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## 15. A week on the plateau: Pig husbandry, mobility and resource exploitation in central Sardinia

*Umberto Albarella, Filippo Manconi and Angela Trentacoste*

*In this paper an ethnoarchaeological analysis of pig husbandry in central-eastern Sardinia is presented. This research further develops a previous project with a similar focus undertaken in Corsica and northern Sardinia. Results presented here are based on ten interviews with local central-eastern Sardinian herders, and various other observations made in the area. In the study area, the typical Sardinian pig breed is kept mainly free-range, and its style of keeping bears clear relationships with the recent, and possibly more distant, past. Pigs and other livestock are typically kept on a plateau, where they live more or less permanently. Herders regularly move from the lowland villages, where they spend time with their families, to the highlands, where they tend the animals. Though no longer practiced, the long distant movement of pigs – including transhumance – occurred until the 1970s and was aimed at reaching regions where better pig pasturing would seasonally be available. The evidence collected is compared with results from the previous phase of the project, as well as with similar work undertaken by other researchers in Greece and Spain. Mobility patterns of humans and animals have been highlighted as part of this project and their potential for archaeological interpretation is emphasised.*

Key words: pig, husbandry, Sardinia, mobility, transhumance

### **Introduction**

The investigation of pig exploitation strategies has produced a number of classic ethnographic studies (Rappaport 1968; Rubel and Rosman 1978; Sillitoe 2003) centred round Papua New Guinea society which have also generated much interpretive interest in archaeology (e.g. Redding and Rosenberg 1998). Considering the common occurrence of the species in the archaeological record and the widely accepted archaeological interest in pig exploitation, it is surprising that ethnoarchaeological analysis has, until recently, paid little attention to the subject outside the Pacific area. However, numerous projects in the last decade have sought to specifically address the ethnoarchaeology of pig exploitation. Observations that we carried out in the 1980s and 1990s on the islands of Corsica (France) and Sardinia (Italy) and the following more structured fieldwork project undertaken there in 2002, have contributed to filling this knowledge gap (Albarella *et al.* 2007). In more recent years, work done by Halstead and Isaakidou (in this volume) in Greece has contributed a similar perspective on the eastern Mediterranean area, using a different approach but sharing similar research interests. Hadjikoumis' doctoral dissertation (2010) on pig domestication in Spain extended the methodological approach that we originally adopted in Sardinia and Corsica to the Iberian

Peninsula, focusing on the famous *dehesa* environment of Extremadura (Spain) and neighbouring Portuguese areas. A similar approach was used by Scrivener (2010) in her undergraduate dissertation focused on a pilot study of pig exploitation in the New Forest of southern Britain. In this area some practices are reminiscent of the woodland pig pasturing – *pannage* – which was widespread in England during the Middle Ages (Wiseman 2000; Albarella 2006). No longer a neglected topic, the ethnoarchaeology of pig husbandry has, in other words, recently become a very active and vibrant area of investigation.

This paper aims to be a further contribution to this area of study, and should be considered an extension of our original work in Corsica and Sardinia (*cf.* Albarella *et al.* 2007). In that first stage of the project we only marginally touched upon central Sardinia but were aware that husbandry practices in this area have remained the closest to their historical roots. At the same time, the wildness and imperviousness of the countryside have helped to preserve the original biological characteristics of wild boar and domestic pigs, as well as traditional aspects of the life of local communities. The key aim of this second phase of our project was therefore to extend our research into this geographic area in order to:

- Increase our sample of interviewed herders, as an aid to check the reliability of our previously collected evidence, as well as to enhance its geographic coverage;
- Investigate possible differences in husbandry practices between different areas of Sardinia;
- Explore our working hypothesis that central Sardinia was more culturally isolated than the northern part of the island, and therefore less affected by the introduction of husbandry innovations which originated on the nearby continent.

This paper presents the results of this investigation into central Sardinian pig husbandry, and discusses the implications of this research in the context of previous ethnoarchaeological work done in Sardinia and other geographic areas, with special attention paid to the aspects that have the greatest potential for archaeological interpretation.

### Study Area and Methods

The evidence discussed in this paper derives from interviews with ten swine herders (Table 15.1); a number of additional conversations with various other local people; fieldwork observations; and photographic recording of the landscape, environment, architectural features related to pastoralism, and the animals themselves. Although the results are informed by many years of data collection in the region, they mainly refer to fieldwork undertaken between August and September 2005. The sample of interviewed herders is not statistically representative, but, particularly if used in combination with the other eight interviews we carried out in southern Corsica and northern Sardinia in 2002 (Albarella *et al.* 2007), should nonetheless be informative. It is also important to consider that we actively biased our sample towards breeders who kept their animals free for at least part of the year, as we considered these to have a greater potential for addressing archaeological questions. Pigs

that are enclosed around the year do, however, also occur, though they are less common and nowadays are generally represented by imported rather than local breeds.

The area concerned by this paper is located in the central-eastern part of Sardinia (Italy) (Fig. 15.1) in the administrative province of Nuoro, and more specifically in the geographic areas known as Supramonte (herders A and B), Ogliastra (herders C to G) and Barbagia (herders H to J). Geologically the area is, like most of Sardinia, rather diverse, and includes limestone formations (towards the coast), as well as granite and metamorphic rocks. It is a mountainous landscape with variable elevations ranging from sea level to above 1800m in the Gennargentu Mountains, on whose slopes some typical free-range livestock are kept. The vegetation is typically Mediterranean with substantial pockets of surviving woodland (holm oak, cork oak, downy oak, sweet chestnut) as well extensive areas of maquis.

The pig herders involved in interviews were chosen from several villages with various local landscapes. The two Supramonte herders (herders A and B) were interviewed in and around the village of Dorgali (400m asl), which is only about 10km away from the coast. Both herders keep their pigs in the hills between the village and the coast: one in an area of dense woodland (A) and the other (B) in a slightly more open landscape, centred around a remarkably well preserved shepherd's hut (Fig. 15.2), inside which our interview occurred. Although swine flu had recently devastated the pig herd of this breeder (B), at the time of our visit the area around the hut was teeming with roaming pigs and some enclosed piglets were also noticed. In Ogliastra, we interviewed three herders from the village of Urzulei (511m asl) and one from Villanova Strisaili (845 m asl), though the former kept most of their pigs on higher ground above the village. Urzulei was, according to many of the people to whom we spoke, considered to be the most typical 'pig territory' in the whole of Sardinia, and roaming pigs can often be seen while driving in that area. The location of the final herder (G) we interviewed in Ogliastra is noteworthy, as his pigs were located on the limestone plateau of San Pietro (385m asl), near the village of Baunei. This is a remarkably wild and isolated

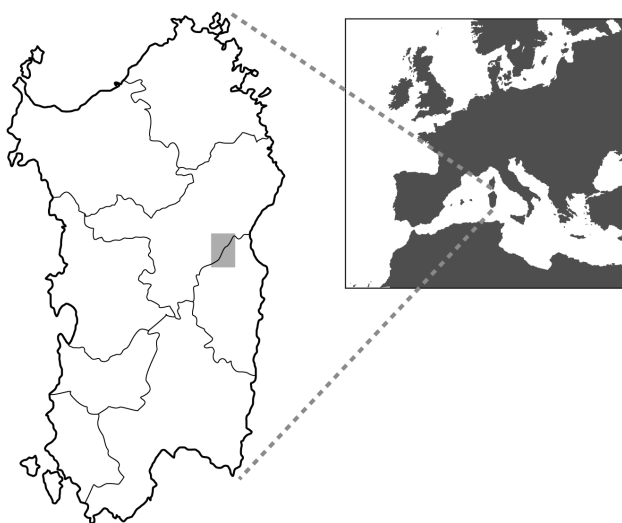


Fig. 15.1 Map of Sardinia with the approximate location of the study area highlighted. Compiled by A. Trentacoste.



Fig. 15.2 A typical shepherd's hut (pinneta) at Buchi Arta (Dorgali). Photo by U. Albarella.

area, which we first visited in 1986; it was reassuring to see that after almost 20 years the area still hosted thriving populations of free-range pigs. A small church and a restaurant are the only human-made constructions visible on the plateau. Finally, we also conducted interviews with herders from Orgosolo (590m asl), in Barbagia. This is the most inland location that we chose, and it provided us with the clearest indication of the ‘plateau style’ of livestock management that will be described in the next section.

Information from the herders was obtained through a questionnaire composed of about 25 questions and slightly modified from the one which was used in our 2002 fieldwork. Although much information was also gathered outside the more formalised question/answer sessions, we considered it important to have a more structured component to the conversation so that a similar type of information could be compared between different herders. Handwritten notes were taken of all answers provided by the herders and, in addition, all conversations were tape-recorded.

## Results

### *A Week on the Plateau*

Before we delve into the details of the information provided by the herders (summarised in Table 15.1) it is useful to draw a general picture of the style of livestock husbandry that characterises our study area, as illustrated by conversations with the interviewees and other informers.

Until recently, in central-eastern Sardinia, it was typical for people to use a more permanent settlement (village) in the valley and a temporary shelter on the plateau, where livestock would be tended. Still today, the men of the village who own livestock (herders) periodically move from one location to the other, while the livestock – comprising of cattle, sheep and goats in addition to pigs – stays on the plateau. This system is exemplified by the Orgosolo case study, where the herders used to walk about 12km to a plateau located almost 500m higher in the mountains (Fig. 15.3), in order to spend time dealing with the animals.

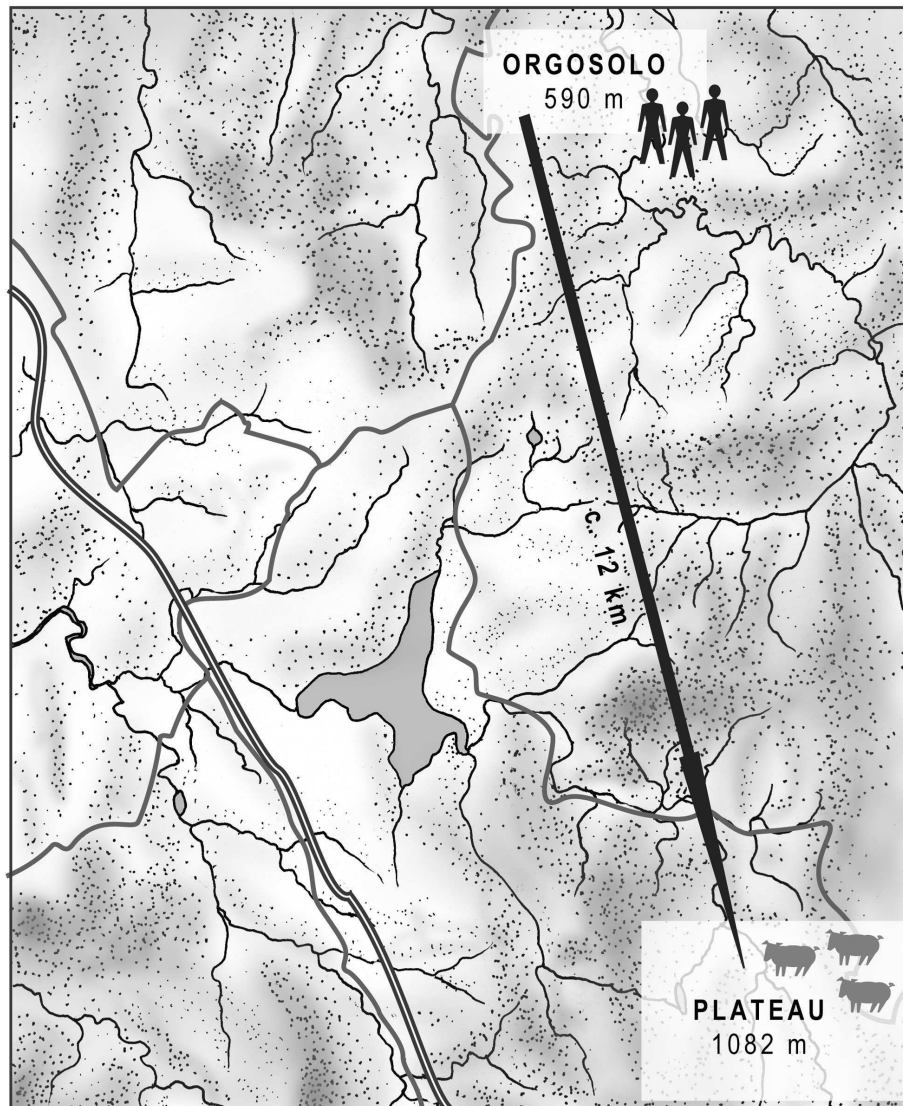


Fig. 15.3 Example of a typical route used by herders, moving periodically between the village (in this case Orgosolo) and its plateau. The animals remain on the plateau. Compiled by A. Trentacoste.

Table 15.1 A summary of the results of the interviews of pig breeders carried out by U. A. and F. M. in August and September 2005. All breeders are based in central/eastern Sardinia in mountainous areas. They are all located in the administrative province of Nuoro and the geographic areas known as Supramonte (A, B), Ogliastra (C to G) and Barbagia (H to J). Continued over the next three pages.

Locality	Buchi Arta (Dorgali)	Dorgali	Urzulei	Urzulei	Urzulei	Villanuova Strisaili	S.Pietro plateau (Baunei)	Orgosolo	Orgosolo	Orgosolo
<b>Breeder</b>	A	B	C	D	E	F	G	H	I	J
<i>Herd size and composition</i>	currently none due to devastation by swine fever; previously 40–60. In the past specialised swineherds could have as many as 200 pigs	c. 20, but up to 100 in the past. Herd is a mix of sexes and ages	c. 30, but up to 350 in the past	c. 15 but up to 150 in the past. Herd includes a boar, a sow with piglets, and castrates	c. 50. In the 1960s herd was <30 due to scarcity of feed. The herd is divided into two groups: one kept in the village and the other on the plateau. Herder keeps 4 entire boars	c. 40, which is the average today. In the past some breeders had hundreds of pigs. Slaughtered suckling piglets are mainly females, while the adults are mainly castrates	c. 30; herding is in addition to managing a restaurant. In the past specialised pig breeders were common	c. 40; in the past specialised pig breeders could have as many as 400 animals	in the past 300–400; castrated males were the majority	28 sows, 3 boars and 12 piglets
<i>Breed</i>	traditional Sardinian, with occasional accidental crosses	traditional Sardinian (NB: the purest possible!) kept free range. Herder also owns improved pigs, but they are enclosed as they would not survive on the plateau	pure traditional Sardinian	traditional Sardinian, but with some crosses	pure traditional Sardinian	mainly traditional Sardinian, with a few improved animals	pure traditional Sardinian	traditional Sardinian	traditional Sardinian	traditional Sardinian
<i>Any wild boar also kept?</i>	occasionally hybrids	some in the past	no	no	2 wild boar + 11 in the mountains; wild boar are kept for reintroduction in the wild (but males are slaughtered)	no	no	no	no	one wild boar
<i>Any wild/domestic crosses?</i>	it happens; the hybrid is wilder but manageable. Hybrid is sometimes killed; other times allowed to grow	it happens regularly, but the hybrids are immediately slaughtered because they do not grow enough (the max weight for the wild boar is 60kg)	it happens, but they are killed	not recently, but wild boar do live in the area	it happens	yes. Hybrids are generally slaughtered because they don't grow enough and tend to escape	it happens. Hybrids are slaughtered because they grow too slowly	yes, it is common, but they are generally slaughtered because they do not grow enough	crosses have happened, and even though small, they were still kept	it happens and the herder owns a hybrid. He kills the males and keeps the females although aware that they will not grow as much as the other pigs
<i>Other livestock/activities</i>	goats, cattle, vineyard	sheep, goats, cattle, olive grove	goats, dairy products, hay meadow	none currently, but it is family tradition to keep also goats (for milk and meat)	cows (for family-based milk use), donkeys, horses, vegetable garden	cattle are kept for meat, and sheep for dairy products. Sheep meat and wool are of little value. Goat milk is also used in the area	goats (meat, milk), sheep (meat, milk), cattle (meat), chickens	sheep, goats, cattle; specialised pig breeding is a thing of the past	sheep, goats, vegetables, vineyard	goats, cattle, donkeys
<i>Castration</i>	90–95% are castrated at 3–4 months; castration is very safe	almost all males are castrated when about 1 year old; no problems are associated with castration	castrated when 1 or 1.5 years old; only one male is kept entire for reproduction	almost all males are castrated at 7–8 months	90% males are castrated at 5 months. Boars kept for reproduction may be castrated at 2–3 years when they will be replaced by a younger male; beyond that age boars may become dangerous	castration occurs between 3–6 months; all males are castrated except the best specimens; no problems are associated with castration	castration is generally at 5–6 months, although boars may be castrated at 2–3 years	castration normally occurs at c. 6 months. Most animals are sold as piglets, but some (c. 10) are castrated and kept for family use	almost all males are castrated	castration is done in August and the age is very variable

<i>Birth season and litter size</i>	generally Dec–Feb, but sows can give birth twice a year. Up to the 1950's one birth per year was the norm due to poorer nutrition. With intensive feeding sows can be pushed to give birth three times per year	mainly in autumn, but other times are possible; sows can farrow twice a year, but normally do so only once; the litter is composed of 5–6 piglets, but in the past this could be as low as 3	can happen throughout the year; generally sows farrow twice per year	piglets can be born at any time of the year; sows have two litters per year; litter size is 8–10 piglets	can happen throughout the year; the purest Sardinian breed generally farrows once a year, but it can do so twice if kept inside; the litter is composed of <i>c.</i> 7 piglets	throughout the year, twice a year; litter of 9–10 piglets, but in the past half of those were killed	throughout the year, twice a year, but occasionally once and even not at all according to the season and the health of the animal	throughout the year, every four months (three farrows per year); <i>c.</i> 12 piglets per litter	twice a year; litter generally of <i>c.</i> 8 piglets but nowadays can go up to 12	twice a year; litter of 8–10 piglets
<i>Mating season</i>	females are in oestrus when piglets are removed; generally twice a year, most commonly in Sept–Oct	any time		throughout the year; 4–5 days after the piglets are removed the sow goes again in oestrus	throughout the year	throughout the year	throughout the year	throughout the year	throughout the year	throughout the year
<i>Where are the litters born?</i>	either in the pen or the countryside; if the latter, there are more losses due to predation from foxes and hawks	they are born outdoor but generally under shelter; since piglets are often predated by foxes or hawks they can be kept in the sty for as long as three months	either in the pen or the countryside; if the latter, there are more losses due to predation from foxes	they are normally born in the sty, where they stay for 15–20 days	generally in the sty, but occasionally outdoors where they are prone to fall prey to foxes; the piglets leave the sty after <i>c.</i> 20 days	in the pen; piglets need to be protected from other pigs; after 20 days the piglets can leave the pen	they are generally born in a pen	they are generally born in a pen; after <i>c.</i> 40 days they are let out	generally in the sty; after <i>c.</i> 15 days the sow takes the piglets outdoors	mainly in the sty, but they leave after 10 days
<i>Purchase of animals</i>	no; unless, like now, the herd dies out due to disease	no	no	no	no; but the herder lends his boar to others; he may also borrow one from others if his is not in the area	no; the herder once purchased pigs from the Campidano valley, but they did not survive		only occasionally	no	only boars for reproduction
<i>Age at slaughter</i>	castrated males are normally slaughtered between 1–2 years; slaughter of suckling piglets is not a traditional practice, but nowadays they are killed at 40–50 days (6–7kg)	if the aim is ham production slaughter occurs between 1.5–3 years; suckling pigs are killed when 4–5kg	<i>c.</i> 1.5 years; suckling piglets at 1–2 months (6–7Kg)	castrates at <i>c.</i> 1 year; boars at 2–3 years; suckling piglets at 30–40 days ( <i>c.</i> 9kg)	generally when 1 year old; suckling piglets at 35 days (8–9kg)	generally when 1 year old; suckling piglets at <i>c.</i> 40–50 days (7–20kg)	the breeder mainly slaughters pigs as suckling pigs for the restaurant (1–2 months, <i>c.</i> 10kg)	suckling piglets normally at 40 days, castrated animals (for family use) are normally slaughtered at 1.5 years	suckling piglets at 40–50 days; otherwise when <i>c.</i> 1 year old	suckling piglets at 40–50 days
<i>Slaughter season</i>	Jan–Feb when the pigs are fattened and their meat preserves better	winter, when the meat can be more easily preserved	Jan–Feb	Dec–Feb, when low temperatures are more suitable for ham preparation	Dec–Mar, when pigs will have fattened themselves with acorns and the meat is also tastier; cooler temperature also guarantees better preservation of the meat	Dec–Feb when the meat can be cured without the risk of spoiling. Pig meat is believed to last longer than other types of meat outside of a refrigerator	winter, when the temperature is right to cure the meat	Dec–Jan, when it is cold and the meat preserves better	winter, when it is colder (Nov–end of Mar)	during the Christmas holidays
<i>Enclosure and home range of the pig herd</i>	entirely free but the pigs decide to stay within a relatively limited area	entirely free; kept at least at 800m asl	entirely free	the pigs are generally enclosed, but in the past they were kept outdoors all year	entirely free on communal land; pigs can go as far as 10km away but they always come back	entirely free but they tend not venture too far – except entire males that disappear sometimes for months	entirely free in winter but they are enclosed in summer, generally Mar–Nov	entirely free on communal land	entirely free on communal land	they live in a area of <i>c.</i> 60 hectares

Locality	<i>Buchi Arta (Dorgali)</i>	<i>Dorgali</i>	<i>Urzulei</i>	<i>Urzulei</i>	<i>Urzulei</i>	<i>Villanuova Strisaili</i>	<i>S.Pietro plateau (Baunei)</i>	<i>Orgosolo</i>	<i>Orgosolo</i>	<i>Orgosolo</i>
Breeder	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>
Daily movements	pigs tend to return to the pen for the night, but in summer they often spend the night in the countryside; sometimes they find shelter in caves	pigs return to the pen at night, both in winter and summer. If they do not, they are either unwell or the pen is inadequate	pigs are normally outside, especially in areas where water is available	NA	pigs return to the sty at night when it is cold, otherwise they stay outside. They can also find shelter in caves and hollow trees	both in winter and summer pigs tend to stay outside, though they may go back to the sty if this is very comfortable; they find various areas of natural shelter	pigs return to the pen for the night	only in winter do pigs return to the pen at night	pigs return to the pen at night; during the day they are generally found near water sources	pigs return to the sty for the night, but only in winter; they can find shelter in the rocks and scrubs. In summer they generally pasture along streams
Mobility	in the past transhumance was practiced, mainly towards the Campidano plains where the pigs would often been sold; in bad years for acorns the animals might be moved to areas where acorn production had been better, such as the Limbara or the Desulo and Aritzo areas			in the past (up to the early 1960s) the pigs were moved from the mountains to the Campidano valley or other plains where they could feed on stubble. They would normally be taken back in Oct/Nov. The breeders themselves took them to the plains. Up to 100–150 pigs could me moved by two or three breeders (in later years on the train!)	the pigs mainly stay on the plateau and the breeders could spend up to 20–30 days with them away from the village; in the past in summer people used to take their pigs to the Campidano valley to feed on stubble, but some would go to closer locations	in the past pigs were taken as far as Cagliari to be sold, but in Jul and Aug they might also be taken to the Campidano valley to feed on stubble	historical transhumance towards the Campidano is known for this area as well	up to the 1960s and 1970s, in summer the pigs were taken to the plains around Cagliari and Oristano to feed on wheat and barley stubble; they would remain in that area for about 3 months. Sheep, goat and cattle transhumance is still practiced today	in summer the pigs could be taken more than 100km away to the Campidano valley, where they would feed on stubble; in bad years for acorns, pigs would be taken to the areas of Aritzo and Desulo where they would feed on sweet chestnuts	
Level of control	minimal; pigs are completely free, mainly independent; but in summer pigs require to be fed daily	minimal, pigs are completely free, but need to be fed in summer; in winter the breeder may not see the pigs for as long as a month	minimal; pigs are completely free, but need to be fed in summer	NA	minimal; the pigs are free, and only occasionally enclosed; the breeder may not see the pigs for as long as 2–3 months	minimal	minimal in winter	sows with piglets require quite a lot of attention, but those that are free are only checked a couple of times a week (slightly more frequently in summer)	minimal in winter, but in summer pigs must be fed daily	minimal as they are kept free range
Capture for slaughter	attracted by food; occasionally shot		attracted by food	NA	pigs are generally attracted by food, but in winter when there are many acorns around it may be difficult to attract them; occasionally they need to be shot	pigs are attracted with food to a pen	NA	call from the breeder	call from the breeder	pigs voluntarily approach the breeder
Diet	in winter: mainly natural food (acorns) with occasional supplements (maize, buttermilk) provided by the breeder. In summer: mais and barley provided by the breeder	in winter (Nov–Feb) pigs are entirely self-sufficient (acorns, tubers, worms), but in summer they are supplied with corn and barley everyday, though they also find some of their own food; even in summer if there are no piglets around daily feeding may not be needed	acorns in winter; only sows that have just given birth need some food supplementation; corn seeds are supplied by the breeder in summer.	breastfeeding sows are given concentrate, while all other pigs are fed with corn seeds throughout the year. In winter this practice is supplemented with some acorns that the breeder gathers in the woodland	in winter they need no supplements to natural food but some is provided to prevent pigs becoming too wild. In summer there is little food around and they need to be fed with corn seeds. In the 1960s in the summer the pigs survived on figs, prickly pears and stored acorns	in winter pigs are completely self-sufficient (acorns and some worms); in summer they feed on grass, roots and worms, which is supplemented by corn and legumes provided by the breeder	unless there has been a bad year for acorns, pigs are self-sufficient in winter; in summer they need to be fed with corn and legumes	in winter pigs feed on acorns and grass and they are entirely self-sufficient (expect sows that have just given birth); in summer pigs are supplied every day with maize and barley which supplements the rather scarce natural food	acorns, roots, worms	in autumn/winter pigs are self-sufficient and eat acorns, grass, tubers, but a food supplement is provided to make sure they remain accustomed to people. In summer they eat roots, but this is supplemented with maize and wild pears provided by the breeder

<i>Adult Weight</i>	full growth: max 130kg; at 1 year average 55kg, max 90kg; wild boar max 80–90kg	full growth: average 90kg, max 120kg	traditional breed: max 100–120kg; max growth reached at 1 year	at 1 year max 100kg; at 2 years max 130kg	max 150kg when 2 years, but the purest Sardinian breed is lighter	100–150kg when 2 years	suckling piglets: 7–8kg max weight at 2 years is 200kg	max 100kg	suckling piglets: 6–7kg; adults range from 80–200kg, but the average is c. 150kg. Pure Sardinian wild boar only eat grass and insects and weigh no more than 25kg (!)
<i>Losses</i>	rare (occasionally stolen)	occasionally pigs disappear, especially entire boars	NA	occasionally (4–5 per year)	rarely, generally entire boars	rarely	rarely	the adults are sometimes stolen	there may be casualties due to hunters or fights between males
<i>Agricultural damage</i>	none; no snout wire needed	there is no cultivated land around, so no snout wire is needed	NA	iron wire is used in the snout to avoid crop damage and deter the pigs from moving too far; however they become fatter without the wire	no; cultivated fields are fenced. Others use iron wire in the pigs' snouts but this breeder does not, as otherwise the pigs cannot feed properly (they can only graze)	not at all due to absence of agriculture on the plateau; snout wire is not necessary	not an issue due to the absence of cultivated fields; snout wire is not necessary	to avoid damage, pigs need to be kept where there are no cultivated fields	rarely a problem and no snout wire is used, except for entire boars to prevent them from killing sows and piglets
<i>Products</i>	meat, fat; in the past bristles were also used and the meat was sold with the skin still on; skin was also used	meat; but in the past (up to the 1960s) bristles were also used and the skin was used to make shoes and bags	meat (also cured), fat	meat, and occasionally skin to produce bags and shoes; however pigskin is not considered to be very good for this purpose	meat, fat; in the past bristles were mainly used by cobblers and to make brushes	meat, blood	meat, fat; in the past bristles were used by cobblers	meat, fat; in the past bristles were used for making brushes, and the fat was the most valuable part of the carcass	only meat

In the pre-motorization days it was unfeasible to cover this distance and altitudinal range every day, and as a consequence, the herders would spend extended periods of time (a week or more) on the plateau, finding shelter in purposefully built huts, known locally as *pinnetas*. These constructions still represent a common feature of the central Sardinian highlands (Fig. 15.2), where simpler and smaller structures known as *sarule* (Figs. 15.4 and 15.5), devoted for the shelter of animals rather than people, can also be commonly encountered. The movement of men between the village and the plateau was not at all seasonal, but would rather proceed unchanged throughout the year.

The solitary life of the men on the plateau has often contributed to the formation of tribal associations among family groups. This practice has given rise to the mythology associated with the notorious banditry of the Sardinian shepherds, but also to the creation of a strong cultural identity and a pride for the historical as well as natural heritage of the region. These themes all feature prominently in the murals that decorate the walls of many houses in Orgosolo (Fig. 15.6), and have amply been portrayed in both literature and cinema.

The central Sardinian plateau is generally characterised by areas of woodland combined with rather extensive open areas (Figs. 15.7 and 15.8). In the latter, shrubs are prevented from growing excessively by the continuous grazing and browsing of livestock. By keeping the vegetation low the animals fulfil an important ecological role, as they help in preventing the spread of wood fires, an endemic problem in the region. The plateau is almost invariably made of communal land, which makes this style of husbandry possible, as the animals are free to pasture wherever they like. The virtual absence of agriculture on these high grounds means that there is no clash of interest between farming and herding, and that crop damage caused by livestock is generally not an issue. Large scale agriculture is not reported in this area, and around the valley bottom village people more commonly engage in horticulture, accompanied by the cultivation of small plots of land and the keeping of a few animals, generally – unlike on the plateau – kept enclosed. Local communities are remarkably self-sufficient and even nowadays in some villages there are only a few shops. Much of the foodstuff required by a family is acquired through exchange rather than purchase and homemade production is still the norm.

The advent of the car has substantially changed the mobility pattern, making it feasible for herders to move from the village to the plateau on a daily basis. However, this is a surprisingly recent development, as car ownership has, in this area, only become commonplace in the last four decades. Although we did not have the opportunity to interview them, we were told of a few elderly shepherds who still regularly spend the night on the plateau, particularly in the Supramonte area. Although many *pinnetas* have fallen into disuse, others are still remarkably well preserved, sometimes as heritage monuments, but more often because they still play a useful function as storage rooms and resting places. By and large the general style of husbandry has





Fig. 15.4 A typical animal's shelter (*sarula*) in the Orgosolo area. Photo by U. Albarella.



Fig. 15.5 A *sarula* with pigs in the Orgosolo area. Photo by U. Albarella.

remained unchanged to today, except that the movement between the village and the plateau has become suitably faster.

#### *Herd Size and Structure*

Large pig herds (up to 400 animals) of the kind still found in the Spanish *dehesa* (Hadjikoumis 2010) are mainly a thing of the past in Sardinia. In the past pig keeping was sufficiently profitable for people to specialise in pig husbandry and consequently herders owned many animals, but this is no longer the case. Nowadays most pig herders also have other professions and/or keep other livestock. For the past four decades it has been more manageable to keep small herds of 20 to 40 pigs. The herd normally includes one to three boars (occasionally none, which means that a boar has to be hired), a few piglets and a majority of castrated males. One of the herders (F) reported that most females would be slaughtered as suckling piglets, while most of the adults would be castrated males. However, this herd composition is not universal as breeder J had a majority of adult females. Most breeders are self-sufficient and only very rarely buy pigs from elsewhere.



Fig. 15.6 Mural painting from Orgosolo representing a shepherd wearing traditional clothes. Photo by U. Albarella.



Fig. 15.7 A view of the Orgosolo plateau. Photo by F. Manconi.

#### *Breed*

All the interviewed herders owned pigs of the traditional Sardinian type, which is dark-coloured, slim and long-nosed (Figs. 15.9 and 15.10). These pigs are more similar to wild boar than to improved pig breeds, mirroring the morphological types characteristic of free-range husbandry



Fig. 15.8 One of the authors taking pictures of pigs on the Orgosolo plateau. Photo by F. Manconi.



Fig. 15.9 A typical long-snouted pig of the Sardinian 'breed' from the Urzulei area. Photo by U. Albarella.

in Corsica (Albarella *et al.* 2007), Greece (Halstead and Isaakidou, in this volume) and Spain (Hadjikoumis 2010). Although one of the herders (D) also had some local pigs crossed with other breeds, the situation in central Sardinia is clearly different from the one we witnessed in the north of the island, where improved breeds had introgressed the local types much more heavily (Albarella *et al.* 2007). Occasionally, improved pig breeds are also kept, but these are enclosed since they would not survive free-range life on the plateau, therefore confirming the accounts that we also received in Corsica. Even pigs acquired from the Campidano valley in south-west Sardinia (Fig. 15.11) can fail to survive on the plateau (Table 15.1). Some of the herders rather proudly claimed to own a very pure Sardinian breed, though genetic analysis that we carried out on the hair of the pigs of breeder B (Larson *et al.* 2007) revealed that, as far as mitochondrial DNA is concerned, they were indistinguishable from the main genetic type widespread in Europe. This is not surprising, as the Sardinian pig type, like the Corsican (Porter 1993, 135), represents a combination of populations of rather diversified origins, rather than a genuine breed. Its rusticity and morphological distinctiveness, reminiscent of the pigs described by Cetti and della Marmora in the 18th and 19th centuries respectively (Albarella *et al.* 2007), cannot, however, be questioned.

### Wild Boar

The wild boar is not an endemic species in Sardinia, but it has been found there since the Neolithic. It was either introduced by early farmers or, more likely, it originates from early domesticates that became feral (Albarella *et al.* 2006). The species is widespread in the region but there have been many introduction events of wild boar from the continent that have diluted the purity of the Sardinian populations. Our study area, however, and Ogliastra in particular, is regarded to be one of the areas where introgression has been more limited (Onida *et al.* 1995),



Fig. 15.10 A typical dark and slender pig of the Sardinian 'breed' from the Dorgali area. Photo by U. Albarella.

perhaps because it is a traditional pastoral area with limited agriculture (*cf.* Cetti 1774, 110). The Sardinian wild boar represents one of the smallest sized populations of the species across its range (Albarella *et al.* 2009) and this has important consequences for its management. Some informers mentioned a maximum weight of 60kg for the wild boar, but also reported the occurrence of 25kg (!) animals, which would only eat grass and insects. However unlikely such weight may seem, it is not far from the lowest end of the weight range provided by Toschi (1965, 429) for the Italian wild boar (*i.e.* 30kg). Only occasionally pig herders keep wild boar, and when they do it is generally in very small numbers. One of our interviewees (breeder E) bred wild boar with the aim to reintroduce them into the wild for hunting purposes – the males would, however, be slaughtered. Our informants rather consistently agreed that domestic pigs and wild boar would commonly mate with each other. This is a well-known phenomenon, already documented in the 18th century (Manca Dell'Arca 1780,

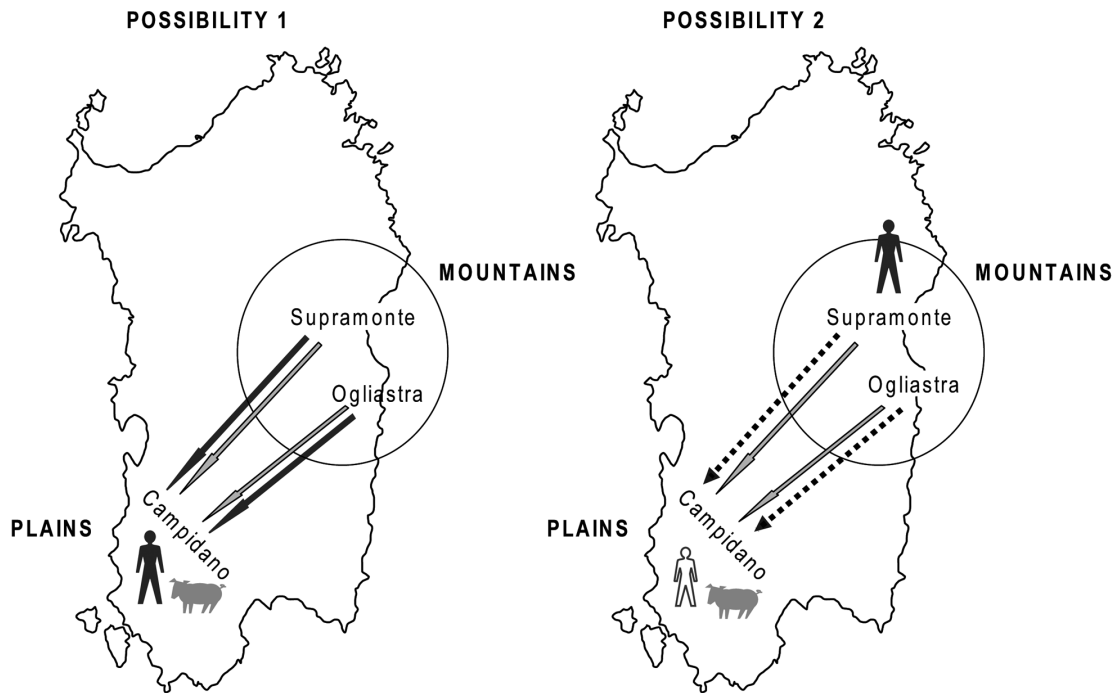


Fig. 15.11 A representation of the seasonal movement of pigs and people from the highlands of Ogliastra and Supramonte to the Campidano valley. In the first possibility the pig owners travel with the pigs, while in the second possibility the breeders hire seasonal workers to drive their pigs to the lowlands. Compiled by A. Trentacoste.

323). Hybrids are occasionally kept (Fig. 15.12), but in general they are not welcome as they do not grow large enough to produce sufficient meat and, in particular, they grow slowly. Consequently hybrids are generally slaughtered early, particularly the males. This approach is consistent with the evidence gathered in Corsica and northern Sardinia (Albarella *et al.* 2007), Greece (Halstead and Isaakidou in this volume) and Spain (Hadjikoumis 2010).

### Castration

Castration is a routine practice, as it was in the 18th century (Manca dell'Arca 1780). Like in Corsica, northern Sardinia (Albarella *et al.* 2007) and Greece (Halstead and Isaakidou in this volume), but unlike Spain (Hadjikoumis 2010), castration is only practiced on males. About 90–95% of the males are generally castrated but, as in Greece, the age of castration is rather variable. Most informers indicated that castration occurs when the animals are between three and eight months old, but castration occurring in the first half of the second year was also mentioned. The reproductive boar is generally kept until it is two to three years old and then castrated and replaced by a younger animal. Boars older than several years are regarded to be potentially dangerous, and in fact fights between males may even lead to casualties. This timing is by and large consistent with the advice provided by Roman sources, for example in the first century AD Columella (VII.9.5) wrote that castration should occur when the pigs are six months old and the reproductive males are three years old. At any age the practice of castration is regarded to be safe and no casualties



Fig. 15.12 A young wild boar x domestic pig hybrid from the Urzulei area. Photo by U. Albarella.

were reported. Only one breeder mentioned this to be a seasonally activity, generally occurring in August.

### Life Cycle

Female pigs are apparently in oestrus throughout the year, except when they are lactating. They seem to go back to oestrus only a few days after the piglets are removed. The consensus is that sows generally farrow twice a year, but this requires them to be fed adequately. In case of food

shortage the traditional Sardinian pig will give birth only once a year, and in extreme cases, not at all. This is very similar to the situation that has been described for Greece (Halstead and Isaakidou in this volume). Additionally, treble farrowing was mentioned as a possibility by a couple of our informers, provided that the pigs were particularly well fed. However, according to breeder A (perhaps significantly, the eldest man we interviewed) one litter per year was the norm up to the 1950s. Apparently the piglets can be born at any time of the year, though two of the herders mentioned autumn and winter as the preferred birth seasons.

The overall health and level of nutrition of the sow play a role in the size of the litter. Litter size is variable, and numbers as low as five and as high as twelve were mentioned; the most common figures seems to range around eight to ten piglets. In the 18th century it was accepted that a sow could milk no more than five or six piglets. Therefore if more were born, they were killed and eaten as a delicacy, and in cases of shortage of food, all would be slaughtered to prevent the mother from eating them herself (Manca Dell'Arca 1780, 324). Two breeders provided a more recent historical perspective: one by making reference to the fact that in the recent past, a litter of as few as three piglets would not be unusual; the other by mentioning that litter size had increased over time from an average of about eight piglets to up to twelve. This variability is also consistent with the wild form, which gives birth to between three and twelve piglets (Toschi 1965, 433).

The sow normally gives birth in a sty or pen, but births in the countryside are not unusual, and herder F showed us a hollow oak tree where, until the recent past, sows would commonly find shelter when in labour (Fig. 15.13). Births outside a protected area are avoided if possible, as many piglets are predated by hawks and foxes. These carnivores are particularly feared and disliked by the breeders who kill them when the occasion arises. On the plateau above Orgosolo we were taken to a rather creepy spot where several dead foxes had been hanged to trees (Fig. 15.14) in the belief that this would scare their living counterparts away. When born in a pen or sty (or better a *sarula*), the piglets are kept enclosed for 10 to 40 days (15 to 20 days representing a more average figure). Herder B, however, mentioned keeping the piglets inside for as long as three months, which would be consistent with the weaning age known for the wild boar (Toschi 1965, 433). Herder B was one of our most accurate and reliable informers, who keeps very pure Sardinian pigs, and his estimate, despite being at odds with others, is therefore credible.

### *Diet*

As mentioned, in autumn and winter pigs are by and large independent as they can freely feed on acorns, tubers, grass and worms. Bad years for acorn production present an exception to this pattern; the way these were dealt with will be discussed below. In winter additional food is occasionally provided by the herders, but several herders



*Fig. 15.13 A hollow oak tree where sows used to find shelter in the area of Villanova Strisaili. Photo by U. Albarella.*

mentioned that the main purpose of this intervention is not nutritional, but is rather aimed to prevent the pigs from becoming too wild and unaccustomed to human presence. Winter food integrations that were mentioned included maize and whey (Fig. 15.15). Suckling sows are helped at any time of the year and are often fed on food concentrate. In summer there is much less natural food available and the pigs are consequently more substantially supported. They still find some food around, such as grass and roots, but this is heavily supplemented with corn seeds (mainly maize and barley), legumes and occasional fruits (pears) provided by the herder. Some of this food is produced industrially and was not available in the past. One of the herders (E) mentioned that in the 1960s pigs survived the summer on supplied figs, prickly pears and stored acorns. This was also confirmed by an elderly farmer, with whom we spoke, who kept his pig enclosed all year round and fed it with barley from his fields. Significantly, he said that the pig could not be fed on food scraps, because the family would not leave any; in those much more parsimonious days everything would be eaten thoroughly.

### *Weight*

Most herders mentioned that Sardinian pigs reach their full



Fig. 15.14 Hanged fox corpses on the Orgosolo plateau. The animals were killed by herders in the belief that they would scare away their living counterparts. Photo by U. Albarella.

growth when they are about two years old, though one of them (D) said that this occurred at one year and another (B) at one and a half years. The variability is likely to be due to feeding regimes as well as to the purity of the breed, with the most typically unimproved Sardinian pig probably being rather slow growing. At full growth the maximum weight of the living pig is given as ranging between 100 and 200kg, but the average can also be below 100kg. To give an idea of the growth rate two breeders mentioned that at one year of age, the average pig weight would be 90kg (A) or 100kg (E), whereas the following year this would have increased to 130kg. There was consensus around the fact that the purest Sardinian type would, on average, be lighter. The elderly farmer said that, despite keeping it enclosed, his typical Sardinian pig would not grow beyond 100kg. These figures compare well with those provided for unimproved breeds in Corsica and northern Sardinia. In central Sardinia the heavier (up to 300kg) improved pigs, which are occasionally found in northern Sardinia, do not seem to occur.

### Products

Meat and fat are the key products of the pig. In the past – when dietary priorities were clearly different from modern days – lard in particular was regarded to be the most valuable part of the carcass. The meat is mostly cured to produce hams, some of which have a very high proportion of fat.



Fig. 15.15 A pig feeding on whey in the area of Villanova Strisaili. Photo by U. Albarella.

However, the taste is, as we experienced in Urzulei, delicious and entirely different from that produced through intensive breeding. Among other products mentioned, blood was also regarded to be useful. Pigskin was in the past used for the production of shoes and bags, but this practice has now been abandoned. Pigskin was never regarded to be particularly valuable, but carcasses were often sold unskinned, as the skin could also be used for culinary purposes. In the past (until the 1960s) pig bristles were used for making brushes and by cobblers, a fact also reported by Manca dell'Arca (1780, 326). Finally, it was also mentioned by herder C that young pigs could also be sold alive to families who would fatten them up within the household. This practice, however, also seems to have disappeared. Presumably this is because nowadays families tend to acquire improved animals that would grow larger and more quickly.

### Slaughter

Adult animals are slaughtered between one and three years of age, with castrates being killed towards the younger part of the range (second year) and breeding pigs towards the older (third year). These pigs would mainly be used for ham production. In Sardinia, however, a fashion for the consumption of meat of suckling/very young animals has developed in recent decades, but this is not a traditional practice, as we were also informed in the north of the island (Albarella *et al.* 2007). These young pigs are normally killed when one or two months old (the figure of 40 to 50 days was repeated by several breeders) and with a weight ranging between four and ten kilograms. As in Spain (Hadjkoumis 2010) and in the north of the island, the slaughter season of the older pigs is firmly fixed in winter, when the animals are fatter after pasturing in the forest and the meat is less prone to go off in the colder climate. Additional advantages of killing the pigs in this period include the potential coincidence with the Christmas holidays (herder J) and the fact that the meat is tastier after the pigs have spent time feeding on acorns, which become available in autumn (herder E).

### *Territory and Control*

All the interviewed herders generally keep their pigs entirely free-range, though this has become a challenge in recent years due to regional laws which, to prevent the spread of swine flu, restrict the movement of the animals. Though these new restrictions appear to have had limited effect on the activity of most of the interviewees, one of the herders (D) has decided to enclose his animals full-time, and another (G) now does so in summer. There is, however, no question about the fact that until the recent past pigs were invariably free throughout the year. Those pigs which are free-range live on communal land and can roam as they like, though they rarely venture more than 10km away. Entire boars tend to wander off far more frequently and they are occasionally lost; indeed, they may not be available when required, in which case a sire may need to be hired from another breeder. In winter when they are self-sufficient, pasturing in woodland, the pigs may be difficult to find, and the common practice of attracting them with food at slaughtering time may not work; in these cases the animals may be shot.

Although all free-range pigs similarly pasture freely during the day, their nocturnal behaviour is more variable: some regularly go back to a pen/sty to sleep; others do so only in winter; and others yet prefer to find shelter in caves, hollow trees and shrubs at any time of the year. Factors that may influence their decision include external temperature, the adequacy and comfort of the sty, and the availability of water sources in the countryside. Water is an important resource for pigs and, particularly in summer, they are often found pasturing along streams or near ponds, springs and lakes, which we also witnessed (Fig. 15.16). It would not be unusual for the herder not see his pigs for a month or more, particularly in winter, though one of our informers (H) checked his pigs at least twice a week. Most of the herders were, however, sceptical of our account of a Corsican breeder visiting his pigs in the mountains only two or three times a year (Albarella *et al.* 2007). In summer, when less natural food is available, the pigs need to be helped and require greater level of control. The most vulnerable animals are sows with piglets, and when they occur, they are looked after closely.

Because they mainly occupy communal land, which is not cultivated, the pigs living on the plateau are rarely in a position to cause damage to crops. This was confirmed to us by the elderly farmer, who said that he had never had problems caused by pigs, as these would physically be separated from the crop fields. Consequently iron wire inserted into the pigs' snouts, which is often used in Corsica (Albarella *et al.* 2007) and Greece (Halstead and Isaakidou, in this volume) to deter pigs from digging in crop fields, generally has no useful function in this area. Nevertheless, two of our informers did fit their pigs with iron wire, as there was a risk that the pigs could trespass cultivated fields. However, one of them (E) complained that in doing so the pig could only graze and would therefore not gain sufficient weight. Another herder specifically said that this detriment to the pig's development was the reason



Fig. 15.16 A pig enjoying a walk in the water on the Orgosolo plateau. Photo by U. Albarella.

why he did not use it, combined with the fact that in his area the cultivated fields were fenced. Other reasons were mentioned for the use of iron wire in the snout, including the prevention of animals from wandering off and of boars from killing sows and piglets.

### *Mobility*

Work that we previously did in northern Sardinia revealed no indication of a seasonal movement of the pigs, though in Corsica some accounts of the movement of animals from the south of the island to the Castagniccia region in the north-east, where pigs would feed on sweet chestnuts, emerged (Molenat and Casabianca 1979; Albarella *et al.* 2007). Sheep, goat and cattle transhumance is still practiced in Sardinia today, and most of the herders informed us that until the recent past this was practiced for pigs too, though for different reasons and following separate routes. Up to the 1970s it was common for pigs to be driven from the highlands of our study area to plains and valleys, where they would feed on the stubble of wheat and barley after the harvest. The Campidano valley (Fig. 15.11), in the south-west of the island, was the most commonly cited lowland, but various plains around Cagliari (in the south) and Oristano (in the west) were also mentioned. This transhumance followed an opposite altitudinal gradient to the one generally practiced with grazing animals: the pigs would spend the winter in the mountains and the summer in the plains, as this, in terms of food availability, was the most efficient strategy. The distance covered by this journey would be substantial, 100km or more, and the animals would feed in the area for about three months. Up to 100 to 150 animals could be driven along this route, under the guidance of two or three herders (therefore an average of one herder for 50 pigs seems to have been required). In later years the journey was sometimes made by train. Generally the pig owners themselves would travel with the pigs to the plains, where a small charge was paid to the farmers who owned the grain fields. An alternative possibility was for the breeders to pay seasonal labourers – generally very poor people – to drive the pigs, so the former could remain in the upland villages with their families (Fig. 15.11).

In addition to the seasonal movement of pigs to the lowlands, other occasional movements of the animals occurred in years when the acorn production on the plateau had been poor. Typically the pigs would be driven from Supramonte and Ogliastra to other mountainous areas, such as the Monte Limbara in the north of the island, where the acorn production might have been better (Fig. 15.17). Another, geographically closer, area where the pigs could be driven is represented by the western slopes of the Gennargentu Mountains, around the villages of Desulo and Aritzo. The main attraction of this area was the abundance of sweet chestnuts, which therefore could provide a useful alternative to acorns. In addition, pigs could be driven to urban centres, such as Cagliari, to be sold at the market (herder F).

The existence of transhumant pigs in Sardinia is mentioned by Le Lannou (2006), who, travelling across the island in the 1930s, had the opportunity to witness this movement directly and also to publish a photograph of transhumant pigs in Aritzo (Le Lannou 2006, Tav.XIIB). He does not, however, provide a reason for the movement of the pigs, limiting his comment to the fact that pigs are subject to transhumance just like sheep. His interpretation, however, that sheep are moved to the valleys to escape the cold of the winter in the mountains (Le Lannou 2006, 218) cannot be applied to pigs, which were moved around the landscape in search of better food rather than a more agreeable climate.

#### Other Livestock

As mentioned above, specialised pig keeping was common in the past but nowadays it is not regarded to be sufficiently profitable due to the competition of national and international markets. Therefore pig keeping must be integrated with other economic activities, of which the breeding of other livestock is the most common. With one exception all our informants kept other animal species, and even the one breeder who currently only keeps pigs mentioned that it was family tradition to breed goats as well. All but one of the interviewed pig herders kept goats and many also mentioned sheep and cattle. Writing in the 18th century Manca Dell'Arca (1780) suggested that in Sardinia pig husbandry was traditionally associated with the keeping of goats, and the evidence we gathered indicates that, to some extent, this practice has survived to these days. Goats would be kept mainly for milk and dairy products, with meat largely regarded as a by-product. Sheep and cattle would variably be used for milk and meat, whereas wool production seems to be of little interest. Due to the spread of motorised equipment cattle are no longer used for traction, but there is still vivid and widespread memory of their use for this purpose. Other animals more rarely mentioned include horses, donkeys and chickens. Although there is a rather clear separation in the area between 'farmers' and 'herders', quite a few of the pig herders were also engaged in agricultural activities such as the management of vineyards, olive groves, hay meadows and vegetable gardens.

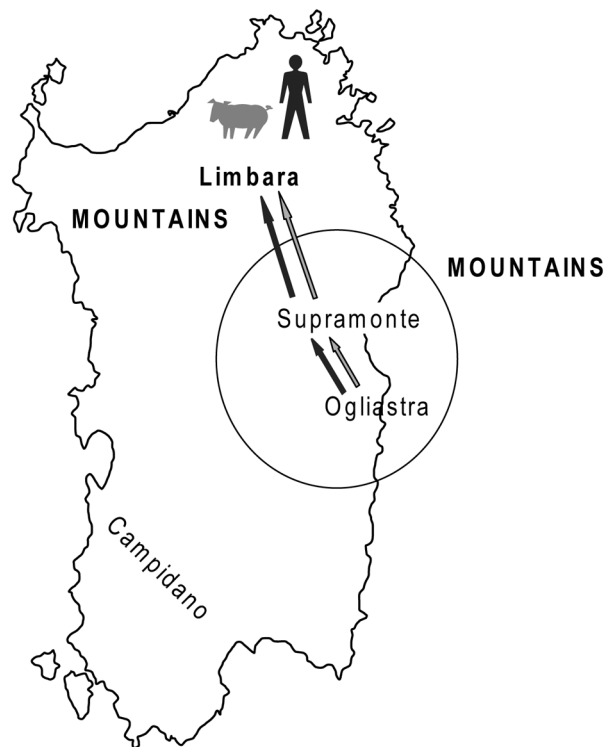


Fig. 15.17 A representation of the 'bad year' (for mast production) movement of pigs and people from the highlands of Ogliastra and Supramonte to the other highlands of Monte Limbara. Compiled by A. Trentacoste.

#### Conclusions

Overall, the second phase of our ethnoarchaeological work in Sardinia has provided useful results in the following areas:

- The sample of interviews that we presented as part of the first phase of this project (Albarella *et al.* 2007) has been enhanced. Many confirmations to our previous observations have been obtained and the characteristics of several management practices have been further clarified;
- The geographic coverage of our ethnoarchaeological research has been extended, thus allowing us to describe previously unreported practices;
- The particularity of the central Sardinian context has been demonstrated, confirming our assumption that this was the most useful area on the island to investigate traditional practices of pig husbandry.

Many of the details about pig husbandry that we have collected as part of this project constitute an aid to archaeological interpretation similarly to those collected from other parts of Europe by Halstead and Isaakidou (in this volume) and Hadjkoumis (2010). Interpretation of various aspects of archaeological animal bone assemblages, including species frequencies, kill-off patterns, sex ratios and biometry, can greatly be enhanced by an understanding of the challenges met by contemporary herders operating

in societies with a low level of industrialisation. Examples of such applications have been provided in our previous work and will not be repeated here. There are, however, a few additional points that may be worth highlighting:

1. Specialised pig herders, which nowadays no longer seem to exist, were a common occurrence in the recent past of Sardinia. Their presence suggests an economy potentially more similar to the style of management of the Spanish *dehesa* (Hadjikoumis 2010) than it may currently appear. The viability of elements of the society to make a living based entirely on pigs needs to be taken into account when interpreting ancient societies.
2. Although the Sardinian ‘breed’ can farrow twice a year, as pigs also did in Roman times (Varro II,IV.14), work in central Sardinia has revealed that even in recent years the traditional regional type, due to shortage of summer food, would commonly give birth only once a year. Manca dell’Arca (1780, 324) also writes that the ability to produce two litters per year was dependent on sufficient nourishment. Wild sows can also potentially farrow twice in a year, though the necessary conditions rarely occur (Toschi 1965). It is likely that in the distant past, when industrially produced food was unavailable and the highly privileged conditions described by the classical authors were rare, single farrowing was the norm for unimproved pigs. This has important implications for archaeological interpretation of seasonal patterns, though the variable birth season characteristic of the Mediterranean area is an issue that cannot be ignored.
3. Like in Greece (Halstead and Isaakidou, in this volume) and Corsica, as well as in contemporary and early modern Sardinia (Della Marmora 1839) and Roman Italy (MacKinnon 2001), a double system of free-range and enclosed pigs is in place in central Sardinia; however, an extensive style of management is definitely predominant. Widespread communal land makes this possible. The potential clash between free range livestock and crop field can thus be avoided not only through a device that will stop pigs from burrowing, but also through landscape management. This has important implications for archaeological interpretation.

The most important new element that we have identified as part of this new project concerns patterns of human and animal mobility associated with livestock management. The double – lowland and highland – style of settlement, with the periodic movement of people from one to the other, has highlighted the occurrence of a relatively simple model of resource exploitation (Fig. 15.3), which takes advantage of different environments and food sources. The splitting of the community into separate settlements fulfilling different functions represents a scenario that we may find replicated in the archaeological record. In addition, we should consider that many of the animals living on the plateau were eventually consumed in the main

village in the valley, which means that this is where their remains are expected to be found. This represents a further reminder of the important distinction between production and consumption that we should make in the interpretation of the zooarchaeological evidence.

The economic and mobility model in place in central Sardinia is made possible by the existence of vast areas of communal land in the highlands. Such communality was a common occurrence in Sardinia until the notorious *Editto delle Chiudende* (Law of Enclosures) was imposed in 1820 by the Piedmontese government (Mientjes *et al.* 2002). This law gave landowners the right to enclose their land and abolished the system of common rights in the use of the land. In the traditionally pastoral area of central Sardinia this law was met with fierce opposition from shepherds who, through the implementation of this legislation, had lost their free access to pasture. It is therefore probably not accidental that, in this area, both extensive common land and free-range livestock management still survive. Before 1820, this extensive animal management system was probably spread across the island.

Another important element that has emerged from our work in central Sardinia is represented by the evidence – provided by several informers – of a pig transhumance, which was integral part of the local system of pig management and is a poorly documented practice in the history of husbandry. Pigs were moved over substantial distances, even exceeding 100 km, which is not entirely surprising if we consider the remarkable agility of the Sardinian ‘breed’. These animals are very adept to walk and even run (Fig. 15.18) as part of their survival strategy in an environment that is, for most of the year, fairly harsh. Such pig types were certainly common in the past and should alert us to the fact that the presence of pig bones in archaeological sites must not necessarily be taken as evidence of sedentism. Unquestionably pigs are not as gregarious as cattle or sheep, but the information we gathered from our interviewees indicates that they can be driven, with, on average, one herder able to take care of about 50 pigs.

Long distance movement of pigs could have a number of different motivations. Of these the most obvious and best documented is the search in winter of suitable woodland, where pigs would feed on mast. Our study area includes abundant woodland and therefore the pigs would not need to be moved unless a specific year had been bad for acorn production. In these cases the pigs were indeed driven away towards areas that had different types of mast or had experienced more successful woodland production. Le Lannou (2006) – writing in the 1930s – regarded the villages of Aritzo and Desulo as typical destinations of pig transhumance. Quite possibly many of these pigs reached those areas as part of regular seasonal movements from regions that were not equally rich in woodland. Similar reasons have been advocated for cases of pig transhumance in 16th and 17th century Spain (Moraza 2005) and France (Moriceau 2005), where pigs would spend two months or more in woodland areas. In France the practice seems to go back to medieval times at least.



Our work has, however, highlighted the occurrence of an additional type of transhumance, occurring in summer rather than autumn or winter. As part of this seasonal practice the pigs would be moved from the mountains to the plains, where they could feed on cereal stubble. This was the most common long mobility pattern in the mountains of central-eastern Sardinia, where the challenging time of the year for pig feeding is clearly the summer rather than the winter.

Finally, pigs could be moved for market rather than pasturing reasons, though it is conceivable that the two activities could be combined. For instance, pigs that were driven from *Ogliastra* to *Campidano* in summer may then have made the shorter journey to the southern urban centre of Cagliari (the largest city in Sardinia) where they could be sold at the market. Instances of pigs being moved all the way from central-eastern Sardinia to Cagliari were, however, also mentioned. Long distance movement of pigs for market purposes has been suggested by Steele (1981) for Roman Italy on the basis of zooarchaeological evidence.

With so much movement of animals from one area to the other, it is therefore not surprising that regional pig types do not seem to occur and that a generic Sardinian ‘breed’ is – or at least was – spread all over the island. Interbreeding of different populations must have been the norm throughout history. The implications of these husbandry strategies for the organization of human societies are substantial. For instance men and women had different patterns of mobility with the latter clearly being far more sedentary, as herding was clearly a man’s activity. Status is also clearly entangled with livestock management; we have, for instance, seen that often the summer pig transhumance was carried out by poor seasonal workers. What is also important for archaeological interpretation is that both people and animals may have left traces of their activities – and in some cases their remains – in places that are different from those where they were born or spent most of the year. The other useful consideration concerns trade and cultural contact between different sub-regions, which clearly must have been substantial.

Pigs are not, and were not, the most numerous livestock in Sardinia; historically they have been substantially outnumbered by sheep (*cf.* Le Lannou 2006; Mientjes 2008). Yet they have played a very important role in the shaping of Sardinian society, and although specialized pig breeding no longer exists, pig husbandry remains a very important economic resource, particularly in *Ogliastra*. Plainly, Sardinian settlement and human mobility patterns have been much influenced by pig management. This has very important implications for archaeological interpretation in Sardinia itself, but also elsewhere. Much of the evidence that we have collected through our interviews with the Sardinian herders is affected by local climatic, environmental and cultural factors. This is why we must beware of applying our various mobility models (Figs. 15.3, 15.11 and 15.16) *tout court* to archaeological contexts, particularly outside Sardinia. However, the



Fig. 15.18 A pig in full gallop on the Orgosolo plateau. Photo by U. Albarella.

various individual elements of our reconstructions represent useful food for thought for archaeological interpretation and highlight the cultural value and importance of practices that are today seriously endangered. These traditions represent an important element of our heritage, whose preservation should be of global and not merely local concern.

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