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, Terrabe *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
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-
distribution, 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 compare
records from Spain and France, we also colla-
ted all records accepted by the French Comité
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 in-
creased 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 in-
crease 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 au-
tumn 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 indivi-
duals 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](image.png)

**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 pàl·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 re-
istres de França (210) només són els homologats pel “Comitè d’Homologation National”.

9
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 (Garcia 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-
number 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 binoculars 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 neighboring 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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