

Pre-service teachers' opinions about the reintroduction of the wild goat, brown bear and Iberian lynx in Portugal

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General introduction

Humans have been responsible for the extinction of several species, at least, since 50 000 years ago. This negative action on biodiversity increased with the industrial revolution in the XVIII century and since then many anthropic activities have mutilated the ecosystems, especially in their dimension and fragmentation, and also in the changes of species present.

Mammals with weight higher than 45 kilos (99 pounds), or even smaller, were the first to be extinct, because they are in any way more sensitive to human action. To oppose to this reality, ecosystems restoration and species reintroductions were improved in several world regions in the last decades, not without some controversial issues.

The aims of the present study

► This study aimed to inquire about the opinion of pre-service teachers concerning future reintroductions of three of the most emblematic Iberian mammals: the wild goat (*Capra pyrenaica*), the brown bear (*Ursus arctus*) and the Iberian lynx (*Lynx pardinus*).

► The sample (n=101) was divided in two groups: Basic school (n1=71) versus Higher school future teachers (n2=30), based on weak versus strong preparation in Ecology in their curriculum.

► For that purpose, a questionnaire was applied to inquire if they agree or not with the reintroductions referred to and to know the reasons of their opinion.

► A chi-squared test was used to test the homogeneity between groups.

► It is important to refer that the Portuguese curriculum for the different cycles of schooling approaches the subject of animal extinction, but it doesn't include the issue of reintroductions, making its discussion dependent on the sensibility and knowledge of the teachers.



Wild goat



Brown bear

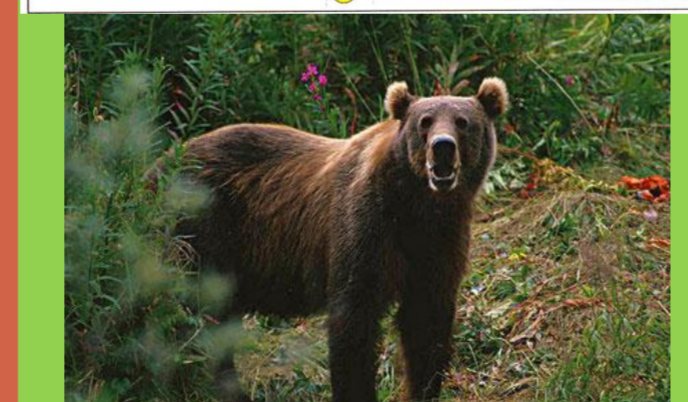
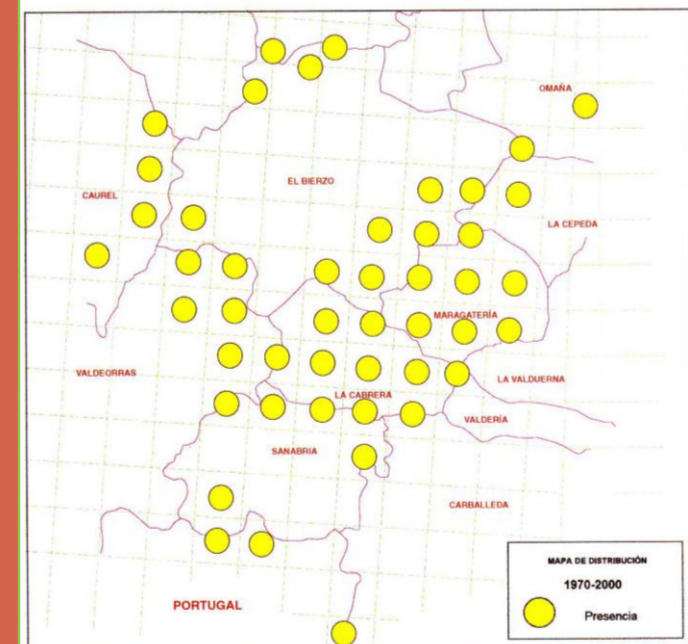


Iberian lynx

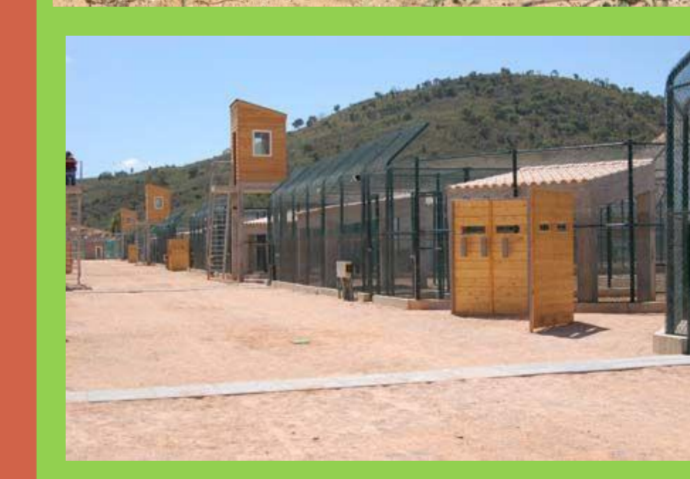
Before results... Some information about the situation of the wild goat, the brown bear and the lynx in Portugal.



The Portuguese wild goat subspecies (*Capra pyrenaica lusitanica*) became extinct near the end of the XIX century. However, a successful reintroduction of 18 individuals of another subspecies in Galicia in 1992 allowed an increasing population in the Gerês Mountains (north of Portugal and in continuity with Xurés mountains in Galicia), estimated now in 400 individuals (Gama, 2008). However, consanguinity is a threat to its survival and new reintroductions are therefore considered important.



The brown bear became extinct in the XVII century (Baeta Neves, 1967), perhaps with some incursions in the Portuguese territory till the beginning of the XX century (Álvares and Domingues, 2010). Recently, its presence was detected in Sanabria, a region of the province of Zamora, Spain, near the northern Portuguese border due to the protection measures implemented in Spain. So, at least, the incursions in Portugal of some of these animals in the near future can be an expectable situation.



The Iberian lynx is in a great danger, present in three small nuclei, two in central regions continuous with Spain and the third isolated in the remote southern mountains, totaling 50 individuals (Castro & Palma, 1996). Authors like Albeniz (2006) consider it as already extinct in Portugal (see the map proposed by him about the distribution of the lynx in the Iberian Peninsula). The National Center for Reproduction of the Iberian Lynx (CNRLI) inaugurated in 2009 in Silves, Algarve, brought some hope to the possibility of survival of this species. It aims to breed animals in captivity in order to reintroduce the species in the wild.

The main results – the opinion of pre-service teachers

► The majority of the future teachers of the two groups (1st group-Basic school future teachers, 2nd group-Higher school future teachers) agreed with the reintroduction of the wild goat and the lynx.

► Higher school future teachers were in majority against the brown bear introduction and the differences from the first group were statistically significant (p. < .01).

► The frequencies and percentages obtained in the two groups are presented in the following table:

	Reintroductions								
	Wild goat			Brown bear			Lynx		
	yes	no	No opinion	yes	no	No opinion	yes	no	No opinion
1 st group	53(75%)	18(25%)	-	46(64,7%)	24(33,9%)	1(1,4%)	59 (84%)	12 (16%)	-
2 nd group	17(57%)	13 (43%)	-	11 (37%)	19 (63%)	-	22(73,3%)	7(24,4%)	1 (3,3%)

► The results showed that future teachers of the 1st group, with less ecological preparation, were more favorable to the reintroductions.

► Curiously, in both groups, ecological reasons were given in a higher number to defend positions against or to support the reintroductions. Even in the case of the brown bear, only one student of each group mentioned the danger of this species for humans.

Implications

These results suggest the inclusion of more concrete situations in the Ecology syllabuses, including the discussion of the ecological viability of some animal reintroductions.

This aspect was confirmed after analyzing the themes present in the science syllabuses, including Ecology, of the courses where the higher education of the pre-service teachers occurred.

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