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Tendencias na invernada de aves acuáticas en Galicia 1986-2025: 1. Cunca do Limia

Trends of wintering waterbirds in Galicia 1986-2025: 1. Limia River Basin

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Censos, aves, invernantes, Cunca do Limia, Ourense, NW España
Waterbird, winter counts, Limia river basin, Ourense, NW Spain

RESUMO

Avaliáronse as tendencias poboacionais ao longo dos últimos 40 anos das aves acuáticas invernantes nas localidades da Cunca do Limia (chaira de A Limia, encoros das Conchas e de Salas) en base aos resultados dos censos realizados no mes de xaneiro pola Sociedade Galega de Historia Natural, tanto os inéditos do período 1986-1995 como os previamente publicados nesta revista do período 1996-2025. Pola obvia escaseza de datos que impide avaliar as súas tendencias, non se analizaron as especies de presencia accidental ou moi esporádica.

Antano localidade de importancia rexional para algunhas especies, o encoro das Conchas colapsou como zona de invernada de aves acuáticas a partires do cambio de século, en parte pola importancia recuperada da chaira da Limia e en parte, probablemente, pola acelerada eutrofización con proliferacións masivas de cianobacterias tóxicas. Das 15 especies con suficientes datos de presencia no encoro das Conchas, 10 amosan tendencias descendentes ou moi descendentes (*Tachybaptus ruficollis, Podiceps cristatus, Ardea cinerea, Mareca penelope, Mareca strepera, Anas crecca, Anas platyrhynchos, Aythya ferina*, e *Vanellus vanellus*), 4 non teñen unha tendencia clara (*Gallinago gallinago, Tringa ochropus, Actitis hypoleucos* e *Alcedo atthis*) e só 1 (*Phalacrocorax carbo*) tivo un incremento no decenio 2000-2010 e un declive posterior.

No encoro do Salas púidose avaliar a tendencia de 11 especies, das cales durante o período considerado diminuíron 3 (*P. cristatus, A. ferina* e *V. vanellus*), aumentaron 2 (*P. carbo* e *A. crecca*) e 6 amosan poucos cambios (*T. ruficollis, A. cinerea, A. platyrhynchos, G. gallinago, A. hypoleucos* e *A. atthis*).

A chaira da Limia é non só a principal zona de invernada de aves acuáticas na cabeceira da súa cunca hidrográfica en número de aves e de especies, senón tamén a que amosa tendencias máis positivas, grazas en parte ao trasvase de efectivos dende o

ABSTRACT

Population trends over the past 40 years of wintering waterfowl in the Limia basin (A Limia plain, As Conchas and Salas reservoirs) were evaluated based on the results of the censuses conducted in January by the Galician Society of Natural History, both the unpublished censuses from 1986–1995 and those previously published in this journal from 1996–2025. Due to the obvious scarcity of data that prevents the assessment of trends, species with accidental or very sporadic presence were not analyzed.

Once a location of regional importance for some species, the As Conchas reservoir collapsed as a wintering area for waterfowl after the turn of the century, partly due to the regained importance of the alluvial floodplain of A Limia and, probably, partly due to accelerated eutrophication of the reservoir with massive blooms of toxic cyanobacteria. Of the 15 species with sufficient presence data in the As Conchas reservoir, 10 show downward or very downward trends *(Tachybaptus ruficollis, Podiceps cristatus, Ardea cinerea, Mareca penelope, Mareca strepera, Anas crecca, Anas platyrhynchos, Aythya ferina*, and *Vanellus vanellus*), 4 do not have a clear trend (*Gallinago gallinago, Tringa ochropus, Actitis hypoleucos* and *Alcedo atthis*) and only 1 (*Phalacrocorax carbo*) had an increase in the decade 2000-2010 and a subsequent decline.

In the Salas Reservoir, the trend of 11 species was assessed. During the period considered, 3 decreased (*P. cristatus, A. ferina*, and *V. vanellus*), 2 increased (*P. carbo* and *A. crecca*), and 6 showed little change (*T. ruficollis, A. cinerea, A. platyrhynchos, G. gallinago, A. hypoleucos,* and *A. atthis*).

The Limia floodplain is not only the main wintering area for waterfowl at the headwaters of its watershed in terms of number of birds and species, but also the one showing the most positive trends, thanks in part to the transfer of birds from the As Conchas reservoir starting in the mid-1990s, following the increase in the area of artificial wetlands in the

encoro das Conchas a partires de mediados dos anos 90 grazas o incremento da superficie de humidais artificiais nas charcas areeiras. Das 22 especies con suficiente información rexistrouse un declive en 4 (*A. ferina, Gallinula chloropus, Fulica atra* e *Tringa ochropus*), un incremento en 12 (*P. cristatus, P. carbo, Ardea alba, A. cinerea, Ciconia ciconia, A. crecca, A. acuta, Spatula clypeata, Aythya fuligula, Pluvialis apricaria*, *V. vanellus* e A*. atthis*), un incremento inicial seguido dun declive posterior en 3 (*M. penelope, M. strepera* e *A. platyrhynchos*) e oscilacións sen tendencia clara en 3 (*Rallus aquaticus, G. gallinago* e *A. hypoleucos*).

INTRODUCIÓN

Coordinados en Europa por Wetlands International desde 1967, os censos de aves acuáticas invernantes teñen como obxectivos avaliar o tamaño das poboacións das aves acuáticas, describir os cambios e tendencias das súas poboacións e da súa distribución e identificar os humidais de importancia subministrando información de utilidade para xestionalos e protexelos. En Galicia, os censos invernais de aves acuáticas foron unha das primeiras actividades desenvolvidas polo Grupo Ornitolóxico Galego (GOG) dende a súa fundación en 1973. Unha vez refundado o GOG como Sociedade Galega de Historia Natural (SGHN) en 1977, os censos tiveron continuidade pola Sección de Ornitoloxía de SGHN. Nos primeiros anos os censos realizáronse só nunhas poucas localidades, sobre todo costeiras, que se foron incrementando co número de colaboradores. Paralelamente, a calidade dos censos aumentou grazas ao mellor coñecemento dos diversos humidais naturais e artificiais, á experiencia gañada cos anos e a unha melloría, diríamos que decisiva, na potencia e calidade da óptica dispoñible. Por ditos motivos, non todos os censos son directamente comparables e a presente avaliación céntrase no conxunto de datos que se consideran máis homoxéneos e comparables: os dos corenta anos comprendidos entre 1986 e 2025. En sucesivas entregas iranse publicando as tendencias poboacionais por localidades para as outras seis grandes áreas definidas por SGHN: Rías Altas do Cantábrico, Rías Altas do Atlántico, cunca hidrográfica de Galicia Costa, Rías Baixas, Cunca do Miño e Cunca do Sil.

MATERIAL E MÉTODOS

Para as tres localidades da cabeceira do Limia con suficientes datos (encoros das conchas e do Salas, chaira da Limia), recompiláronse os datos inéditos dos censos entre 1986 e 1995 (dende 1988 no caso da Limia), así como os previamente publicados nesta revista correspondentes aos quinquenios 1996-2000 (González & Carrión, 2000) e 2001-05 (González, coord., 2010), e aos decenios 2006-15 (SGHN-Sección Ornitoloxía, 2017) e 2016-25 (SGHN-Sección Ornitoloxía, 2026). Excluíuse da análise o encoro de Lindoso pois só se dispón de datos para o trienio 2023-25 que indican unha

sand ponds. Of the 22 species with sufficient information, a decline was recorded in 4 (*A. ferina, Gallinula chloropus, Fulica atra* and *Tringa ochropus*), an increase in 12 (*P. cristatus, P. carbo, Ardea alba, A. cinerea, Ciconia ciconia, A. crecca, A. acuta, Spatula clypeata, Aythya fuligula, Pluvialis apricaria, V. vanellus* and *A. atthis*), an initial increase followed by a subsequent decline in 3 (*M. penelope, M. strepera* and A*. platyrhynchos*) and oscillations without clear trend in 3 (*Rallus aquaticus, G. gallinago* and A*. hypoleucos*).

INTRODUCTION

Coordinated in Europe by Wetlands International since 1967, wintering waterbird censuses aim to assess the size of waterbird populations, describe changes and trends in their populations and distribution, and identify important wetlands, providing useful information for managing and protecting them. In Galicia, the winter censuses of waterfowl were one of the first activities developed by the Galician Ornithological Group (GOG) since its foundation in 1973. Once the GOG was refounded as the Galician Natural History Society (SGHN) in 1977, the censuses were continued by the Section of Ornithology of SGHN. In the early years, the censuses were carried out in only a few locations, mainly coastal, which were gradually increased with the number of collaborators. At the same time, the quality of the censuses increased thanks to better knowledge of the various natural and artificial wetlands, to the experience gained over the years and to an improvement, we would say decisive, in the power and quality of the optics available. For these reasons, not all censuses are directly comparable and this evaluation focuses on the set of data that is considered more homogeneous and comparable: those of the forty years between 1986 and 2025. In successive papers, population trends by locality will be published for the other six large areas defined by SGHN: Rías Altas do Cantábrico, Rías Altas do Atlántico, Galicia Costa river basin, Rías Baixas, Cunca do Miño and Cunca do Sil.

MATERIAL AND METHODS

For the three localities of the headwaters of the Limia with sufficient data (Conchas and Salas reservoirs, A Limia floodplain), unpublished data from the censuses between 1986 and 1995 (since 1988 in the case of A Limia) were compiled, as well as those previously published in this journal corresponding to the five-year periods 1996-2000 (González & Carrión, 2000) and 2001-05 (González, coord., 2010), and the decades 2006-15 (SGHN-Sección Ornitoloxía, 2017) and 2016-25 (SGHN-Sección Ornitoloxía, 20265). The Lindoso reservoir was excluded from the analysis because only data are available for the 2023-25

importancia mínima para a invernada de acuáticas (presenza de 9-10 aves de dúas especies).

A base de datos empregada presenta dúas características moi inusuais neste tipo de estudios e que constitúen sendas vantaxes moi importantes. A primeira vantaxe é a permanencia ao longo do tempo dun núcleo estable de censadores experimentados e bos coñecedores das localidades que participaron en todos os censos e, no seu caso, instruíron aos novos participantes que se foron incorporando para reforzar o equipo ata o punto de poder censar simultaneamente as tres localidades a partires de 2006. A segunda vantaxe é que a serie de datos está completa ao 100% pois disponse da información para todas as localidades e todos os anos, polo que non foi preciso empregar programas estatísticos para inferir/imputar datos perdidos polo que, unha vez introducidos nun arquivo de IBM/SPSS 29.0, testouse o axuste dos datos orixinais a modelos de regresión lineal e curvilínea (cuadrática e cúbica).

triennium, which indicate a minimal importance for the wintering of aquatic birds (presence of 9-10 birds of two species).

The database used has two very unusual characteristics in this type of study, which are both very important advantages. The first advantage is the permanence over time of a stable core of experienced ornithologists with good knowledge of the localities who participated in all the censuses and, where appropriate, instructed the new participants who were incorporated to strengthen the team to the point of being able to simultaneously census the three localities starting in 2006. The second advantage is that the data series is 100% complete, since information is available for all locations and all years, so it was not necessary to use statistical programs to infer/impute missing data and, once introduced into an IBM/SPSS 29.0 file, the adjustment of the original data to linear, quadratic and cubic regression models was tested.

RESULTADOS E DISCUSIÓN

Tachybaptus ruficollis (mergullete común)

A chaira limiá é, con gran diferencia, a principal zona de invernada na cunca do Limia cuns efectivos que oscilan xeralmente no rango 40-80 individuos e un promedio que se mantén moi estable ao redor das 60 aves (Fig.1). No encoro do Salas a invernada foi sempre moi reducida e diminuiu ao longo do período (R^2 lineal= 0,123; p< 0,05). A invernada no encoro das Conchas mantén unha forte tendencia decrecente na que pasou dun promedio de 7 aves/ano no decenio 1986-1995 a non ter ningún rexistro nos últimos 9 anos (R^2 cúbico= 0,328; p< 0,001). No conxunto da cunca a situación é de estabilidade grazas ao comportamento na chaira da Limia, que encaixa coa estabilidade ou lixeiro aumento da área de ocupación en España entre o II e o III atlas de aves reprodutoras (Molina et al., 2022). Sen embargo, a tendencia da especie é decrecente tanto a nivel mundial (Birdlife International, 2025; Wetlands International, 2025) como en Europa onde a información recompilada polo EBCC (2025) indica unha diminución do 16% no longo prazo (1980-2023) e do 20% no decenio 2014-2023.

RESULTS AND DISCUSSION

Tachybaptus ruficollis (little grebe)

The A Limia floodplain is, by far, the main wintering area in the Limia basin with numbers generally range around 40-80 individuals and an average that remains very stable around 60 birds (Fig. 1). In the Salas reservoir, wintering was ever very low and decreased throughout the period (R^2 lineal= 0.123; p< 0.05). On the contrary, wintering in the Conchas reservoir has a strog decreasing trend, going from an average of 7 birds/year in the decade 1986-1995 to not having any records in the last 9 years (R^2 cubic= 0.328; p< 0.001). In the basin as a whole, the situation is stable thanks to the behavior in the A Limia floodplain, which fits with the stability or slight increase in the area of occupation in Spain between the II and III atlas of breeding birds (Molina et al., 2022). However, the trend of the species is decreasing both globally (Birdlife International, 2025; Wetlands International, 2025) and in Europe where information compiled by the EBCC (2025) indicates a decrease of 16% in the long term (1980-2023) and of 20% in the decade 2014-2023.



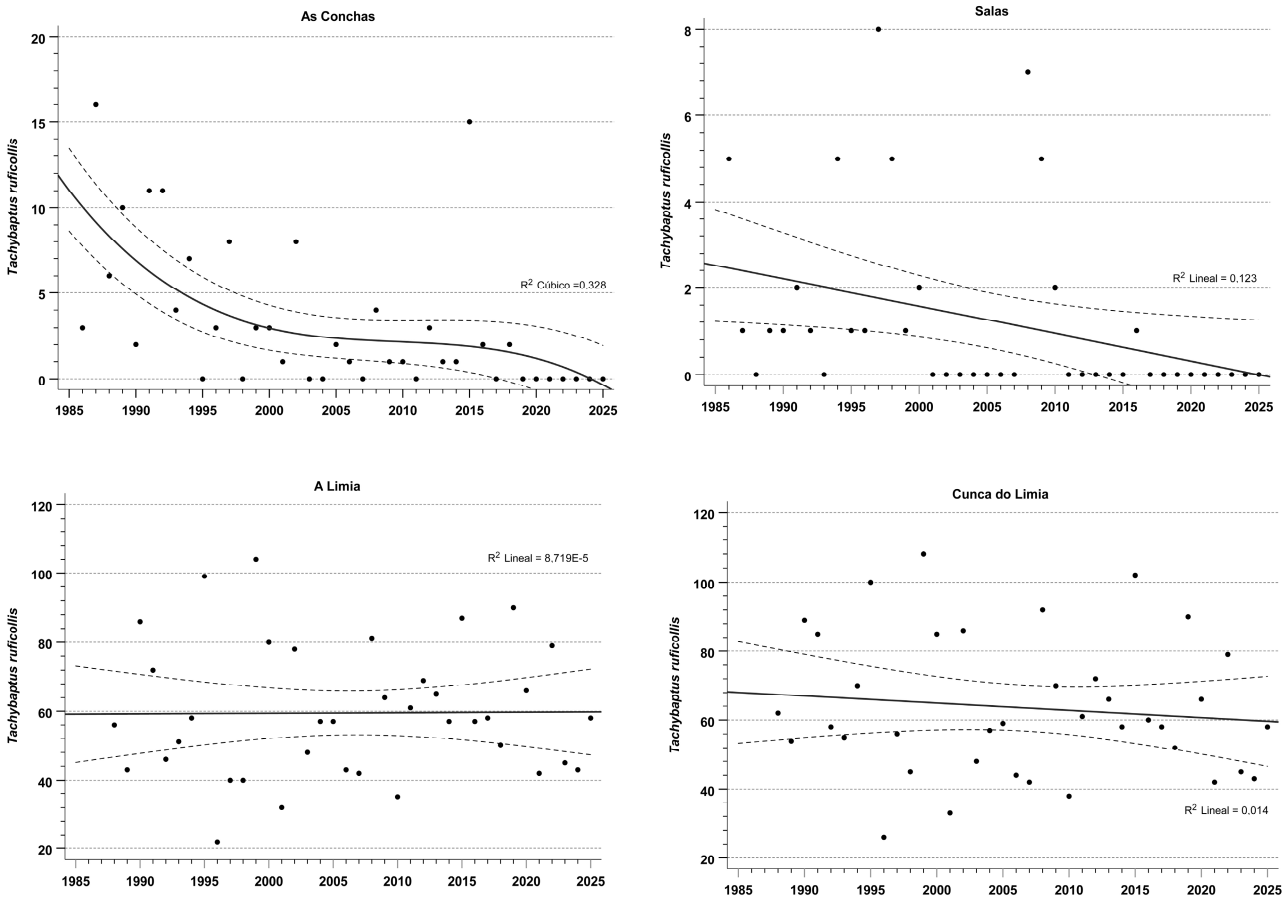


Fig. 1. Invernada de *Tachybaptus ruficollis* (mergullete pequeno) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes lineais ou curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 1. Wintering of *Tachybaptus ruficollis* (little grebe) in the localities censused in the Limia River basin. With a solid line the trends are shown according to linear or curvilinear fits and with a dotted line the confidence interval of the mean.

Podiceps cristatus (mergullón cristado)

Durante a primeira metade do período considerado, a práctica totalidade dos efectivos invernantes na cunca do Limia concentrábanse no encoro das Conchas e, en menor medida, no do Salas, con fortes variacións interanuais nas dúas localidades posiblemente relacionadas coas flutuacións do nivel de auga encorada; pola contra, os rexistros eran esporádicos e case testemuñais na chaira limiá (Fig. 2). O declive sostido do número de mergullóns cristados en ámbolos dous encoros (só significativo no do Salas) contrasta co incremento observado na chaira da Limia que se axusta a un modelo cuadrático (R^2= 0,550; p< 0,001), que nos últimos 15 anos superou ao encoro do Salas e nalgúns casos ao das Conchas. No seu conxunto, a tendencia da especie na cunca do Limia é negativa. A tendencia poboacional da especie é incerta a nivel global (Birdlife International, 2025; Wetlands International, 2025); en Europa, mentres que a evolución a longo prazo (1980-2023) aínda é negativa (-5%) hai unha reversión cara unha tendencia positiva (+31%) no decenio 2014-2023 (EBCC, 2025), na que se encadra o aumento da área de ocupación en España entre o II e o III atlas de aves reprodutoras, cun incremento xeneralizado da distribución no oeste peninsular, incluída Galicia (Molina et al., 2022).

Podiceps cristatus (great crested grebe)

During the first half of the period considered, practically all of the wintering populations in the Limia basin were concentrated in the As Conchas reservoir and, to a lesser extent, in the Salas reservoir, with strong interannual variations in the two locations possibly related to fluctuations in the water level in the reservoir; on the contrary, records were sporadic and almost testimonial in the A Limia flood plain (Fig. 2). The sustained decline in the number of great crested grebes in both reservoirs (only significant in the Salas reservoir) contrasts with the increase observed in the A Limia floodplain that fits well to a quadratic model (R^2= 0.550; p <0.001), which in the last 15 years has surpassed the Salas reservoir and in some cases the As Conchas reservoir. Overall, the trend of the species in the Limia basin is of decline. The population trend of the species is uncertain at a global level (Birdlife International, 2025; Wetlands International, 2025); in Europe, while the long-term evolution (1980-2023) is still negative (-5%), there is a reversal towards a positive trend (+31%) in the decade 2014-2023 (EBCC, 2025), which includes the increase in the area of occupation in Spain between the II and III breeding bird atlases, with a generalized increase in distribution in the western peninsula, including Galicia (Molina et al., 2022).

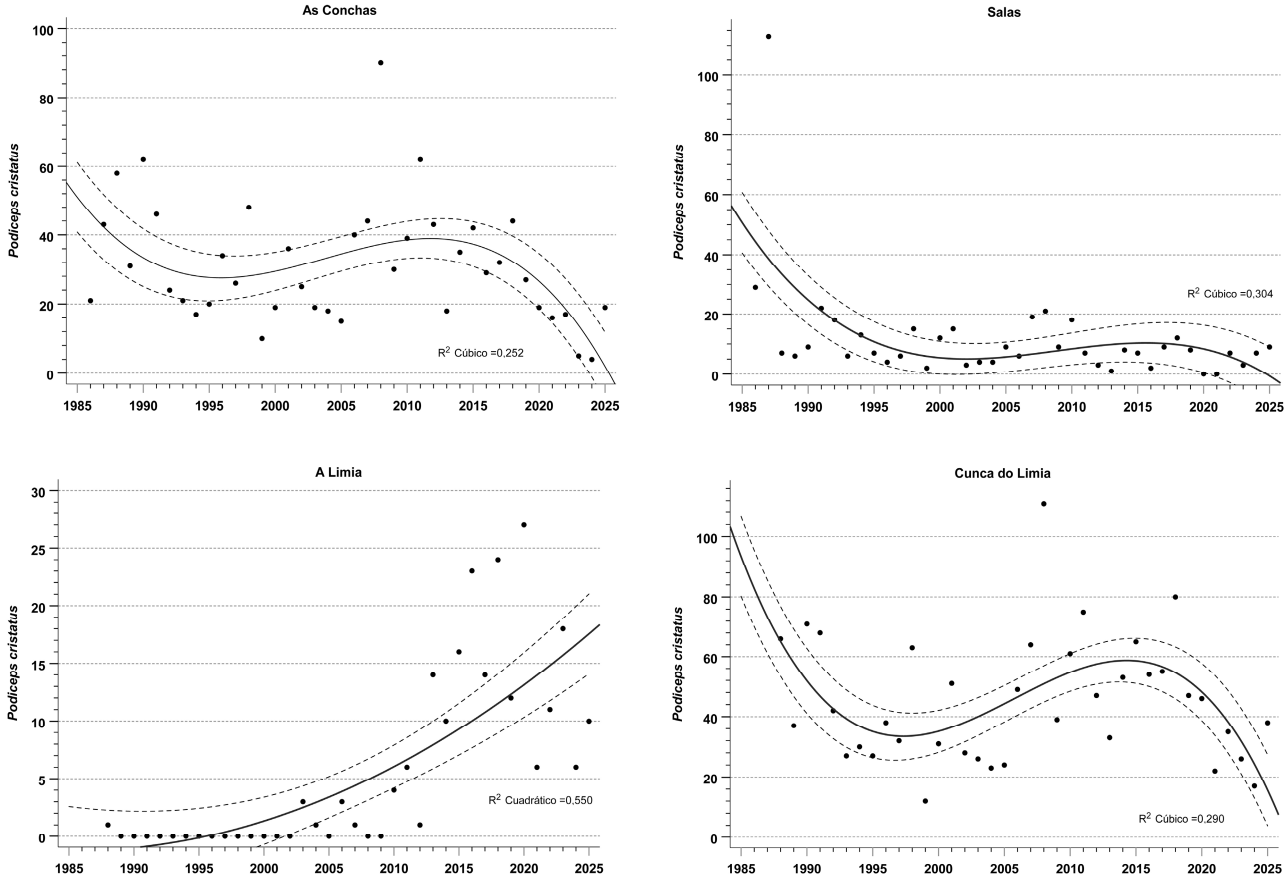


Fig. 2. Invernada de *Podiceps cristatus* (mergullón cristado) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes lineais ou curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 2. Wintering of *Podiceps cristatus* (great crested grebe) in the localities censused in the Limia River basin. With a solid line the trends are shown according to linear or curvilinear fits and with a dotted line the confidence interval of the mean.

Phalacrocorax carbo (corvo mariño grande)

O único rexistro da especie na século XX foi en 2000 no encoro das Conchas (Fig. 3). Na Limia rexistrouse por primeira vez en 2001 e inmediatamente se converteu na principal zona de invernada na cunca hidrográfica cun incremento fortísimo ata 2009 seguido dunhas flutuacións posteriores que se axustan a un modelo cúbico (R^2= 0,666; p< 0,001). No encoro das Conchas o incremento ata 2009, ben inferior ao da Limia, deu paso a un declive sostido polo que a tendencia poboacional nesta localidade axústase a un modelo cuadrático (R^2= 0,212; p< 0,01). Cun primeiro rexistro en 2004 e uns efectivos sempre inferiores ás 14 aves, a tendencia no encoro do Salas e de incremento lineal (R^2= 0,425; p<0,01). A tendencia no conxunto da cunca hidrográfica é semellante á da Limia. Tanto a nivel español como europeo e global a tendencia da especie é de incremento tanto na extensión da área de cría (EBCC, 2022; Molina et al., 2022) como na poboación (Birdlife International, 2025; Wetlands International, 2025).

Phalacrocorax carbo (great cormorant)

The only record of the species in the 20th century was in 2000 in the As Conchas reservoir. In A Limia it was recorded for the first time in 2001 and immediately became the main wintering area in the watershed with a very strong increase until 2009 followed by subsequent fluctuations that fit a cubic model (R^2= 0.666; p< 0.001). In As Conchas reservoir the increase until 2009, well below that of A Limia, gave way to a sustained decline so that the population trend in this locality fits a quadratic model (R2= 0.212; p< 0.01). With a first record in 2004 and numbers always below 14 birds, the trend in the Salas reservoir follows a linear increase (R^2= 0.425; p< 0.01). The trend in the watershed as a whole is similar to that of A Limia. Both at the Spanish, European and global level, the tendency of the species is to increase both in the extension of the breeding area (EBCC, 2022; Molina et al., 2022) and in the population (Birdlife International, 2025; Wetlands International, 2025).

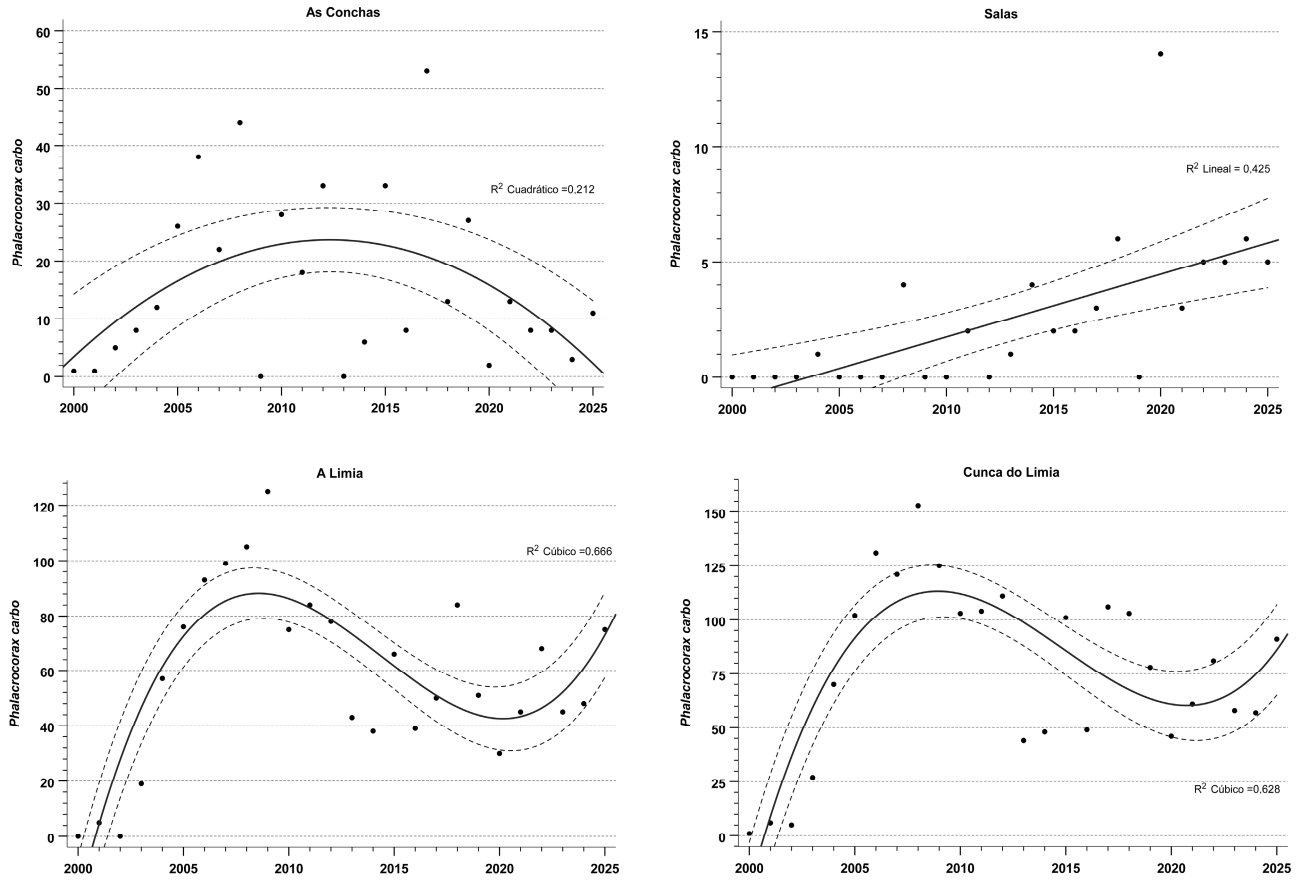


Fig. 3. Invernada de *Phalacrocorax carbo* (corvo mariño grande) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes lineais ou curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 3. Wintering of *Phalacrocorax carbo* (great cormorant) in the localities censused in the Limia River basin. With a solid line the trends are shown according to linear or curvilinear fits and with a dotted line the confidence interval of the mean.

Ardea alba (garza branca grande)

Sen rexistros da especie na cunca hidrográfica durante o século XX e con observacións esporádicas dun ave no Salas (2008) e nas Conchas (2020), a chaira da Limia -cun rexistro illado en 2001- acolle dende 2012 uns efectivos invernantes aínda discretos pero que están a medrar rapidamente, axustándose moi ben a súa evolución a un modelo cuadrático (R^2= 0,714; p< 0,001; Fig. 4). A tendencia na Limia é seguramente consecuencia do importante aumento da área de cría da especie en Europa (+68%) e a expansión cara ao oeste (incluída a península Ibérica) dos núcleos de cría da especie entre o primeiro (anos 1980) e o segundo (2013-2017) atlas europeo de aves reprodutoras (EBCC, 2022). A nivel global a tendencia da especie é incerta debido a tendencias contrastadas (diminución, estabilidade ou aumento) nas distintas poboacións (Birdlife International, 2025; Wetlands International, 2025), pero en España rexistrouse un forte aumento da área de ocupación entre o II e o III atlas de aves reprodutoras (Molina et al., 2022).

Ardea alba (great egret)

Without records of the species in the river basin during the 20th century and with sporadic observations of a bird in Salas (2008) and Conchas (2020), the A Limia floodplain - with an isolated record in 2001 - has hosted wintering populations that are still discrete but are growing rapidly since 2012, with their evolution fitting very well to a quadratic model (R^2= 0.714; p< 0.001; Fig. 4). The trend in A Limia is certainly a consequence of the significant increase in the species' breeding area in Europe (+68%) and the westward expansion (including the Iberian Peninsula) of the species' breeding nuclei between the first (1980s) and the second (2013-2017) European Breeding Bird Atlas (EBCC, 2022). At a global level, the trend of the species is uncertain due to contrasting trends (decrease, stability or increase) in the different populations (Birdlife International, 2025; Wetlands International, 2025), but in Spain a strong increase in the area of occupation was recorded between the II and III breeding bird atlases (Molina et al., 2022).

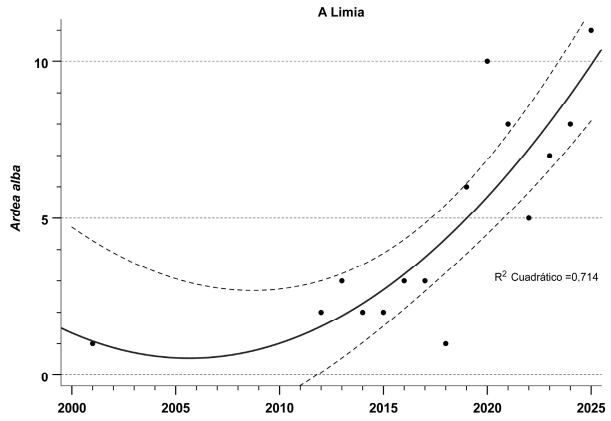


Fig. 4. Invernada de *Ardea alba* (garza branca grande) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste curvilíneo e con liña de puntos o intervalo de confianza da media.
Fig. 4. Wintering of *Ardea alba* (great egret) in the A Limia floodplain. With a solid line the trend is shown according to curvilinear fit and with a dotted line the confidence interval of the mean.

Ardea cinerea (garza real)

As tendencias poboacionais contrastan fortemente entre as tres localidades da cunca hidrográfica (Fig. 5). O encoro das Conchas pasou de ser a principal localidade no primeiro quinquenio da serie, con ata 25 aves, a unha invernada testemuñal no último con 0-1 aves, nun declive que se axusta a un modelo cúbico (R^2= 0,426; p< 0.001). No encoro do Salas a invernada mantense sensiblemente estable nunhas cifras que só moi excepcionalmente superan as 5 aves. Polo contrario, aínda con flutuacións interanuais, a invernada na chaira limiá amosa un crecemento sostido que se axusta ben a un modelo cuadrático (R^2= 0,691; p< 0,001) e que, ao ser a localidade máis importante con diferencia, determina unha tendencia semellante para o conxunto da cunca (R^2= 0,469; p< 0,001). A nivel global a tendencia da especie é incerta (Birdlife International, 2025; Wetlands International, 2025). En Europa experimentou un incremento do 93% no longo prazo (1980-2023), pero a súa poboación mantívose estable no decenio 2014-2023 (EBCC, 2025). Paralelamente a súa área de cría aumentou un 8,7% entre o primeiro (anos 1980) e o segundo (2013-2017) atlas europeo de aves reprodutoras (EBCC, 2022), cun dos maiores incrementos en Iberia duplicándose as cuadrículas ocupadas en España entre o II e o III atlas de aves reprodutoras, cun incremento xeneralizado da distribución no oeste peninsular, incluída Galicia (Molina et al., 2022), que contrasta coa diminución dun 26,5% da súa poboación no período 2002-2021 (Carrascal et al., 2023).

Ardea cinerea (grey heron)

Population trends contrast strongly between the three locations in the watershed (Fig. 5). The As Conchas reservoir went from being the main location in the first five-year period of the series, with up to 25 birds, to a witness wintering site in the last with 0-1 birds, in a decline with a mediocre that fits to a cubic model (R^2= 0.426; p< 0.001). In the Salas reservoir, wintering remains relatively stable with numbers that only very exceptionally exceed 5 birds. On the contrary, even with interannual fluctuations, wintering in the A Limia floodplain shows a sustained growth that fits well to a linear model (R^2= 0.691; p< 0.001) and that, being the most important location by far, determines a similar trend for the entire watershed (R^2= 0.469; p< 0.001). At a global level, the trend of the species is uncertain (Birdlife International, 2025; Wetlands International, 2025). In Europe, it experienced a 93% increase in the long term (1980-2023), but its population remained stable in the decade 2014-2023 (EBCC, 2025). At the same time, its breeding area increased by 8.7% between the first (1980s) and the second (2013-2017) European Breeding Bird Atlas (EBCC, 2022), with the largest increases in Iberia, with the grids occupied in Spain doubling between the II and III Breeding Bird Atlases, with a widespread increase in distribution in the western Iberian peninsula, including Galicia (Molina et al., 2022), which contrasts with the decrease of 26.5% of its population in the period 2002-2021 (Carrascal et al., 2023).



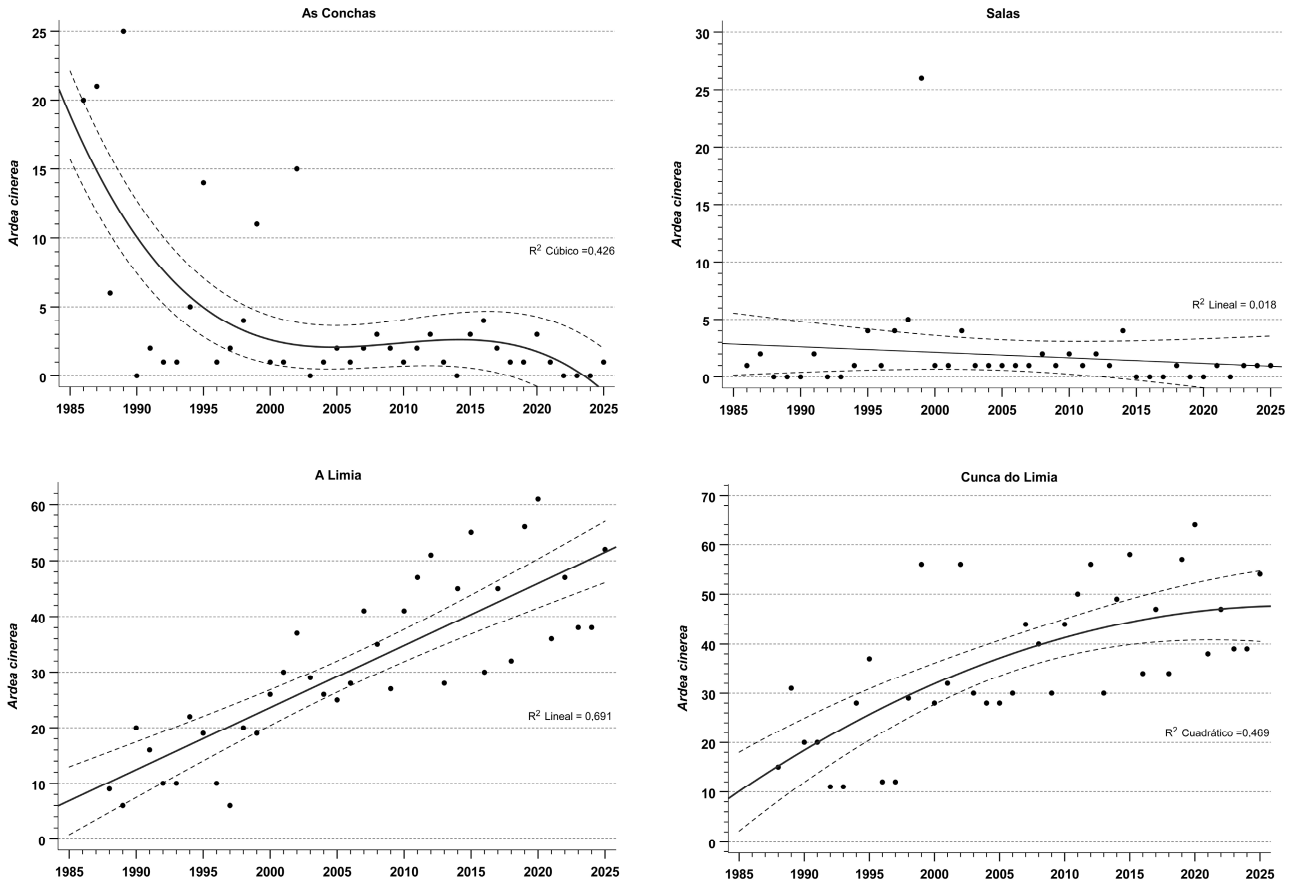


Fig. 5. Invernada de *Ardea cinerea* (garza real) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes lineais ou curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 5. Wintering of *Ardea cinerea* (grey heron) in the localities censused in the Limia River basin. With a solid line the trends are shown according to linear or curvilinear fits and with a dotted line the confidence interval of the mean.

Ciconia ciconia (cegoña branca)

Agás os de 1 ave en 2005 e 2 en 2019 no encoro do Salas, todas as observacións na cunca hidrográfica concéntranse na chaira da Limia a partires de 1998 (Fig. 6), cun forte incremento que se axusta moi ben a un modelo cuadrático (R^2= 0,870; p< 0,001). Estímase que a nivel global a tendencia é de incremento (Birdlife International, 2025; Wetlands International, 2025). En Europa a súa poboación aumentou un 59% entre 1980 e 2023, malia un declive do 9% no decenio 2014-2023 (EBCC, 2025); en España, sen embargo, lonxe de detectarse un declive recente rexistrouse un forte incremento poboacional no periodo 2011-2021 (Carrascal et al., 2023). A área de cría da especie expandiuse un 9,4% entre o primeiro (anos 1980) e o segundo (2013-2017) atlas europeo de aves reprodutoras (EBCC, 2022), sobre todo na metade meridional onde, por exemplo, aumentou un 17% en España entre o II e o III atlas de aves reprodutoras (Molina et al., 2022).

Ciconia ciconia (white stork)

Except for 1 bird in 2005 and 2 in 2019 in the Salas reservoir, all observations in the watershed are concentrated in the A Limia floodplain since 1998 (Fig. 6), with a strong increase that fits very well to a quadratic model (R^2= 0.870; p< 0.001). It is estimated that the global trend is increasing (Birdlife International, 2025; Wetlands International, 2025). In Europe, its population increased by 59% between 1980 and 2023, despite a decline of 9% in the decade 2014-2023 (EBCC, 2025); in Spain, however, far from detecting a recent decline, a strong population increase was recorded in the period 2011-2021 (Carrascal et al., 2023). The breeding area of the species expanded by 9.4% between the first (1980s) and the second (2013-2017) European Breeding Bird Atlas (EBCC, 2022), especially in the southern half where, for example, it increased by 17% in Spain between the II and III Breeding Bird Atlas (Molina et al., 2022).

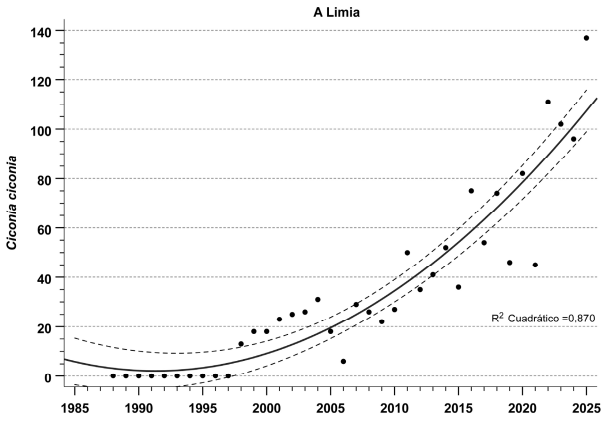


Fig. 6. Invernada de *Ciconia ciconia* (cegoña branca) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste curvilíneo e con liña de puntos o intervalo de confianza da media.
Fig. 6. Wintering of *Ciconia ciconia* (white stork) in the A Limia floodplain. With a solid line the trend is shown according to curvilinear fits and with a dotted line the confidence interval of the mean.

Mareca penelope (asubión común)

Sen rexistros no do Salas, no encoro das Conchas a invernada da especie amosou fortes flutuacións anuais (0-64 aves) no primeiro decenio da serie para logo desaparecer completamente, non habendo observacións nos últimos 30 anos (Fig. 7) e amosando unha tendencia negativa cun pobre axuste a un modelo cuadrático (R^2= 0,202; p< 0,02). Na chaira limiá a especie comezou a rexistrarse en 1998 e durante 20 anos mantivo unha invernada regular aínda que discreta, pero diminuíu e fíxose irregular nos últimos 8 anos, que se axuste a un modelo cuadrático (R^2= 0,384). Non hai unha tendencia clara para o conxunto da cunca hidrográfica, pero os datos apuntan a un declive no último decenio. A tendencia global da especie é decrecente (Birdlife International, 2025; Wetlands International, 2025), pero en Europa considérase estable (EBCC, 2022; EBCC, 2025).

Mareca penelope (Eurasian wigeon)

Without records in the Salas reservoir, in the As Conchas reservoir the wintering of the species showed strong annual fluctuations (0-64 birds) in the first decade of the series and then disappeared completely, with no observations in the last 30 years (Fig. 7), showing a decreasing trend with a poor fit to a quadratic model (R^2= 0.202; p< 0.02) In the A Limia floodplain the species began to be recorded in 1998 and for 20 years maintained a regular although discrete wintering, but it decreased and became irregular in the last 8 years, that fits to a quadratic model (R^2= 0.384). There is no clear trend for the entire river basin, but the data point to a decline in the last decade. The global trend of the species is decreasing (Birdlife International, 2025; Wetlands International, 2025), but in Europe it is considered stable (EBCC, 2022; EBCC, 2025).

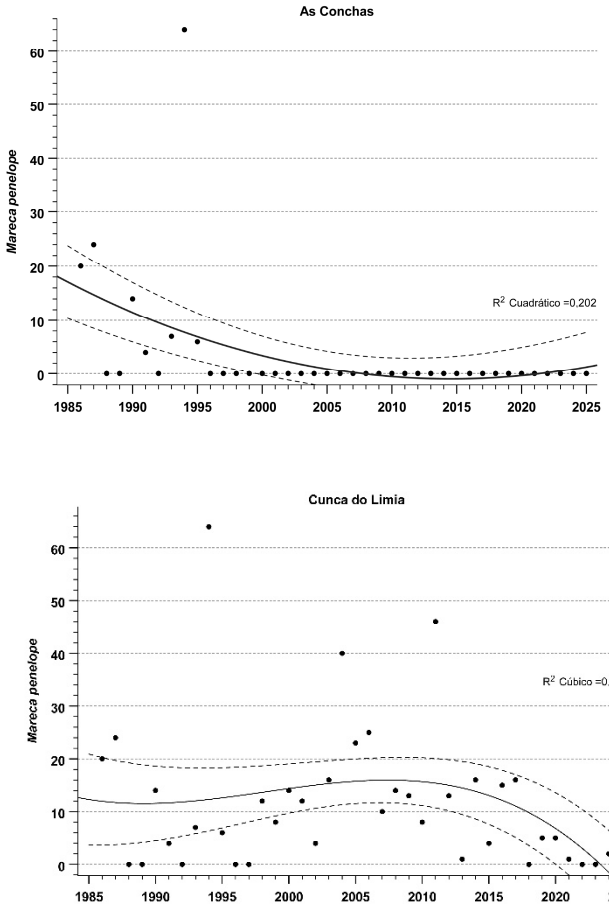


Fig. 7. Invernada de *Mareca penelope* (asubión común) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 7. Wintering of *Mareca penelope* (Eurasian wigeon) in the localities censused in the Limia River basin. With a solid line the trends are shown according to curvilinear fits and with a dotted line the confidence interval of the mean.

Mareca strepera (pato cinsento)

A especie nunca se rexistrou no encoro do Salas, mentres que no das Conchas a invernada foi baixa e irregular nos primeiros 12 anos da serie (0-14 aves) e non hai observacións nos últimos 28 anos (Fig. 8), seguindo un declive cun axuste mediocre a un modelo cuadrático (R^2= 0,240; p< 0,01). Tras un primeiro rexistro na Limia en 2001, entre 2005 e 2022 a especie invernou de xeito regular aínda que con efectivos por debaixo das 20 aves, pero non se observou no último trienio e a súa tendencia poboacional só ten un axuste mediocre a un modelo cuadrático (R^2= 0,256; p< 0,02). No conxunto da cunca oscila sen unha tendencia clara. Tanto a nivel global como europeo estímase que as súas poboacións están a aumentar (Birdlife International, 2025; Wetlands International, 2025); a súa área de cría aumentou un 27,7% entre o primeiro (anos 1980) e o segundo (2013-2017) atlas europeo de aves reprodutoras (EBCC, 2022), rexistrándose unha das maiores expansións na península ibérica, cun 124% de aumento en España entre o II e o III atlas de aves reprodutoras (Molina et al., 2022).

Mareca strepera (gadwall)

The species has never been recorded in the Salas reservoir, while in the As Conchas reservoir the wintering was low and irregular in the first 12 years of the series (0-14 birds) and there have been no observations in the last 28 years (Fig. 8), following a decline with a mediocre fit to a quadratic model (R^2= 0.240; p< 0.01). After a first record in A Limia in 2001, between 2005 and 2022 the species wintered regularly although with numbers below 20 birds, but it has not been observed in the last three years, so its population trend only has a mediocre fit to a quadratic model (R^2= 0.256; p< 0.02)). For the basin as a whole, no clear trend is observed. Both at a global and European level, its populations are estimated to be increasing (Birdlife International, 2025; Wetlands International, 2025). Its breeding area increased by 27.7% between the first (1980s) and the second (2013-2017) European atlas of breeding birds (EBCC, 2022), registering one of the largest expansions in the Iberian Peninsula, with a 124% increase in Spain between the II and III atlas of breeding birds (Molina et al., 2022).

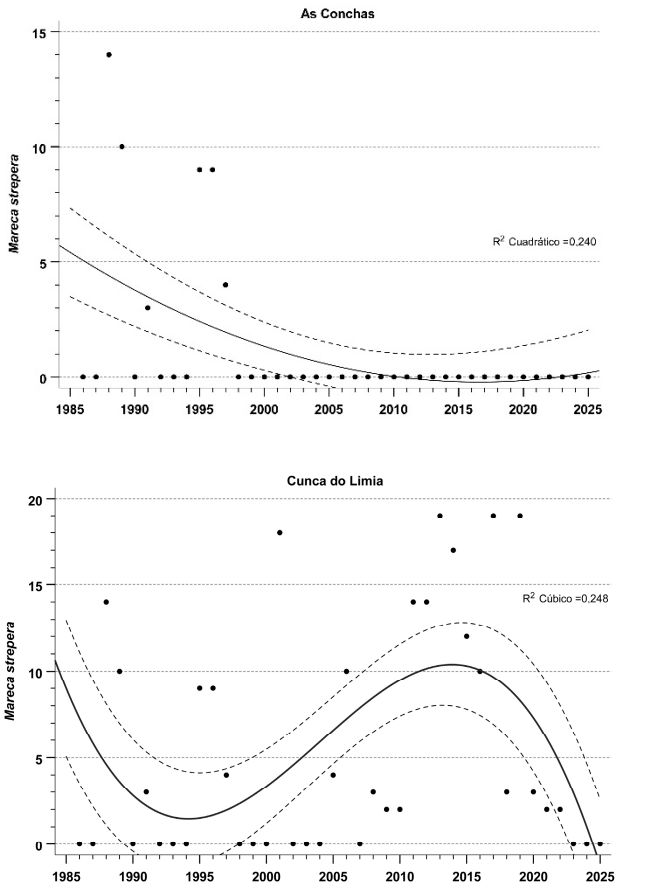


Fig. 8. Invernada de *Mareca strepera* (pato cinsento) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 8. Wintering of *Mareca strepera* (gadwall) in the localities censused in the Limia River basin. With a solid line the trends are shown according to curvilinear fits and with a dotted line the confidence interval of the mean.

Anas crecca (cerceta eurasiática)

O encoro das Conchas foi a principal zona de invernada da especie na cunca hidrográfica ata mediados dos anos 90 cando comezou un imparable declive que se axusta ben a un modelo cuadrático (R^2= 0,672; p< 0,001); antes con presencia anual no encoro, a especie só se rexistrou en 2 dos últimos 22 anos, un deles (2011) coincidindo cunha chegada excepcionalmente alta de invernantes a Galicia (Fig.

Anas crecca (common teal)

The As Conchas reservoir was the main wintering area of the species in the river basin until the mid-1990s when it began an unstoppable decline that fits well with a quadratic model (R^2= 0.672; p< 0.001); previously present annually in the reservoir, the species has only been recorded in 2 of the last 22 years, one of them (2011) coinciding with an exceptionally high arrival of wintering birds in Galicia

9). En canto a superficie das charcas areeiras brindou suficiente acubillo seguro para o repouso diúrno da especie, os efectivos censados na chaira limiá aumentaron moito a expensas de As Conchas, amosando que este encoro (apenas 8 km augas abaixo da Limia) máis que unha zona de invernada era unha localidade de 'repouso diurno' de aves que á noitiña ían alimentarse á chaira. Debido ás fortes variacións interanuais, con invernadas excepcionais de 1278 aves en 2011 (non amosada no gráfico para visualizar mellor o resto dos datos, pero incluida nos modelos) e case 600 en 2019, o mediocre axuste do modelo cuadrático para A Limia (R^2= 0,236, p< 0,05) non permite discernir entre unha estabilidade ou un lixeiro declive no último decenio. Ao contrario que As Conchas, o encoro do Salas mantén unha invernada regular dun número variable de individuos pero sen unha tendencia temporal clara, o mesmo que acontece globalmente no conxunto da cunca hidrográfica. A tendencia da especie é incerta tanto a nivel global como europeo (Birdlife International, 2025; Wetlands International, 2025); a súa área de cría en Europa contraeuse un 2% dende os anos 1980, afectando especialmente ao sur da súa distribución (EBCC, 2022) aínda que en España incrementouse un 11% entre o II e o III atlas de aves reprodutoras (Molina et al., 2022).

(Fig. 9). While the surface area of the sandy ponds provided sufficient safe shelter for the species to rest during the day, the numbers recorded in the A Limia floodplain increased greatly at the expense of As Conchas, showing that this reservoir (just 8 km downstream of the Limia) was more than a wintering area a 'daytime resting' location for birds that went to the floodplain to feed at night. Due to the strong interannual variations, with exceptional winterings of 1278 birds in 2011 (not shown in the graph to better visualize the rest of the data, but included in the models), and almost 600 in 2019, the mediocre adjustment of the quadratic model tested for A Limia (R^2= 0.236; p< 0.05) does not allow us to discern between stability or a slight decline in the last decade. Unlike As Conchas, the Salas reservoir maintains a regular wintering of a variable number of individuals but without a clear temporal trend, the same as happens globally in the entire river basin. The trend of the species is uncertain both at a global and European level (Birdlife International, 2025; Wetlands International, 2025). Its breeding area in Europe has contracted by 2% since the 1980s, especially affecting the south of its distribution (EBCC, 2022) although in Spain it increased by 11% between the II and III breeding bird atlases (Molina et al., 2022).

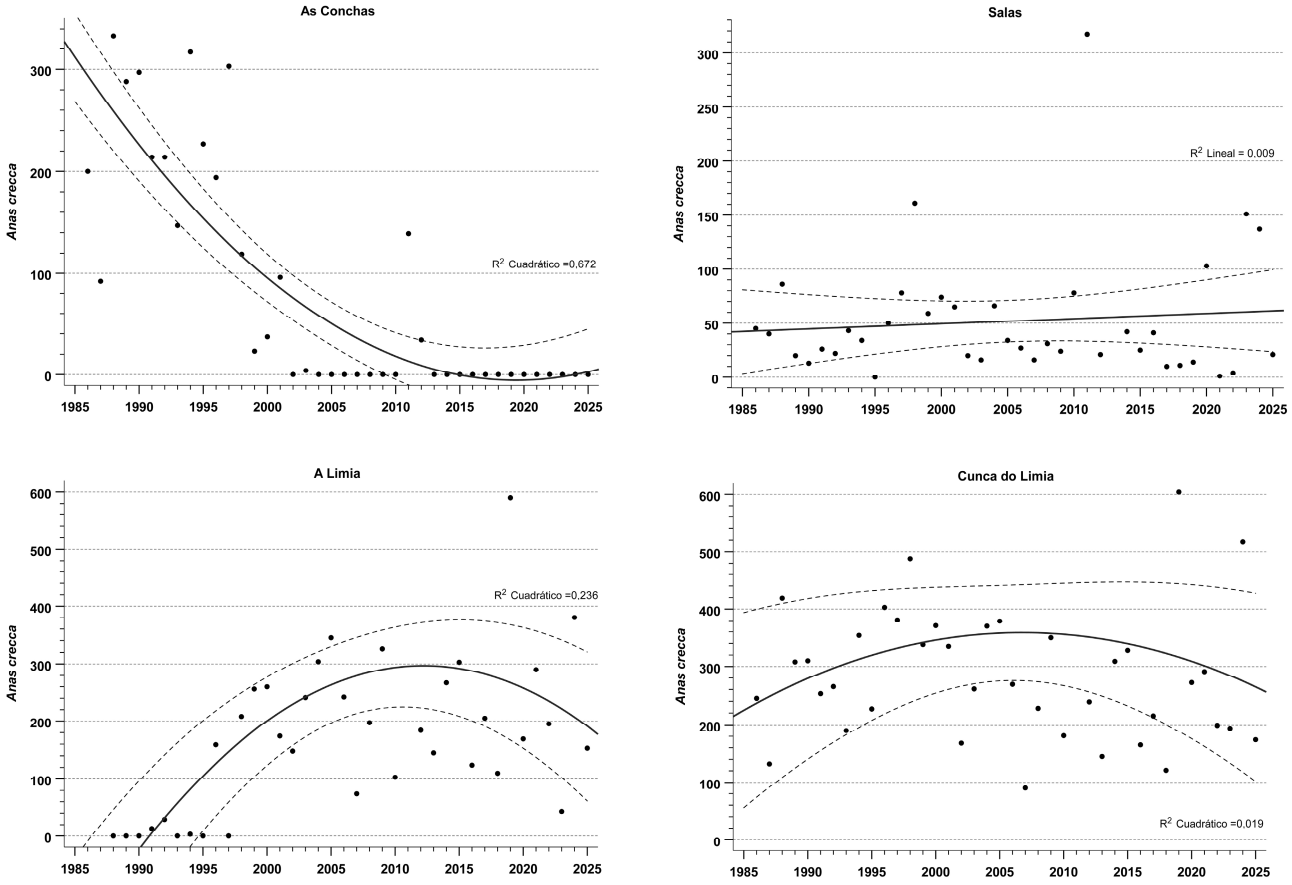


Fig. 9. Invernada de *Anas crecca* (cerceta eurasiática) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes lineais ou curvilíneos e con liña de puntos o intervalo de confianza da media. A invernada excepcional de 1278 aves en 2011 non se amosada no gráfico para visualizar mellor o resto dos datos, pero incluiuse no modelo.
Fig. 9. Wintering of *Anas crecca* (common teal) in the localities censused in the Limia River basin. With a solid line the trends are shown according to linear or curvilinear fits and with a dotted line the confidence interval of the mean. The exceptional wintering of 1278 birds in 2011 is not shown in the graph to better visualize the rest of the data, but it was included in the model.

***Anas platyrhynchos* (lavanco real)**

O encoro das Conchas foi a principal zona de invernada da especie na cunca do Limia durante o primeiro decenio do período, cunha cifra media superior ás 900 aves que se desplomou a partires de mediados dos anos 90 ata cifras sempre inferiores ás 100 aves no último decenio, amosando un declive poboacional que se axusta moi ben a un modelo cuadrático (R^2= 0,861; p< 0,001; Fig. 10). Ao igual que no caso do seu conxénere *A. crecca* e coa mesma explicación, os efectivos invernantes na chaira limiá aumentaron moito dende mediados dos 90, chegando a valores máximos de 2000-3500 aves nos anos do cambio de século, cun declive posterior que aínda se mantén: no último quinquenio rexistráronse 3 das 5 menores invernadas dos últimos 30 anos; a tendencia poboacional na Limia axústase ben a un modelo cúbico (R^2= 0,627; p< 0,001). Pola súa banda, a invernada no encoro do Salas mantívose sen cambios sensibles durante todo o período considerado, con valores xeralmente inferiores as 100 aves. Globalmente, no conxunto da cunca hidrográfica a invernada da especie oscilou durante o primeiro decenio, aumentou durante o seguinte e diminuíu nos dous últimos seguindo un modelo cúbico (R^2= 0,475). A nivel global a tendencia da especie é de incremento (Wetlands International, 2025), pero é estable en Europa (Birdlife International, 2025) onde a súa área de cría en Europa aumentou un 1,2% dende os anos 1980 (EBCC, 2022) e os efectivos aumentaron nun 54% no longo prazo (1980-2023) pero diminuíron un 3% no decenio 2014-2023, o último con datos (EBCC, 2025). En España contrasta o incremento dun 18% na área de cría dende o cambio de século (Molina et al., 2022) coa redución dun 24,8% na poboación reprodutora no período 2002-2021, aínda que cunha tendencia a estabilizarse nos últimos 10 anos (Carrascal et al., 2023).

***Anas platyrhynchos* (mallard)**

The As Conchas reservoir was the main wintering area of the species in the Limia basin during the first decade of the period, with an average number of more than 900 birds that plummeted from the mid-1990s to numbers always below 100 birds in the last decade, showing a population decline that fits very well with a quadratic model (R^2= 0.861; p< 0.001; Fig. 10). As in the case of its congener *A. crecca* and with the same explanation, the wintering numbers in the A Limia floodplain have increased greatly since the mid-1990s, reaching maximum values of 2000-3500 birds in the years of the turn of the century, with a subsequent decline that is still maintained: in the last five years, 3 of the 5 lowest wintering numbers of the last 30 years were registered; the population trend in A Limia fits well to a cubic model (R^2= 0.627; p< 0.001). On the other hand, the wintering in the Salas reservoir remained without significant changes throughout the period considered, with values generally lower than 100 birds. Overall, in the entire river basin, the wintering of the species fluctuated during the first decade, increased during the following and decreased in the last two following a cubic model (R^2= 0.475). Globally, the species' trend is increasing (Wetlands International, 2025), but in Europe its trend is considered stable (Birdlife International, 2025) as its breeding area in Europe has increased by 1.2% since the 1980s (EBCC, 2022) and the numbers increased by 54% in the long term (1980-2023) but decreased by 3% in the 2014-2023 decade, the last with data (EBCC, 2025). In Spain, the 18% increase in the breeding area since the turn of the century (Molina et al., 2022) contrasts with the 24.8% reduction in the breeding population in the period 2002-2021, although with a tendency to stabilize in the last 10 years (Carrascal et al., 2023).



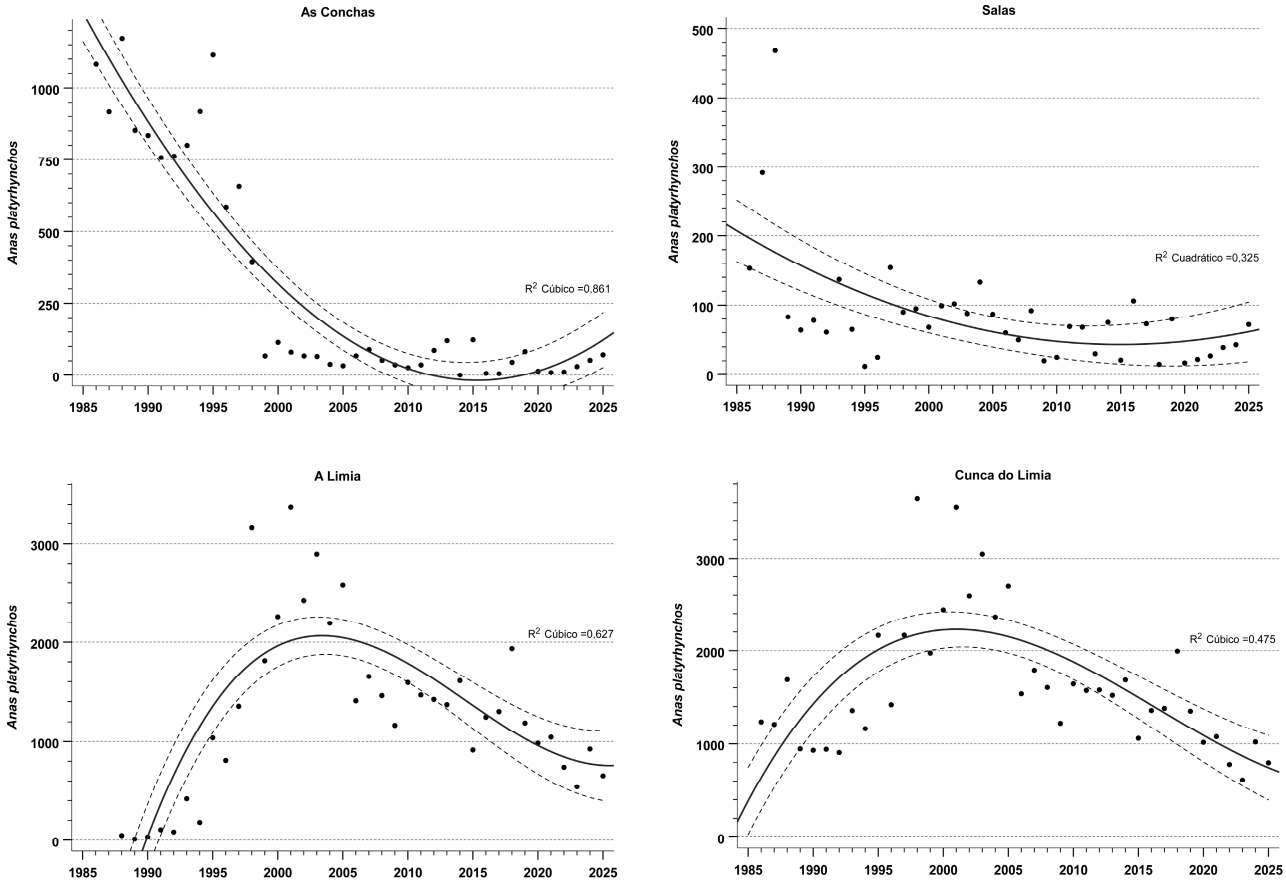


Fig. 10. Invernada de *Anas platyrhynchos* (lavanco real) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 10. Wintering of *Anas platyrhynchos* (mallard) in the localities censused in the Limia River basin. With a solid line the trends are shown according to curvilinear fits and with a dotted line the confidence interval of the mean.

Anas acuta (pato rabilongo)

A única localidade da cunca con rexistros da especie é a chaira da Limia, só dende 2001 e con efectivos reducidos pero que apuntan a un crecemento seguindo un modelo cúbico, aínda que o axuste do modelo é mediocre (R^2= 0,356; Fig. 11). A tendencia da especie é incerta a nivel global, pero en Europa estímase que diminuíu un 24% en 20 anos (Birdlife International, 2025; Wetlands International, 2025) e a súa área de cría en Europa reduciuse un 14,7% entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 (EBCC, 2022), mentres que en España diminuíu un 8% entre o II e o III atlas de aves reprodutoras (Molina et al., 2022).

Anas acuta (northern pintail)

The only locality in the basin with records of the species is the A Limia floodplain, only since 2001 and with low numbers but which point to a growth following a cubic model, although the fit of the model is mediocre (R^2= 0.356; Fig. 11). The trend of the species is uncertain at a global level, but in Europe it is estimated that it has decreased by 24% in 20 years (Birdlife International, 2025; Wetlands International, 2025) and in parallel its European breeding area has been reduced by 14.7% between the breeding bird atlases of the 1980s and those of 2013-2017 (EBCC, 2022), while in Spain it has decreased by 8% between the II and III breeding bird atlases (Molina et al., 2022).

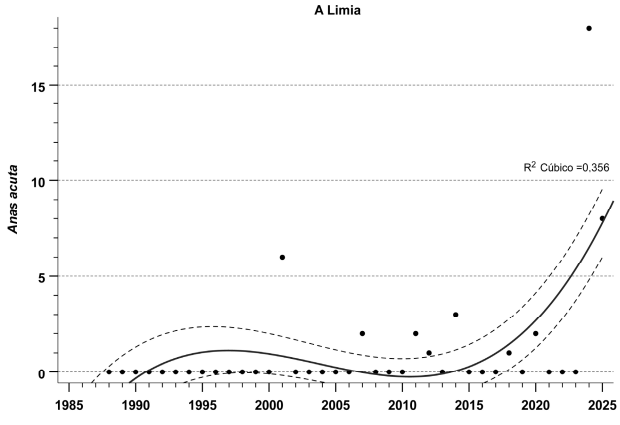


Fig. 11. Invernada de *Anas acuta* (pato rabilongo) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste curvilíneo e con liña de puntos o intervalo de confianza da media.
Fig. 11. Wintering of *Anas acuta* (northern pintail) in the A Limia floodplain. With a solid line the trend is shown according to curvilinear fits and with a dotted line the confidence interval of the mean.

Spatula clypeata (cullerete boreal)

Rexistrado só na chaira da Limia dende 1995 con efectivos xeralmente inferiores ás 40 aves pero que, con oscilacións interanuais, amosan unha tendencia lineal ascendente (R^2= 0,430; p< 0,001; Fig. 12). A poboación global da especie está a diminuír, pero a europea mantense estable (Birdlife International, 2025; Wetlands International, 2025), cun incremento dun 5,0% na súa área de cría entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017; un dos maiores aumentos rexistrouse precisamente na península ibérica (EBCC, 2022), chegando en España ao 89% entre o II e o III atlas de aves reprodutoras (Molina et al., 2022).

Spatula clypeata (northern shoveler)

Recorded only in the A Limia floodplain since 1995 with numbers generally below 40 birds but which, with interannual oscillations, follow a linear upward trend (R^2= 0.430; p< 0.001; Fig. 12). The global population of the species is decreasing, but the European population remains stable (Birdlife International, 2025; Wetlands International, 2025), with an increase of 5.0% in its breeding area between the breeding bird atlases of the 1980s and those of 2013-2017; one of the largest increases was recorded precisely in the Iberian Peninsula (EBCC, 2022), reaching 89% in Spain between the II and III breeding bird atlases (Molina et al., 2022).

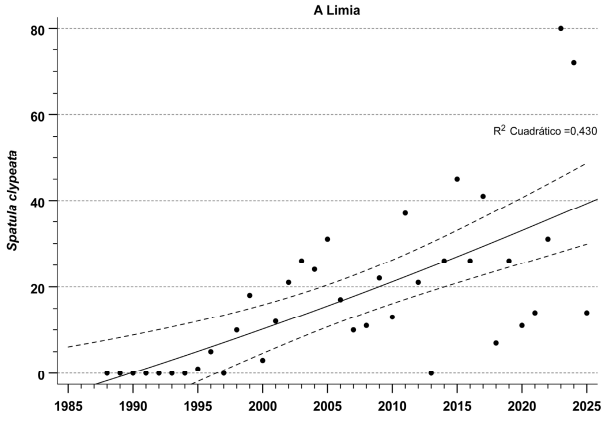


Fig. 12. Invernada de *Spatula clypeata* (cullerete boreal) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 12. Wintering of *Spatula clypeata* (northern shoveler) in the A Limia floodplain. With a solid line the trend is shown according to curvilinear fit and with a dotted line the confidence interval of the mean.

Aythya ferina (parrulo eurasiático)

Documentáronse invernadas ata 30 aves no encoro das Conchas ou no do Salas (nunca o mesmo ano) durante o primeiro decenio considerado, pero non hai rexistros nas Conchas nos últimos 30 anos e no Salas dende 2001 (Fig. 13). Na chaira limiá houbo unha invernada de ata 32 aves na metade dos anos entre 1990 e 2002, pero dende entón só hai tres rexistros de 1-2 aves. Por mor desa irregularidade e oscilacións da invernada, os axustes das tendencias poboacionais nas tres localidades non son moi fiables aínda que todos suxiren unha diminución. Os efectivos tanto continentais como mundiais da especie están a diminuír. En Europa rexístranse diminucións dun 30-50% nos tamaños das poboacións reprodutoras e invernantes dende o cambio de século (Birdlife International, 2025; Wetlands International, 2025), aínda que a extensión da súa área de cría mantívose en xeral estable entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 (EBCC, 2022) e en España aumentou un 69% entre o II e o III atlas de aves reprodutoras (Molina et al., 2022).

Aythya ferina (common pochard)

Up to 30 birds were recorded wintering at the As Conchas or Salas reservoirs (never in the same year) during the first decade considered, but there are no records at As Conchas in the last 30 years and at Salas since 2001 (Fig. 13). In the A Limia floodplain there was a wintering of up to 32 birds in half the years between 1990 and 2002, but since then there have been only three records of 1-2 birds. Because of this irregularity and oscillations of wintering, adjustments to population trends at the three locations are unreliable although all suggest a decrease. Both continental and global numbers of the species are declining. In Europe, there have been 30-50% decreases in the sizes of breeding and wintering populations since the turn of the century (Birdlife International, 2025; Wetlands International, 2025), although the extent of their breeding area has remained generally stable between the breeding bird atlases of the 1980s and those of 2013-2017 (EBCC, 2022) and in Spain it has increased by 69% between the II and III breeding bird atlases (Molina et al., 2022).

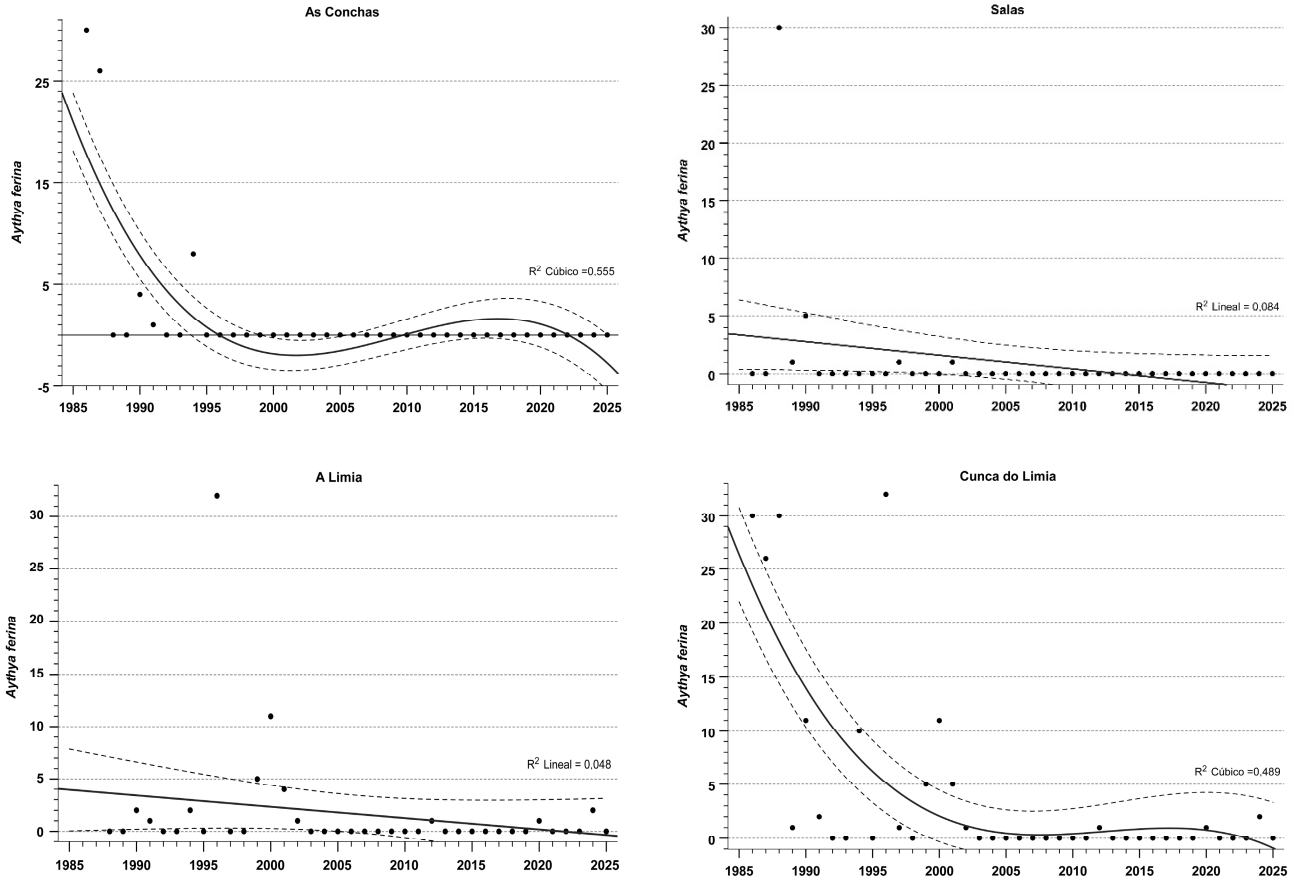


Fig. 13. Invernada de *Aythya ferina* (parrulo eurasiático) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes lineais ou curvilíneos e con liña de puntos o intervalo de confianza da media.
Fig. 13. Wintering of *Aythya ferina* (common pochard) in the localities censused in the Limia River basin. With a solid line the trends are shown according to linear or curvilinear fits and with a dotted line the confidence interval of the mean.

Aythya fuligula (parrulo cristado)

Especie rexistrada só na Limia e só nun terzo dos invernos ata 2016, pero dende 2017 a súa invernada é anual cunha tendencia que sería de incremento de acordo cun modelo cúbico (R^2= 0,299; p< 0,01) obtido para os datos (Fig. 14). As estimas a nivel global, con datos insuficientes, suxiren unha estabilidade das pobacións (Birdlife International, 2025; Wetlands International, 2025). A área de cría en Europa aumentou un 1,1% entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 (EBCC, 2022), mentres que en España diminuíu un 11% entre o II e o III atlas de aves reprodutoras (Molina et al., 2022).

Aythya fuligula (tufted duck)

A species recorded only in A Limia and only in a third of winters until 2016, but since 2017 its wintering is annual with a trend that would be increasing according to a cubic model (R^2= 0.299; p< 0.01) obtained for the data Fig. 14). Estimates at a global level, with insufficient data, suggest a stability of the populations (Birdlife International, 2025; Wetlands International, 2025). The breeding area in Europe would have increased by 1.1% between the breeding bird atlases of the 1980s and those of 2013-2017 (EBCC, 2022), while in Spain it decreased by 11% between the II and III breeding bird atlases (Molina et al., 2022).

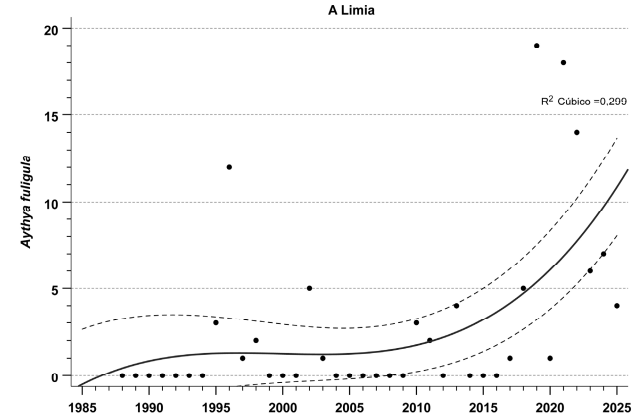


Fig. 14. Invernada de *Aythya fuligula* (parrulo cristado) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste curvilíneo e con liña de puntos o intervalo de confianza da media.
Fig. 14. Wintering of *Aythya fuligula* (tufted duck) in the A Limia floodplain. With a solid line the trend is shown according to curvilinear fit and with a dotted line the confidence interval of the mean.

***Rallus aquaticus* (zurrasca eurasiática)**

Especie rexistrada só na Limia pola carencia de hábitats axeitados nos encoros das Conchas e Salas (Fig. 15). O aparente incremento dende 2008 débese en realidade a un mellora substancial da detectabilidade polo emprego de reclamos gravados. As estimas a nivel global, con datos insuficientes, suxiren unha estabilidade das pobacións (Birdlife International, 2025; Wetlands International, 2025). A súa área de cría en Europa tería aumentado un 2,2% entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017, percibíndose unha diferencia latitudinal, con máis aumentos no norte e máis diminucións no sur (EBCC, 2022), cunha redución do 9% entre o II e o III atlas de aves reprodutoras en España (Molina et al., 2022).

***Rallus aquaticus* (western water rail)**

A species recorded only in A Limia due to the lack of suitable habitats in the As Conchas and Salas reservoirs (Fig. 15). The apparent increase since 2008 is actually due to a substantial improvement in detectability through the use of recorded calls. Global estimates, with insufficient data, suggest a stability of the populations (Birdlife International, 2025; Wetlands International, 2025). Its breeding area in Europe would have increased by 2.2% between the breeding bird atlases of the 1980s and those of 2013-2017, with a latitudinal difference being perceived, with greater increases in the north and greater decreases in the south (EBCC, 2022), with a reduction of 9% between the II and III breeding bird atlases in Spain (Molina et al., 2022).

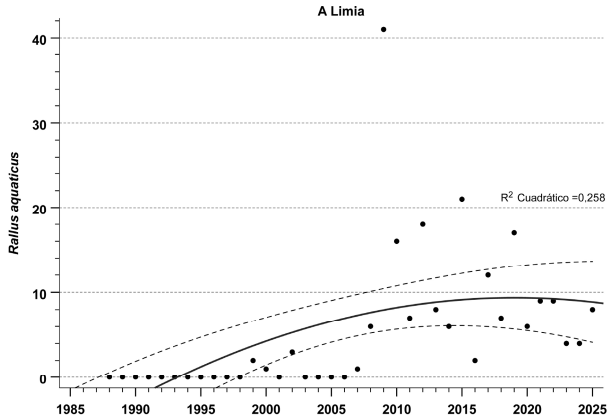


Fig. 15. Invernada de *Rallus aquaticus* (zurrasca eurasiática) na chaira da Limia. Con liña contínua amósanse a tendencia segundo axuste curvilíneo e con liña de puntos o intervalo de confianza da media.
Fig. 15. Wintering of *Rallus aquaticus* (western water rail) in the A Limia floodplain. With a solid line the trend is shown according to curvilinear fits and with a dotted line the confidence interval of the mean.

***Gallinula chloropus* (galiña de auga común)**

Igual que a especie anterior, só hai rexistros na Limia pola carencia de hábitats axeitados nos encoros das Conchas e Salas Fig. 16). As variacións na detectabilidade debidas ao nivel das augas e a cobertura da vexetación seguramente explican parte das oscilacións interanuais dos efectivos censados, pero un modelo cúbico que se axusta moderadamente ben (R^2= 0,391; p< 0,001) apunta a un incremento inicial no primeiro decenio da serie (ata 180-200 aves no trienio 1993-95) cunha diminución posterior e unha certa estabilidade no último decenio. Aínda que a área de cría da especie en Europa mantívose estable entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 (EBCC, 2022), os seus efectivos rexistran unha diminución do 30% entre 1980 e 2023 e dun 18% no decenio 2014-2023 (EBCC, 2025). En España a comparación entre o II e o III atlas de aves reprodutoras indica unha contracción da área de cría ao redor do 9% (Molina et al., 2022).

***Gallinula chloropus* (common moorhen)**

Like the previous species, there are only records in A Limia due to the lack of suitable habitats in the As Conchas and Salas reservoirs (Fig. 16). Variations in detectability due to water level and vegetation cover certainly explain part of the interannual oscillations in the censused numbers, but a cubic model that fits moderately well (R^2= 0.391; p< 0.001) points to an initial increase in the first decade of the series (up to 180-200 birds in the 1993-95 triennium) with a subsequent decrease and some stability in the last decade. Although the breeding area of the species in Europe remained stable between the 1980s and 2013-2017 breeding bird atlases (EBCC, 2022), its numbers registered a decrease of 30% between 1980 and 2023 and of 18% in the decade 2014-2023 (EBCC, 2025). In Spain, the comparison between the II and III breeding bird atlases indicates a contraction of the breeding area of around 9% (Molina et al., 2022).

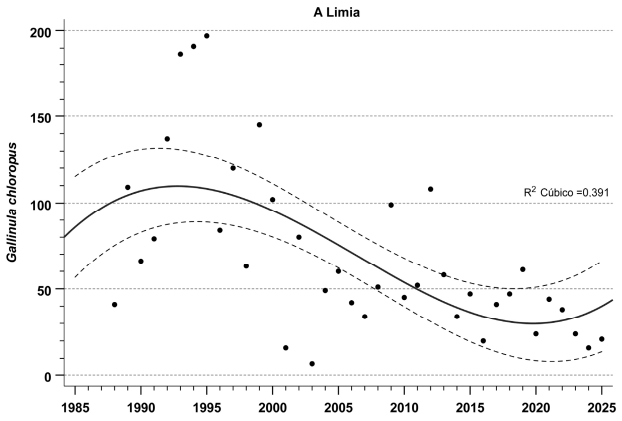


Fig. 16. Invernada de *Gallinula chloropus* (galiña de auga común) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste curvilíneo e con liña de puntos o intervalo de confianza da media.
Fig. 16. Wintering of *Gallinula chloropus* (common moorhen) in the A Limia floodplain. With a solid line the trend is shown according to curvilinear fit and with a dotted line the confidence interval of the mean.

Fulica atra (galo de auga común)

Agás a observación de 1 ave no encoro das Conchas en 1996, todos os rexistros da cunca hidrográfica corresponden á chaira da Limia onde, coa excepción do cuatrienio 1994-97, a presenza da especie é xeralmente de só 1-2 aves cunha tendencia que semella de declive (Fig. 17). Aínda que a área de cría da especie en Europa mantívose estable entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 (EBCC, 2022) -mesmo con incrementos dun 19% entre o II e o III atlas de aves reprodutoras de España (Molina et al., 2022)-, as súa poboacións rexistran unha diminución a longo prazo (1980-2023) do 5%, agravada a un 17% no decenio 2014-2023 (EBCC, 2025). Esta tendencia negativa en Europa, estimada nun 20% nun intervalo de tres xeracións -é dicir, 21 anos- contrasta coa tendencia global das súas poboacións que semella positiva (Birdlife International, 2025).

Fulica atra (Eurasian coot)

Apart from the observation of 1 bird in the As Conchas reservoir in 1996, all records in the watershed correspond to the A Limia floodplain where, with the exception of the four-year period 1994-97, the presence of the species is reduced to 1-2 birds with a trend that seems to be declining (Fig. 17). Although the breeding area of the species in Europe has remained stable between the breeding bird atlases of the 1980s and those of 2013-2017 (EBCC, 2022) - even with increases of 19% between the II and III breeding bird atlases of Spain (Molina et al., 2022)-, its populations register a long-term decrease (1980-2023) of 5%, aggravated to 17% in the decade 2014-2023 (EBCC, 2025). This negative trend in Europe, estimated at 20% over a three-generation period - that is, 21 years - contrasts with the global trend in their populations which appears positive (Birdlife International, 2025).

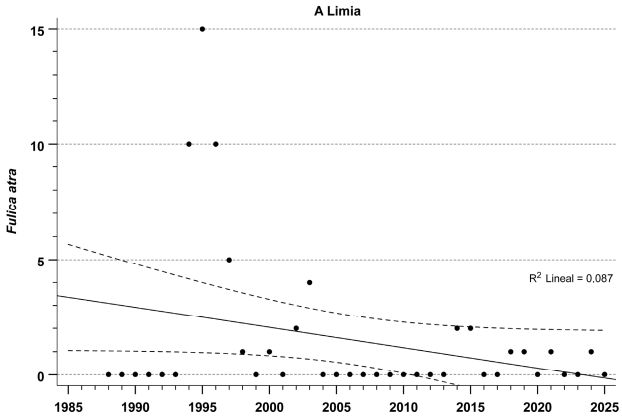


Fig. 17. Invernada de *Fulica atra* (galo de auga común) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste lineal e con liña de puntos o intervalo de confianza da media.
Fig. 17. Wintering of *Fulica atra* (Eurasian coot) in the A Limia floodplain. With a solid line the trend is shown according to linear fits and with a dotted line the confidence interval of the mean.

Pluvialis apricaria (píldora dourada europea)

Especie rexistrada só na chaira da Limia onde ten presenza case anual (26 dos últimos 30 anos) pero con fortes oscilacións (0-500 aves); a evolución temporal suxire unha estabilidade ou un lixeiro incremento dos efectivos invernantes (Fig. 18). A nivel global as súas poboacións amosan unha tendencia positiva (Birdlife International, 2025; Wetlands International, 2025), pero en Europa reducíronse un 31% no longo prazo (1980-2023), atenuándose o declive no decenio 2014-2023 ata o 11% (EBCC, 2025). Os cambios teñen sido menores para a área de cría europea, que diminuíu lixeiramente (-3,1%) entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 (EBCC, 2022).

Pluvialis apricaria (Eurasian golden plover)

A species recorded only in the A Limia floodplain where it is present almost annually (26 of the last 30 years) but with strong oscillations (0-500 birds); the temporal evolution suggests a stability or a slight increase in wintering numbers (Fig. 18). Globally, its populations show a positive trend (Birdlife International, 2025; Wetlands International, 2025), but in Europe they have been reduced by 31% in the long term (1980-2023), the decline being attenuated in the decade 2014-2023 to 11% (EBCC, 2025). The changes have been smaller for the European breeding area, which has decreased slightly (-3.1%) between the breeding bird atlases of the 1980s and those of 2013-2017 (EBCC, 2022).

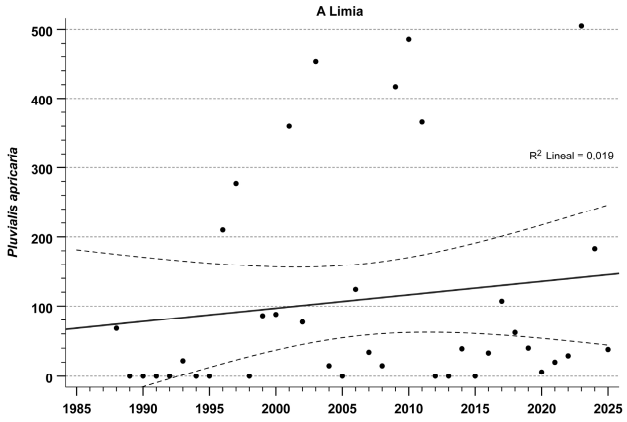


Fig. 18. Invernada de *Pluvialis apricaria* (píldora dourada europea) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste lineal e con liña de puntos o intervalo de confianza da media.
Fig. 18. Wintering of *Pluvialis apricaria* (Eurasian golden plover) in the A Limia floodplain. With a solid line the trend is shown according to linear fit and with a dotted line the confidence interval of the mean.

Vanellus vanellus (avefría choromica)

Durante o período 1986-2000 a especie presentábase de xeito ocasional nos encoros das Conchas (4 rexistros con 1-12 aves) e Salas (5 rexistros de 1-7 aves) pero dende o cambio de século non hai observacións en ningún dos encoros (Fig. 19). Pola contra, a súa presenza pode considerarse anual na chaira da Limia (só 3 anos sen rexistros, todos anteriores a 1999), pero con oscilación moi fortes vencelladas ás vagas de frío no centro e norte de Europa, cunha cifra récord de 3308 aves o ano 2011. Por mor desas flutuacións, o axuste de todos os modelos ensaiados é malo pero apuntan a que tendencia a longo prazo na Limia é de estabilidade, pero con (moi) amplas oscilacións. A especie está a sufrir unha regresión xeneralizada, con diminucións dun 20-29% a nivel global (Birdlife International, 2025; Wetlands International, 2025), dun 62% en Europa no longo prazo (1980-2023) e dun 20% no decenio 2014-2023 (EBCC, 2025), aínda que a área de cría europea só diminuiu un 1,6% entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 (EBCC, 2022). En España entre o II e o III atlas de aves reprodutoras tamén se reduciu o número de cuadrículas con reprodución probable ou confirmada (Molina et al., 2022).

Vanellus vanellus (northern lapwing)

During the period 1986-2000 the species was present occasionally both in the As Conchas reservoir (4 records with 1-12 birds) and in the Salas reservoir (5 records of 1-7 birds) but since the turn of the century there have been no observations in either reservoir (Fig. 19). On the contrary, its presence can be considered annual in the A Limia floodplain (only 3 years without records, all before 1999), but with very strong oscillations linked to cold waves in central and northern Europe, with a record number of 3308 birds in 2011. Because of these fluctuations, the fit of all the tested models is poor but they point to a long-term trend in the Limia of stability, but with (very) wide oscillations. The species is undergoing a widespread regression, with declines of 20-29% globally (Birdlife International, 2025; Wetlands International, 2025), but of 62% in Europe in the long term (1980-2023) and 20% in the decade 2014-2023 (EBCC, 2025), although the European breeding area only contracted by 1.6% between the breeding bird atlases of the 1980s and those of 2013-2017 (EBCC, 2022). In Spain, between the II and III breeding bird atlases, the number of grids with probable or confirmed breeding was also reduced (Molina et al., 2022).



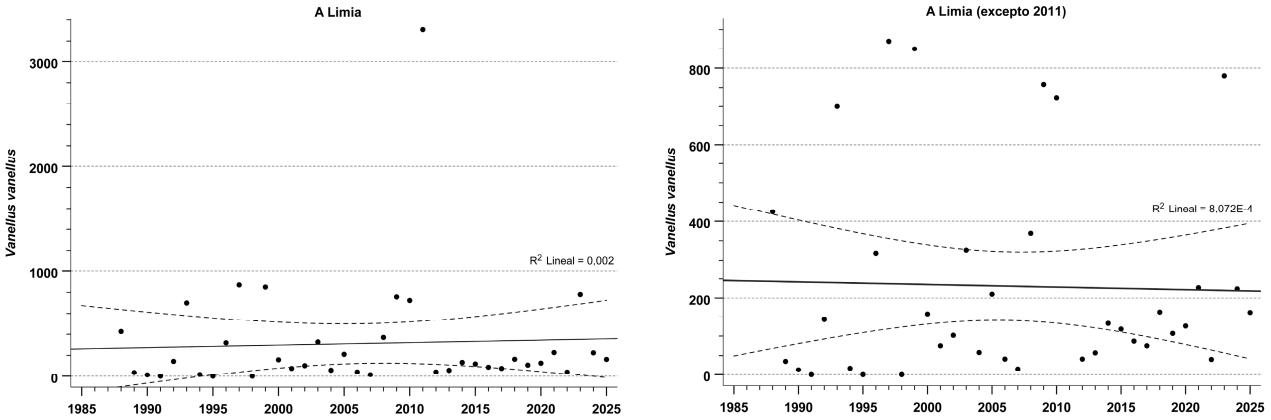


Fig. 19. Invernada de *Vanellus vanellus* (avefría choromica) na chaira da Limia. Con liña contínua amósanse as tendencias segundo axustes lineais [con (esquerda) e sen (dereita) a invernada excepcional de 2011] e con liña de puntos o intervalo de confianza da media.
Fig. 19. Wintering of *Vanellus vanellus* (northern lapwing) in the A Limia floodplain. With a solid line the trends are shown according to linear fits [with (left) and without (right) the exceptional record of 2011] and with a dotted line the confidence interval of the mean.

Gallinago gallinago (arceúcha das brañas)

Aparte de catro observacións de 1-2 aves nas Conchas e outros tantas de 1-3 aves no Salas no período 1986-97, non hai rexistros en ningún dos encoros desta especie que, polo contrario, se presenta regularmente na chaira da Limia con efectivos flutuantes e unha tendencia a longo prazo de lixeiro declive (Fig. 20). Sospéitase que a especie está a sufrir unha regresión a nivel global (Birdlife International, 2025; Wetlands International, 2025), que está confirmada para Europa cunha diminución do 49% no longo prazo (1980-2023) pero sen cambios no decenio 2014-2023 (EBCC, 2025). Entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017, a extensión da área de cría en Europa reduciuse un 5,7%, pero coa meirande parte da diminución concentrada no terzo sur da súa distribución (EBCC, 2022), aínda que os datos do III atlas de aves reprodutoras en España suxiren un aumento dun 13% na extensión da área de cría en comparación co II atlas (Molina et al., 2022).

Gallinago gallinago (common snipe)

Apart from four observations of 1-2 birds in As Conchas and as many of 1-3 birds in the Salas in the period 1986-97, there are no records in any of the reservoirs of this species which, on the contrary, occurs regularly in the A Limia floodplain with fluctuating numbers and a long-term trend of slight decline (Fig. 20). It is suspected that the species is undergoing a regression at a global level (Birdlife International, 2025; Wetlands International, 2025), which is confirmed for Europe with a decrease of 49% in the long term (1980-2023) but without changes in the decade 2014-2023 (EBCC, 2025). Between the breeding bird atlases of the 1980s and those of 2013-2017, the extent of the breeding area in Europe was reduced by 5.7%, but with most of the decrease concentrated in the southern third of its distribution (EBCC, 2022), although data from the III breeding bird atlas in Spain suggest a 13% increase in the extent of the breeding area compared to the II atlas (Molina et al., 2022).

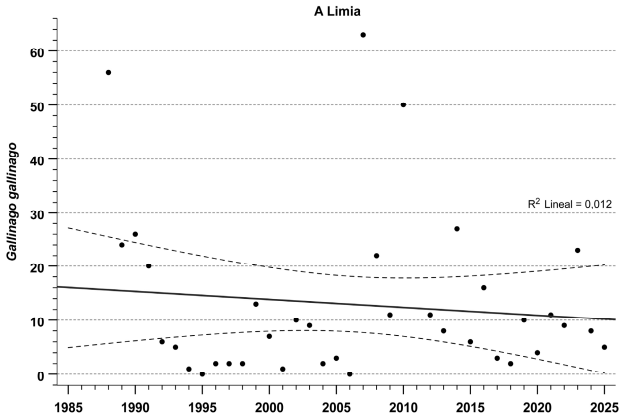


Fig. 20. Invernada de *Gallinago gallinago* (arceúcha das brañas) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste lineal e con liña de puntos o intervalo de confianza da media.
Fig. 20. Wintering of *Gallinago gallinago* (common snipe) in the A Limia floodplain. With a solid line the trend is shown according to linear fit and with a dotted line the confidence interval of the mean.

Tringa ochropus (bilurico de ás negras)

Con só un rexistro no encoro das Conchas (1 ave en 2023) e dous no do Salas (1 ave en 1997 e 1999), a única localidade da cunca hidrográfica -e de Galicia- con invernada bastante regular da especie (7 de cada 10 anos) é a chaira da Limia onde os efectivos raramente superan as 3 aves (Fig. 21). Todos os modelos ensaiados proporcionan malos axustes e apuntan a unha tendencia descendente da invernada. Sen embargo, as estimas a nivel global - con datos de baixa calidade- apuntan a un incremento das poboacións da especie (Birdlife International, 2025; Wetlands International, 2025), que está mellor documentado para Europa onde se teñen rexistrados un incremento do 5% no longo prazo (1980-2023) e do 1% no decenio 2014-2023 (EBCC, 2025). No mesmo senso, entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 a extensión da área de cría en Europa aumentou un 1,4% (EBCC, 2022).

Tringa ochropus (green sandpiper)

With only one record in the As Conchas reservoir (1 bird in 2023) and two in the Salas reservoir (1 bird in 1997 and 1999), the only locality in the watershed - and in Galicia - with fairly regular wintering of the species (7 out of 10 years) is the A Limia floodplain where the numbers rarely exceed 3 birds (Fig. 21). All the models tested provide poor adjustments and point to a downward trend in wintering. However, estimates at a global level - with low quality data- point to an increase in the populations of the species (Birdlife International, 2025; Wetlands International, 2025), which is best documented for Europe where an increase of 5% has been recorded in the long term (1980-2023) and 1% in the decade 2014-2023 (EBCC, 2025). In the same sense, between the breeding bird atlases of the years 1980 and those of 2013-2017 the extension of the breeding area in Europe increased by 1.4% (EBCC, 2022).

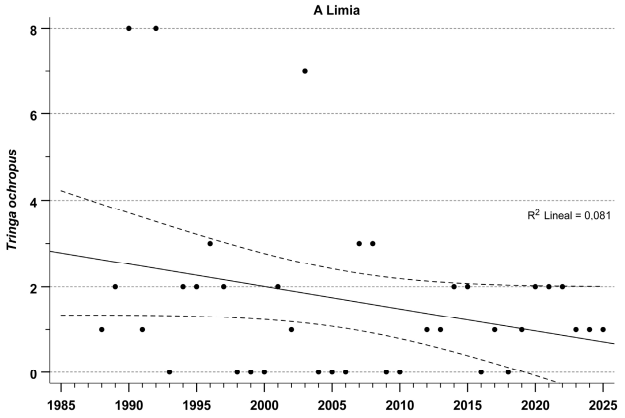


Fig. 21. Invernada de *Tringa ochropus* (bilurico de ás negras) na chaira da Limia. Con liña contínua amósase a tendencia segundo axuste lineal e con liña de puntos o intervalo de confianza da media.
Fig. 21. Wintering of *Tringa ochropus* (green sandpiper) in the A Limia floodplain. With a solid line the trend is shown according to linear fit and with a dotted line the confidence interval of the mean.

Actitis hypoleucos (bilurico das rochas)

No encoro do Salas a especie ten presencia esporádica (1 de cada 10 anos), sempre de aves solitarias mentres que os rexistros son máis frecuentes no encoro das Conchas e na chaira da Limia (3 e 4 de cada 10 anos, respectivamente) con efectivos no rango de 1-8 aves (Fig. 22). Nas tres localidades a tendencia a longo prazo é de relativa estabilidade ou lixeira diminución. A nivel global estímase que a especie está a sufrir unha regresión (Birdlife International, 2025; Wetlands International, 2025), que no caso de Europa está confirmada cunha diminución do 50% no longo prazo (1980-2023) e dun 7% no período 2014-2023 (EBCC, 2025) e unha redución do 4,6% na área de cría entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017, concentrándose a meirande parte da diminución na metade meridional da súa distribución (EBCC, 2022), incluída España (Molina et al., 2022).

Actitis hypoleucos (common sandpiper)

In the Salas reservoir the species is sporadically present (1 of 10 years), always as solitary birds, while records are more frequent in the As Conchas reservoir and the A Limia floodplain (3 and 4 of 10 years, respectively) with numbers ranging from 1-8 birds (Fig. 22). In the three locations the long-term trend is of relative stability or slight decrease. At a global level, it is estimated that the species is undergoing a regression (Birdlife International, 2025; Wetlands International, 2025), which in the case of Europe is confirmed with a decrease of 50% in the long term (1980-2023) and 7% in the period 2014-2023 (EBCC, 2025) and a reduction of 4.6% in the breeding area between the breeding bird atlases of the 1980s and those of 2013-2017, with most of the decrease concentrated in the southern half of its distribution (EBCC, 2022), including Spain (Molina et al., 2022).

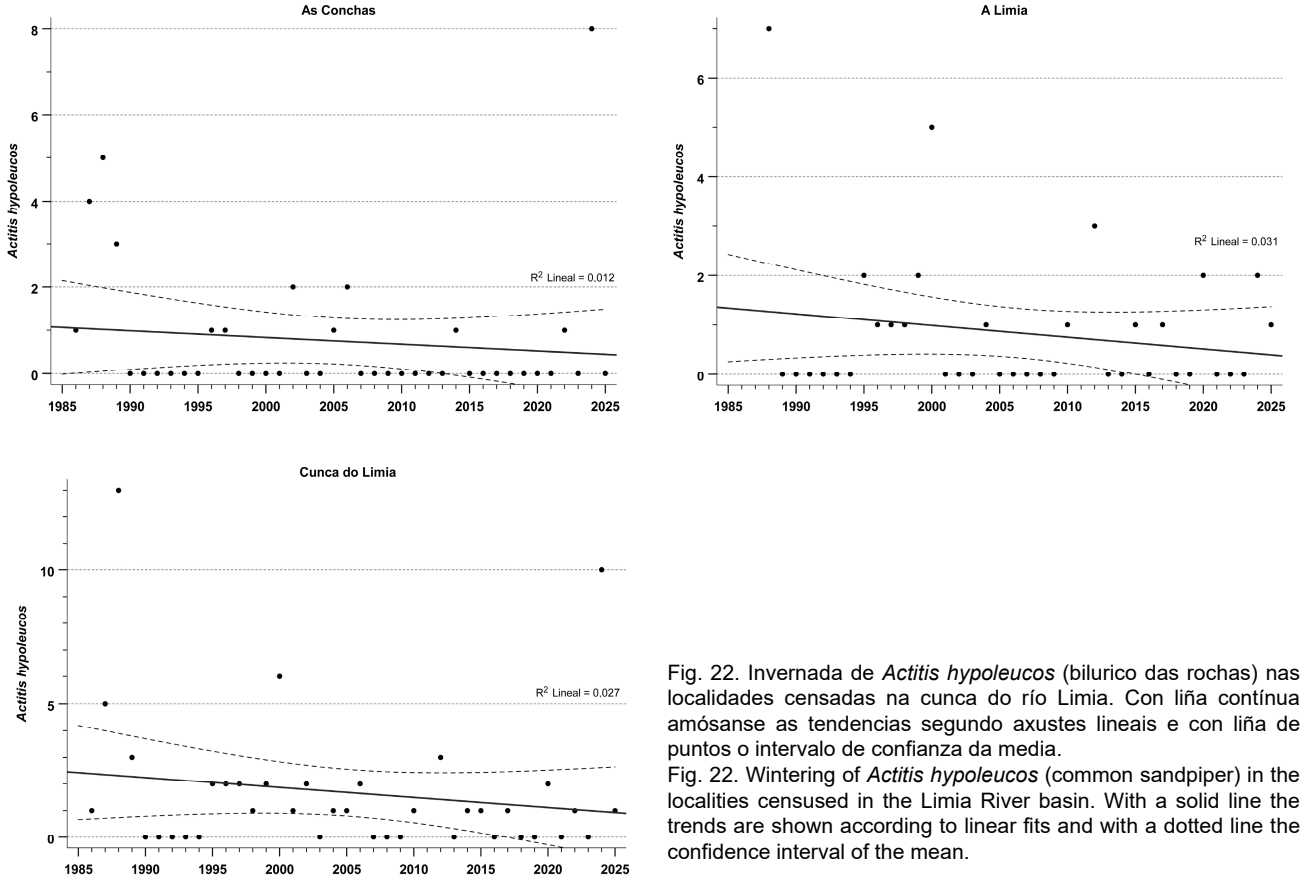


Fig. 22. Invernada de *Actitis hypoleucos* (bilurico das rochas) nas localidades censadas na cunca do río Limia. Con liña contínua amósanse as tendencias segundo axustes lineais e con liña de puntos o intervalo de confianza da media.
Fig. 22. Wintering of *Actitis hypoleucos* (common sandpiper) in the localities censused in the Limia River basin. With a solid line the trends are shown according to linear fits and with a dotted line the confidence interval of the mean.

Alcedo atthis (picapeixe común)

Especie de presencia pouco frecuente tanto no encoro das Conchas (1-2 aves; 1 de cada 5 anos) como no do Salas (1 ave; 1 de cada 7 anos) mentres que na chaira da Limia pasou de ser esporádica ata 1998 a ter rexistros todos os anos posteriores, agás un. Na Limia todos os modelos sinalan unha tendencia positiva cuns axustes moderamente bos (R^2= 0,410; p< 0,001). Esta tendencia coincide co incremento das poboacións reprodutoras en Europa: un 63% no longo prazo (1980-2023) e un 18% no decenio 2014-2023 (EBCC, 2025). No mesmo senso, entre os atlas de aves reprodutoras dos anos 1980 e os de 2013-2017 a extensión da área de cría en Europa aumentou un 1,4% (EBCC, 2022) e semella manterse estable en España (Molina et al., 2022).

Alcedo atthis (common kingfisher)

A species with an infrequent presence in both the As Conchas (1-2 birds; 1 of 5 years) and the Salas reservoirs (1 bird; 1 of 7 years), while in the A Limia flood plain it went from being sporadic until 1998 to having records in all subsequent years, except one. In A Limia all the models indicate a positive trend with moderately good adjustments (R^2= 0.410; p< 0.001). This trend coincides with the increase in breeding populations in Europe: 63% in the long term (1980-2023) and 18% in the decade 2014-2023 (EBCC, 2025). In the same sense, between the breeding bird atlases of the 1980s and those of 2013-2017, the extension of the breeding area in Europe increased by 1.4% (EBCC, 2022) and seems to remain stable in Spain (Molina et al., 2022).

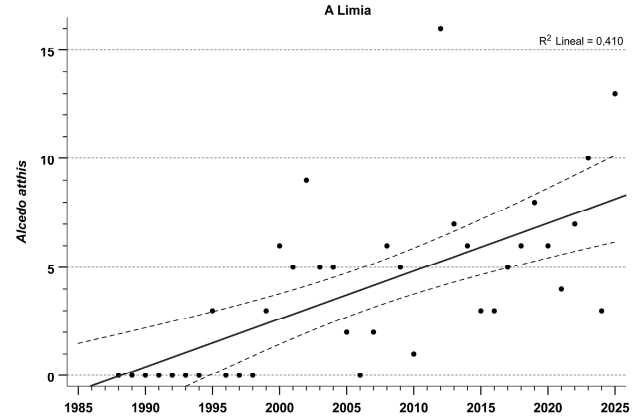


Fig. 23. Invernada de *Alcedo atthis* (picapeixe común) na chaira de A Limia. Con liña contínua amósase a tendencia segundo axuste lineal e con liña de puntos o intervalo de confianza da media.
Fig. 23. Wintering of *Alcedo atthis* (common kingfisher) in the A Limia floodplain. With a solid line the trend is shown according to fit and with a dotted line the confidence interval of the mean.



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