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Extinction of the Andalusian Hemipode *Turnix s. sylvatica* (Desf.) in the Mediterranean region

by Carlo G. Violani & Bruno Massa

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Among the 13 species of button quails belonging to the Old World and Australasian genus *Turnix*, the Andalusian Hemipode *Turnix sylvatica* (Desfontaines 1787) has been divided into the greatest number of subspecies (24 following Howard & Moore 1984, 9 according to Johnsgard 1991), and has the widest distribution (S.W. Europe, Africa north and south of the Sahara, E. Iran, India, S.E. Asia, Philippine Is., Indonesia, New Guinea and Bismarck Archipelago, N.W. Australia). In particular, in the western Palearctic, the range of the nominate subspecies *Turnix s. sylvatica* in historical times included the western and southern Iberian Peninsula, N.W. Africa from Morocco to N. Cyrenaica, N. Algeria and N. Tunisia, as well as Sicily where it became extinct around the beginning of the present century.

Current status

Today the presence of the Andalusian Hemipode (or striped Button-quail) in the western section of its former range (Mediterranean area) is strongly fragmented and poorly known. Urban *et al.* (1986) mention six records of the bird from the west and north coasts of Morocco since 1963; according to Bergier & Bergier (1991) the Andalusian Hemipode is a very rare resident, the biology of which is almost unknown in Morocco; it appears to be restricted to two regions, the eastern Mediterranean coast near the mouth of Moulouya wadi and the Atlantic coast between Casablanca and Safi. A recent observation of a single male singing (Thévenot 1989) was made in 1988 near Skhirat (north of the quoted Atlantic area). As regards Algeria, a last record from the mouth of Oued Zhour in 1976 was reported by Burnier (1979); no other recent record is reported by Ledant *et al.* (1981). In Tunisia, four individuals were recorded in 1972 10 km north of Cape Sousse by Thomsen & Jacobsen (1979). As regards Libya, Bundy (1976) considers it as a "possibly scarce resident and overlooked" and reports just one recent probable observation in palm scrub east of Garrabulli in 1967.

As regards the Iberian Peninsula, we were able to find few recent records, all in western Andalusia: a captured individual in the Doñana dunes, unspecified numbers observed in Huelva department (Purroy 1982), one at Coto del Rey in 1986, another in the Acebuche in 1987, and one pair in the same site in 1988 (Llandres & Urdiales 1990). In the Coto Doñana Museum there are six specimens labelled as from Huelva and Cadiz, dating from 1964 to 1981 (José Cabot *in litt.*). According to Llandres & Urdiales (1990), the Andalusian population is probably one

of the last living in the Mediterranean area, once very common and widespread, now on the verge of extinction.

Finally, as regards Italy, the Andalusian Hemipode never inhabited Sardinia (*fide* Salvadori 1872; *contra* Cramp 1980: 534). This erroneous record probably originated from a very old mislabelled specimen in the Leiden Museum. It was instead a former resident breeder in Sicily, extinct not later than 1920, probably due to both hunting and land reclamation. According to Iapichino & Massa (1989) it occurred mainly in garigue with *Chamaerops humilis* along the south coast from Gela to Mazara, probably was scarcer near Catania and Ragusa, and was absent from northern Sicily (one shot near Palermo was reported as exceptional by Doderlein, 1869–74). It was fairly common in the 19th century (Benoit 1840), but greatly decreased during its last decades. Doderlein (1869–74) could shoot 10–15 hemipodes daily on the south coast in 1862–70, while Giglioli (1889) and Angelini (1892) listed *T. sylvatica* as nearly extinct. Whitaker (1896, 1905) reported that it was once plentiful in all parts of the southern and southwestern provinces, "where its favourite haunts were tracts of uncultivated moorland, among the clumps of dwarf broom-palm and other scrub vegetation". The last documented records were : singles shot at Falconara, autumn 1910 (Orlando 1958), and at Castelvetrano, 1913 (Sorci *et al.* 1973), and a doubtful occurrence at Agrigento in 1914 (Arrigoni degli Oddi 1929). Its extinction as late as the 1940–50s claimed by Orlando (1958) is considered a mistake (Iapichino & Massa 1989). The birds were sedentary and lived alone, except during the incubating period (May to the end of August), with the formation of monogamous pairs (Arrigoni degli Oddi 1929). Few specimens of genuine Sicilian origin are now preserved in the main Italian and foreign museums; they were collected in the wild not later than 1920.

Biometrics

In order to make a comparison with other sources, we have tried to get more mensural data from a larger number of specimens than those examined in Cramp (1980). We have examined several specimens of *T. s. sylvatica* (28 males and 44 females) from the ornithological collections of the Museums of Florence, Rome, Palermo, Terrasini, Turin, Geneva, Tring, Edinburgh, Belfast, Bonn, Leiden, Amsterdam, Vienna (see also Schifter 1992) and the collection of Istituto Tecnico di Modica, Ragusa; 12 males and 12 females of *T. s. dussumier* (Temminck), 32 males and 24 females of *T. s. lepurana* (Smith) (all in BMNH). The following measurements were taken: flattened wing and tarsus lengths according to Svensson (1975), upper mandible length from the feathering to tip (bill length). Because of the difficulties in taking accurate tail lengths from old skins, we did not use this measurement.

Table 1 gives the results geographically divided into three populations, namely Sicily, North Africa and Spain. We did not find any statistical difference between them (Sicilian *vs* North African, Sicilian *vs* Spanish, Spanish *vs* North African measures), except the wing length of Sicilian *vs* North African males (t test=2.53; $P<0.01$;

TABLE 1
Measurements of *Turnix sylvatica sylvatica* (Desf.), in mm

	Wing			Bill length			Tarsus		
	n	range	mean ± s.d.	*n*	range	mean ± s.d.	*n*	range	mean ± s.d.
Sicily									
♂♂	15	73–92	87.07 ± 4.64	15	10–14	11.69 ± 1.11	15	20–24	22.35 ± 1.34
♀♀	12	83–97	92.58 ± 4.35	11	10.5–15	12.45 ± 1.32	11	20–26.3	23.41 ± 2.04
North Africa									
♂♂	9	78–86	82.78 ± 2.61	9	9–13.2	11.60 ± 1.37	9	21–24.1	22.68 ± 1.09
♀♀	23	84–98	91.95 ± 4.18	22	11–15	12.82 ± 0.90	23	19–26	23.46 ± 1.62
Spain									
♂♂	4	79–89	84.50 ± 4.10	4	11–12.5	11.62 ± 0.65	4	20–23.5	21.62 ± 1.63
♀♀	9	86–97	92.10 ± 3.75	8	12–14	13.19 ± 0.86	9	22–26	23.19 ± 1.35

TABLE 2
Measurements of the three subspecies of *Turnix sylvatica* considered, in mm

	Wing			Bill length			Tarsus		
	n	range	mean ± s.d.	*n*	range	mean ± s.d.	*n*	range	mean ± s.d.
T. s. sylvatica (Desf.) (specimens in Table 1, combined)									
♂♂	28	73–92	85.32 ± 4.47	28	9–14	11.65 ± 1.15	28	20–24.1	22.35 ± 1.36
♀♀	44	83–98	92.16 ± 4.15	41	10.5–15	12.79 ± 1.06	43	19–26	23.29 ± 1.68
T. s. dussumier (Temm.)									
♂♂	12	65–72	67.70 ± 2.07	12	9–11	9.75 ± 0.72	12	16.5–18	16.80 ± 0.51
♀♀	12	70–76	73.60 ± 1.55	12	10–12	10.70 ± 0.62	12	17–20	18.33 ± 0.94
T. s. lepurana (Smith)									
♂♂	32	72–80	75.90 ± 2.24	33	9–12	10.60 ± 0.66	33	16–20	18.48 ± 0.99
♀♀	24	75–89	82.90 ± 3.20	24	10–12.5	11.20 ± 0.73	24	18–21	19.40 ± 0.96

f.d.=22). This difference may be due to the degree of isolation of the Sicilian population. We also found significant differences between males and females in wing length (t test Sicily=3.151; $P<0.01$; f.d.=25; North Africa=6.079; $P<0.001$; f.d.=29; Spain=3.286; $P<0.01$; f.d.=11) and between North African and Spanish specimens in bill length (t test North Africa=2.900; $P<0.01$; f.d.=28; Spain=3.194; $P<0.01$; f.d.=10).

Thus we pooled together all sexed specimens from Sicily, North Africa and Iberia (Table 2). We were able to broaden considerably the range of wing length for the males (73–92 mm), as compared with 83–92 given in Cramp (1980). For females, although our maximum wing length was shorter than that reported by Cramp, our range was somewhat wider: range 83–98, mean 92.2, cf. 91–101 and 97.3 in Cramp, whose measurements were based on a smaller number of skins.

Because we also examined the BMNH and RMNH specimens, used for biometrics in Cramp (1980), it is possible that differences between our results and those reported by Cramp (1980) could be the result of different techniques in taking measurements. For bill and tarsus lengths, both for males and females, our results widen the range given in Cramp (1980). We found statistically significant differences between males and females (t test wing length=6.584; $P<0.001$; f.d.=69; bill length=4.215; $P<0.001$; f.d.=66; tarsus=2.731; $P<0.01$; f.d.=68).

We have some data to support the hypothesis that Mediterranean *Turnix sylvatica* is a good taxon, isolated from sub-Saharan and Asiatic forms. Table 2 reports our results compared with biometric data of *T. s. lepurana* from sub-Saharan Africa and *T. s. dussumier* from Asia, which should be the geographically closest living forms. Our measurements of *T. s. lepurana* do not differ much from those recorded by Urban *et al.* (1986); only the female wing is notably longer than ours, 86.5 *vs* 82.9. The wing length of *T. s. dussumier* measured by us is slightly different from what has been reported by Vaurie (1965) (males, 70.6 *vs* 67.7; females, 75 *vs* 73.6).

As a matter of fact, there are remarkable biometric differences, well justified by the great isolation of these populations and by the high degree of sedentariness which prevents any gene flow. The differences between *T. s. sylvatica* and both *T. s. lepurana* and *T. s. dussumier* are highly significant (t test: in all the cases $P<0.0001$); we also found statistical differences between *T. s. lepurana* and *T. s. dussumier* (t test, males: bill, wing and tarsus, $P<0.0001$; females: wing, $P<0.0001$; bill, $P<0.05$; tarsus, $P<0.003$). The circum-Mediterranean form might be considered as an example of gigantism by isolation.

Concluding remarks

Today the Andalusian Hemipode is present in only 3–4 small areas of its original Mediterranean range and probably its total population is so small as to be considered on the very brink of extinction. Biometric data of the Mediterranean form show that it is very different from sub-Saharan and Asiatic forms; thus its extinction would mean the irretrievable loss of an example of Mediterranean endemism. Any future attempt aiming at replacing *Turnix s. sylvatica* with other subspecies for reintroduction purposes would be therefore unjustified and should be totally discouraged.

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