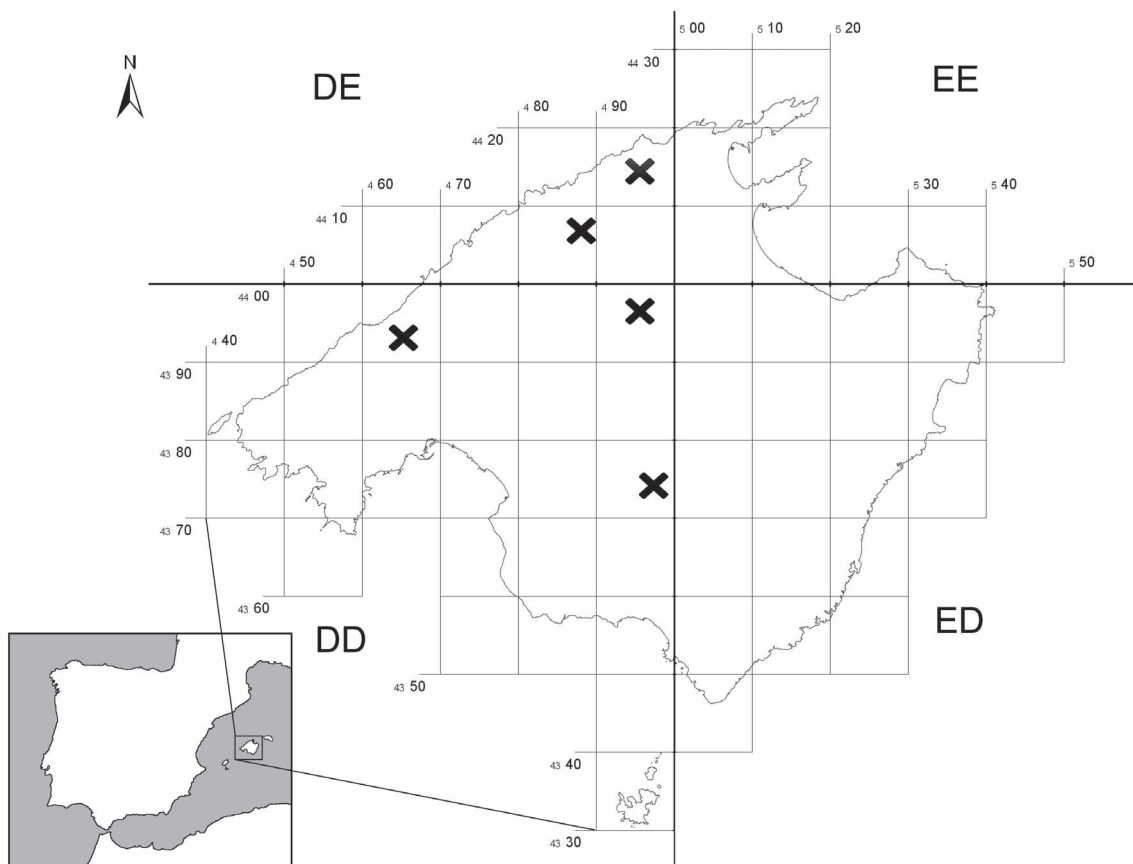
All these observations of fallow deer over the last two decades suggest new introduction events to the island of Mallorca. In fact, the distribution of the observations on the island points to both multiple and isolated introduction events. The most likely cause of their introduction is trading in animals from mainland Spain, even though no hunting activities for this species have been recently documented. To date, there is no information about the size of the population, and the trend in it is unpredictable with such scanty data. Historically, *D. dama* has inhabited the

islands and lived alongside the local flora and fauna for centuries (Alcover 2010). The current occurrence of *D. dama* would cause problems in terms of human safety, local biodiversity and the dynamics of the islands' ecosystems if the size of the population were to reach too high a

level. To prevent these possible future impacts, the Government of the Balearic Islands is trying to stop the population from breeding by hunting all observed individuals. Despite these steps, there are no controls on the trade and introduction of fallow deer or similar species to

**Table 1.** Recent records of the fallow deer *Dama dama* at the island of Mallorca

Date	Locality	Information	UTM	Observer
1997	Pollença	Small herd	31SDE91	Mayol <i>et al.</i> 2007
2002	Esporles	Small herd	31SDD69	Mayol <i>et al.</i> 2007
11/2005	Pollença	a solitary female	31SDE91	Mayol <i>et al.</i> 2007
07/2006	Pollença	a solitary female	31SDE91	Mayol <i>et al.</i> 2007
16/03/2012	Esporles	1 male observed	31SDD69	Maribel Jiménez (Forum GOB)
28/10/2012	Esporles	3 ind. observed	31SDD69	Guillem Mir (Forum GOB)
23/05/2017	Inca	Dead individual	31SDD99	Pep Corcoles (Diario de Mallorca)
29/07/2017	Selva	Young couple	31SDE80	Samuel Pinya
09/10/2017	Llucmajor-Porreres	Car crash	31SDD97	Policia Local Llucmajor



**Figure 1.** Distribution map of the localities where the fallow deer was observed from 1997 to 2017. See table 1 for more details.



**Figure 2.** A young male fallow deer observed in Selva on the 2017 July 29<sup>th</sup>.

the island, so it is likely that more observations will be documented in the future. Major attention should be paid by the environmental authorities to preventing the introduction of alien species to the islands' ecosystems.

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