MORPHOMETRICAL ANALYSIS OF TWO MEDITERRANEAN WILD BOAR POPULATIONS

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Abstract: 67 skulls of adult wild boars from an Algerian and Italian population were measured and compared. The discrimination between the two populations and between sexes was mostly based on skull size. Italian wild boars were less dimorphic than the Algerian ones, probably because they had recently crossbred with semi-domestic pigs.

1. Introduction

The aims of the present study were to compare craniometric variation in two geographically well separated populations of Mediterranean Wild boar and to evaluate sexual dimorphism within each population.

2. Methods

67 skulls of adult wild boars (more than four years old) were measured: 24 males and 27 females from the Natural Park of Maremma (Central Italy) and 7 males and 9 females from near Alger, Algeria. Ten measurements (Total length, Condylobasal length, Palatal length, Greatest frontal width, Maximum width of the skull, Height with jaws clenched, Occipital width, Mandible length, Height of mandible, Length of symphysis) were taken on each skull. The overall pattern of variation was examined using Factor Analysis (FA) computed on both the observed values and the ratio between each variable and the presumed general skull size (Total length) to remove the influence of size variation among groups from the observed values. Discriminant Analysis (DA) was employed to classify observations.

3. Results and discussion

In the FA performed on observed values the first three factors accounted for 85.4% of the total variance. The factor coefficients indicated the contribution that each character made to the discrimination of the samples and they are shown in table 1. Factor I represented skull size and all characters showed high and positive loadings on it so that size is responsible for discriminating among groups. Plot of first two factors scores showed a complete separation between males and females from Algeria, while a partial overlap occurred between males and

Table 1: Factors coefficients obtained from Factor Analysis performed on observed values.

VARIABLES	FACTORS		
	1	2	3
Total length	0.905	0.162	-0.184
Condylobasal length	0.942	0.035	-0.179
Palatal length	0.893	-0.154	-0.151
Greatest frontal width	0.825	0.190	-0.100
Maximum width of the skull	0.873	-0.188	-0.082
Height with jaws clenched	0.885	0.066	-0.305
Occipital width	0.744	0.495	0.220
Mandible length	0.855	-0.373	0.092
Height of mandible	0.746	0.226	0.483
Length of symphysis	0.783	-0.397	0.372
Perc. Var.	71.9	7.2	6.3

females from Maremma (Fig.1). FA computed on the ratio-transformed data produced a large overlap among all the four groups due to the removal of the variation linked to different skull size.

DA based on the observed values appeared to be better (100% for both sexes in Algeria and for the males in Maremma and 85.2% for the females in Maremma) (Tab. 2) than the one based on the ratio-transformed data.

In summary, it is mainly the growth of the skull to a greater extent, which distinguished the populations from each other and separated morphometrically the two sexes.

Sexual dimorphism was confirmed for both populations, specimens from Maremma overlapping more than specimens from Algeria.

Differences in sexual dimorphism within the two populations might be related to the "history" of each group. Italian wild boars have crossbred up to 18 years ago with semi-domestic pigs (Massei & Tonini, 1991), while according to Kowalski and Kowalska (1991) the wild boars from Algeria can be regarded as pure because the breeding of domestic pigs is not common in a Muslim country.

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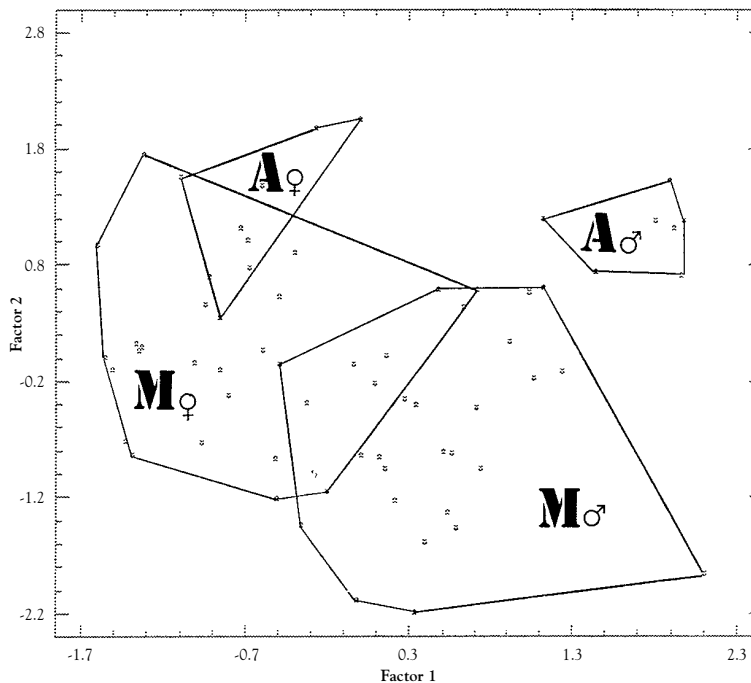

Figure 1 - Plot of the first two factors scores. A = specimens from Algeria; M = specimens from Maremma.

Table 2: Percent correct classification based on Discriminant Analysis performed on observed values. M = Maremma; A = Algeria.

Predicted Group	1	2	3	4
DISCRIMINANT ANALYSIS Classification results				
Actual Group				
1 M males	100	0	0	0
2 M females	11	85.2	0	3.7
3 A males	0	0	100	0
4 A females	0	0	0	100