



The Bearded Tit *Panurus biarmicus* in Iberia

Garcia Peiro I*

Department of Ecology and Hidrology, University of Murcia, Spain

***Corresponding author:** Ignacio Garcia Peiro, Department of Ecology and Hidrology, University of Murcia, SEO/Birdlife. C/ El Salvador, 17-4D. 03203 Elche (Alicante), Spain, Email: ignacio.peiro@yahoo.es

Mini Review

Volume 5 Issue 6

Received Date: December 01, 2022

Published Date: December 19, 2022

DOI: 10.23880/izab-16000427

Abstract

This article summarizes the situation of the Bearded Tit (*Panurus biarmicus*) in Iberia on the basis of the literature found in some Spanish Journals, books and own investigations. This is a species few studied in the centre of Spain, on the bulk of populations are, so furthermore investigations are needed from these areas.

Keywords: Bearded Tit; Iberia; Zoogeography; Population Ecology; Habitat Selection; Biometry; Movements

Abbreviation: NT: Near Threatened.

Introduction

Populations of Bearded Tit in Iberia are considered to belong the nominate form *Panurus biarmicus biarmicus* [1] although they were named earlier within the synonymia *occidentalis* on the basis of a male bird skin collected in Sevilla in 1904 [2]. In Spain, it is firstly classified as *Near Threatened* (NT) at the beginning past century [3] but was revised as *Critically Endangered* [4]. The number of Spanish breeding pairs in 1998-2002 was low (650-1100) compared to other European countries (40): France: 3000-9000 pairs, Italy: 4000-10.000, and the species has a patchy distribution in Central (Castilla la Mancha), Northern (Navarra, Zaragoza, Palencia) and Eastern regions (Valencia and Catalonia) [5]. It is absent from Portugal [46].

Results

Zoogeography of Iberian Populations

- **The Bearded Tit in the North of Spain**
The Bearded Tit in northern Spain was firstly

established as breeder in Navarra region from 1994, although observations came from the beginnings 80's [6], probably due to its nomadic behaviour and the expansive European process in late 60's and from populations in Western France established there on wintering since 1971 [7]. Afterwards colonized the Westernmost Palencian Lagoons [8]. Populations of Ebro Valley- Laguna del Escorón, Laguna de Gallocanta (Zaragoza) remain established since the end of 90's [9]. In the Basque Country is recently established and currently exists observations in winter [10]. In the same time, populations of Iberia results smaller than populations breeder at northern latitudes [1] and, according [11], there must be a clinal variation following Bergmann's rule -see Biometry- in relation to this species in Iberia. The estimation of number of breeding pairs for this complete region are of about 100 -200 pp in early 2000's.

- **The Bearded Tit in the Centre of Spain**

These populations are known from the 70's [12]. At the ends of 60's expanded towards Extremadura [13,14] where remained absent until the end of 2000's and nowadays exists new localities there [15-17]. Currently its population is the most numerous of Iberia with about 300-500 pairs, mainly inhabiting marshlands and endorreic complex lagoons of

Toledo and Ciudad Real [5].

- **The Bearded Tit in the East of Spain**

Populations of Eastern Spain remain as the earliest known from the past centuries and probably conforms the remains of an isolated established nucleus from the last ice-age [18]. The first evidence of its presence in Valencia comes from 1856 when the priest naturalist Ignacio Vidal in his "*Catálogo de las Aves de la Albufera de Valencia*" and he considered Bearded Tit as more abundant as breeder than Penduline Tit *Remiz pendulinus* in l'Albufera de Valencia and he advised that both ones merited future studies [19]. Afterwards [20] quoting [19] reaffirms its presence in l'Albufera and spread its occurrence towards nearby marshlands (Xeraco, Xeresa, Tabernes de Valldigna, Gandía) on where nowadays haven't had new records [44].

Populations of Valencian Community are currently located in three protected wetlands (Albufera de Valencia, El Hondo and Santa Pola Saltpans) and later ones belong to the southernmost populations of southern Europe of the nominate race [1,21]. Populations of Southern Alicante (Natural Parks of El Hondo and Santa Pola's Saltpans) were first cited in 1970-1971 by [22,23].

Populations from l'Albufera de Valencia Natural Park were estimated in 13-18 individuals in 2005-2006 [24]. In El Hondo, Bearded Tit population was estimated in 140 individuals in 1985 [25], 100 in 1998-2000 [25] and 140-160 in 2005-2006 [24]. In Santa Pola's saltpans were estimated in 39-45 individuals in 2005-2006 [24]. In El Hondo, Bearded Tits have systematically been trapped for ringing from beginnings 90's [26] and in Santa Pola's from ends 2000's (López *com. pers*) but not recaptures of birds ringed among the Parks exist currently [27] although interchange from nearby breeding sites inside this southern nucleus is not discarded Peiró [28] particularly due to captures for ringing at nearby wetlands in the beginnings 90's [29].

This southern nucleus seems to be isolated from northern nucleus particularly due to the presence of mountain hills at Northern Alicante, although observations in marshlands of Northern Alicante were detected in the beginnings 90's [30,31].

Dispersion of populations from Catalanian nucleus of Ebro Delta towards south has been detected [27] and this fits with observations in marshlands and rivers of Northern Levant (Castellón) in the beginnings 90's [21] so contact among these nucleus seems probable, particularly due the absence of mountains along coast in these areas.

Populations of Northeast Spain

Populations of Catalonia were first described by [20] locating them in marshlands of Costa Brava (Gerona).

Afterwards, until middle of XX century is not discovered in Ebro Delta (Tarragona) when in Buda Isle is found as breeder by [32]. In Ebro Delta, in the beginnings 90's, was abundant with nearly 50 pp but decreased drastically in the beginnings 2000's until 5 pp [33].

Population Dynamics and Evolutionary Ecology of the Bearded Tit in Iberia

The population dynamics in Iberia comes from studies of [34,35] in El Hondo Natural Park (SE Spain). Abundances of Bearded Tit in two localities of this Park in 90's showed a decreased trend of about 10% [34]. Increases of winter rainfall and raising of winter temperatures along time were the main abiotic factors on explaining this decline [34]. The factors underlying such decline are due to high depredation rates at nestling stage [5], high depredation rates of fledgings, particularly females [35] and bad quality of waters, in similar form to the declines occurred in Ebro Delta [5]. Input or output of water levels of the Park not relies a significant effect on the over-dispersion or aggregation of birds, pointing that Bearded Tits mostly are concentrated in suitable areas inside of the Park independently from the influx of the water.

The sex-ratios of the Bearded Tit in El Hondo are studied in 90's by [35] and show that they are overall high male skewed (0.62). Juvenile sex-ratios meet equality (0.55) and adult sex-ratios are highly skewed toward males (0.67). Recovery data of males and females (11.8% and 6.8%, respectively) is similar from retrap-rate of juveniles which is extremely low (1.5%). Probably the most important factor in explaining the sex ratios is the differential dispersion among sexes which relies in a more mortality of one sex in spite of the not differences in body condition among ages and sexes [35]. Is not relevant in a long time series in El Hondo the analysis of influence of climatic abiotic factors (rainfall, temperatures, freeze) on some morphological traits (wing-lengths), according the studies carried out by [36,37]. Wing-morphology studies on birds in complete moult carried out in El Hondo confirm the general rule in passerines that, after moult, adults and males attain wing shapes greater than females and juveniles, and this is explained as an ontogenic adaptation to move inside of reeds. Studies of some aspects of the breeding biology of the Bearded Tit in North-Western Spain from birds trapping for ringing and they found the birds with brood patch expand from the second half of March (25th) to second half of August (16th) [9].

Habitat Selection

The habitat selection of the Bearded Tit in Iberia is based in observations of [38-40] and ringing of fledgings with mist-nets in "senda de bigotudos" by [34,42] in El Hondo Natural Park combining between nests in reedbeds and reeds chosen at the neighbour sites. They conclude that reedbeds chosen

for nesting differ from other reeds in having more dry stems, more density of stems and lesser height than reeds in the nearby sites, so the nesting and feeding or dispersing sites differ considerably in the reed structure. They conclude that the availability of potentially nesting sites in this Park is scarce. The results of [42] indicate that Bearded Tit's fledgings increase its morphological attributes in relation to the height of reed and that short and sparse reeds are ideal for dispersal to another points of "El Hondo" [42].

Movements and Longevity

A total of 221 recoveries from the Spanish Migration Office Ringing Data Bank are used and summarized elsewhere for Iberia by [43]. Mean distance occupied by Bearded Tits is 47.5 ± 14.6 km (N = 20) and mean days among recaptures are 344.8 ± 20.1 (N = 221). Among sexes, males displacements (65.7 ± 22.8 km, N = 12) are longer than females (20.3 ± 6.8 km, N = 8). Among ages, movements of adults (EURING code 4) (82.9 ± 38.2 km, N = 7) are longer than those from unknown age (EURING code 2) (28.5 ± 6.2 km, N = 13) and recapture days in adults (406.6 ± 32.9 days, N = 99) are greater than juveniles (EURING code 3) (207.8 ± 27.4 days, N = 56). Movements of major entity are found of

Iberian Bearded Tits recovered in Sweden in the last 2000's (S.Svensson, *pers. com*) probably indicating a overwintering in Iberia of a very small part of the remaining European population. The typology of movements of this species in Iberia seems to be coupled to the social foraging seed-behaviour of Cardueline finches on the wintering areas. In them, birds that move over bigger areas are of longer age and are in lesser condition seeking food by local enhancement. Bearded Tits could behave similarly dispersing in small groups, mainly in sunset, towards those reed patches on which reed-seed availability and quality is better [38,42,45].

Biometry of Populations in Iberia

The Iberian populations of Bearded Tit were morphometrically characterized in South-Eastern Spain [11] and North-Western Spain [9] (Table 1). Despite of the split of the ages and sexes in the samples, populations of Southern and Northern Spain have similar wing-lengths, tarsus and weights, Northern Bearded Tits being smaller in tail, probably due to the different damaging degree of tail feathers and more juveniles captured juveniles in the sample of Zaragoza.

Locality	Sex/Age	Wing-length	Tail-length	Tarsus-length	Weight
EL HONDO (ALICANTE,SE SPAIN)	MALES	59.5 ± 1.9 (53) 54-63	83.9 ± 3.5 (48)	20.4 ± 0.6 (49) 18.9-21.5	13.5 ± 0.9 (61) 11-16
EL HONDO (ALICANTE,SE SPAIN)	FEMALES	57.9 ± 1.7 (33) 53-60	76.9 ± 4.2 (30)	19.6 ± 0.5 (29) 19.6-20.5	13.0 ± 1.1 (37) 11.4-16
ESCORON (ZARAGOZA, NW SPAIN)	ADMALES	60.6 ± 1.0 (35) 58.5-63	80.5 ± 2.6 (32)	20.5 ± 0.5 (34) 19.6-21.5	14.6 ± 1.0 (28)
ESCORON (ZARAGOZA, NW SPAIN)	ADFEMALES	58.8 ± 1.2 (18) 57.5-62	74.7 ± 2.7 (16)	19.9 ± 0.4 (17) 19.3-20.7	14.7 ± 1.4 (16)
ESCORON (ZARAGOZA, NW SPAIN)	JUVMALES	55.4 ± 1.1 (25) 53-57	71.1 ± 2.8 (23) 62-75.5	20.5 ± 0.5 (24) 19.2-21.4	13.2 ± 1.1 (22)
ESCORON (ZARAGOZA, NW SPAIN)	JUVFEMALES	54.6 ± 1.5 (8) 52.5-57	66.3 ± 2.4 (48) 63.5-71.5	19.7 ± 0.6 (7) 19.1-20.8	12.4 ± 0.4 (7) 11-14

Table 1: Measurements of Bearded Tits ringed in localities of South East and North West Spain according Svensson [39] and based in [11] and [9]. Mean \pm SD, sample size (in brackets) and range are given.

References

- Cramp S, Perrins CM (1993) The Birds of the Western Palearctic. Vol VII. Oxford University Press, Oxford.
- Spitzer G (1973) Zur verbreitung der formen von *Panurus biarmicus* in der Westpaläartiks. Bonn Zool Beitrage 24: 291-301.
- López G, Monros JS (2004) Bigotudo (*Panurus biarmicus*). In: Madrono A, (Eds.), Libro Rojo de las Aves de España. Ministerio de Medio Ambiente-SEO/Birdlife. Madrid, Spain, pp: 341-344.
- Peiró IG, Robledano F, Esteve MA (2010) Revisión de los estados de conservación del Bigotudo *Panurus biarmicus* a escala nacional, regional y local. El Serenet 7: 29-35.
- López G, Monrós J (2003) Bigotudo (*Panurus biarmicus*). In: Martí R, del Moral JC (Eds.), Atlas de las Aves Reproductoras de España: 504-505. DGCN-SEO Birdlife, Madrid, Spain.

6. Expósito C (1998) El Bigotudo (*Panurus biarmicus*, Linnaeus 1758) en Navarra. Anuario Ornitológico de Navarra 4: 163-165.
7. Dejonghe J (1976) Hivernage et données biométriques de la Mésange à moustaches (*Panurus biarmicus*) en Ile-de-France. Passer 13: 77-85.
8. Jubete F, Martín CM (2009) Aves de las lagunas de la Nava, Boada, Pedraza y su entorno. Caja España.
9. Albaiceta E, Sanz J (2007) Biometría, condición física, fenología reproductora, coloración alar y marcas linguales del Bigotudo (*Panurus biarmicus*) en la Estanca del Escorón (Zaragoza). Revista de Anillamiento 20: 2-11.
10. Webster B (2011) Bigotudo. *Panurus biarmicus*. Ardeola 58: 217.
11. Peiró IG (1994) Biometría del Bigotudo *Panurus biarmicus* en una localidad del sureste de España. *Butlletí del Grup Català d'Anellament* 11: 51-55.
12. CMA (1974) Nuevos datos sobre Pájaro Moscón (*Remiz pendulinus*) y Bigotudo (*Panurus biarmicus*) en el centro de España. *Ardeola* 20: 380-381.
13. Bernis F (1968) *Remiz pendulinus* y *Panurus biarmicus* en Cáceres. *Ardeola* 12: 240.
14. Chiscano JLP (1968) Presencia de Bigotudos (*Panurus biarmicus*) en el río Guadiana. *Ardeola* 12: 241.
15. SEO-Cáceres (2009) Bigotudo. *Panurus biarmicus*. *Ardeola* 56: 365.
16. Kelsey M, Hawkins J (2011) Bigotudo. *Panurus biarmicus*. *Ardeola* 58: 512.
17. Mayordomo S (2011) Bigotudo. *Panurus biarmicus*. *Ardeola* 58: 217.
18. Tavares J, Pessoa PS, Abreau FB (2000) The first breeding record of Bearded Tit *Panurus biarmicus* in Syria. *Sandgrouse* 22: 145-146.
19. Vidal I (1856) Catálogo de las Aves de la Albufera de Valencia. Librería Valenciana pp: 11.
20. Arévalo-Vaca J (1887) Aves de España. Memorias de la Real Academia de Ciencias Exactas, Físicas y Naturales de Madrid. Tomo X, pp: 181.
21. Gosler A, Mogyorósi D (1997) Bearded Tit. In: Hagenmeijer EJ, Blair MJ (Eds.), *The EBCC Atlas of European Breeding Birds: Their Distribution and Abundance*, T D Poyser, London, UK, pp: 628-629.
22. Navarro Medina JD (1971) Notas preliminares sobre acuáticas de las Salinas de Santa Pola (Alicante). *Ardeola* 15: 91-93.
23. Navarro Medina JD (1972) Panorama ornitológico de los embalses de "El Hondo" (Alicante). *Ardeola* 16: 228-239.
24. López G, Belenguer R, Castany J, Díes JI (2007) El declive del bigotudo en la Comunidad Valenciana. *Quercus* 262: 14-18.
25. Navarro Medina JD (1988) Estudio ornitológico de "El Hondo". Caja de Ahorros del Mediterráneo.
26. Peiró IG (2000) Resultados de la actividad de anillamiento de aves en el Parque Natural del Hondo (Alicante) durante los años 1997 y 1998. *Oxyura: Revista sobre las zonas húmedas* 10(1): 161-168.
27. Frías O, Serradilla AI, Escudero E (2007) Informe de las actividades de la central de anillamiento de aves ICONA. Año 2006. Apéndice 11. *Ecología* 21: 301.
28. Peiró IG (2010) Estudios sobre el Bigotudo *Panurus biarmicus*, un superespecialista de carrizal. In: Hernández VJ (Ed.), *Estudios de campo sobre paseriformes palustres: ecología, evolución, comunidades y conservación. Técnicas en Biología de la Conservación*, 3. Tundra Ediciones, Valencia, Spain, pp: 63-76.
29. Peiró IG (1992) Bigotudo, *Panurus biarmicus*. In: Díes JI, Díes B (Eds.), *Anuario Ornitológico Comunidad Valenciana*. Spain, pp: 107.
30. Aschan G (1994) Bigotudo, *Panurus biarmicus*. In: Díes JI, Díes B (Eds.), *Anuario Ornitológico Comunidad Valenciana*. Spain, pp: 101.
31. Prades R, Sánchez FJ (1990) Bigotudo *Panurus biarmicus*. In: Díes JI, Díes B (Eds.), *Anuario Ornitológico Comunidad Valenciana*. Spain, pp: 73.
32. Maluquer S, Pons-Oliveras JR (1961) La avifauna de la Isla de Buda en primavera-verano de. *Ardeola* 7: 79-111.
33. Purroy F (1997) Atlas de las aves de España (1975-1995). Lynx Edicions.
34. Peiró IG, Maciá ML (2002) Evolución de la abundancia del Bigotudo *Panurus biarmicus* en carrizales del Parque Natural de El Hondo (SE de España). *Revista Catalana de Ornitología* 19: 11-16.
35. Peiró IG (2011) Sex-ratio variation in the Bearded Tit *Panurus biarmicus* in El Hondo Natural Park. *Revista Catalana d'Ornitología* 27: 40-44.

36. Peiró IG, Robledano F, Esteve MA (2007) Influencia de los episodios selectivos sobre la variabilidad temporal de la longitud del ala en una población sedentaria de Bigotudo (*Panurus biarmicus*; Aves: *Passeriformes*). In SESBE (Eds). I Congreso Español de Biología Evolutiva. Tarragona, pp: 34.
37. Peiró IG, Robledano F, Esteve MA (2006) The effect of age and sex on the wing morphology and body size of the Bearded Tit *Panurus biarmicus* during the complete moult. *Ringing & Migration* 23(2): 101-106.
38. Belenguer R, López G, Monró, JS (2006) Selección del microhábitat de nidificación del Bigotudo (*Panurus biarmicus*) en el Parque Natural de El Hondo (Alacant). In: SEO/Birdlife, Actas XVIII Congreso Español y III Ibérico de Ornitología, Alicante, pp: 95.
39. Svensson L (1992) Identification guide to European passerines. L. Svensson. Stockholm.
40. Birdlife International (2004) Birds in Europe: population estimates, trends and conservation status. Birdlife Conservation Series, No. 12, Cambridge.
41. Peiró IG (2003) Selección de hábitat y dinámica sucesional de los Passeriformes del carrizal del Parque Natural del Hondo: aspectos aplicados a su gestión. Informe para el Instituto Municipal de Cultura. Ayuntamiento de Elche.
42. Peiró IG (2017) The behavioural ecology, local population dynamics and conservation of the Bearded Reedling *Panurus biarmicus* in "El Hondo Natural Park" (SE Spain). *Ecology & Evolutionary Biology* 2(2): 25-33.
43. Peiró IG (2013) Movements, sex-ratios, recovery rates and longevity of the Bearded Reedling *Panurus biarmicus* in Iberia. *Ringing & Migration* 28(1): 50-52.
44. Aguilera SC, Àlvaro JC (2016) Presència i distribució de l'ornitofauna primaveral a la marjal de Xeresa (València) de 2014 a 2016. *Nemus* 6: 146-160.
45. Peiró IG (2020) Water reservoirs dynamics do not affect the abundance and productivity of the bearded tit (*Panurus biarmicus*) in "El Hondo Natural Park" (SE Iberia). *Int J Avian & Wildlife Biol* 5(2): 49-53.
46. Rufino, R. (Ed.). (1989). Atlas das aves que nidificam em Portugal Continental. Ministerio do Plano e da Administracao do Territorio.

