J.biosoc.Sci, (2008) **40**, 577–586, © 2008 Cambridge University Press
doi:10.1017/S0021932007002684 First published online 16 Jan 2008

SEASONALITY OF MARRIAGES IN SARDINIAN PASTORAL AND AGRICULTURAL COMMUNITIES IN THE NINETEENTH CENTURY

EMANUELE SANNA* AND MARIA ENRICA DANUBIO†

**Dipartimento di Biologia Sperimentale, Sezione di Scienze Antropologiche, Università degli Studi di Cagliari, Monserrato, Italy and †Dipartimento di Scienze Ambientali, Università di L'Aquila, L'Aquila, Italy*

Summary. The study of marriage seasonality of populations with different socioeconomic backgrounds may contribute to the better understanding their reproductive behaviours. This study analyses the monthly distribution of marriages in the 19th century in four agricultural villages and four pastoral villages on the island of Sardinia (Italy). The data were derived from 7340 marriage acts (3571 for the four agricultural villages and 3769 for the four pastoral villages). The aim is to ascertain whether the Sardinian agricultural and pastoral communities followed the matrimonial models reported for contemporary Italy and Europe and whether there was a change in the monthly distribution of marriages between the two halves of the 19th century. The results suggest that the marriage seasonality of the Sardinian farmers and shepherds was very similar to the patterns shown in the 19th century by Italian and European agricultural and pastoral communities. The Sardinian farmers preferred to marry in autumn–winter, while the Sardinian shepherds had a very high concentration of marriages in summer–autumn. Both communities avoided marriages in the Advent and Easter periods and in the month of May (dedicated to the Virgin Mary), and the farmers also in August (also dedicated to the Virgin Mary). Despite a certain seasonal stability, there was a significant change in the monthly distribution of marriages between the two halves of the 19th century in both the agricultural and pastoral communities, probably due to a series of laws that transformed the centuries-old socioeconomic system of Sardinia in the second half of the century.

Introduction

Marriage is the event in which biological and socio-cultural components interact, influencing the evolution of a population's genetic patrimony.

In human populations, spousal choice is dictated by ethnic, social, religious, psychological, socioeconomic, cultural and geographical factors. Therefore, marriages are not contracted randomly, but are conditioned by the ecological context, *sensu lato*, in which various communities have developed specific subsistence models. The seasonality of marriages, like spousal choice, is an integral part of behavioural models conditioned by the ecological and cultural substratum. In fact, the marriage seasonality of a given population is strongly influenced by geographic location, climatic factors, work activities and religious factors (Danubio & Amicone, 2001).

The analysis of marriage seasonality of populations with different geographical, cultural and socioeconomic backgrounds allows the identification of the main factors influencing their reproductive behaviours (Coppa *et al*., 2001; Gruppioni *et al*., 2005; Gruppioni & Danubio, 2006). Finally, a change in marriage seasonality through time can also help in understanding the productive and cultural system of a community (Siri & Lucchetti, 1989; Salvat *et al*., 1997; Coppa *et al*., 2001; Danubio & Amicone, 2001).

This study analyses the seasonality of marriages in the 19th century in Sardinian agricultural and pastoral communities to ascertain whether there are any differences with respect to models reported for contemporary Italy and Europe.

Socioeconomic background

The Sardinian socioeconomic system has been characterized for centuries by archaic and autarkic forms of subsistence production: backward and poor agriculture, and primitive sheep-farming (Terrosu Asole, 1980; Idda *et al*., 1984; Sole, 1984). Agricultural productivity was conditioned by the extreme subdivision of rural land (Le Lannou, 1941; Angioni, 1980; Day, 1980; Day *et al*., 1984), resulting in extreme poverty of the rural classes and widespread farm-handing (Le Lannou, 1941; Day *et al*., 1984). Pastoral productivity was based on familial management of small flocks and the use by flock owners of at least annual contract labour (serf-shepherds) to manage the livestock (Angioni, 1982). Moreover, much of the municipal land, especially in pastoral communities, was subject to communal use, which allowed the survival of families that did not own land (Livi, 1984; Sole, 1984). Sardinian shepherds who practised long-distance transhumance remained for about six months in the plains, where the flocks overwintered. The transhumance began in December and ended at the end of April (Meloni, 1982). However, the shepherds returned to the mountain pastures in February to recover the one-year-old sheep (*saccaias*) and re-unite them with the rest of the flock in the lowland pastures (Meloni, 1982).

In the first half of the 19th century, the Piedmontese rulers believed that communal landholding was the greatest obstacle to agri-pastoral productivity. Therefore, in 1820, they emanated the so-called Chiudende Edict that allowed anyone who had 'delimited' part of the communal land to become its owner. The modifications induced by the edict were strongly opposed in pastoral zones, leading to a revolt (1832–1833) that was suppressed by military force (Da Passano, 1982). Feudalism was abolished in 1838 and, to accelerate the privatization of land, usufructuary rights to state land (*ademprivili* and *cussorgiali*) were abolished by decree in 1863 and 1865 (Da Passano, 1982). Moreover, most of the *Monti frumentari*

Table 1. Population sizes of the four agricultural and four pastoral villages in Sardinia recorded in censuses during the 19th century

	Censuses			
	1821	1844	1861	1881
Agricultural villages				
Dolianova	1682	2155	2904	2811
Donori	659	791	815	806
Serdiana	832	915	1006	857
Soleminis	325	367	429	374
Total	3498	4228	5154	4848
Pastoral villages				
Arzana	1712	1523	1589	1781
Desulo	1507	1821	2354	2385
Talana	320	387	448	520
Villagrande S.	1237	1175	1251	1278
Total	4776	4906	5642	5964

(agrarian credit institutions) were suppressed between 1851 and 1871, although they were later reconstituted by law in 1897 (Del Piano, 1982).

These provisions profoundly transformed the socioeconomic system of Sardinia (Cherchi Paba, 1977). This transformation, planned and managed by the Piedmontese rulers and supported by the subordinate Sardinian elite, led to a change of land ownership similar to the situation in bourgeois Europe at that time. However, not only did it alter the existing social stratification, but also ended up aggravating the living conditions of the shepherds and farmers (from both the social and productive point of view), since they remained largely excluded from land ownership (Bolacchi, 1984). This led to a strong increase in the numbers of farm-hands, flock owners without pasture lands, and serf-shepherds, as well as to impoverishment of the rural classes (Da Passano, 1982; Ortu, 1982).

Subjects and methods

The analysis of marriage seasonality in the 19th century is based on data collected from parish marriage registers (Liber Matrimoniorum) of eight villages in central-southern Sardinia: four with an agricultural and four with a pastoral socioeconomic and cultural background. Table 1 reports the population sizes recorded in 19th century censuses for the four agricultural villages (Dolianova, Donori, Serdiana, Soleminis) and four pastoral villages (Arzana, Desulo, Talana, Villagrande Strisaili). Figure 1 shows the geographical position and elevation (in metres) of the eight villages. In total, 7340 marriage acts were consulted (3571 for the four agricultural villages and 3769 for the four pastoral villages).

https://doi.org/10.1017/S0021932007002684 Published online by Cambridge University Press

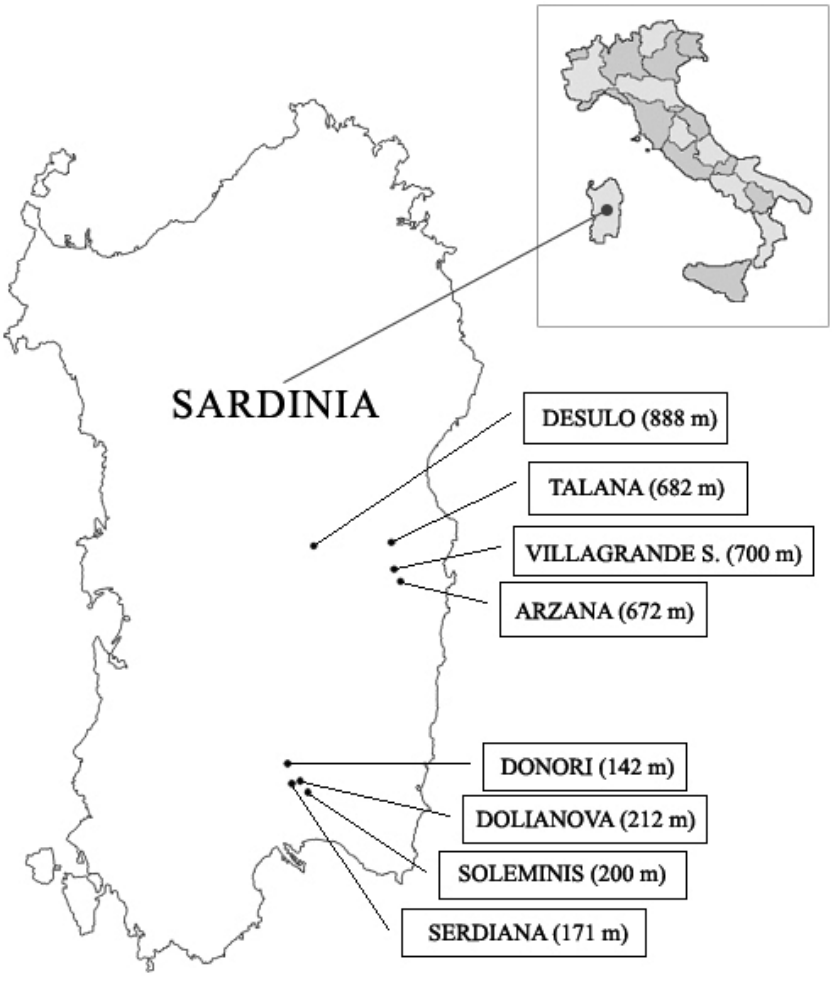

Fig. 1. Island of Sardinia: geographic position and altitude (metres above sea level) of the eight villages considered.

For a reliable distribution of monthly samples, seasonality was analysed by pooling the data from the lowland agricultural villages and from the pastoral mountain villages both for the two halves of the 19th century and for the entire century. The number of marriages was expressed as so many per 1200, corrected according to the number of days in each month so that the number of expected marriages per month would be 100 if there were no seasonality (Henry, 1976).

Statistical analyses

The goodness-of-fit test was used to determine if the marriages were randomly distributed in the various months of the year. The χ^2 test was used to check if there

https://doi.org/10.1017/S0021932007002684 Published online by Cambridge University Press

Table 2. Monthly distribution of marriages and index of Henry values in the first and second halves of the 19th century and in the entire century in Sardinian agricultural and pastoral villages

	1800–1849		1850–1899		1800–1899	
Month	*n*	Index	*n*	Index	*n*	Index
Agricultural						
January	123	83·1	164	105·0	287	94·3
February	166	122·6	191	133·6	357	128·2
March	94	63·5	82	52·5	176	57·8
April	109	75·9	111	73·2	220	74·6
May	108	73·0	126	80·6	234	76·8
June	126	87·8	113	74·6	239	81·0
July	78	52·7	77	49·3	155	51·0
August	85	57·4	88	56·3	173	56·9
September	226	157·4	175	115·5	401	135·9
October	245	165·6	245	156·8	490	161·1
November	298	207·6	350	230·9	648	219·6
December	79	53·4	112	71·7	191	62·8
	1737	1200	1834	1200	3571	1200
Pastoral						
January	69	48·5	80	44·9	149	46·5
February	138	106·0	163	99·9	301	102·6
March	25	17·6	26	14·6	51	15·9
April	65	47·1	77	44·5	142	45·6
May	43	30·1	39	21·8	82	25·6
June	116	84·0	144	83·2	260	83·5
July	224	157·4	265	148·6	489	152·5
August	182	127·9	191	107·1	373	116·3
September	253	183·3	451	260·7	704	226·4
October	311	218·6	344	192·9	655	204·3
November	237	171·7	296	171·1	533	171·4
December	11	7·8	19	10·7	30	9·4
	1674	1200	2095	1200	3769	1200

was a difference in the monthly distribution of marriages between the first and second halves of the 19th century, and between the agricultural and pastoral communities in each half-century and in the entire century.

Results

Table 2 reports the absolute number of marriages per month and the index of Henry (*I*) for the agricultural and pastoral communities in the first and second halves of the 19th century and in the entire century. The significant results of the goodness-of-fit

https://doi.org/10.1017/S0021932007002684 Published online by Cambridge University Press

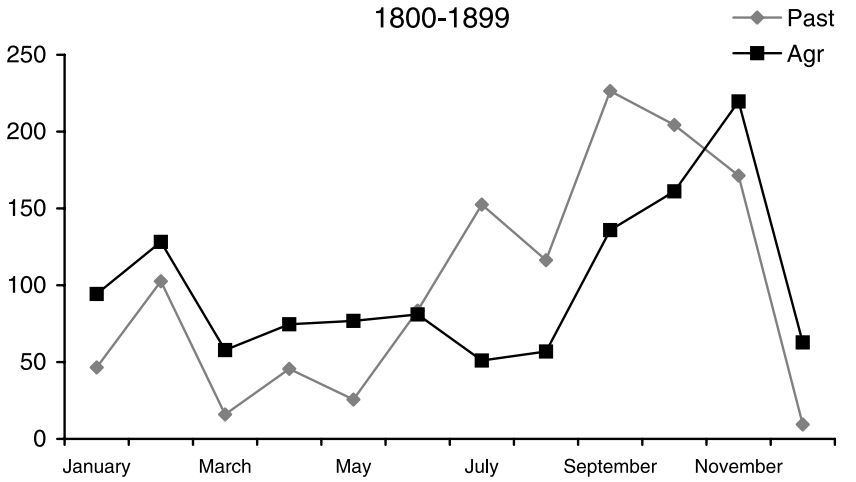

Fig. 2. Monthly distribution of marriages in the 19th century in Sardinian agricultural and pastoral villages.

test ($p \leq 0{\cdot}001$) indicate a non-random choice of the month of marriage, clearly due to a matrimonial strategy.

The monthly pattern of the index in the entire century is different in the two types of communities (Fig. 2), the difference being highly significant with the χ^2 test ($p \leq 0{\cdot}001$). In the agricultural communities, February and the autumnal months have index values greater than 100; 53% of all the marriages were celebrated in these months. In the pastoral communities, 73% of all the marriages were celebrated from July through November and in February. Both communities avoided marriages in the Advent and Easter periods and in the month of May (dedicated to the Virgin Mary), and farmers also in August (also dedicated to the Virgin). For the farmers, the pattern of low matrimonial indexes in the summer months was mainly due to the need to work in the fields in that period of the year.

These seasonality models, both in the agricultural and pastoral communities, show temporal stability through the whole century (Figs 3 and 4). In the agricultural community there is also a slight increase of marriages in January ($I=105$) in the second half of the 19th century. The observed differences are statistically significant ($p \leq 0{\cdot}01$). In the pastoral communities, although the custom of celebrating around two-thirds of the marriages in the summer–autumn months remained the same, the differences in the monthly distribution of marriages between the first and second halves of the 19th century are highly significant ($p \leq 0{\cdot}001$). They can be mainly attributed to the sudden increase of marriages in September in the second half of the century: from $I=183{\cdot}3$ to $I=260{\cdot}7$.

Discussion

Two main models of marriage seasonality have been described for historical communities of Western Europe. The first is typical of agricultural communities in

https://doi.org/10.1017/S0021932007002684 Published online by Cambridge University Press

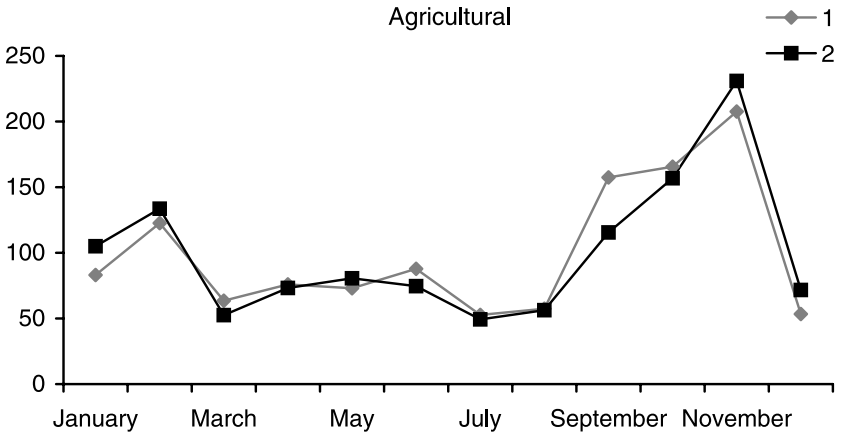

Fig. 3. Monthly distribution of marriages in the two halves of the 19th century in Sardinian agricultural villages.

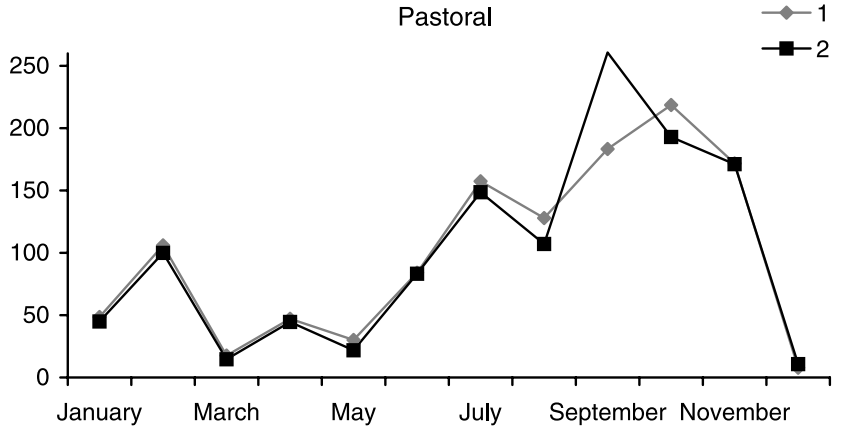

Fig. 4. Monthly distribution of marriages in the two halves of the 19th century in Sardinian pastoral villages.

which marriages are celebrated mainly in autumn–winter (Bourgeois, 1946; Chiassino & Di Comite, 1972; Cardamone, 1975; Dupaquier, 1977; Perrenoud, 1983; Siri & Lucchetti, 1989; Lucchetti *et al.*, 1996; Salvat *et al.*, 1997; Coppa *et al.*, 2001; Danubio & Amicone, 2001). The second, less well studied model is typical of pastoral communities and is characterized by a very high concentration of marriages in the summer–autumn months (Siri & Lucchetti, 1989; Danubio & Amicone, 2001; Gruppioni *et al.*, 2005). However, within these general models there are differences between and within communities, and in time. These fluctuations result from local geographical peculiarities, due to the ecological and socio-cultural characteristics of the communities, and from the prevailing and/or temporary influence of one or several factors that determine the pattern (Coppa *et al.*, 2001).

https://doi.org/10.1017/S0021932007002684 Published online by Cambridge University Press

The two models of marriage seasonality have been confirmed for 19th century Italy. Agricultural communities of Abruzzo, in both the Province of Teramo (Coppa *et al*., 2001) and the inland mountainous Province of L'Aquila (Danubio & Amicone, 2001), exhibited marked marriage seasonality in autumn and winter, and in May and June among the remaining months. The tendency of 19th century agricultural communities to have the highest incidence of marriages in autumn and winter was also recorded for the northern Italian communities of Roaschia (alpine region of Piedmont), Fontanigorda (upper Trebbia Valley, Liguria) and Madregolo (village in the municipality of Collecchio, Province of Parma, Emilia-Romagna) (Lucchetti *et al*., 1996). On the other hand, the pastoral communities of the upper Parma Valley, Province of Parma (Emilia-Romagna, northern Italy) (Siri & Lucchetti, 1989) and of the Province of L'Aquila (Abruzzo, central-southern Italy) (Danubio & Amicone, 2001) followed the classical pastoral model of marriage seasonality, i.e. a mean peak in summer and in October among the remaining months. Moreover, in these Italian agricultural and pastoral communities, the religious restrictions for Advent in December and especially Lent in March limited the number of marriages in some cases, albeit to a lesser degree than work-related limitations (Siri & Lucchetti, 1989; Coppa *et al*., 2001; Danubio & Amicone, 2001).

Moreover, Gruppioni *et al.* (2005) and Gruppioni & Danubio (2006) analysed the effects of marriage seasonality of populations with different socioeconomic backgrounds in relation to their reproductive outcomes. These authors compared the monthly distribution of marriages with that of conception rates in several historical agricultural and pastoral groups of central Italy. The two parameters were highly correlated in pastoral communities, and showed negative correlation in agricultural groups. Moreover, gross rates of birth averaged 35 per 1000 in agricultural societies and 27 per 1000 in pastoral groups, thus suggesting that pastoralism acted as a regulator of reproduction.

The Sardinian agricultural and pastoral communities largely followed the models of matrimonial seasonality identified for Italy and Western Europe. Sardinian farmers preferred to marry in autumn and winter, whereas in the pastoral communities marriages took place in summer (until November), with another peak in February probably due to the return of the shepherds to the village to recover the one-year-old sheep (*saccaias*). Despite the general stability, these two models of marriage seasonality exhibited an evident, albeit different, change in the second half of the 19th century that could be interpreted as a consequence of an extension of work activities in both the agricultural and pastoral communities. In fact, the legislative modifications caused a strong reduction of the number of landowners and thus a great increase of farm-hands, landless flock owners and serf-shepherds, who in order to survive were compelled to increase their working time (Da Passano, 1982; Ortu, 1982).

Therefore, as recorded in similar studies conducted in Italy and Europe, the observed modification of the matrimonial models in Sardinia in the 19th century must be sought in an alteration of the productive system (Salvat *et al*., 1989; Lucchetti *et al*., 1996; Siri & Lucchetti, 1997; Coppa *et al.*, 2001). In particular, an important role was probably played by the changes in land ownership occurring in Sardinia in the 1800s, such as the Chiudende Edict between 1820 and 1850, the abolition of feudalism in 1838 and of the usufructuary rights to state land (*ademprivili* and

cussorgiali) in 1863 and 1865, and the suppression of most of the *Monti frumentari* between 1851 and 1871, all of which transformed the socioeconomic system that had existed for centuries.

The results of the present study should be extended to analyses of marriage seasonality in other 19th century Sardinian agricultural and pastoral communities and confirmed by data on reproductive behaviour.

Acknowledgments

The authors thank the ecclesiastical authorities for their assistance with the data collection. The work was supported by an ex-60% MURST grant.

References

Angioni, G. (1980) Il ricco, il povero, il signore, il mercante. *Quaderni sardi di storia* **1**, 63–81.

Angioni, G. (1982) Pane e formaggio. In *Contadini e Pastori nella Sardegna Tradizionale*. CRS-Pizzi, Cinisello Balsamo, pp. 97–126.

Bolacchi, G. (1984) Un'autonomia in regime di dipendenza. In Savona, P. (ed.) *Per un'altra Sardegna*. F. Angeli, Milan, pp. 19–49.

Bourgeois, J. (1946) Le mariage, coutume saisonnière. Contribution à une étude sociologique de la nuptialité en France. *Population* **4**, 623–642.

Cardamone, A. F. (1975) Il ciclo stagionale dei matrimoni, delle nascite e dei decessi a Bitonto dal 1661 al 1800. In Sori, E. (ed.) *Demografia Storica.* Il Mulino, Bologna, pp. 227–237.

Cherchi Paba, F. (1977) *Evoluzione Storica dell'attività Industriale Agricola Caccia e Pesca in Sardegna*. Vol. IV. Fossataro, Cagliari.

Chiassino, G. & Di Comite, L. (1972) Le fluttuazioni stagionali dei matrimoni in Italia. *Rassegna Economica* **36**, 1535–1553.

Coppa, A., Di Donato, L., Vecchi, F. & Danubio, M. E. (2001) Seasonality of marriages and ecological contexts in rural communities of central-southern Italy (Abruzzo), 1500–1871. *Collegium Antropologicum* **25**, 403–412.

Da Passano, M. (1982) L'agricoltura sarda nella legislazione sabauda. In *Contadini e Pastori nella Sardegna Tradizionale*. CRS-Pizzi, Cinisello Balsamo, pp. 76–81.

Danubio, M. E. & Amicone, E. (2001) Biodemographic study of a central Apennine area (Italy) in the 19th and 20th centuries: marriage seasonality and reproductive isolation. *Journal of Biosocial Science* **33**, 427–449.

Day, J. (1980) Insediamento, colture e regime fondiario in Trexenta dal XIII al XIX secolo. *Quaderni sardi di storia* **1**, 43–62.

Day, J., Anatra, B. & Scaraffia, L. (eds) (1984) *La Sardegna Medioevale e Moderna*. UTET, Turin.

Del Piano, L. (1982) I Monti frumentari. In *Contadini e Pastori nella Sardegna Tradizionale*. CRS-Pizzi, Cinisello Balsamo, pp. 69–75.

Dupaquier, M. (1977) Le mouvement saisonnier des mariages en France (1856–1968). *Annales de démographie historique*, 131–149.

Gruppioni, G., Coppa, A. & Danubio, M. E. (2005) Subsistence patterns as regulators of vital events. The case study: seasonality of marriages and births in historical times in the Abruzzo Region (Central-Southern Apennines). *Human Evolution* **20**, 181–191.

Gruppioni, G. & Danubio, M. E. (2006) Subsistence regimens and marital patterns: biodemographic implications. In Calò, C. & Vona, G. (eds) *Human Genetic Isolates.* Research Signpost, Kerala, India, pp. 99–119.

Henry, L. (1976) *Demografia*. Labor, Barcelona.

Idda, L., Rivolta, G. & Dettori, S. (1984) Nel dopoguerra la rivoluzione colturale. In *Sardegna, l'uomo e la pianura*. Banco di Sardegna-Pizzi, Cinisello Balsamo, pp. 207–234.

Le Lannou, M. (1941) *Patres et Paysans de la Sardaigne*. Arrault, Tours.

Livi, C. (1984) La popolazione della Sardegna nel periodo Aragonese. *Archivio Storico Sardo* **34**, 24–130.

Lucchetti, E., Manfredini, M., Boetsch, G., Bley, D., Aluja, P., Pena, J., Revello, D., Melleri, R. & Sevin, A. (1996) Changes in marriage seasonality among some European rural populations. *International Journal of Anthropology* **11**, 73–81.

Meloni, B. (1982) La transumanza. In *Contadini e Pastori nella Sardegna Tradizionale*. CRS-Pizzi, Cinisello Balsamo, pp. 157–159.

Ortu, G. (1982) Tre tempi della dipendenza contadina. In *Contadini e Pastori nella Sardegna Tradizionale*. CRS-Pizzi, Cinisello Balsamo, pp. 33–49.

Perrenoud, A. (1983) Calendrier du mariage et coutume populaire: le creux de mai en Suisse Romande. *Population* **6**, 925–940.

Salvat, M., Vigo, M., Macbeth, H. & Bertranpetit, J. (1997) Seasonality of marriages in Spanish and French parishes in the Cerdanya valley, eastern Pyrenees. *Journal of Biosocial Science* **29**, 51–62.

Siri, E. & Lucchetti, E. (1989) Andamento stagionale dei matrimoni nell'alta Val Parma. *Antropologia Contemporanea* **12**, 31–49.

Sole, C. (1984) I Savoia: un rifiorimento mancato. In *Sardegna, l'uomo e la pianura*. Banco di Sardegna-Pizzi, Cinisello Balsamo, pp. 67–78.

Terrosu Asole, A. (1980) Abitati nati o abbandonati tra l'Alto Medioevo e i nostri giorni. In Pracchi, R. & Terrosu Asole, A. (eds) Atlante della Sardegna. Fasc. II. Kappa, Rome, pp. 118–136.