FIELDWORK REPORT SICILY 2008

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OBJECTIVES

1. To find a resident population of Eurasian penduline tits *Remiz pendulinus* suitable for future research investigating a. heritability of parental care and b. costs of parental care in terms of survival.
2. To set up collaborations for investigating one of the most southerly located populations of Eurasian penduline tits.
3. To get an idea about whether this southern population might be different from our study population Hungary with regards to a. patterns of parental care, b. biometrics, and/or c. behaviour.

METHODS

*Fig. 1. Typical habitat at Biviera di Gela: A tamarix (*Tamarix sp.*) woodland interspersed with reed (*Phragmites australis*). Nest material may be collected from the tamarix, reed, or various herbaceous plants.*

I have visited two populations:
Biviera di Gela (37°01' N, 14°20'E) and *Piana di Vicari/Fiume San Leonardo* (37°50' N, 13°33'E), Sicily, Italy.

Both areas were visited for two days each and judged on suitability as a future study site.
On the second day of my visit to Piana di Vicari three adults were trapped and colour-ringed, and I took standard biometric measurements and a blood sample following Van Dijk *et al*. 2007.

*Fig. 2. Typical habitat at Piana di Vicari. The river is fringed with mainly willows (*Salix sp.*). Nest material may be collected from the willows, reed, reed-mace (*Typha sp.*), or various herbaceous plants.*

RESULTS

Fig. 3. Easily accessible nest (stage D) in Tamarix at Biviera di Gela.

Biviera di Gela
GPS Coordinates: 37°01’ N, 14°20’E
Dates: 24-25 April

Nest monitoring
Number of nests: 3
Number of males without nest: 2
Number of females without nest: 1 (foraging, accompanied by juveniles)

Nest	*Stage*	*Tree*	*Comment*
1	E	*Tamarix*	Male Ca, Bl, Si
2	?	*Tamarix?*	Male Ca, Si Female Ca Nest not seen, but male and female around and very active
3	D	*Tamarix*	Male Ca, Bl, Si (Fig. 3)

Parental care
All parental care observed in this area was carried out by a female (foraging with juveniles).

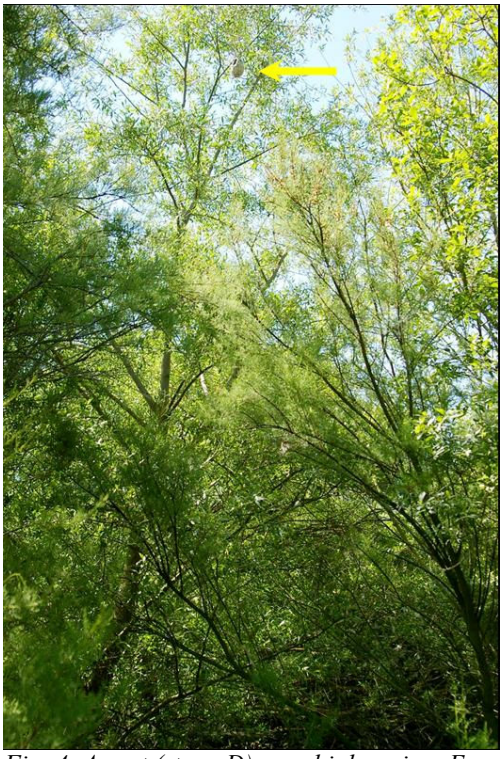
Fig. 4. A nest (stage D) very high up in a Eucalyptus at Piana di Vicari.

Piana di Vicari, Fiume San Leonardo
GPS Coordinates: 37°50' N, 13°33'E
Dates: 27-28 April

Nest monitoring
Number of nests: 5
Number of males without nest: 2
Number of females without nest: 0

Nest	*Stage*	*Tree*	*Comment*
1	D	*Eucalyptus*	Male Ca, Bl, GN(from Tamarix) Female Ca, Bl, GN(from Tamarix) When female arrived at the nest, the male flew off (as 'usual') (Fig. 4)
2	F	*Eucalyptus*	Female feeding nestlings (Fig. 5)
3	D	*Salix*	Male Ca, Bl
4	F	*Eucalyptus*	Female feeding nestlings
5	D	*Eucalyptus*	Male Ca, Bl

Parental care

All parental care observed during my visit in this area was carried out by the female only (N=2). In previous years of study in this area (1999-2002), only one nest was cared for by a male (N. Cuti, *pers. comm.*).

Fig. 5. Female feeding nestlings at Piana di Vicari.

Biometrics/blood sampling

We trapped **2 males** (nest 3 and 5), and **1 female** (nest 4), of which all standard biometric measurements, photos of the head and back, and a small blood sample were collected.

CONCLUSIONS

To start with the biometrics, interestingly, the **mean body mass** of these three adults was **8.35g** (range 8.25-8.50g). The mean body mass of all measurement from Hungary is **9.62g** (range 7.90-13.25g). An earlier study on this population reports a similar mean body mass (8.5g, 8.0-10.4g; Cuti 2004). Also, the tarsus and the wing length seem slightly smaller at Sicily than in Hungary, although this clearly requires further data before firm statements can be made. Further data on biometrics and blood samples will be obtained from Renzo Ientile, who has been trapping penduline tits year round for a number of years, and will continue doing this during spring 2008.

The patterns of parental care at Sicily seem different from other European populations (Brinkhuizen *et al*. in prep.): Levels of nest desertion appear to be lower (Cuti 2004) and male care appears to be much rarer (Cuti 2004, this report).

Penduline tits at Sicily are likely to be resident year round (Cuti 2004, B. Massa *pers. comm.*). Additionally, only very few, if any, migratory penduline tits come to Sicily during winter (B. Massa & N. Cuti, *pers. comm.*). This suggests that the Sicilian population of penduline tits may be rather isolated from the more northern populations with very little gene flow among those populations. Additionally, the areas at Sicily in which the penduline tits occur appear to be much drier and to contain much less food than our study area Féhértó in southern Hungary.

These two variables, an isolated population and a different, poorer habitat, may have influenced local biometrics *and* pattern of parental care. Biometrics are likely influenced by the level of migration. If food is scarce, this may have pronounced effects on population and individual characteristics in various ways: i. population density, and thus remating opportunities, is likely to decrease, potentially affecting benefits of desertion (but see: Brinkhuizen *et al*. in prep.). ii. Female penduline tits may be more selected for to provide care than males (van Dijk & Székely submitted), thus females may provide 'better' care than males

(but see Pogany *et al*. in prep.). This is likely to be of particular importance when food is scarce (see Van Dijk *et al*. 2008). iii. Clutch and brood size may also be negatively influenced by generally lower food abundance, and indeed the number of eggs laid and fledglings produced at Sicily appear to be lower than in other European populations (Cuti 2004, N. Cuti *pers. comm.*). These may suggest that the behaviour and morphology of penduline tits at Sicily are different from other European populations. It would be very interesting to verify these reflections using a larger dataset on behaviour and morphology, and to investigate whether the Sicilian population has genetically differentiated from other European populations.

Another noteworthy thing is that the number of penduline tits at Sicily appears to be stable, also over recent years (B. Massa & E. Giudice *pers. comm.*), whereas breeding populations in northern Italy have almost completely disappeared (P. Tout *pers. comm.*) in congruence with a trend observed across the outermost range of the distribution (*i.e.* decreasing numbers in Spain (F. Valera *pers. comm.*), The Netherlands (D.M. Brinkhuizen *pers. comm.*), Sweden and Germany (O. Persson *pers. comm.*). Again, this may suggest that the Sicilian penduline tits are somehow different.

To sum up, coming back to the objectives:

1. I did find a resident population of penduline tits. For the future it would be interesting to verify how different these penduline tits are from other European population, and investigate why. As a future long term study site investigating the breeding system of Eurasian penduline tits, however, the population density at both Biviera di Gela and Piana di Vicari seems too low. Alternative populations for the latter may be found in North-Eastern Spain, or in southerly populations in Turkmenistan, Kazakhstan or Azerbaijan.
2. Collaborations have been set up and further biometric data and blood samples will be collected by Bruno Massa and Renzo Ientile.
3. As outlined above, this southerly located and isolated population of penduline tits appears to be different in morphology and pattern of parental care. Whether the behaviour, *e.g.* parental interactions, is significantly different too, remains to be investigated.

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Penduline tit habitat at Piana di Vicari