DAMAGES CAUSED TO CROPS BY WILD BOARS (S. scrofa meridionalis) IN SARDINIA (ITALY)

Onida P. *, Garau F. **, Cossu S. ***

* Comitato Provinciale della Caccia di Oristano (Regione Autonoma della Sardegna), v. Carducci 21, 09170, Oristano, Italy.

** Ufficio Caccia e Pesca / Assessorato Regionale della Difesa dell'Ambiente (Regione Autonoma della Sardegna), v.le Trento 69, 09123, Cagliari, Italy.

Abstract: In Sardinia wild boars *(Sus scrofa)* are originally present with an endemic subspecies, *S. scrofa meridionalis*. It is distinguished by its smaller size and by a taller and larger head in comparision with the one of the typical form. In the Island, starting from the sixties, many exemplars of the subspecies *Sus scrofa scrofa* (central European Wild boar) have been introduced with a hunting purpose. They have spread in a great part of Sardinia and they have cast out the endemic subspecies to a few areas (central Sardinia, Ogliastra, Sulcis, Iglesiente). We should consider the fact that in Sardinia wild boars have always had the chance to interbreed with great facility with domestic pigs, owing to the large diffusion of pig rearing in the wild state. We haven't any exact and reliable data on the distribution and density of the Wild boar in Sardinia. The only information we get is from the examination of the shootings during the hunting season. The introduction of central European exemplars and the possibility of interbreeding with domestic pigs may have influenced the prolificacy and have favoured in many circumstances the numerical development of the population of wild animals. Wild boars are a omnivorous species, they feed mainly on the fruits of woods (acorns, chestnuts, hazelnuts), roots, tubers, bulbs and larvas of insects, corns, carrot, potato, sugar beet and vineyards. They often cause damage to crops. Even in Sardinia several cases of damage caused by wild boars in farming area are reported to the Regional Department of the Defence of Environment. This Department is responsible for the evaluation of the damages and the possible refund for farmers. In this poster the data of the damages claimed in a three year period, from 1990 to 1992, are examined. Particular attention is paid to the geographical distribution of the damage and to the kind of crops.

Keywords: Wild boar, *Sus scrofa meridionalis*, Suidae, Damage increase.

IBEX J.M.E. 3:230-235

1. Introduction

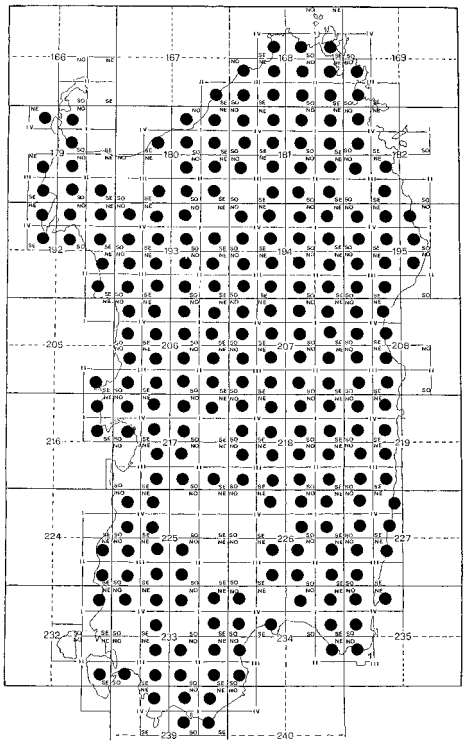
Wild boars in Sardinia are present at first with the subspecies *Sus scrofa meridionalis* Major, 1883, characterised by small size and by a thin and long muzzle. Sardinian wild boars probably originate from pigs gone wild. The species is largely distributed (Fig. 1) almost all over the regional territory and in particular in areas with vegetation characterised by mediterranean brushwood and wood of evergreen broadleaf plants (ilex, corkoak and *Quercus pubescens*). In Sardinia there are no certain data on the real distribution and density of populations and we lack information on bioethology and the use of habitat.

In the last decades (1960-1990) wild boars belonging to the central European subspecies (*S. scrofa scrofa*) and to the Maremma one (*S. scrofa majori*) have been introduced in different areas of the region (Gallura, Nurra, Sant'Antioco, etc.), with the only aim of repopulation for hunting purposes.

These introductions have certainly caused genetic contamination of pre-existing populations and in some cases a population increase which has contributed to the reduction of food availability and to the spreading of the species even in areas never frequented before.

Wild boar is an omnivorous species and feeds, also in Sardinia, predominantly on fruits of woods (acorns, berries, chestnuts and hazelnuts etc.) and on roots, tubers, bulbs, larvas of insects and other invertebrates it searches for with its limbs and muzzle. Under certain conditions (high density, excessive presence of man in woods, reduction of natural food resources owing to fires, drought etc., repopulation and unfit introductions) wild boars may frequent, in order to feed, even farming areas causing damages which might be of a certain importance.

In this poster the data of the damage claimed in a three years period, from 1990 to 1992, are examined. Particular attention is paid to the geographical distribution of the damage and to the type of crops.



● Presence

Figure 1 - Wild boar distribution in Sardinia (1992).

2. Methods

The data concerning damages to crops caused by wild boars in Sardinia in the years 1990, 1991 and 1992 have been processed.

The data come from the surveys and the assessments of damages made by technical offices of the hunting Provincial Committees of Sassari, Nuoro, Oristano and Cagliari. These offices, bodies of the Regional Committee for the Defence of Environment, are in charge of evaluating the claims of damages caused by wild fauna sent by farmers. It is important to underline that the rules concerning the indemnity of damages are not very well known by farmers who don't often claim damages when they are of a small extent. For this reason the occurrence as it appears from the analysis of the data is to be considered understated.

3. Results

We learn from the analysis of the data that in Sardinia in the years 1990 - 1992 the crops more frequently and more largely damaged by wild boars are grasslands (clover, lucern, etc.), cereal fields (maize, wheat, barley), vineyards and pastures. Vegetable gardens are much less affected.

In tables 1, 2 and 3 the data concerning the damaged surfaces, in hectares, corresponding to the four provinces and to the whole territory of Sardinia are reproduced.

In figures 2, 3 and 4 the percentages of damaged surfaces for the different crops for each year are reproduced.

In figure 5 the variation of damaged surfaces in the years 1990 - 1992 for each crop is presented.

As regards the survey of the kind of damages caused by wild boars it has been observed a direct impact on the crops with use of produce and an indirect impact with trample and digging of the ground.

In table 4 the consequences on the main crops are presented.

4. Regulations

4.1. Present regional regulations (Regional Law 28.4.1978 n.32)

The autonomous region of Sardinia, which is

Tab. 1: Characterization of the damaged surfaces - Year 1990.

CROPS	Damaged surfaces (ha)				
	SASSARI	NUORO	ORISTANO	CAGLIARI	SARDINIA
vineyard	101	40	8	15	**164**
wheat	—	—	8	32	**40**
barley	—	—	35	5	**40**
grassland	—	10	29	35	**74**
maize	70	—	7	—	**77**
vegetables	10	—	7	—	**17**
pasture	—	—	44	—	**44**
TOTAL	181	50	138	87	**456**

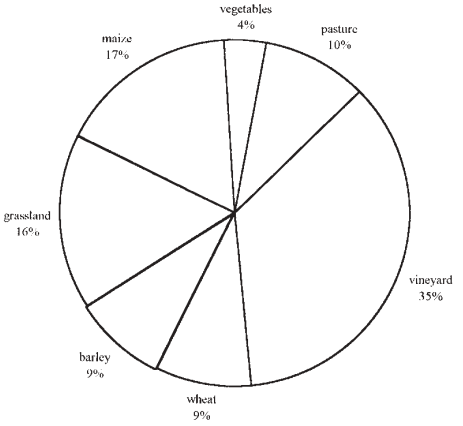


Figure 2. - Proportion of various crops in total damaged surface - Sardinia, year 1990

the sole responsible as regards hunting, following the state law of 27th December 1977, has issued the regional law 32 of 28th April 1978. It deals with "Rules on the protection of fauna and hunting in Sardinia" and confirms article 1 which states that "Wild fauna is an environmental possession of the Region and therefore it is safeguarded and protected in the interest of national community". For this reason the Regional Administration has planned for the safeguard and protection of crops, art. 55 of above mentioned regional law *32/78* that "adequate reparation is granted for the damage of crops contiguous or inside permanent oases of faunal protection and capture and areas of repopulation and capture".
This article was then modified by art. 47 of regional law *31/83* which states: "The Regional Administration grants adequate compensation to breeders and farmers for damages caused to cattle and crops by game or by the handling of permanent oases of faunal protection and of areas of repopulation and capture". This last rule enlarges the possibility of granting indemnities for damages caused by wild fauna both to crops and to cattle even if they are not inside permanent oases of faunal protection and/or areas of repopulation and capture.
It is important to underline however that adequate indemnity means "ristoro patrimoniale" (property relief) and certainly not a complete compensation.

4.2. Adjustment of regional regulations to law *157/92*.

The Regional Administration with the bill 188 of 16th February 1993 still before the regional committee which will soon introduce it to the Regional Council for approval has incorporated the innovative aspects set by the state law 157/92 and in particular the principle of the link hunter-territory-crops.
The title II heading IV of the above mentioned bill concerns the protection of crops, cattle and

Tab. 2: Characterization of the damaged surfaces - Year 1991.

CROPS	Damaged surfaces (ha)				
	SASSARI	NUORO	ORISTANO	CAGLIARI	SARDINIA
vineyard	83	60	—	15	**158**
wheat	—	20	5	37	**62**
barley	40	—	—	10	**50**
grassland	50	10	82	45	**187**
maize	100	—	—	—	**100**
vegetables	15	—	5	—	**20**
pasture	—	—	83	—	**83**
TOTAL	288	90	175	107	**660**

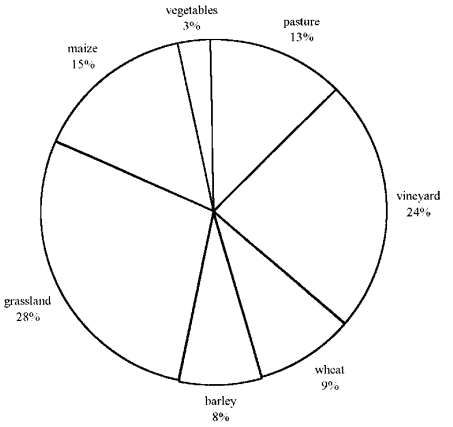


Figure 3 - Proportion of various crops in total damaged surface - Sardinia, year 1991

fish production. This protection is to be agreed on by hunters and farmers concerning hunting in private property. Landowners and landholders must be paid a subsidy in exchange for hunting and in addition can claim compensation for the damage caused to crops and works by hunting and by wild fauna. Competence in this field is divided among the different subjects in charge of the management of the Institutions fixed by law. However the Regional Administration must pay for the damages caused in permanent oases of faunal protection and capture, in temporary areas of repopulation and capture and in public areas of game breeding for study and repopulation.

5. Final considerations and suggestions

From the analysis of the data of the present survey it is possible to make some general considerations and suggestions:

1. At present we haven't got enough scientific information on food liking, ethology and the dynamics of Wild boar populations in Sardinia. Consequently, also the analysis of the occurrence of damages is objectively more difficult, so it would be necessary to start also in Sardinia researches on the biology and ecology of this species.

2. Available data on the distribution and extent of damages caused by wild boars to crops are not enough yet and they don't allow us to define a complete outline of the occurrence. A deeper research on the matter all over the regional territory is to be hoped along with the beginning of specific surveys on sample areas according to their different environmental characteristics (altitude, vegetation, type of crops).

3. As regards the analysis of damages caused by wild boars it is possible to state that the occurrence concerns mainly hill pastures and grasslands next to woodlands of small or medium extent. In these areas wild boars, by "ploughing"

Tab. 3: Characterization of the damaged surfaces - Year 1992.

CROPS	Damaged surfaces (ha)				
	SASSARI	NUORO	ORISTANO	CAGLIARI	SARDINIA
vineyard	70	70	3	15	**158**
wheat	—	20	—	43	**63**
barley	—	—	—	10	**10**
grassland	70	20	58	115	**263**
maize	197	—	3	—	**200**
vegetables	20	—	4	—	**24**
pasture	—	—	125	—	**125**
orchard	—	5	—	—	**5**
TOTAL	357	115	193	183	**848**

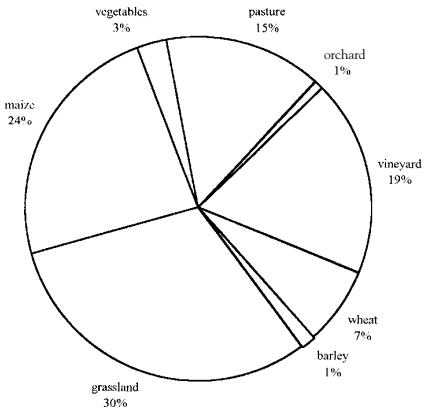


Figure 4 - Proportion of various crops in total damaged surface - Sardinia, year 1992

the ground, make the surface unusable for the traditional practise of domestic animal breeding (sheep and cattle) in the wild or half -wild state. In some cases relevant damages are caused.

Where there are large woodlands (Nuorese, Sarrabus, Sulcis-Iglesiente) the number of claims for damages caused by wild boars is smaller.

The occurrence of damages also concerns, in some parts of Sardinia, farming areas with intensive cultivations such as vegetables or vineyards where these crops are next to woodlands or mediterranean bushlands (Algherese, Sassarese and Logudoro).

It is to be underlined that from 1990 to 1992 there was an increasing diffusion of the occurrence: 21 comunal territories affected in 1990 with a total amount of damaged surface of 456 ha; 28 in 1991 with 660 ha damaged and 38 in 1992 with 848 ha (Fig. 6). The number of claims for damages caused by wild boars also increased.

At present it is not possible to decide whether the above mentioned increase originates from a real growth and territorial diffusion of the Wild boar populations, from modifications of the natural environment of the species or (more probable) is a consequence of an increasing and more widespread knowledge of the regulations concerning claims for damages caused by wild fauna. A lot of farmers are likely to suppose that damage compensation can provide a new possibility of supplementing their farming income.

It is our opinion that in order to deal with the problem of damages caused by wild boars it is necessary to start a handling of this ungulate that should not only consider the possibility of granting compensations but also allows in the different environmental situations to evaluate the occurrence scientifically and supply farmers with technical information on:

- preventive measures (repulsive forces, fences, complementary food supplies, etc);

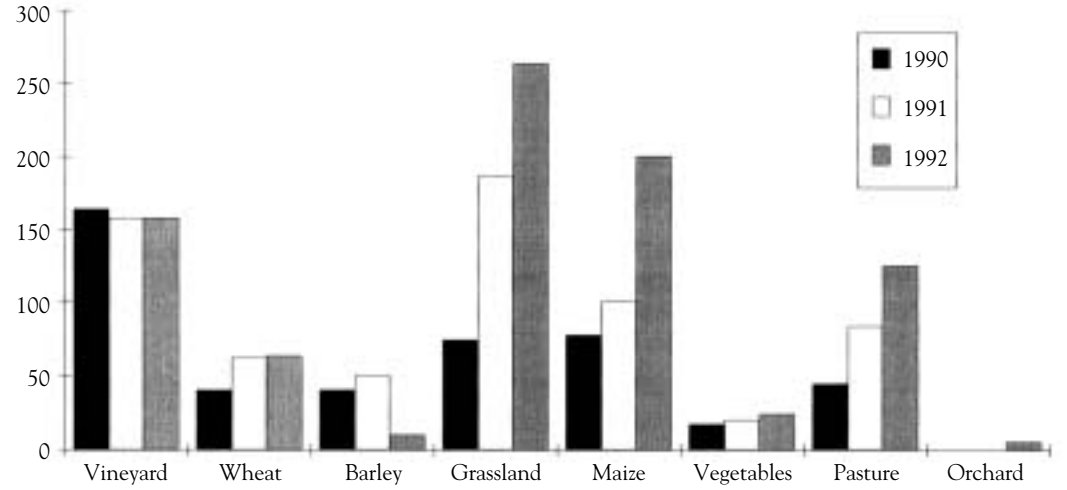


Figure 5 - Damaged surfaces (ha) for various crop types, from 1990 to 1992.

Tab 4: Consequences of damages caused by wild boars on different crops.

VINEYARD	Breaking off of plants and breakage of stalks, damage of bunches with crushing of grapes and getting sour of bunches as a consequence.
WHEAT and BARLEY	Flattening of plants and difficulty of mechanical harvesting as a consequence.
GRASSLAND and PASTURE	Breaking of turf with possible erosion in a sloping ground.
MAIZE	Breaking off of plants which makes it difficult mechanical harvesting of cobs. Cobs are often damaged.
VEGETABLES	Trample and smearing.

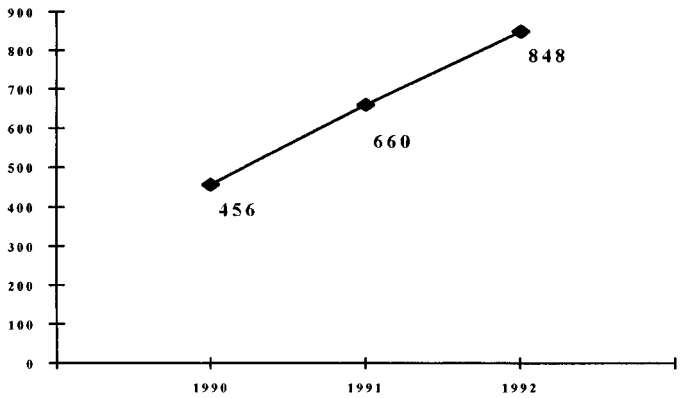


Figure 6 - Increase of registered damaged surfaces (ha) from 1990 to 1992.

- population control (capture and hunting plans);
- strict evaluation of damages and consequent total compensation.

6. Acknowledgements
We would like to thank Mr Salvatore Pruneddu for translating this poster into English.