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Abstract: The situation of Iberian lynx in Spain has been reviewed and updated, as a result of the continuous monitoring carried out for the two reproductive populations found in 2002, as well as in the rest of the areas where the specie has historically been present.



# MONITORING AND STATUS OF THE IBERIAN LYNX (*LYNX PARDINUS*) IN SPAIN. 2002-2004

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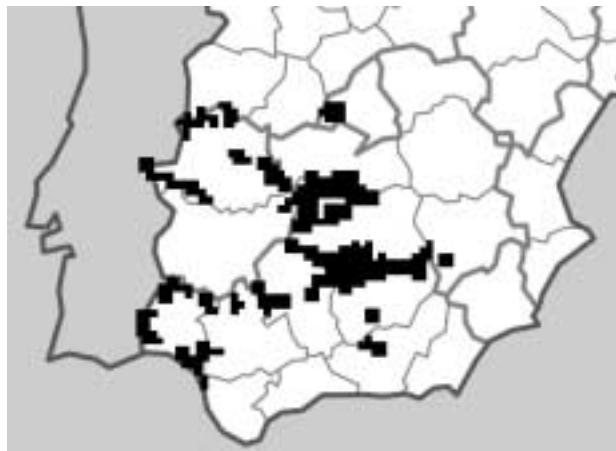
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The situation of Iberian lynx in Spain has been reviewed and updated, as a result of the continuous monitoring carried out for the two reproductive populations found in 2002, as well as in the rest of the areas where the specie has historically been present.

## BACKGROUND

The initial reference is the estimated population of the Iberian lynx National Census conducted by Rodríguez and Delibes in 1988. In that study they estimated a population of 1000-1200 lynx and about 350 reproductive females.

Later, in the 90s, partial studies were carried out in the Regions where a lynx presence had been observed during the 80s: Andalusia, Castilla-La Mancha, Castilla y León, Extremadura and Madrid. Altogether, these studies estimated the existence of a lynx population of between 450 and 700 individuals. A clear regressive trend was observed in the whole distribution area.



**Figure 1** Estimated area of Iberian lynx *Lynx pardinus* presence in the 80s (modified from Rodríguez and Delibes, 1988)

### Census-diagnosis 2000-2002

The following approval of the Iberian lynx Conservation Strategy in February 1999 and with the endorsement of the Lynx Work Group of the National Committee of Nature Conservation, a new national study was carried out to update the lynx distribution, population estimated and issues. This job was undertaken in coordination with all Regional Governments and the neighbouring state of Portugal, using as a reference the lynx distribution defined in the 80s upon which a 10x10 km UTM square grid for field sampling was designed.

Unlike other jobs carried out, this study employed two novel and more objective techniques to detect lynx:

- 1 Camera traps, using natural lynx urine as a lure
- 2 Genetic analysis of scats.

The general results for the various lynx cores defined in 1988 were as follows:

#### Population estimates

With these data, it was estimated that the size of the Iberian lynx population in the year 2002 was of about 160 individuals over a year old, divided into only two reproductive populations. A summary of data and results of the estimates is shown in Table 2.

N Grids	Positive	
	With reproduction	
	Scats	
	Minimum no. of lynx	
	Accumulated no. of lynx	
Estimates	Capture-recapture	
	Final estimate	
Surface (hectares)		
Territory estimate (resident females)		

**Table 2** Summary of results obtained for Iberian lynx populations detected. The number of positive squares is shown (U.T.M. 10 x 10 km squares), squares with verified reproduction, results of various population estimates, surface currently occupied and estimated number of territories with reproductive adult females for each nucleus.

POPULATIONS	ESTIMATE 1988	ESTIMATE 2002
Eastern Sierra Morena	518	60-110
Doñana	49	24-33
Montes de Toledo	148	¿?
Huelva	53	Not detected
Sierra Morena of Seville	17	Not detected
Sierra Morena of Córdoba	60	Not detected
Guadiana-Piñón	65	Not detected
Southeast of Badajoz	51	Not detected
Sierra de San Pedro-Cedillo	46	Not detected
Villuercas-Monfragüe	8	Not detected
Western Central Mountains	90	Not detected
Madrid and Valle del Tiétar	31	Not detected

**Table 1** Summary of results obtained for each Iberian lynx population defined by Rodríguez and Delibes (1988). Estimates are shown of the population for each area in 1988, and resulting estimates in the last nationwide study conducted.

ANDÚJAR-CARDEÑA	DOÑANA	MONTE DE TOLEDO
5	16	1
5	4	-
110	33	-
60	24	-
104	28	-
68	26	-
<b>60-110</b>	<b>24-33</b>	-
15.000	35.000	-
<b>18-23</b>	<b>8</b>	-



**Figure 2** Verified distribution area of Iberian lynx *Lynx pardinus* in the year 2002 (Guzmán et al. 2002).



**Figure 3** Squares with verified reproduction of Iberian lynx in the period 2000-2002 (Guzmán et al. 2002).

### Monitoring 2002-2004

Once the above mentioned figures were announced at the previous International Seminar on the Iberian lynx held in Andújar (Jaén) in October 2002, a continuous monitoring of the two reproductive populations located in 2002 (Andújar-Cardena and Doñana) has been

conducted, and simultaneously in the rest of the areas where the species has been historically present. This work was undertaken jointly and in coordination with the various monitoring teams of the different Regional Governments, NGOs and the Environmental Ministry.

With the information obtained from these monitoring studies we

were able to conduct a review of the distribution and population estimates of the Iberian lynx for 2004 with more accurate data than those of the year 2002.

Thus, the most relevant developments to be highlighted are:

- a) The existence of only two reproductive cores is confirmed (the same detected in 2002), in which the population estimated have been reduced.
- b) Very precise information on reproduction is available: number of territories, number of reproductive females and productivity, parameters for annual monitoring.
- c) In the rest of the sample areas there are no data indicating that stable populations exists, nor even single individuals. We have only gathered the following isolated evidence of presence, still pending confirmation:
  - 1 A scat collected by the forest guards in the Candelario mountains (Salamanca), analysed by the E.B.D. with a positive result (1 of 200 samples analysed from the same zone).
  - 2 Several scats collected in 2003 in an estate of the Alcaraz mountains (Albacete), analysed by the M.N.C.N. also with positive results.

Subsequently, further sampling of these same sites has rendered no more positive data despite the constant efforts carried out, which suggests isolated and/or erratic individuals.

Finally, the lack of verified mortality figures outside the two reproductive populations above mentioned (Andújar-Cardeña and Doñana) supports the idea that there are no other populations beyond these two.

### Summary of current situation

With the figures obtained in the period 2002-2004, we have carried out a review of the estimates for 2002, taking into account the greater knowledge of the situation of the two population cores detected, as well as the elimination processes of individuals thanks to the increased accuracy of the camera traps, which has reduced the total number of individuals.

For the rest of the zones with historical presence, the population pool (safety margin) provided in 2002 has been reduced, since no population has been detected in these areas.

If in the year 2002 we considered the existence of a population of about 160 lynx, with current data and the higher level of knowledge on the species currently available regarding its distribution and status, it is estimated that for 2004 the lynx population is less than 100 individuals (excepting cubs of the year): about 60-70 adult lynx currently remain in Andújar-Cardeña and about 20-25 adult individuals in Doñana.

Finally, the breeding territories and the number of females reproducing annually have been most accurately defined, as well as the number of cubs bred successfully by the females every year.

For the Andújar-Cardeña (Jaén) nucleus the number of reproduction territories ranges around 20-22, while in the case of Doñana (Huelva-Sevilla) there are about 6-8 reproductive territories, although the number of females that breed annually varies considerably, as can be seen below (table 3).

YEAR	Nº REPRODUCTIVE FEMALES	Nº CUBS
2002	21-22	36-42
2003	11-12	18-21
2004	17-21	31-39

**Table 3** Evolution of the most probable number of territories with verified reproduction in the two populations (Andújar-Cardeña and Doñana) in the last 3 years. The column on the right shows the probable number of cubs bred successfully (until they became independent from their mother).