

How many common cranes (*Grus grus*) winter in Spain and Portugal?

¿Cuántas grullas comunes (*Grus grus*) invernán en España y Portugal?

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Abstract

The Iberian Peninsula, i.e., Spain and Portugal, is one of the most important wintering areas of common cranes (*Grus grus*), accounting for 50% of the European winter population. Historical winter censuses have never managed to provide a complete picture, and in 2015 a striking difference of almost 100.000 birds has been found between the winter census and an unprecedented census of migrating birds crossing the Pyrenees in spring after overwintering in the Iberian Peninsula. This infers that the Iberian wintering population is dramatically higher than annual winter censuses suggest. What lies behind this discrepancy in common crane numbers and how can we improve their population estimates? These underestimations of population size in winter censuses may be due to two reasons. Firstly, not all potential common crane winter areas have been covered, especially in the “dehesas” where access is often restricted. Secondly, a combination of different census methods (area counts vs. roost counts; and roost counts at dusk or at dawn) makes it difficult to achieve reliable results. In order to find those “missing” cranes and obtain a more realistic count of common cranes during winter, it would be necessary to make an additional effort, covering more areas and paying more attention to the census method. If these results fail to provide satisfactory results, attention should be shifted to key areas in order to monitor the demography of this emblematic species indirectly.

Palabras clave: census methods, coordinated monitoring program, Sotonera reservoir.

Resumen

La Península Ibérica, España y Portugal, es una de las zonas de invernada más importantes de la grulla común (*Grus grus*), albergando alrededor del 50% de la población invernante

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europaea. Los censos históricos de invierno nunca han podido ofrecer una imagen completa, y en 2015 se encontró una sorprendente diferencia de casi 100.000 aves entre el censo de invierno y un censo de aves migratorias que cruzan los Pirineos en primavera (algo que nunca se ha hecho antes), después de pasar el invierno en la Península Ibérica. Esto sugiere que la población invernante ibérica es mucho mayor de lo que indican los censos invernales anuales. La pregunta es por qué existe esta discrepancia en el número de grullas comunes y cómo podemos mejorar el conocimiento de su número. Los censos de invierno podrían subestimar el tamaño de la población por dos razones. En primer lugar, por no cubrir todas las posibles zonas de invernada de la grulla común, especialmente en las dehesas, donde el acceso suele estar restringido. En segundo lugar, una combinación de diferentes métodos de censo (censos de área vs. censos en dormidero; y censos de dormideros al anochecer o al amanecer) hace que sea difícil obtener resultados fiables. Para encontrar esas grullas que faltan y obtener un recuento más realista de las grullas comunes invernantes, sería necesario hacer un esfuerzo adicional, cubriendo más áreas y prestando más atención al método de censo. Si no se obtienen resultados satisfactorios, se debería centrar la atención en zonas clave para monitorear indirectamente la demografía de esta especie tan emblemática.

Palabras clave: métodos de censo, programa de seguimiento coordinado, embalse de Sotónera.

Laburpena

Iberiar Penintsula, Espainia eta Portugal, *Grus grus* kurrilo arruntaren negu-pasa eremu garrantzitsuenetako bat da, Europako negutar populazioaren % 50 inguru hartzen duela. Neguko zentso historikoek inoiz ezin izan dute eman irudi osoa, eta 2015ean 100.000 hegaztiko alde harrigarria topatu zen neguko zentsoaren eta udaberrian Pirinioak zeharkatzen dituen hegazti migratzaileen zentsoaren artean (lehenago inoiz egin gabekoa), negua Iberiar Penintsulan igaro ondoren. Horrek adierazten du negua iberiar penintsulan igarotzen dutenen zentsoa urteko neguko erroldak adierazten dutena baino askoz handiagoa dela. Galdera da zergatik dagoen alde hori kurrilo arruntaren populazioen zenbaketan, eta nola hobetu daitekeen kurrilo arruntaren populazioen zenbaketa. Neguko zentsoek populazioaren tamaina bi arrazoiengatik gutxietsi dezakete. Lehenik eta behin, kurrilo arruntaren balizko negu-pasa eremu guztiak ez hartzeagatik, bereziki dehesa lekuak, maiz sarrera mugatuta egoten baita. Bigarrenik, zentsu-metodo desberdinen konbinaketak (eremuk zentsuak vs. etzalekuko zentsoak; eta etzalekuko zentsuak iluntzean edo egunsentian) zail bihurtzen du emaitza fidagarriak lortzea. Falta diren kurrilo horiek aurkitzeko eta neguko kurrilo arruntaren zenbaketa erreala lortzeko ahalegin gehigarri bat egin beharko litzateke, eremu gehiago hartuz eta zentso-metodoari arreta gehiago eskainiz. Emaitza onak lortu ezean, arreta funtsezko eremuetan jarri beharko litzateke, espezie hain emblematikoko horren demografia zeharka monitorizatzuz.

Gako hitzak: erroldatzeko metodoak, jarraipen koordinaturako programa, Sotonerako urtegia.

Current knowledge of the Common Crane wintering population in Iberia

It is well known that Iberian Peninsula is one of the most important wintering areas of the common crane (*Grus grus*), holding about half of the European population (Wetlands International 2025). An assessment of 15 winter censuses in Spain and Portugal between 1960 and 2014 (Alonso *et al.*, 2016) stated that those counts have been incomplete, while there was a clear steep upward trend in numbers. A study on the evolution of the Iberian common crane in the winters 2013 – 2023 (Román Álvarez & Cruz, 2023) showed important variations in their numbers between censuses, with a minimum count of 175.091 cranes in December 2013 and a maximum of 273.914 in January 2022, showing no clear upward or downward trend.

Census protocol during the 2015 and 2016 spring migration

From the 14th of February to the 15th of March in years 2015 and 2016, common cranes migrating north to the Pyrenees were counted on a daily basis at the Sotonera reservoir from sunrise to about 2 PM, writing down the number of migrating birds every 10 minutes. We also distributed Crane Observation Forms to all ornithologists in Huesca, while the Government of Aragón shared these forms to all their Rangers working in the Pyrenees. The rangers guaranteed there were every day observers in every valley for the scarcely populated central Pyrenees. Both in 2015 and 2016, we received around 300 forms with detailed information of migrating common cranes (date, hour, group size, flight direction) from 75 observers. Jesús María Lekuona, who coordinated a bird observatory that was active every day, send us the same detailed information from Navarra, covering the western Pyrenees. For the eastern part of the Pyrenees, we received data from the Institut Català d'Ornitologia (ornitho.cat). Most of these last observations included flight direction but few stated the exact time. To calculate the number of cranes we had to reject many observations in order to avoid potential double counts. Combining all this information, we could reconstruct the route and calculate the minimum number of common cranes per day that migrated north from their Iberian wintering grounds over the Pyrenees. We were extremely careful not to make double counts of migrating groups.

Results of the 2015 and 2016 spring migration count

In spring 2015, the gross number of cranes counted in Navarra and Huesca was 595.695. After removing potential double counts, we calculated that 277.983 individuals migrated over the western and central Pyrenees (21,586 over Navarra and 256,397 over Huesca). See Mooser & Woutersen 2015 (available at trektellen.nl) for daily maps and numbers. For the Eastern Pyrenees (Catalonia), we determined that

25.374 migrated through this part of the mountains. Accordingly, the total number of migrating common cranes over the Pyrenees in 2015 came to 303.357, of which more than half, 175.394 birds, crossed the mountains in only 2 days (1st and 2nd of March) after a delay due to previous unfavorable weather conditions. The total number of common cranes crossing the Pyrenees in 2016 came to 201.569 (115,321 over Navarra, 68,847 over Huesca and 17.401 over Catalonia).

Surprisingly, the resulting number of 303,357 in 2015 and 201,569 in 2016 was considerably higher than the January Iberian winter count for the corresponding year, which was 208,154 and 183,058 birds, respectively (Román Álvarez & Cruz, 2023). The difference was 95,203 and 18,511 for each year. As it is impossible to record all migrating common cranes, especially during favourable weather, the real difference is probably even higher than the spring count indicates. That the 2015 difference is much higher than 2016, is because the exceptionally bad weather conditions in 2015 made much easier the spring counts and increased the detectability of migrating cranes (see above). Under favorable weather conditions, common cranes can fly very high or at night, being unnoticed for observers on the ground. In any future spring migration censuses, weather circumstances need to be taken into consideration.

The data from the 2015 and 2016 winter counts (January, Román Álvarez & Cruz, 2023) compared with the 2015 and 2016 spring counts (see above), as well with data from Alonso *et al.* (2016), show important differences (table 1). If we assume that the real wintering population is close to the spring estimate, up to 34-43,5% (the 1987/88 estimate) of the common cranes might not be represented in the national censuses some years.

The data above indicate that the real size of the common crane population wintering in Spain and Portugal might be systematically underestimated. Considering the spring 2015 census as the most complete minimum estimate available so far, the relatively large percentage of cranes that are not counted every year (Table 1), and the increasing European breeding population since 2015 (Wetlands International 2025), we could infer that the Iberian wintering population would normally be well over 300.000 birds.

Why so many common cranes go unnoticed in the winter census?

In the first place, possibly not all areas with common cranes have been counted. Historically it is well known that important numbers of Common Cranes winter in the “dehesas”, the holm – and cork oak forests in the centre and the south-western parts of the Iberian Peninsula. Almost all the dehesas are private, fenced, where access is not allowed and therefore a complete census is logistically difficult. In these vast rolling landscapes detecting common cranes would be additionally hampered if tree density is high, which would limit bird detectability (Fig. 1A). Also, in the north-half of Spain,

Winter	Number counted	Estimate	Difference
1984/85	31.945	40–50.000	+ 20,1 – 36,1%
1987/88	39.579	60–70.000	+ 34,0 - 43,5%
2012/2013	118.466	160-190.000	+ 26,0%- 37,7%
2014/2015	208.154	303.357	+ 31,4%
2015/2016	183.058	201.569	+ 9,2%

Table 1.- Census of wintering common cranes in the Iberian Peninsula (Román Álvarez, & Cruz 2023), population estimate (Alonso *et al.* 2016, and the spring counts in the Pyrenees for 2015 and 2016) and the difference between estimation and census.

Tabla 1.- Censo de grullas comunes invernantes en la Península Ibérica (Román Álvarez & Cruz, 2023), estimación poblacional (Alonso *et al.* 2016, y censos de primavera en el Pirineo de 2015 y 2016) y diferencia entre estimación y censo.

where common cranes winter in open areas and are much easier to find and count (Fig. 1B), some remote and inaccessible areas may not have been included in the censuses.

Another issue is the use of different census methods. In areas with high common crane density the census takes place in the feeding areas at daytime. In other areas, night roosts are counted in the afternoon (at dusk) or early morning (at dawn) (Fig. 1C; Roman, 2019). Numbers at a night roost may be lower in the evening than in the morning because common cranes can enter when it is already dark (in France the roosts are counted in the morning). Common cranes may travel more by night than assumed, this resulting in underestimated numbers in the case of an evening count. They also may spend all night or part of it in one of the many hundreds of hidden drinking pools for cattle situated in the dehesas. In Extremadura a combination of area counts and roost counts is used for wintering crane censuses, but when birds enter the roost (common cranes can travel up to 30 kilometers or more to and from a roost), observers cannot be sure whether those birds have been counted or not in previous censuses at the feeding areas.

Potential future directions

In order to get a more reliable census and to find more common cranes in the field, it would be necessary, in the first place, to assure that all potential main areas are covered. For this, it is important to make a list of all areas where wintering common cranes have been found historically. The map with the probability of presence of wintering common cranes in Spain (Sanchez *et al.*, 2012) may also be of great help to find unknown potential areas. Potential areas which cannot be visited, should be listed. Special attention should be paid to the problems that combining area and roost

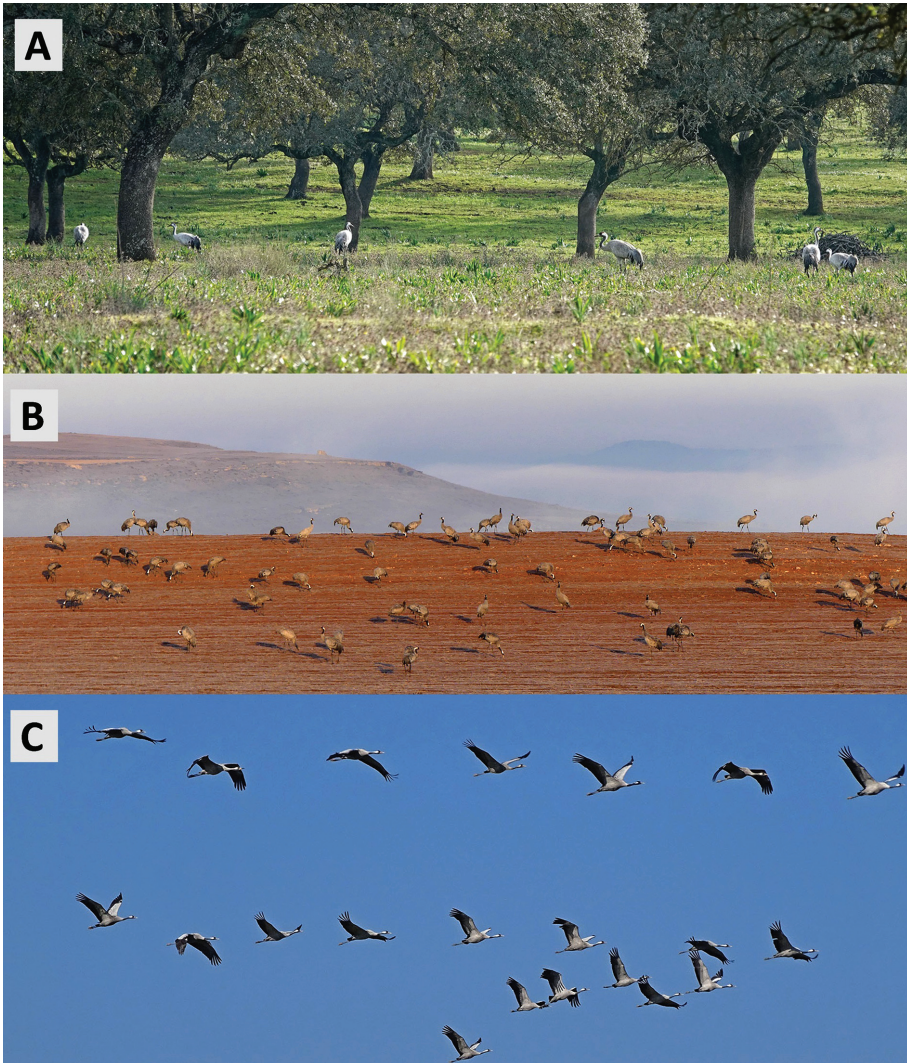


Fig. 1.- A) Feeding common cranes in a Dehesa landscape can only be detected at close range. (Photo: Trujillo (Extremadura), Kees Woutersen). B) Common cranes in an open agricultural landscape are easy to detect (Photo Gallocanta, Kees Woutersen). C) If common cranes fly in small groups, they can be counted one by one, but getting a reliable count of a big group entering a roost at nightfall might be a challenge (Photo: Sotonera (Huesca), Kees Woutersen).

Fig. 1.- A) Las grullas comunes comiendo en una dehesa solo pueden ser detectadas a corta distancia. (Foto: Trujillo (Extremadura), Kees Woutersen). B) Las grullas comunes en un paisaje agrícola abierto son fáciles de detectar (Foto: Gallocanta, Kees Woutersen). C) Se pueden contar una a una las grullas comunes que vuelan en grupos pequeños, pero obtener un recuento fiable de un grupo grande que entra en un dormitorio al anochecer puede ser complicado (Foto: Sotonera (Huesca), Kees Woutersen).

counts create, and prioritize the roost counts that are probably easier to standardize. In this respect, whether roost counts are more reliable at dusk or at dawn should be also resolved. Although, in the end, all these measurements are unlikely to provide a complete census of the wintering common crane population in Iberia, they would provide valuable information for many Iberian key areas (regional censuses) that could help us to indirectly monitor the demography of this emblematic species.

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