

# MONTHLY BIRTH DISTRIBUTION OF THE WILD BOAR (*Sus scrofa* L.) IN CENTRAL PORTUGAL

C. FONSECA<sup>1</sup>, J. SOUSA<sup>1</sup>, J. VINGADA<sup>2</sup>, J. CANCELA<sup>3</sup> Y A. M. V. M. SOARES<sup>1</sup>

1. Depto. Biología, Univ. Aveiro, Campus Universitário de Santiago,  
P-3810-193 Aveiro, Portugal. (cfonseca@bio.ua.pt)

2. Depto. de Biología, Univ. Minho, Campus Universitário, P-4710 Braga, Portugal

3. Direcção Regional de Agricultura da Beira Litoral, Av. Fernão de Magalhães, 465,  
P-3000-177 Coimbra, Portugal

## ABSTRACT

The knowledge of the reproductive events in game animal populations contributes to a more efficient species management. Problems regarding the overlapping of hunting and breeding season on wild boar (*Sus scrofa* L.) are very common in almost all European countries. In Portugal, despite the wild boar's demographical increase, the information about the characteristics of its reproduction and other ecological aspects is very scarce or absent. The wild boar population from central Portugal was monitored during the last four hunting seasons (1995/96, 1996/97, 1997/98, 1998/99). Several reproductive parameters were studied. Frequency of pregnancy was greater in older classes and the average litter size of harvested pregnant females was low ( $4,14 \pm 1,15$ ) in relation with other populations from northern Europe. The influence of litter size on the age of females and its geographical variability are discussed. One reproduction period is observed with the peak of births in March. According to the obtained reproductive season, several considerations about wild boar population hunting and management in the centre of Portugal are presented.

Key words: Central Portugal, game management, Reproduction, wild boar.

## RESUMEN

### *Distribución de los meses de nacimiento del jabalí (Sus scrofa L.) en el centro de Portugal*

El conocimiento de los eventos reproductivos en las especies cinegéticas contribuye a una gestión más eficiente de las mismas. Los problemas relacionados con el solapamiento del periodo de caza y del reproductor en el jabalí (*Sus scrofa* L.) son frecuentes en la mayoría de los países europeos. En Portugal, pese al incremento demográfico del jabalí, la información existente sobre la reproducción y otros aspectos ecológicos es muy escasa o incluso ausente. Las poblaciones de jabalí del centro de Portugal fueron censadas durante las cuatro últimas estaciones de caza (1995/96, 1996/97, 1997/98, 1998/99) y se analizaron diversos parámetros reproductivos. El porcentaje de hembras gestantes fue mayor en las clases de edad más viejas y el número de embriones en las hembras cazadas fue bajo ( $4,14 \pm 1,15$ ) en comparación con el de otras poblaciones situadas más al norte de Europa. Se discute la influencia de la edad de la hembra sobre el tamaño de la camada, así como la variabilidad geográfica. Se detecta un periodo de reproducción con un máximo de nacimientos en marzo. A partir de los datos obtenidos sobre la reproducción de la especie se efectúan algunas consideraciones sobre la caza y gestión de las poblaciones salvajes de jabalí en el centro de Portugal.

Palabras clave: gestión cinegética, jabalí, Portugal Central, reproducción.

## INTRODUCTION

Problems regarding the overlapping of hunting and breeding season on wild boar (*Sus scrofa* L.) are very common in almost all European countries. In Portugal,

despite the wild boar demographical increase (Fonseca, 1999), the information about the characteristics of its reproduction is very scarce or absent.

The wild boar population from central Portugal was monitored during the last four hunting seasons (Oct.1995/Feb.96 - Oct.1998/Feb.99) and 149 females were analysed. The following reproductive parameters were studied: percentage of pregnant females, timing of puberty, birth dates and average litter size.

Therefore, the knowledge of the wild boar's reproductive potentialities may be used in a more efficient and sustainable game management.

#### MATERIAL AND METHODS

All harvested animals were aged by tooth eruption patterns and wear according to Matschke (1967) and ONC (1995). Three age classes were considered: Piglets (up to 12 months), Yearlings (between 12 and 24 months) and Adults (above 24 months). The following female biological parameters were collected: age, weight, reproductive status, number of embryos or placental scars and ovaries activity.

The minimum weight at which the first reproduction occurs in females was determined.

Birth dates have been deduced from the age of the embryos or fetuses determined using the Henry (1968) and Vericad (1983) formulas. The gestation period was taken to be 120 days (Mauget 1982, Sáez-Royuela y Telleria 1987, Vericad 1983).

#### RESULTS AND DISCUSSION

##### *Breeding status*

86 (57,7%) of the 149 female pigs studied were pregnant or showed placental scars indicating that more than half were involved in breeding.

Figure 1 shows the proportion of breeding females in the considered age classes. No piglet females were pregnant. However, six young wild boar females (about 40% of the examined piglet females), weighting in average more than 34,5 Kg (dressed weight) presented ovarian activity.

As described by the following authors, Aumaitre *et al* (1982) (20 Kg), Rosell (1998) (30kg), Mauget & Pepin (1991) (30–35kg), a minimum body weight must be reached before puberty appearance. In sampled animals, this weight seems to be around 35 Kg, although the availability of food resources in conjunction with natural photoperiodism might affect directly the occurrence of the first reproduction.

64,6% and 83,0% of yearling and adult females, respectively, were pregnant, revealing that a large number of mature females are pregnant during the most important period of the wild boar's hunting season (October-February).



Figure 1. Percentages of Breeding (pregnant females or females with recent placental scars) and Not pregnant wild boar's females

*Porcentajes de hembras reproductoras (hembras gestantes y hembras con máculas uterinas recientes) y hembras no gestantes de jabalíes*

### Females reproduction phenology

The results obtained for the central Portuguese population of wild boar seem to show the occurrence of a marked birth period that extends from January to May (Figure 2).

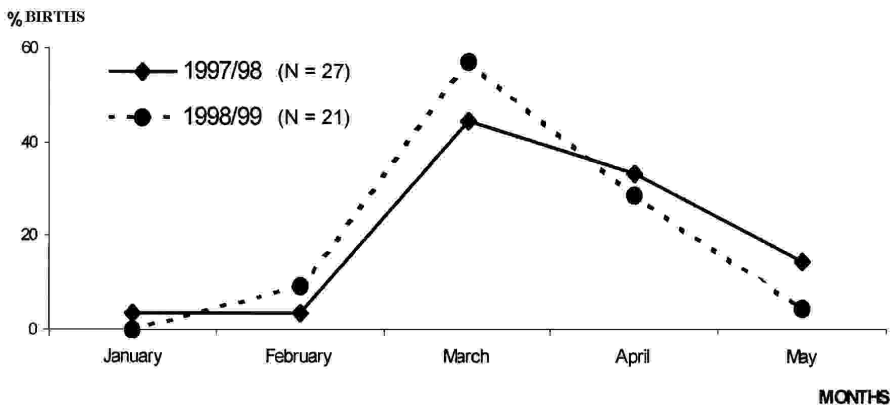


Figure 2. Monthly birth distribution from the embryos obtained during the hunting season

*Distribución de los meses de nacimiento de los embriones obtenidos durante el periodo de caza*

Very similar data were obtained in the two seasons of study. The peak parturition month was March with 45% of births in 1997/98 and 57% in 1998/99. Based on present data, one can assume that the mating season starts in September (Autumn) and the births take place in the Spring.

The main wild boar hunting pressure in central Portugal occurs during the mating season of this species, creating several management problems and ethical questions. For instance, between 1997-1999, the big number of pregnant females killed during January and February in a central Portuguese mountainous region contributed to the reduction of wild boar local population until the present time.

The pronounced seasonality of the wild boar's sexual activity presented in this study can help in future decisions about wild boar management in the centre of Portugal.

#### *Litter size*

The number of foetuses per wild boar varied from 2 to 6 (4 most frequently) among the 73 pregnant females (Figure 3). The obtained results follow a normalized distribution ( Anderson-Darling test,  $p=0,667$ ) with an average of  $4,14 (\pm 1,15 \text{ SD})$  piglets per female.

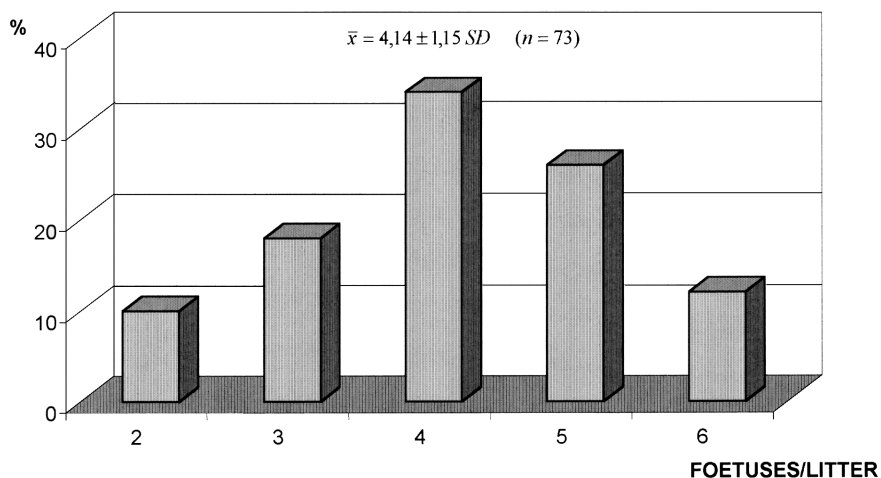


Figure 3. Distribution of the litter size  
*Distribución del tamaño de camada*

The litters' average is smaller in yearling females ( $3,65 \pm 1,10 \text{ SD}$ ) than adult females (>2 years old) ( $4,56 \pm 1,02 \text{ SD}$ ). The reproductive capacity of central

Portuguese wild boars appears to fall within the range of Iberian Peninsula populations, such as 4,30 in Northern Spain (Sáez-Royuela & Telleria, 1987), 4,10 in Southeast Spain (Abaigar, 1992), 3,60 and 4,06 in two regions of Catalonia (Rosell, 1998). The litter size values obtained in Iberian wild boar populations are smaller when compared with other European countries boar's populations. In fact it can be observed a gradient of reproductive potential across European countries.

#### CONCLUSIONS

The following general conclusions may be defined from the obtained data:

More than half of females harvested between October and February were involved in breeding;

For females captured in the wild, puberty was attained at approximately 35 Kg dressed body weight;

One reproduction period was observed, with the peak of births in March, from the analysis of the material obtained during the hunting season (October to February) although another birth period may occur (ONC, 1995). However we couldn't access to wild boar's reproductive samples from other months of the year.

Average number of foetuses is 4,14. The number of foetuses per litter increases with the female age;

The Iberian wild boar population's litter size is smaller when compared to other European populations.

#### ACKNOWLEDGMENTS

The present work was supported by the FCT (Science and Technology Foundation) by a PhD grant to Carlos Fonseca (PRAXIS XXI –BD–13 348/97).

#### REFERENCES

- ABAIGAR, T. (1992). Paramètres de la reproduction chez le sanglier (*Sus scrofa*) dans le sud-est de la Péninsule Ibérique. *Mammalia*, 56 (2): 245-250.
- AUMAITRE, A., C. MORVAN, J. P. QUERE, J. PEINIAU Y G. VALLET (1982). Productivité potentielle et reproduction hivernale chez la laie (*Sus scrofa scrofa*) en milieu sauvage. *Journées Recherche Porcine en France*, 14: 109-124.
- FONSECA, C. M. M. S. (1999). *Ecologia de Javali (Sus scrofa, Linnaeus, 1758) no Centro de Portugal*. Tese de dissertação de Mestrado. Departamento de Zoologia da Universidade de Coimbra, Coimbra. 68 pp.
- HENRY, V. G. (1968). Foetal development in European wild hogs. *J. Wildlife Manage.*, 32 (4): 966-971.
- MATSCHKE, G. H. (1967). Aging European wild hogs by dentition. *J. Wildlife Manage.*, 31: 109-113.
- MAUGET, R. (1982). Seasonality of reproduction in the wild boar. Pp. 509-526. En: D. J. A. Cole y G. R. Foxcroft (eds). *Control of pig reproduction*. London Butter. London.
- MAUGET, R. Y D. PEPIN (1991). Energy intake, growth and timing of puberty in the European Wild boar *Sus scrofa* L. Pp. 205-209. En: B. Bobek, K, Perzanowski y W. Regelion (eds).

- Global trends in wildlife management*. Trans. 18<sup>th</sup> IUGB Congress, Krakow.
- ONC (1995). *Le sanglier*. Brochures techniques, 14. 36pp.
- ROSELL, C. (1998). *Biología i Ecologia del Senglar (Sus scrofa, L., 1978) a dues Poblacions del Nordest Ibèric. Aplicació a la Gestió*. Tesis Doctoral. Departament de Biología Animal, Facultat de Biologia, Universitat de Barcelona. Barcelona. 269 pp.
- SÁEZ-ROYUELA, C. Y J. L. TELLERIA (1987). Reproductive trends of the wild boar (*Sus scrofa*) in Spain. *Folia Zool.*, 36 (1): 21 - 25.
- VERICAD, R. (1983). Estimación de la edad fetal y períodos de concepción y parto del jabalí (*Sus scrofa*) en los Pirineos occidentales. En: *Actas del XV Congreso Int. Fauna Cinegética y silvestre*. Trujillo, 1981: 811 - 820.