

History, status and distribution of Andalusian Buttonquail in the WP

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Buttonquails (or hemipodes) *Turnix* are small ground-birds, characterized by their secretive habits. They show certain similarities to true quails (*Coturnix*), although they are not phylogenetically related. Traditionally, buttonquails have been placed in their own family, Turnicidae (comprising *Turnix* with 15 species and *Ortyxelos* with one, Quail-plover *O meiffrenii*), associated with families like cranes Gruidae and rails Rallidae in the order Gruiformes (cf Dementiev & Gladkov 1969, Cramp & Simmons 1980, Urban et al 1986, Johnsgard 1991, del Hoyo et al 1996, Madge & McGowan 2002). Although some of the latest morphological studies support this idea, ie, linking them closely with the Rallidae (Rotthowe & Starck 1998), other authors place them in their

own order, Turniciformes (Sibley & Ahlquist 1990, Livezey & Zusi 2007). However, recent genetic studies have in fact revealed that Turnicidae are a lineage in the order Charadriiformes, having closest affinities with the suborder Lari (including Laridae, Alcidae and Glareolidae) (cf Paton et al 2003, Paton & Baker 2006, Baker et al 2007, Fain & Houde 2007, Hackett et al 2008). Sexual roles are reversed in buttonquails, with females being larger and more brightly coloured than males. Females sing and take the lead in territorial behaviour and courtship; some females are polyandrous (Madge & McGowan 2002).

Common Buttonquails *T sylvaticus* live in vegetation with dense cover and are reluctant to fly. As a rule, the species can be found when females

92 Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, south of Sidi Abed, El Jadida, Morocco, 16 September 2007 (Benoît Maire). First-ever photograph of living wild individual (not on nest) in the Western Palearctic.



give their mating calls, a very low, cattle-like *hoooo*, that can hardly be heard at some distance. In addition, the ventriloquial nature of the song makes it very difficult to locate the bird (Cramp & Simmons 1980, Roché 1996, Gutiérrez & Qninba 2010; figure 1). This may explain why there is an almost complete absence of scientific studies and technical reports on the species, despite its vast distribution in Africa and Asia. It has been treated in major books and monographs (Dementiev & Gladkov 1969, Cramp & Simmons 1980, Johnsgard 1991, Urban et al 1986, del Hoyo et al 1996, Madge & McGowan 2002) but just a few specific studies, mainly involving captive birds, have shed some light on its breeding biology and physiology (Hoesch 1960, Niethammer 1961, Trollope 1970, Flieg 1973, Wintle 1975, Ridley 1983, Herholdt 2001). This situation is even more critical in the Western Palearctic (WP), where the species has survived in very low numbers since the last decades of the 20th century, and virtually no research has ever taken place.

Almost all knowledge on the species in the WP, where the nominate subspecies *T s sylvaticus* (Andalusian Buttonquail) occurs, comes from old books and papers (eg, Irby 1875, Heim de Balsac

& Mayaud 1962, Etchécopar & Hüe 1964), and most recently from a number of observations published in technical reports and notes in birding journals, mainly confirming the continued presence of the species (García et al 1986, Urdiales 1993, Garrido 2004, Bergier et al 2005, 2009, van den Berg & Haas 2008).

This situation lasted until 2007 when a living wild bird was photographed in the WP for the first time (Dutch Birding 30: 190, plate 213, 2008). The only previous graphic material consisted of old paintings and photographs from museum specimens. In 2009, a small breeding population of buttonquails could be studied for the first time and some preliminary biological data have already been published (Gutiérrez et al 2009, Gutiérrez & Qninba 2010).

The aim of this paper is to present a complete review of the knowledge about the historical status and distribution of Andalusian Buttonquail in the WP and to document the extinction process in its former distribution areas. Furthermore, we present an update of its distribution and status, based on field work carried out during the last 15 years, mostly in Morocco and Spain.

Identification of Andalusian Buttonquail is rela-

93 Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, male at nest in pumpkin field, Sidi Abed, Morocco, 19 May 2009 (José Manuel Sayago)



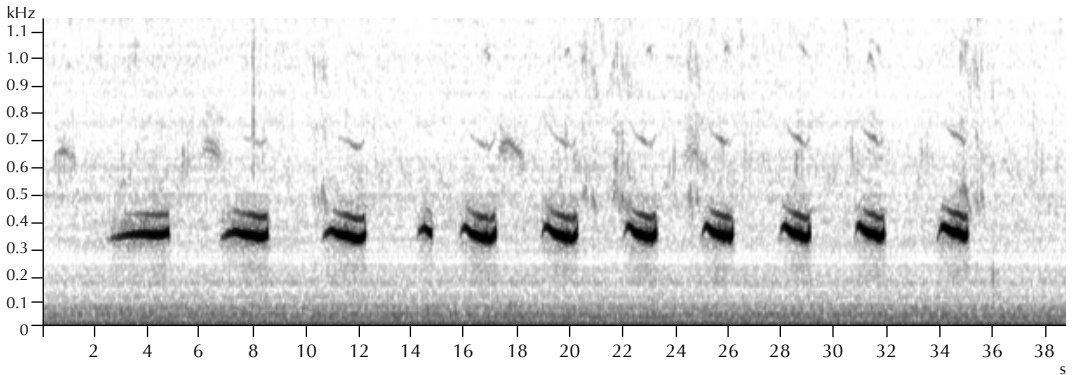


FIGURE 1 Song of Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, female, in maize cultivation surrounded by reeds, Safi, Morocco, 27 June 2010 (Arnoud B van den Berg/The Sound Approach)

tively straightforward (once seen or heard...), both by song and by shape and plumage, and this is therefore not the subject of this paper. Detailed descriptions of all plumages and subspecific variation can be found in, eg, Madge & McGowan (2002).

Taxonomy

Of the 15 *Turnix* species, Common Buttonquail is the one with the widest distribution. It is closely related to and may form a superspecies with Red-backed Buttonquail *T maculosa*, with which it has sometimes been considered conspecific. These two species, together with Barred Buttonquail *T suscitator*, have the largest subspecific variation.

Worldwide, up to nine subspecies of Common Buttonquail are recognized (del Hoyo et al 1996, Madge & McGowan 2002; see table 1). Common Buttonquail was formerly known as *T sylvatica* (cf David & Gosselin 2002, Dickinson 2003, Redactie

Dutch Birding 2004, 2011). In the past, the species had various English vernacular names: Andalusian Hemipode, Kurrichane Buttonquail, Small Buttonquail and Striped Buttonquail. The nominate subspecies (Andalusian Buttonquail) is an endemic of the western Mediterranean and nowadays one of the rarest and most endangered taxa in the world (Violani & Massa 1993, Pertoldi et al 2006).

As a subspecies, Andalusian Buttonquail is closely related to the sub-Saharan subspecies *T s lepurana* (Kurrichane Buttonquail). The vernacular name of nominate *sylvaticus* reflects the Spanish (Torillo Andaluz) and French (Turnix d'Andalousie) names. It should be noted that the name Kurrichane Buttonquail was used until recently as a species name by Gill & Wright (2006) but has now been replaced by Common Buttonquail (Gill & Donsker 2010, Redactie Dutch Birding 2011). Andalusian and Kurrichane Buttonquails mainly differ in size (figure 2) and colour of nape and back. Andalusian

TABLE 1 Subspecies, proposed vernacular names and distribution areas of Common Buttonquail *Turnix sylvaticus* (cf Madge & McGowan 2002)

Subspecies	Name	Distribution area
<i>T s sylvaticus</i>	Andalusian Buttonquail	western Mediterranean
<i>T s lepurana</i>	Kurrichane Buttonquail	sub-Saharan Africa
<i>T s dussumier</i> *	Indian Common Buttonquail	India and Myanmar
<i>T s davidi</i>	Indochinese Common Buttonquail	Indochina, China, Taiwan and Hainan
<i>T s whiteheadi</i> **	Luzon Common Buttonquail	Luzon (northern Philippines)
<i>T s nigrorum</i>	Negros Common Buttonquail	Negros (south-eastern Philippines)
<i>T s celestinoi</i>	Visayan Common Buttonquail	Bohol and Mindanao (southern Philippines)
<i>T s suluensis</i>	Sulu Common Buttonquail	Sulu Island (south-western Philippines)
<i>T s bartelsorum</i>	Indonesian Common Buttonquail	Java and Bali (Indonesia)

* Incorrectly given as *dussumieri* in Madge & McGowan (2002), cf http://zipcodezoo.com/Animals/T/Turnix_sylvatica_dussumier

** Whitehead's Buttonquail in Madge & McGowan (2002)



FIGURE 2 Common Buttonquails / Gestreepte Vechtkwartels *Turnix sylvaticus* (Carlos Gutiérrez). Skins from Doñana Biological Station Scientific Collection, Spain. Right four: Kurrichane Buttonquails / Afrikaanse Vechtkwartels *T s lepurana* (Namibia; upper two females, bottom two males); left three: Andalusian Buttonquails / Andalusische Vechtkwartels *T s sylvaticus* (from Doñana; two females and one male (centre)).

shows a darker ground colour on the back-feathers, these being more reddish in Kurrichane. A recent genetic study, using the cytochrome b of the mitochondrial DNA, revealed that these two taxa are more closely related than the differences in size and colour would suggest (Pertoldi et al 2006), which led these authors to propose to maintain the current status of Andalusian and Kurrichane as well-differentiated subspecies of the same species. Note that not only have morphological differences been found between these two subspecies (Madge & McGowan 2002) but also within the three former WP populations of Andalusian (Iberia, Sicily and North Africa), the Iberian birds being much darker on the back than Sicilian and north African ones (Urdiales 1997), although almost no biometric differences were found between them (Violani & Massa 1993). More detailed studies are needed to establish the level of genetic divergence, not only between Andalusian and Kurrichane but also between the three former populations of Andalusian.

Methods

An extensive bibliography has been compiled,

summarizing all the references to the historic and present occurrence of Andalusian Buttonquails in the WP, from the 17th century book of Marcuello (1617) and many ornithological publications of the 19th century (eg, Cook 1834, Machado 1854, Rosenhauer 1856, Arévalo Baca 1887, Angelini 1892) to the most recent papers and reports (Garrido & Gutiérrez 2010, Gutiérrez & Qninba 2010). Additional data were compiled from many local, regional and national avifaunas (eg, Arrigoni degli Oddi 1929, Heim de Balzac & Mayaud 1962, Etchécopar & Hüe 1964, Alonso 1980, Hollis 1985, Isenmann & Moali 2000, Thévenot et al 2003, Isenmann et al 2005, Benyacoub et al 2007), main handbooks and monographs (Dementiev & Gladkov 1969, Cramp & Simmons 1980, Urban et al 1986, Johnsgard 1991, del Hoyo et al 1996, Madge & McGowan 2002), notes in ornithological journals (Bergier et al 2005, 2009, van den Berg & Haas 2007, 2008), specific papers (Pratesi 1974, Violani & Massa 1993, Catry 1999), and technical reports (Parreño 1991, Urdiales 1993, Solís 1995, Garrido 1998b, Garrido 2001, Gutiérrez 2008, Gutiérrez et al 2009).



FIGURE 3 Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus* (Carlos Urdiales). Skins from Natural History Museum, Tring, England. IM: males from Iberia; IH: females from Iberia; SH: female from Sicily; MM: males from Algeria; MH: females from Algeria.

Our field work was carried out during 1995-2010. In this period, different projects and expeditions in search of buttonquails were undertaken, mainly in Morocco and Spain but also in Algeria and Portugal (Garrido 2001, Gutiérrez 2008), based on previous researches in Spain (Parreño 1991, Urdiales 1993, Solís 1995). At the same time, one expedition to Namibia was undertaken in order to test searching methods with Kurrichane Buttonquail, as well as to obtain genetic samples of this taxon (Pertoldi et al 2006).

The difficulty of finding buttonquails has been described repeatedly in the literature (Irby 1875, Madge & McGowan 2002, Garrido 2004). Our search methods changed over the years, as our knowledge about the species increased. At first, we thought that listening for singing females and tape luring were the only research methods. However, during a 2001 expedition to Morocco, searching for indirect evidence of the species' presence, mainly footprints, proved to be a good way to find it (Garrido 2004; see also below under

'Finding Andalusian Buttonquails'), and tape luring was abandoned because females appeared not to respond. More recently, we discovered that other tracks and traces, especially droppings, provide an even better way to find birds (Gutiérrez et al 2009, Gutiérrez & Qninba 2010).

Altogether, five different methods have been used during our 15 years of research: **1** searching for singing females (with and without tape luring); **2** field searches with volunteers (using binoculars); **3** monitoring with ground bird traps; **4** track searching (foot prints, droppings, feathers, scratchings and nests); and **5** use of hunting dogs, especially trained to find Common Quails *C coturnix* and Eurasian Woodcocks *Scolopax rusticola*.

Results

As long as 21 centuries ago, Plinius Secundus (Pliny the Second), in his impressive work *Naturalis Historiae* (book 10, chapter 57), wrote about a small bird that imitated oxen calls and was named Taurus ('bull'). His report came from southern France, and has been analyzed to correspond with buttonquails (Kinzelbach 1995). Through the mid 19th century, Andalusian Buttonquail was distributed in three main areas in the WP: North Africa (from east to west in Libya, Tunisia, Algeria and Morocco), Sicily (Italy) and Iberia (Spain and Portugal) (cf Vaurie 1965, Cramp & Simmons 1980, Violani & Massa 1993). For each country involved, the species' former distribution and the history of its decline until the early 21st century is described below, as well as the recent situation in those areas where, nowadays, its presence is confirmed (Morocco) or suspected (Algeria and Spain).

Italy

A summary of the history of Andalusian Buttonquail in Italy can be found in Pratesi (1974) and Violani & Massa (1993). Apparently, it was only found in Sicily. Although Cramp & Simmons (1980) suggest otherwise, it has never been recorded on Sardinia; the error probably originates from a mislabelled museum specimen (Violani & Massa 1993). Except for one bird cited by Doderlein (1869) and two birds held at Museo e Istituto di Zoologia Sistemática dell'Università di Torino, Turin, Italy, all three from the Palermo area, buttonquails were known only from the southern slopes of Sicily (Salvadori 1887, Giglioli 1889, Angelini 1892). The species was once common along the south-western coast between Mazara and Gela and scarcer in some localities in the east (Iapichino & Massa 1989). Its presence along the south-western

coast was confirmed in Terranova (Gela) (Benoit 1840, Doderlein 1869; specimen(s) in Museo Civico di Zoologia di Roma, Rome); Falconara (Orlando 1958); Licata (Doderlein 1869); Agrigento (Doderlein 1869); Sciacca (Doderlein 1869); Selinunte (Palumbo 1890); Castelvetrano (Sorci et al 1973); and Mazzara (Doderlein 1869, Iapichino & Massa 1989; specimen(s) in Museo Civico di Zoologia di Roma, Rome, and Museo Regionale Palazzo d'Aumale, Terrasini). One specimen from Marsala at the Natural History Museum (Tring) extends the former distribution to westernmost Sicily. In the east, it occurred in Juncetto (specimen(s) in Museo di Catania), Lentini, Spaccaforo (now Ispica) (specimen(s) in Museo Civico di Zoologia di Roma), Ragusa and Catania (Iapichino & Massa 1989). More museum specimens of Sicilian origin can be found at Liceo de Siracusa (two), Museo di Palermo (four) and Museo di Storia Naturale di Firenze, Florence (eight).

The last confirmed sightings refer to a bird shot at Falconara in 1910 (Orlando 1958) and one in Castelvetrano in 1913 (Sorci et al 1973). The extinction in Sicily has presumably occurred no later than 1920 (Violani & Massa 1993).

Spain

Andalusian Buttonquail was mentioned for the first time by Captain S E Cook (Cook 1834) near Cádiz and Gibraltar. The second half of the 19th century was a very productive period in terms of the publication of ornithological books and papers, offering a rather complete overview of the Spanish avifauna.

Andalusian Buttonquails were occasionally found in Sevilla supplies markets by Machado (1854). Although not encountered by Brehm (1857) in the same period, Captain C W Watkins (1857) affirms to hunt six or seven every season. It was found in Granada province at El Pozuelo lagoon (López Seoane y Pardo de Montenegro 1861), and was said to be abundant on the Andalusian coasts (López Seoane 1870).

According to Saunders (1871), the species was abundant near Algeciras and Málaga, and he found a nest with two eggs in Gibraltar (Saunders 1877). Abel Chapman gives some references on the species in three of his books: one bird singing at La Barca de La Florida, Cádiz (Chapman 1884), one bird shot in Doñana (Chapman 1888) and the species was found here in palmetto scrub (Chapman & Buck 1893). It was said to be common between Málaga and Gibraltar by Arévalo Baca (1887) who gives four localities: San Pedro

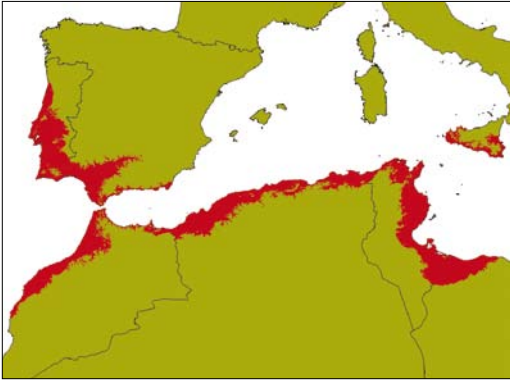


FIGURE 4 Supposed historic (19th century) world distribution (red) of Andalusian Buttonquail *Turnix sylvaticus sylvaticus* (based on observations and museum specimens and clutches, combined with distribution of areas below 200 m above sea level)



FIGURE 5 Present (2010) world distribution of Andalusian Buttonquail *Turnix sylvaticus sylvaticus*; red = known occurrence, ? = possible occurrence

de Alcántara, Chapas de Marbella, Alhaurinejo and Vega de Málaga. Calderón (1896) found one specimen in the Natural History Museum of Sevilla University (now at Museo Nacional de Ciencias Naturales, Madrid, Spain). In his catalogue of the birds of Portugal, Spain and the Balearic Islands, Reyes Prósper (1886) made a compilation of many of the records given above. Possibly, the most thorough text describing the situation in Spain was given by Colonel Leonard Howard L Irby, mentioning the species' occurrence in Gibraltar, Vejer de la Frontera, Benalup, Las Agusaderas, Lomo del Rey and San Roque (Irby 1875).

Corresponding with these old records, we found several specimens and clutches in scientific collections: Natural History Museum (Tring): Gibraltar (two), El Puerto de Santa María (one), Málaga province (four), and unknown Spanish origin (one), as well as a clutch from Málaga province; Field Museum of Natural History (Chicago, USA), Málaga (one); Museo Nacional de Ciencias Naturales (Madrid, Spain): Sevilla (one); Zoological Museum of Moscow University (Russia): Sevilla (one); Manchester Museum (England): Gibraltar (one) and Málaga (one); National Museum of Scotland (Edinburgh, Scotland): Cantillana, Sevilla (one) and Málaga (one); Nederlands Centrum voor Biodiversiteit Naturalis (Leiden, the Netherlands): Sevilla (one) and Málaga (one); and Museum Heineanum (Halberstadt, Germany): Antequera (one) and unknown Spanish origin (one). More skins of unknown Spanish origin are at American Museum of Natural History (New York, USA; one);

Forschungsinstitut und Naturmuseum Senckenberg (Frankfurt, Germany; two); National Museum of Natural History, Smithsonian Institute (Washington, USA; one); Western Foundation of Vertebrate Zoology (Los Angeles, USA; one clutch of four eggs); and Naturhistorisches Museum (Wien, Austria; two clutches of four eggs each).

This well documented situation of the 19th century contrasts strongly with the almost absolute absence of observations during the early 20th century, until the 1970s, when we can mark the start of the modern history of Andalusian Buttonquail in Spain. Gil Lletget (1945) made a compilation basically reflecting the data given by Irby (1875) and Tait (1924); only a few sightings exist from this period. In an account of his first expedition to Coto Doñana, Huelva, Mountfort (1958) makes mention of a bird kept alive in a barber shop in Jerez de la Frontera, captured nearby with a quail net. One of the participants to this expedition was Roger Tory Peterson, who was informed by another expedition member, Mauricio González Gordón, about the error in the plate of Andalusian Buttonquail in the first edition of his *Guide of the birds of Britain and Europe* (Peterson et al 1954). Here, the species was depicted as a dark-eyed bird instead of pale-eyed, and this captive bird gave Peterson the opportunity to change this mistake in later editions of his popular guide. Others records concerned one shot at La Janda in 1955 (Trigo de Yarto 1960), one collected in La Barca de la Florida in 1956 (held in a private collection in Jerez de la Frontera), and some birds seen near Jerez de la Frontera in 1958 (Hudson

1975). Another four-egg clutch at the Western Foundation of Vertebrate Zoology in Los Angeles was collected in 1960 at Utrera, Sevilla. Based on these scant records, the taxon was believed to be almost extinct by the 1960s (Bernis 1966), but in subsequent years it appeared not only to be still surviving but even still locally common (Luis García *in litt*).

All available information shows that the distribution in Spain was restricted to Andalucía, with no confirmed observations or references outside its boundaries. It was common in lowlands of Huelva and Cádiz provinces, reaching well inland along the Guadalquivir valley in Sevilla province, the plains of Antequera and near Granada, also occupying the coastline from Tarifa eastwards along the Mediterranean shores of Cádiz, Málaga and Granada provinces. A former presence in coastal Almería, although suspected, has never been confirmed.

Some references indicate the possibility of the species occurring in other Spanish regions. In Catalunya, sightings were mentioned in Girona by Vayreda y Vila (1883), in Rosas in the 1960s (Wallace & Sage 1969) and at l'Ampolla (Boer & van Orden 1964), and one specimen of unknown origin is held at the Museum of Zoology of Barcelona. In an exhaustive revision, Gordo *et al* (2006) rejected the validity of all these observations, saying that even the museum specimen could be of non-Catalan origin, and discarding a natural occurrence in Catalunya. A recent report from Extremadura of a singing female on 17 April 2002 at Cáceres (Crouzier 2003) is considered doubtful because it was only heard briefly in a region without any historic or recent data. Finally, some recent information came from Cabo de Gata area, Almería. In 1980-81, different observers reported seeing birds that they identified as Andalusian Buttonquail in this area (Luis García *pers comm*), and an observation of a flying bird in April 1994 is mentioned in Manrique (1996) and again one in flight in April 2002 (Vittery 2003). Searches in this area in 2006 remained without positive results (Gutiérrez 2008).

Today, there is still hope for the species' survival in two provinces, Cádiz and Huelva, and possibly in a third, Málaga. In Cádiz, it was still present in the 1970s but later, during a breeding bird atlas survey, no birds were found, and it was stated to be extinct (Alonso 1980), although a sighting was given of a nest with eggs at La Linea in May 1973. On 20 October 1978, one bird was shot at Laguna del Torero, Vejer de la Frontera (Ceballos & Guimerá 1992). In 1995, a study carried out in Cádiz

revealed the presence of a female singing on 18 May at a cattle farm in Chiclana de la Frontera, where the species was well known to the farmer (Solís 1995). Solís (1995) also received indirect information about birds at other localities, which corroborated the species' presence in this province during the 1990s.

In Huelva province, almost all information comes from Doñana National Park and surrounding areas. For this area, Chapman (1888), Chapman & Buck (1893), Crú & Crú (1903) and Martínez Gámez (1906) first mentioned the species' presence for the end of the 19th and the start of the 20th century. In their diaries, Pedro Weickert (1952-53) and José Antonio Valverde (1958) mentioned it near Huelva and San Juan del Puerto, respectively (Garrido 1996). In 1980-81, Luis García, ornithologist of Doñana Biological Station, kept in contact with local hunters and was able to collect some shot buttonquails. These specimens are held at Doñana Biological Station scientific collection, and are, together with another obtained by Javier Castroviejo in 1978, the last specimens collected in Spain. Although heard in 1989 (Johan Elmberg *pers comm*) and the early 1990s in Doñana National Park (Oreel 1991, van Ijzendoorn 1993, Urdiales 1993), extensive fieldwork efforts in later years yielded no results (Garrido 1998a, 1998b, 1999, Garrido & Hernández 1998). A specific intensive survey during 2005-08 in this area and others in Andalucía also failed to produce any birds (Gutiérrez 2008). Recently, there have been some unconfirmed sightings in Doñana National and Natural Park in 1997 (José Manuel Sayago *pers comm*), 2000 (Persson 2004), 2003 and 2004 (Carlos Urdiales *pers comm*) and 2007 (Jacinto Román *pers comm*), and also another in 2005 at Fuente de Piedra Nature Reserve, Málaga (Peregrina 2006), which may give some hope for the species' survival in Andalucía. Some of the effective search methods recently applied in Morocco (Gutiérrez *et al* 2009, Gutiérrez & Qninba 2010) have not yet been used in Spain but will be during the coming years.

Portugal

A complete review of Andalusian Buttonquail was provided by Paulo Catry (1999). Considered 'common' by several authors (Bocage 1862, Smith 1868), it was once distributed in the south (Alentejo, Algarve) and in the lowlands close to Mondego river and Aveiro. Tait (1924) states that it is 'not rare' near Abrantes where it was seen by him; this area was also mentioned by Coverley (1945) some years later. The species was also



94 Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus* (upper) and Common Quail / Kwartel *Coturnix coturnix*, male, Sidi Abed, Morocco, 21 May 2009 (Miguel Ángel Quevedo)

mentioned as being hunted in Esmoriz, Estarreja, Ovar and Vagos, Aveiro, by W R Teage (Chapman & Buck 1893).

The museums of Coimbra and Lisboa (Lisbon) held some specimens of Portuguese origin but most of them were lost over the years, notably those in Lisboa which were destroyed by fire in 1978. Eight specimens in Coimbra Natural History Museum were described by several authors (Giraldes 1879, Reyes Prósper 1886, Seabra 1910, Themido 1933): two of unknown Portuguese origin, two from Pereira do Campo, and four from Evora, Maiorca (Montemor-o-Velho), Montargil and São Martinho do Bispo, respectively. In addition, Souza (1873) cites five birds of unknown Portuguese origin and three from Alentejo in the collection of the Science Museum of Lisbon University. One specimen, of unknown Portuguese origin, is present at Museo Civico di Storia Naturale Giacomo Doria in Genova (Genoa), Italy, and another from Setubal at Museum für Naturkunde in Berlin, Germany.

The species was classified as 'indeterminate' in the first Red Book of Portuguese vertebrates (SNPRCN 1990), although no information had been found during a specific inquiry with hunters in 1980 (Rufino 1989) and no confirmed sightings

were known from 1940 onwards (Cтры 1999). The most recent status update is 'extinct' in Portugal (Cabral et al 2005).

Libya

Andalusian Buttonquail is mentioned for Libya by von Heuglin (1873) in the 19th century. A couple of sightings can be found in Bundy (1976): one in Suani Ben Adem (November 1923) and a probable one in palm scrub near Al Garabulli (February 1967), both in Tripolitania. Although we have not found more recent sightings, the second site nowadays is a nature reserve that would be well worth a visit. Heim de Balsac & Mayaud (1962) point at the possibility of the presence in Cyrenaica, and Toschi (1969) states that it is 'evidently rare or very scarce or probably declining' but no confirmed sightings or specimens have been found for this region.

Tunisia

Isenmann et al (2005) recently reviewed the status of Andalusian Buttonquail in Tunisia. It was once reported to be common along coastal plains between Cap Bon and Tabarka (Koenig 1888, Lavauden 1924, Heim de Balsac & Mayaud 1962). In 1972, four birds were recorded north of Sousse

(Thomsen & Jacobsen 1979) and one at Bejaoua, Tunis, on 18 June (Isenmann et al 2005). The last report was at Ichkeul National Park in 1985 (Skinner et al 1986). There are no reports after 1985 and it is now probably extinct.

Museum specimens have been collected in Tunis (Field Museum, Chicago, USA), Potinville (American Museum of Natural History, New York, USA) and Al Marsa (Museo e Istituto di Zoologia Sistemática dell'Università di Torino, Turin, Italy).

Algeria

In the late 18th century, Desfontaines (1787) used a bird from Oran, Algeria, to describe the type specimen of '*Turnix sylvatica*'. Buttonquails were once 'common' throughout the year in all the coastal areas of Bône (now Annaba) and Oran (Heim de Balsac & Mayaud 1962), with museum specimens known from Metidja Plain (American Museum of Natural History, New York), Bône (Museum für Naturkunde, Berlin, Germany), and Algiers and Hammam Meskoutini (Natural History Museum, Tring, England). This last museum also holds a number of skins (from the Shelley collection) that originate from Biskra, a locality c 200 km from the nearest coast, away from the Mediterranean climate zone and along the northern edge of the Sahara. This is well outside the known habitat and climate requirements of Andalusian Buttonquail, so further study on the origin of these specimens is advisable.

In recent times, there has been a report of one bird in palmetto *Chamaerops humilis* scrub near Ain Fezza east of Tlemcen, c 50 km from the coast, on 22 July 1973 by Arnoud van den Berg and Edward van IJzendoorn (Isenmann & Moali 2000). It has also been reported from palmetto scrub near Skikda at the mouth of Oued Zhour in 1976 (Burnier 1979), and a female was found singing at El Kala in 1989, 1990 and 1994 (Benyacoub 1993).

We render the species' survival in Algeria as likely because of recent comments from Algerian researchers (Benyacoub et al 2007; Mohammed Belhamra pers comm), an unconfirmed sighting of two birds near Skikda on 13 June 2007 by Zeraoula Ali, Guergueb El-Yamine, Brahmia Hafid and Bounab Chouayb (Moussa et al 2010), and the fact that large areas of well conserved suitable habitat remain with traditional cultivation. An extensive survey should be carried out to determine if any populations still survive and, if that is the case, how to protect them.

Morocco

A complete review of Andalusian Buttonquail is provided by Thévenot et al (2003). Irby (1875) was the first to mention it for the Tangier peninsula and he also obtained a clutch from Essaouira. Buttonquails could be encountered in two more or less disjunct areas. In the eastern plains, birds were found in the 1980s at the Moulouya estuary and near Melilla (Thévenot et al 2003), although we failed to find it in subsequent surveys. In the west, a continuous distribution area could once be found along the Atlantic coast between the Tangier peninsula (Irby 1875, Vaucher & Vaucher 1915, Hartert & Jourdain 1923, Brudenell-Bruce 1958, Smith 1965, Pineau & Giraud-Audine 1979; specimen(s) in American Museum of Natural History, New York and Manchester Museum) and Essaouira (Irby 1875, Hartert & Jourdain 1923), reaching well inland up to 400-500 m above sea level in Jbala (Pineau & Giraud-Audine 1979). There have been sightings from Larache and Souk El-Arba du Rharb (Heim de Balsac & Mayaud 1962, Pineau & Giraud-Audine 1979), near Merja Zerga (Thévenot & Beaubrun 1983), Mamora forest, Ben Slimane and Shkirat area between Rabat, Mohammedia and Sidi Bettache (specimen(s) at Institut Scientifique de Rabat and Museum of Comparative Zoology of University of Harvard; Thévenot et al 2003), south of Casablanca in El Jadida and Cap Blanco (specimen(s) in American Museum of Natural History, New York) and coastal Doukkala (Thévenot et al 2003). There were no confirmed records during the 1990s and, as a consequence, it was considered extinct by Moroccan authorities and excluded from the list of protected bird species.

During extensive field work carried out throughout its historic distribution area, we found a small population in palmetto and broom *Calicotome villosa* scrub in 2000 in Doukkala. Birds were recorded here in subsequent years in early spring but not in late spring or summer. Some years later, in January 2004, the species was sighted in coastal cultivation areas in this region by Hannu Huhtinen and Pasi Laaksonen, with one bird crossing a road and entering a carrot *Daucus carota* field (Bergier et al 2005). In November 2007, one bird was found by D Ledan as a road kill on the same road (Bergier et al 2009) and a live bird was found and photographed in September 2007 by Pascal Dupuis, Jacques Franchimont and Benoît Maire (Bergier et al 2009; Dutch Birding 30: 190, plate 213, 2008). Birds were found in the same area in 2008 (Alban Guillaume & Guillaume Léotard in litt) and 2009 (Dirk Colin



95 Scrub habitat (palmetto and broom), Oued Rharg, Oualidia, Morocco, 15 April 2006
(*Carlos Gutiérrez*)

96 Cultivated habitat, Oulad Ghanem, Morocco, 8 June 2010
(*Carlos Gutiérrez*)



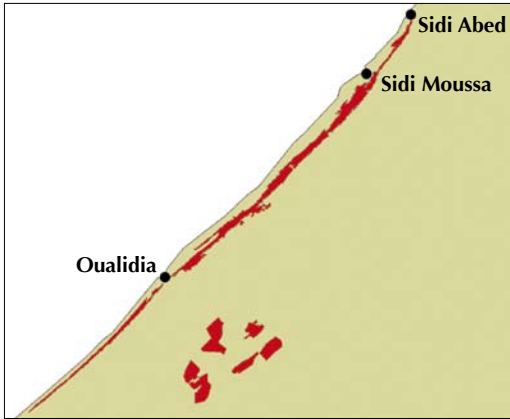


FIGURE 6 Detailed map of currently known distribution (red) of Andalusian Buttonquail *Turnix sylvaticus sylvaticus* in Morocco **97** Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, female in corn field, Oulad Ghanem, Morocco, 12 June 2010 (Carlos Gutiérrez) **98** Nest of Andalusian Buttonquail *Turnix sylvaticus sylvaticus* in pumpkin field, Sidi Abed, Morocco, 19 May 2009 (Carlos Gutiérrez) **99** Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, chick, Sidi Moussa, Morocco, 10 June 2010 (Carlos Gutiérrez)

& Kris De Rouck in litt). In 2009, a preliminary study was carried out in this area resulting in the first data on breeding, with several adults and chicks being observed, two nests found and five birds ringed (Gutiérrez et al 2009). With the experience obtained in 2009, search and study methods were improved (Gutiérrez & Qninba 2010). As a result, we found buttonquails at several sites in the region of Doukkala-Abda in El Jadida, Oualidia and Safi provinces. The species' presence has been confirmed in 2150 ha of remnant patches of palmetto and broom scrub in the calcareous plains inland of Oualidia town, 9 to 15 km from the coast, and in the 4650 ha of coastal cultivation of this three provinces, between Sidi

Abed (El Jadida) in the north, and Cap Bedouzza in the south, occupying different kind of crops (eg, cereal, maize, carrot, pumpkin, corn, lucerne, tomato and potato) as well as fallow land.

There have also been recent sightings in other areas. In 2001, there was a probable observation of a singing female south of Tangier (Miguel Ángel Bravo pers comm), although the bird was not found during subsequent visits. More recently, in 2004 and 2005, there were observations of a couple of birds at Cap Sim, Essaouira (Hamid Rguibi pers comm), which may indicate the presence of another population, but more research is needed to confirm breeding and, if present, what numbers are involved.



100 Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, right wing of adult, Sidi Abed, Morocco, 21 May 2009 (Carlos Gutiérrez) **101** Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, right wing of chick, Sidi Abed, Morocco, 21 May 2009 (Carlos Gutiérrez) **102** Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus* and Common Quail / Kwartel *Coturnix coturnix*, male (below), Sidi Abed, Morocco, 21 May 2009 (Sandra Bañuls) **103** Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus* (left) and Common Quail / Kwartel *Coturnix coturnix*, male, Sidi Abed, Morocco, 21 May 2009 (Miguel Ángel Quevedo). Same birds as in plate 94.

Conclusions

In the 19th century, Andalusian Buttonquail was found in six countries: three in Europe (Italy, Portugal and Spain) and three in North Africa (Algeria, Morocco and Tunisia). The historic presence in Libya has not been confirmed by museum specimens, although bibliographic references suggest that it once occurred.

All locations were coastal sites with temperate Mediterranean climate situated well below 100 m above sea level, with the exception of Jbala, Morocco, where it is said to have been found at 400-500 m. The occurrence at Biskra, Algeria, is doubtful due to the continental/desert climate in this area.

In mainland Europe, birds were found from the Aveiro area in the Portuguese Atlantic coast, south through all districts (Guarda, Leiria, Lisboa, Setúbal, Beja and Faro), continuing in Spain from west to east in the Andalusian provinces of Huelva, Sevilla, Cádiz, Málaga and Granada. In Italy, birds were only found along the south and east coasts of Sicily. In the Maghreb, two disjunct areas existed. Along the Mediterranean coastline, it was patchily distributed from (possibly as far as) Tripolitania, Libya, in the east westwards through coastal Tunisia and Algeria to the Moulouya estuary in Morocco. Along the Atlantic coast in Morocco, it occurred from the Tangier peninsula in the north to Essaouira in the south (figure 4).



104 Excrements of Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, Sidi Abed, Morocco, 15 May 2009 (*Jacinto Román*) **105** Excrements of Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, Oualidia, Morocco, 8 June 2010 (*Ruth García*) **106** Footprint of Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, Oulad Ghanem, Morocco, 5 June 2009 (*Carlos Gutiérrez*) **107** Footprint of Kentish Plover / Strandplevier *Charadrius alexandrinus*, Doñana, Huelva, Spain, 6 April 2007 (*Carlos Gutiérrez*). Compare with more symmetrical footprint of Andalusian Buttonquail *Turnix sylvaticus sylvaticus* in plate 106. **108** Andalusian Buttonquail / Andalusische Vechtkwartel *Turnix sylvaticus sylvaticus*, Sidi Abed, Morocco, 21 May 2009 (*Carlos Gutiérrez*). Note almost symmetrical three-toed foot.

Presently, only one population is known to persist in the WP, in the Doukkala region, along the Atlantic coast of Morocco, where its presence has been confirmed in El Jadida, Oualidia and Safi provinces. There is hope that the species may still survive in northern Algeria, northern Morocco and southern Spain (figure 5) but more investigations and field expeditions are needed to determine the current situation there.

Finding Andalusian Buttonquails

Andalusian Buttonquails are certainly very difficult birds to find and observe but we can give some helpful tips. First of all, for Morocco, be aware that the conservation of the tiny population is extremely important; therefore, one should never disturb the breeding process and should always be kind and polite to local people, asking permission from farmers and land owners before starting out to walk in any given area. If you try to find buttonquails in scrub areas, it is possible to walk freely through the whole area but in the cultivated areas it is very important not to walk through the fields.

However, it is easier to detect the birds' presence by searching tracks than by trying to find them on sight. These tracks (green-coloured droppings, feathers and footprints) can be found at the edge of cultivations or on narrow footpaths. Droppings are very small cylindrical excrements characterized by urate (salt derived from uric acid), making them pale green instead of white (plate 104-105). Buttonquail feathers are well patterned and easily identifiable, and it is even possible to separate those of adults from well-grown chick feathers. Buttonquails are three-toed species lacking a hind toe (hence the old name 'hemipode', meaning 'half foot'). Hence, footprints are identifiable because they show only three toes and are much smaller than those of Common Quail (only 2 cm long, against 3 cm in Common Quail; plate 106 & 108). Beware of small plover footprints that can be very similar but which are asymmetric, with different angles between the toes (plate 107; for more details, see Gutiérrez & Qninba 2010).

The Doukkala area still holds a kind of traditional cultivation and regularly some fields remain fallow between two cultivation cycles. These fields are very attractive for buttonquails and can be walked more easily.

Females can sing the whole day, with more activity after warm nights and less during cold weather. Singing females have been detected between March and August, though in 2009 sound-

recordings were made of several females singing in a small cultivated area in El Jadida province as late as from 29 September to 1 October, when the crop at their site was harvested (Arnoud van den Berg/The Sound Approach in litt). Indeed, the species' presence has been confirmed all year round. Although buttonquails can make nomadic or dispersive movements during different seasons, sedentary behaviour seems to be the rule for WP birds. Therefore, reporting any sighting as soon as possible is of great importance to make it possible for researchers to follow it up and try to establish adequate conservation measures. Note that there are many areas to explore that may still hold buttonquail populations, not only in Morocco (eg, Cap Sim in Essaouira and the coastal strip between Asilah and Larache) but also in Algeria and Spain. Birders are requested to send every observation to the first author of this paper and to the rarities committee of the country involved.

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Samenvatting

HISTORIE, STATUS EN VERSPREIDING VAN ANDALUSISCHE VECHTKWARTEL IN DE WP Vechtkwartels *Turnicidae* vormen een familie die traditioneel verwant werd geacht met kraanvogels *Gruidae* en rallen *Rallidae*. Tevens vertonen ze enige gelijkenis met kwartels *Coturnix* (*Phasianidae*). Recent moleculair genetisch onderzoek heeft echter uitgezeten dat vechtkwartels een aparte tak vormen binnen de orde van waadvogels *Charadriiformes* en het nauwst verwant zijn aan onder meer meeuwen *Laridae*, alken *Alcidae* en vorkstaartplevierien *Glaucolidae*. Bij alle vechtkwartels is de bij de meeste vogelsoorten gebruikelijke rol van de geslachten omgedraaid: vrouwtjes zijn groter en feller gekleurd dan mannetjes, zingen en nemen het voortouw bij territoriumgedrag en balts.

In dit artikel worden historie, status en verspreiding van Vechtkwartel *Turnix sylvaticus* in het West-Paleartic gebied (de WP) besproken aan de hand van uitgebreid literatuur-, museum- en veldonderzoek in 1995-2010. Het gaat daarbij om de ondersoort *T s sylvaticus* (Andalusische Vechtkwartel) die oorspronkelijk voorkwam in kustgebieden van Noordwest-Afrika en Zuidwest-Europa maar die aan het begin van de 21e eeuw leek te zijn uitgestorven. De vermoedelijke verspreiding in de 19e eeuw en de huidige verspreiding worden weergegeven in respectievelijk figuur 4 en 5. De historische verspreiding en het eventuele uitsterven worden besproken voor Italië (alleen Sicilië, laatste in 1913), Spanje (misschien nog aanwezig), Portugal (laatste in 1940), Libië (laatste mogelijk in 1967), Tunesië (laatste in 1985), Algerije (waarschijnlijk nog aanwezig) en Marokko (nog aanwezig; zie figuur 6). De enige plek in de WP waar nog met zekerheid een populatie blijkt voor te komen is de Doukkala-regio langs de Atlantische kust van Marokko. Uit dit gebied worden foto's gepresenteerd van exemplaren in het veld en op het nest, van een nest met eieren, van een pasgeboren jong, van vogels in de hand (onder meer in directe vergelijking met Kwartel *C coturnix*), van pootafdrukken (met karakteristieke symmetrische 'drietand'), van uitwerpselen (met typische groene kleur) en van het biotoop. Figuur 3 toont balgen van exemplaren die in het oorspronkelijke verspreidingsgebied in de WP zijn verzameld (Algerije, Iberisch Schiereiland en Sicilië); in figuur 2 is het verschil in formaat te zien tussen Andalusische Vechtkwartels uit Zuid-Spanje en exemplaren van de ondersoort *T s lepurana* (Afrikaanse Vechtkwartel uit Namibië). Er bestaat hoop dat Andalusische Vechtkwartel nog voorkomt in Noord-Marokko, Noord-Algerije en Zuid-Spanje (provincies Cádiz en Huelva).

Vechtkwartels zijn moeilijk waar te nemen. Ze leven in dichte, lage vegetatie en bij verontrusting vliegen ze niet graag op maar lopen weg of drukken zich. De vrouwtjes kunnen de hele dag door zingen met een diep, laag, langgerekt *hoe*, als een verre en moeilijk te localiseren misthoorn, met grote tussenpozen herhaald, soms samen met andere vrouwtjes, en de zangactiviteit is groter na warme nachten dan gedurende koud weer. Deze zang werd voornamelijk vastgesteld van maart tot augustus (maar ook nog tot in oktober). Aanvankelijk werd gedacht dat voor het opsporen van de soort het luisteren naar zingende vrouwtjes en afspeken van geluid de beste methoden zouden zijn. Daarnaast werden andere zoekmethoden uitgeprobeerd zoals het gebruik van vallen en van honden die speciaal voor de jacht op Kwartels en Houtsnippen *Scolopax rusticola* waren getraind. Uiteindelijk bleek dat de vrouwtjes niet hoorbaar op het afspeken van geluid reageerden en dat het zoeken naar sporen (pootafdrukken, veren en uitwerpselen) de meest effectieve zoekmethode was.

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The recording of the Andalusian Buttonquail as shown in the sonagram in figure 1 can be heard at www.dutchbirding.nl/turnix. Also a video by José Manuel Sayago (same bird as in plate 93) can be viewed there. EDITORS