

A pack of wolves tending for 12 pups in Montesinho Natural Park, NE Portugal

Una manada de lobos cuida de 12 cachorros en el Parque Natural de Montesinho, NE de Portugal

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On the 30th of August 2022, one of us (PC) watched and caught on video 9 wolf (*Canis lupus* Linnaeus, 1758) pups in a remote area of Montesinho Natural Park (NE Portugal). In the subsequent days, until the 23rd of September, further efforts were made to obtain observations (using binoculars and telescopes, during daylight) and short videos documenting this pack (wolves were never noticeably aware of our presence). Most of the observation time was a by-product of surveys of red deer (*Cervus elaphus* Linnaeus, 1758) related to hunting management. A total of ca 50 hours of attempted observation was carried out.

One of the videos obtained shows the presence of at least 12 pups in the pack, and two independent tallies on different dates, by 2 different observers, reached 12 pups on careful counts. Given the distance and the cover by trees and bushes, it was impossible to see or video the whole group, except in rare brief occasions. (video: <https://youtu.be/2w70XsgQrpc>).

At least 4 different recognizable adults/subadults were seen (one of them limping), but never simultaneously as they moved in an independent way. Several observations of adults feeding or interacting with the pups were made. The pups played and slept in the morning sun, as far as we could see scattered over a maximum radius of two hundred meters around a central point. At some point, the pups divided into 2 groups (separated by 150 m) which howled back at each other. All pups looked to be of the same size. All seemed

equally healthy, playful, and mobile. No aggression between pups or between adults or adults and pups was observed.

Wolves are documented to have litters of an average of 6 pups, ranging from 1 to 13 pups (Kreeger 2003). Mean litter size in a large number of North American studies varied between 4.2 and 6.9 (Fuller *et al.* 2003). In Spain, based on foetus and placental scar counting, mean litter size is estimated to be between 5.5 and 6.0, with recorded cases of litters up to 10 pups (Ferreras-Colino *et al.* 2021). Field observations in Castilla y León yielded litters with a mean of 4.7 pups, ranging between 2 and 10 pups (Barrientos 2000) while further data obtained broadly in the same region averaged 4.0, ranging between 1 and 8 pups (Fernández-Gil *et al.* 2020). Nevertheless, a group of 11 pups has also been observed in 2015, near Madrid (Blanco *et al.* 2021).

Although the typical social structure of wolf groups results in only one female per pack reproducing in each year, multiple breeding (i.e. two females having litters simultaneously) is well documented and is not exceptional (Mech & Boitani 2003, Ausband 2018). The reasons and mechanisms for this are not well understood, but it is believed that a mother and one daughter may reproduce when a new alpha male arrives in the pack, or when the daughter mates with another wolf, like a temporary “adoptee” to the pack or a male from a neighbouring pack; further, father-daughter matings are also possible; other mechanisms cannot

be excluded (Mech & Boitani 2003, Hedrick *et al.* 2019, Ausband 2018). Multiple breeding occurs more often in large packs (Ausband 2018).

The area surrounding the place where the pups were seen harbors a high density of red and roe deer *Capreolus capreolus* (Linnaeus, 1758) (various individuals of each species were seen or heard in each day in the field). In winter, the density of red deer in a broader region around the denning site has been estimated at 3.26 individuals/100 ha (Santos 2009, see also Carvalho 2011) and the density of roe deer at 1.23 individuals/100 ha (Valente *et al.* 2014). Wild boar *Sus scrofa* Linnaeus 1758 is also present. There are no herds of small domestic ungulates in the area and no free-ranging horses or cattle. Wolf diet in the region is composed almost exclusively by wild mammals (Figueiredo *et al.* 2020).

On the 2nd of May 2022 a pack of 8 adult/subadult wolves was observed (by PC) during the day at a distance of 5.3 km from the site where the pups were later found. Hence, it is possible that this group of pups belonged to this pack. Other rendezvous sites with howling pups were detected by us in the same season 9 km to the southeast and 12 km to the southwest of the place of the described pup observations.

Although just an anecdotal observation, this record contributes to the mounting evidence that wolves in this region of Iberia face favorable conditions allowing the maintenance of a high overall density (Pimenta *et al.* 2005) and a very successful reproduction.

References

- Ausband D.E. 2018. Multiple breeding individuals within groups of a social carnivore. *Journal of Mammalogy*, 99: 836-844. DOI: [10.1093/jmammal/gyy051](https://doi.org/10.1093/jmammal/gyy051)
- Barrientos L.M. 2000. Tamaño y composición de diferentes grupos de lobos en Castilla y León. *Galemys*, 12 (NE): 249-256.
- Blanco J.C., Laso R. & Alonso O. 2021. Diez años tras los lobos madrileños. *Quercus*, 423: 12-19.
- Carvalho J. 2011. *Monitorização da população de veado (Cervus elaphus L.) na Zona de Caça Nacional da Lombada, Nordeste Transmontano: Época 2010/2011*. Universidade de Aveiro. Aveiro.
- Fernández-Gil A., Quevedo M., Barrientos L.M., Nuño A., Naves J., de Gabriel M. ... & Revilla E. 2020. Pack size in humanized landscapes: the Iberian wolf population. *Wildlife Biology*, 2020:wlb.00594. DOI: [10.2981/wlb.00594](https://doi.org/10.2981/wlb.00594)
- Ferreras-Colino E., García-Garrigós A., Gortázar C. & Llana L. 2021. Wolf *Canis lupus* litter size in Spain. *European Journal of Wildlife Research*, 67: 31. DOI: [10.1007/s10344-021-01473-7](https://doi.org/10.1007/s10344-021-01473-7)
- Figueiredo A.M., Valente A.M., Barros T., Carvalho J., Silva D.A.M., Fonseca C. ... & Torres R.T. 2020. What does the wolf eat? Assessing the diet of the endangered Iberian wolf (*Canis lupus signatus*) in northeast Portugal. *PLoS ONE*, 15 (3): e0230433. DOI: [10.1371/journal.pone.0230433](https://doi.org/10.1371/journal.pone.0230433)
- Fuller T.K., Mech D. & Cochrane J.F. 2003. Wolf population dynamics. Pp. 161-191. In: Mech D.L. & Boitani L. (eds). *Wolves. Behaviour, Ecology and Conservation*. The University of Chicago Press, Chicago.
- Hedrick P.W., Robinson J.A., Peterson R.O. & Vucetich J.A. 2019. Genetics and extinction and the example of Isle Royale wolves. *Animal Conservation*, 22: 302-309. DOI: [10.1111/acv.12479](https://doi.org/10.1111/acv.12479)
- Kreeger K.J. 2003. The Internal Wolf: Physiology, Pathology and Pharmacology. Pp. 192-217. In: Mech D.L. & Boitani L. (eds). *Wolves. Behaviour, Ecology and Conservation*. The University of Chicago Press, Chicago.
- Mech D.L. & Boitani L. 2003. Wolf Social Ecology. Pp. 1-34. In: Mech D.L. & Boitani L. (eds). *Wolves. Behaviour, Ecology and Conservation*. The University of Chicago Press, Chicago.
- Pimenta V., Barroso I., Álvares F., Correia J., Ferrão da Costa G., Moreira L. ... & Santos E. 2005. *Situação populacional do Lobo em Portugal: resultados do Censo Nacional 2002/2003*. Relatório Técnico. ICNE, Lisboa
- Santos J.P.V. 2009. *Estudo populacional do veado (Cervus elaphus) no Nordeste Transmontano*. Msc Thesis, Universidade de Aveiro, Aveiro. 84 pp.
- Valente A.M., Fonseca C., Marques T.A., Santos J.P., Rodrigues R. & Torres R.T. 2014. Living on the edge: roe deer (*Capreolus capreolus*) density in the margins of its geographical range. *PLoS ONE*, 9(2): e88459. DOI: [10.1371/journal.pone.0088459](https://doi.org/10.1371/journal.pone.0088459)

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