

A review of occurrences of the Pallid Harrier *Circus macrourus* in the Western Mediterranean: a new migrant and wintering species

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The Pallid Harrier *Circus macrourus* is considered a rarity in Spain. Despite being an endangered species in Europe, there has been a marked increase in the number of sightings in Spain of this raptor in the past decade. To reassess its status, we compiled 212 records pertaining to 215 individuals for this species in Spain in 1990–2013 in a comprehensive study of its occurrence. Most records (46%) occur during spring passage and the majority along the Mediterranean coast (Catalonia and Balearic Islands). Spring records probably correspond to vagrant individuals blown onshore from their migration routes through the central Mediterranean during bad weather. Records during autumn migration are historically scarce (8%), although since 2011 there has been a marked increase (up to 39%) in observations in August–November. Most of the observations have taken place at the western (Navarre) and eastern (Catalonia) extremes of the Pyrenees, which correspond to the main migratory routes for birds entering Iberia from Europe. The new breeding population in northern Europe may be the origin of this increase and could have led to the establishment of a migratory route through Western Europe. Since 2005, the species has also begun to be observed in winter in the Iberian Peninsula (mainly in Valencia and Andalusia) and the number of birds that do not cross into Africa is rising. Overall, the total number of records has increased almost exponentially since 2008 and so we believe that the Pallid Harrier should no longer be considered a rarity but, rather, as a regular scarce migrant and wintering species in Spain.

Key words: Pallid Harrier, *Circus macrourus*, migration, rarity, wintering, Spain.

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The Pallid Harrier *Circus macrourus* is a vagrant migratory raptor in Western Europe. It is an eastern species with a core breeding area in the steppes of Asiatic Russia, Kazakhstan and Mongolia whose winter distribution is shared between sub-Saharan Africa and Southern Asia (del Hoyo *et al.* 1994, Terraube *et al.* 2012). In Europe about 600–2,140 pairs currently breed in Azerbaijan, Belarus, Moldova, Ukraine, the Western Palearctic part of Russia, and Kazakhstan, and recently in Turkey and Finland (Galushin *et al.* 2003, Forsman & Erterius 2012). However, these marginal

European populations underwent a marked and continual decline in 1970–2000 (Tucker & Heath 1994, BirdLife International 2004) and the species reached the verge of extinction in Belarus, Moldova and Ukraine, became extinct in Romania, and declined by about 30–50% in its important Russian population. Significant declines were also detected in West Africa, the most probable wintering area for these populations (Thiollay 2006). It is a globally Near Threatened species, which has been provisionally evaluated as Endangered in Europe (BirdLife International 2004, Burfield

2008). Changes in land use are the main cause of its poor conservation status in Eastern Europe, the main specific threats to its populations being the destruction and degradation of steppe grasslands due to conversion to arable land, the burning of vegetation, the intensive grazing of damp pastures and the clearance of shrubs and tall vegetation (Galushin *et al.* 2003).

The destruction of the Pallid Harrier's breeding habitat in Russia may have resulted in a northward movement of breeding birds since the species is today (above all in the past decade) spreading into northern and north-western Europe. This phenomenon has been well documented in Finland (Forsman & Erterius 2012), where it became established as a regular breeder in 2003, with up to four pairs detected in the Oulu area by 2005. In addition, there has been an increase in the number of birds recorded on raptor counts at Falsterbo (the southernmost tip of Sweden): for example, 27 individuals were recorded on passage between 1998 and 2003 (Bildstein 2006), while at least 45 birds were recorded in 2011 alone (Forsman & Erterius 2012).

The migratory movements of the Pallid Harrier through the Mediterranean Basin are well known. As an eastern species, most individuals migrate through the Middle East and Italy (Corso & Cardelli 2004). The site in the Western Palearctic with most Pallid Harrier records on postnuptial migration is Kfar Qasem (northern Israel) (129 birds in 1994, Alon *et al.* 1994; 137 in 2003, Corso & Cardelli 2004). In Eilat (southern Israel), 113 birds were counted in 1985 (Shirihai & Christie 1992). However, during spring migration, the number of Pallid Harriers recorded in Israel is notably smaller, with a maximum of 57 birds in 1994 (Yosef 1996). Such seasonal differences are probably due to spring migration being more concentrated through the Central Mediterranean, with most individuals crossing the sea between Tunisia and Sicily and then moving northwards through Italy (Panuccio 2004, 2001; Premuda *et al.* 2004, 2008; Panuccio & Agostini 2006, Corso *et al.* 2009). For example, 132 birds were recorded on passage in April–May 2001 across the Strait of Messina (southern Italy) (Corso & Cardelli 2004). Available records thus strongly suggest the existence of loop migration in this species.

The Pallid Harrier is catalogued as a rare species in Spain (Gutiérrez *et al.* 2012). In 1984–

2011, there were 50 records of 53 individuals (Gutiérrez *et al.* 2013), although other observations collated from websites – most of which were not sent to bird committees – increase this figure to over 119 birds in just 2011–2013. This recent increase in the number of observations outside migration periods suggests that the species' status in Spain should be reassessed. The aim of this study was to carry out an in-depth assessment of the current situation of the Pallid Harrier in Spain by describing its occurrence and phenology during migratory periods and its presence in winter based on all records available up to 2013.

Material and methods

We collated all Pallid Harrier records from Spain since 1990 accepted by the Spanish Ornithological Society's Rarities Committee (CR-SEO) (de Juana 1992, 1995, 1996, 2000, 2001, 2002, 2003, 2004, 2005, 2006a, 2006b; Dies *et al.* 2007, 2008, 2009, 2010, 2011; Gutiérrez *et al.* 2012, 2013). However, these reports only run up to 2011 because of the time-lag occurring between the field observation, submission, assessment of observations by the Committee, and the final publication of reports. For this reason, we completed our database with records taken from two ornithological websites specializing in reporting rarities in the Iberian Peninsula: *Rare Birds in Spain* (www.rarebirdspain.net) and *Reservoirbirds* (www.reservoirbirds.com). They provide instant access to any record reported by observers that has not yet been reviewed by specialists from the CR-SEO. Nonetheless, we are confident that the overwhelming majority of these observations are valid since they are usually backed up by photographs. These Internet records only cover the period 2000–2013.

For each record, we recorded the date, location, age and sex of the observed birds. Age and sex were not available for all observations. All records were cross-referenced to remove any duplicates (e.g. reported simultaneously on both websites). Records were classified into three periods by date as follows: spring migration (March–May), autumn migration (August–November) and winter (December–February). The distribution of records by season, sex, age and location was checked and, if necessary, statistical tests were performed. In the case of seasonal dis-

tribution, we divided records into three periods to examine potential changes in the seasonal pattern of occurrence over time. In 1990–2010, we only used observations accepted by the CR-SEO, which we split into two periods, 1990–2004 and 2005–2011, given that the species began to overwinter in Spain in 2005. Then, we defined a third period, 2011–2013, since the overwhelming majority of observations from these years are only available on the Internet and are still pending assessment by the CR-SEO. In order to compare records from Spain and France, we also collated all records accepted by the French *Comité d'Homologation National* (CHN) for 1990–2012. These records are available at www.chn-france.org. However, since 1 January 2013 the species is no longer considered a rarity in France and its records are not assessed by the CHN.

Results

The number of recorded Pallid Harriers has increased dramatically since 1990 (Figure 1). Until 1999, the Pallid Harrier had only been observed four times in Spain (de Juana 2006a) but since 2002 the species has been observed every year. The number of records taken from the Internet

has increased almost exponentially since 2008 and in 2013 alone 61 birds were observed. The number of records accepted by the CR-SEO also increased during the study period, although not as sharply (Figure 1). Records from France, where there has been an increase in records since the end of the 1990s and an especially noticeable increase since 2004, offer a similar picture to those obtained from the Internet for Spain (Figure 1).

The Pallid Harrier has been recorded in Spain on both spring and autumn migration, and also in winter. An examination of the figures for each of these seasons demonstrates an increasing trend towards more individuals occurring on autumn migration and in winter (Figure 2). During the initial period (1990–2004), most records (71%) were of individuals passing through Spain in spring. In 2005, the first wintering individual was recorded (Bort *et al.* 2009), which can be linked to the increase in the number of records during both autumn migration and winter in 2005–2010. In this period, only 59% of individuals were recorded during spring migration, with 30% observed on autumn migration and 10% in winter (Figure 2). In the final period (2011–2013), the number of records in spring and autumn was similar (41 vs. 56). The number of wintering individuals increased notably from

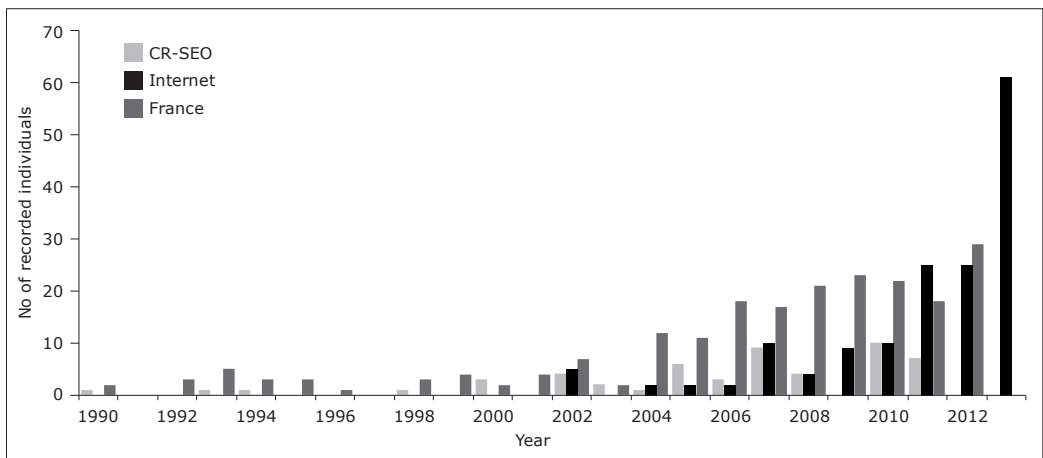


Figure 1. Number of Pallid Harriers recorded in Spain and France in 1990–2013. Records for Spain are shown in two categories: records accepted and published by the CR-SEO (53) and observations available on the Internet but not submitted to any rarity committee (154). French records (210) are those that have been accepted by the CHN.

Nombre d'arpelles pâ-lides russes observades a Espanya i França entre 1990 i 2013. Els registres espanyols estan dividits en dues categories: aquells homologats i publicats pel Comitè de Rareses de SEO (53), i aquelles observacions trobades a internet que encara no han estat sotmeses a avaluació per cap comitè (154). Els registres de França (210) només són els homologats pel "Comité d'Homologation National".

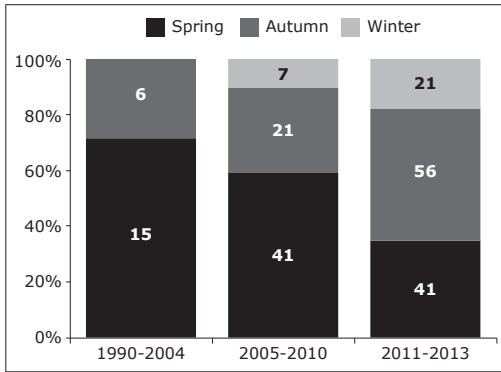


Figure 2. Percentage of individuals recorded during spring migration (March–May), autumn migration (August–November) and in winter (December–February) in Spain in 1990–2013. The total number of records for each category and period are shown in the boxes. *Percentatge d'individus observats durant la migració de primavera (març–maig), la migració de tardor (agost–novembre) i la hivernada (desembre–febrer) a Espanya entre 1990 i 2013. El nombre total de registres per a cada categoria i període es mostren dins de les columnes.*

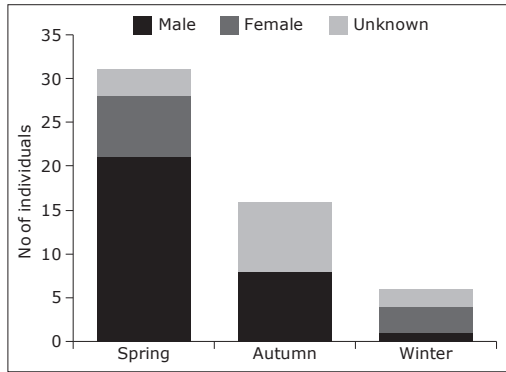


Figure 3. Distribution of records for each season grouped by sex for records accepted by the CR-SEO (n = 53). Period 1990–2011. *Distribució de les observacions a cada estació segons el sexe dels individus. Només s'han emprat registres homologats pel CR-SEO (n = 53). Període 1990–2011.*

7 to 21 in this period but remained low in terms of overall numbers (18%) and was similar to the previous period (Figure 2).

Most of the records approved by the CR-SEO were of males (74%) and identified females only represent 26% of records (Figure 3). There was a statistically significant dominance of males in our dataset (Fisher Exact Test two-tailed: n = 46, p = 0.009; Figure 3), unlike in southern Italy where, interestingly, females outnumbered males during spring migration (Panuccio & Agostini 2006). We found that individuals of known age in records accepted by the CR-SEO (n = 47) were not distributed evenly among all age classes (Chi Square Test: $\chi^2 = 9.48$, df = 2, p = 0.009; Figure 4). Interestingly, although birds in their first calendar year were the most-recorded age-class in autumn and winter, none were detected during spring migration. This result suggests that the new autumn migratory route through Western Europe is used by young individuals on their first migration and that many of these young birds undertake spring migration along shorter routes across the central Mediterranean.

During spring migration Pallid Harriers were mainly recorded in eastern Spain (i.e. along the Mediterranean coast; 81% of records), with fewer individuals detected in the centre and west of the Iberian Peninsula (two records for

Asturias, and just one for Badajoz and Toledo provinces). The first individual detected on migration through the Strait of Gibraltar (S Spain) by the migration monitoring programme of the foundation *Migres* was recorded in May 2008 (Ramírez 2008), an observation that can be added to a previous record by British observers from March 2006 in Gibraltar (García 2007). In spite of the fact that none of the records for 2011–2013 have yet been assessed by the CR-SEO, these spring records have the same spatial distribution pattern as previously commented. Most records were from Catalonia, the exception being some birds observed in the Balearic Islands, Andalusia, Extremadura, Castilla-La Mancha, La Rioja, and Aragón.

Autumn records up to 2010 were widely spread throughout Spain and reveal two main entry points into the Iberian Peninsula: 44% of birds were recorded in Navarre and represent individuals moving down the western Pyrenees route (Moreau 1956), while the remaining birds were detected on the eastern route in Catalonia (18%), Valencia and Andalusia (both 11%). Other localities with records include the Balearic Islands (two records) and Madrid and Burgos with just one record each. In recent years (2011–2013), the non-assessed CR-SEO data show that most individuals still concentrate along the western (Navarre) or eastern (Catalonia and Valencia) routes when crossing the Pyrenees. However, the exceptional increase in the num-

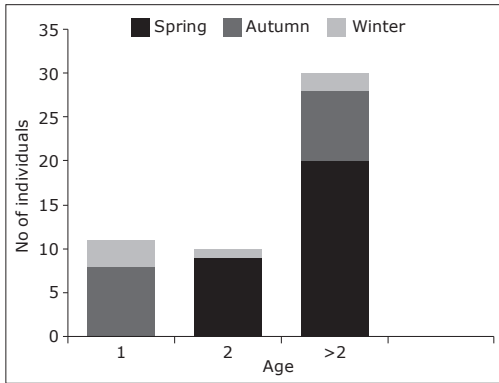


Figure 4. Distribution of records for each season grouped by age (years) for records accepted by the CR-SEO ($n = 53$). Period 1990–2011. Age is given in calendar years (CY), except for wintering records which refer to 1= first winter; 2= second winter; >2= more than two years.

Distribució de les observacions segons l'edat dels individus. Només s'han emprat registres homologats pel CR-SEO ($n = 53$). Període 1990–2011. L'edat es dona en anys / calendari (CY), excepte pels registres d'hivern que representen 1= primer hivern; 2= segon hivern; >2= més de dos anys.

ber of records for this short period has led to more marginal sightings in Aragón, Castilla-La Mancha, Castilla-León, Murcia and Cantabria, away from the main migratory fluxes. Of special interest is the increase in autumn records in Andalusia, especially in Cádiz and Seville provinces.

The first wintering individual in Spain was detected in 2005 in the Marjal d'Almenara (Castellón), where – presumably – the same bird was also located in winter 2006 and 2007 (Bort *et al.* 2009). In 2006, another individual was also found wintering in Zaragoza province, while in 2007 and 2008 there were single observations from Zamora and Cádiz, respectively. There were no winter records in the whole of Spain for winter 2009 (according to the CR-SEO), but there were fresh records from Cádiz for winter 2010–2011. In the most recent period (2011–2013), a number of birds observed in October–November in Cádiz and Seville apparently spent the rest of the winter in these provinces of Andalusia. At least, 13 Pallid Harriers overwintered in Andalusia between November 2011 and February 2013. In addition to this important wintering area, birds once again spent the winter in the Levante region (Valencia and Murcia), as well as in new locations in Extremadura and Palencia.

Discussion

In recent years, there has been a marked increase in Pallid Harrier records in Spain in all seasons and of all ages and sexes. Part of this increase may be an artifact due to an increase in the number of birdwatchers possessing better identification skills (e.g. Forsman 2005) and higher-quality binocular and telescopes than those from the 1990s (Gordo 2014). However, most of this increase in sightings has occurred over the last five years, a period in which no substantial changes have occurred in the Spanish ornithological community. Furthermore, the same trend in observations has been noted in neighbouring France, where birdwatching has a longer tradition and no potential bias due to greater birdwatching effort has occurred. Therefore, we are confident that our data reflect a true biological process. Our results are also fully consistent with the increase in the breeding population in Scandinavia and the potential establishment of new more westerly migratory routes – and even new wintering quarters – in the Iberian Peninsula.

The spatial distribution of records in Spain concurs fully with traditional migratory routes (e.g. over Italy) and the species' migratory ecology. This raptor has a low wing-load and, like other harriers, can cross large stretches of water using direct flapping flight (Elkins 1998, Berthold 2001). Therefore, birds wintering in the western Sahel are not obliged to migrate into Africa via the Strait of Gibraltar and, indeed, do so directly across the Mediterranean Sea from Europe (Spar & Bruderer 1997, Corso & Cardelli, 2004, Panuccio & Agostini 2006). This fact would explain why most of the observations during spring migration are from northern Catalonia and the Balearic Islands. This same reasoning is valid for France, where 42% of spring records occur in the southeast of the country (Liger 2008). Likewise, the presence of easterly winds associated with low-pressure fronts in the central and eastern Mediterranean clearly affects the arrival of migrant Pallid Harriers, as also occurs in the case of falls of other eastern species such as Collared Flycatcher *Ficedula albicollis* and Icterine Warbler *Hippolais icterina* (Gargallo *et al.* 2011). Although satisfactorily interpretable in light of known Pallid Harrier ecology, the observed migratory patterns may contain some bias due to the uneven distribution of the sampling effort

by birdwatchers in Spain (Ferrer *et al.* 2006). In fact, Catalonia, the Balearic Islands and Valencia have some of the highest densities of birders in the whole of the Iberian Peninsula. Nevertheless, there are almost no records of the species for other birding hotspots in Spain such as Galicia, Madrid or the Gibraltar area, suggesting that this bias, if it exists at all, is minimal.

In conclusion, in view of the growing number of Pallid Harriers recorded in Spain every year and its regular occurrence as a migrant and wintering species, we propose that this harrier should no longer be considered as a rarity.

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Resum

Revisió de la presència de l'Arpella pàl·lida russa *Circus macrourus* a la Mediterrània occidental: una nova espècie migrant i hivernant

L'Arpella pàl·lida russa *Circus macrourus* és una raresa a Espanya. Malgrat ser una espècie greument amenaçada a Europa, hi ha hagut un notable augment de citacions a Espanya els darrers anys. Vam recopilar 212 registres que pertanyen a 215 individus d'aquesta espècie a Espanya entre 1990 i 2013 amb l'objectiu d'estudiar exhaustivament la seva presència. La majoria de registres (46%) es produeixen durant la migració primaveral, i un bon nombre d'aquests individus s'observen en pas al llarg de la costa mediterrània (Catalunya i Balears). Els registres primaverals segurament pertanyen a individus divagants, desviats mar endins cap a l'oest dels seus itineraris habituals per la Mediterrània central, i segurament com a resultat de temporals. Les observacions durant la migració de tardor han estat històricament escasses (8%), tot i que des de 2011 hi ha hagut un espectacular augment de les observacions entre agost i novembre fins al 39%. La majoria de les observacions de tardor es produeixen a banda i banda dels Pirineus (Navarra i Catalunya), seguint les principals vies migratòries d'entrada a la península. La nova població reproductora del nord d'Europa podria ser la causa d'aquest augment a

causa de la creació d'una nova ruta migratòria a través d'Europa Occidental. Des de 2005, alguns exemplars han estat tot l'hivern a la Península (principalment al Llevant i Andalusia), tendència que també sembla anar en augment. En conjunt, el nombre total de registres està augmentant de manera exponencial des de 2008. Els resultats del nostre estudi suggereixen que cal actualitzar l'estatus de l'Arpella pàl·lida russa per deixar de considerar-la una raresa a Espanya.

Resumen

Revisión de la presencia de Aguilucho papialbo *Circus macrourus* en el Mediterráneo occidental: una nueva especie migrante e invernante

El Aguilucho papialbo *Circus macrourus* se considera una rareza en España. Pese a ser una especie seriamente amenazada en Europa, se ha producido un notable aumento de los avistamientos en España en los últimos años. Se han recopilado 212 registros que pertenecen a 215 individuos de esta especie en España entre 1990 y 2013 con el objetivo de estudiar exhaustivamente su presencia. La mayoría de los registros (46%) se producen durante la migración primaveral, encontrándose la mayoría de estos individuos en paso lo largo de la costa mediterránea (Cataluña y Baleares). Los registros primaverales pertenecen a individuos divagantes desviados mar adentro hacia el oeste de sus itinerarios habituales por el Mediterráneo central seguramente como resultado de temporales. Las observaciones durante la migración de otoño han sido históricamente escasas (8%), aunque desde 2011 se ha producido un espectacular aumento de las observaciones entre agosto y noviembre hasta el alcanzar el 39%. La mayoría de las observaciones otoñales se producen ambos lados de los Pirineos (Navarra y Cataluña), en consonancia con las principales rutas migratorias de entrada a la península. La nueva población reproductora del norte de Europa podría ser la causa de este aumento debido a la creación de una nueva ruta migratoria a través de Europa Occidental. Desde 2005, algunos ejemplares han permanecido todo el invierno en la Península (principalmente en el Levante y Andalucía), tendencia que también parece ir en aumento. En conjunto, el número total de registros está aumentando de manera exponencial desde 2008. Los resultados de nuestro estudio sugieren que el estatus del Aguilucho papialbo debería actualizarse para dejar de ser considerado una rareza en España.

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