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DISTRIBUTION AND BIOMETRY OF THE WILD BOAR (*Sus scrofa*) IN THE COMO AND VARESE PROVINCES

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ABSTRACT - The following study contains and analyses data about ihe wild boar (*Sus scrofa*) huntcd in thc Como and Varese provinces from October 1993 to January 1993. These populations have been formed from individuals which havc bccn illegally introduced continuously since 1978 in the Varese province and since the mid 80s in thc Como provincc. Somc of thcm havc also come from the neighbouring Switzerland.

Biometric analyses were carried out on 189 specimens, and were divided into age and sex classes. We considered 8 measurements for some external morphological characteristics and 28 for the skull structure. For each specimen the age class was evaluated by tooth growth analysis. The possible presence of fetuses in every female was also checked.

The data collected by the Veterinary Service (U.S.S.L.) enabled us to identify the main diseases of thc studicd populations. Frequent cases of tuberculosis were observed.

Key words: Sus scrofa, Biometry, Distribution.

INTRODUCTION

In Italy the area occupied by wild boar has increased more than five times over the last thirty years. These areas include somc large zones where the species was absent for several decades or even centuries (Massei and Toso, 1993). The origin of these recent populations is mainly due to an unauthorized introduction of individuals which has continued since 1978 in the Varese province and since mid 80s in the Como province. Some animals came from Switzerland. but the main reason of the population growth is due to the introduction of the animals for hunting purposes.

The need to limit damage to crops and pastures, and even to kitchen gardens has pushed the Provincial Administration into stipulating hunting restrictions.

The aim of our work is to provide a data analysis of the animals which were shot in the period between October 1993 and January 1993.

METHODS

We have first reported the shooting site of each wild boar and the area where its presence has been confirmed on an I.G.M. 10 x 10 miliiary map (scale 1:50.000). Our aim was to obtain a detailed geographical picture of the species presence in each province.

Shot animals were weighed (weight of disemboweled animals) and measured. The biometrical measurements are as follows: total length (LT); tail length (LC), head length (LTe); hind hock length (LGp); neck circumference (CC); withers height (AG). Afterwards we extracted the skulls and collected the measurements which are listed

in Table1. Moreover, we examined the stomach content to evaluate the boar's diet. For each specimen the age class was established by checking teeth growth. We checked for the presence of fetuses in all the females.

A critical analysis of the *data* collected by the Veterinary Service (U.S.S.L.) allowed us to detect the main pathologiea.

STUDY AREA

The study area in the Varese province includes the mountains in the northern part of the province. It is a homogeneous area and is characterized by mountain ranges which have a maximum altitude of almost 1700 m a.s.l. (M. Lema 1692 m). The vegetation at lower altitudes is formed by mixed chestnut (*Castanea sativa*) woods and on the sunny slopes there is a thermoxerophilous vegelation where the downy oak (*Quercus pubescens*) prevails. At higher altitudes the beech (*Fagus sylvatica*) is the main species. The conifers found there were all artificially planted.

Furthermore, besides the wild boar, roe deer (*Capreolus capreolus*), deer (*Cervus elaphus*), mouflon (*Ovis musimon*) and chamois (*Rupicapra rupicapra*) occur in the same area.

Individuals of the Como province came from Penisola Lariana (Lariana peninsula) between the two branches of Lake Como. The mountains are moderately high (max 1686 m a.s.l.) and in the area there is a strong antliropic presence. The vegetation is mainly formed by deciduous trees, especially chestnut trees and a Quercus-betuletum association. In the Lariana peninsula there are also roe deer arid mouflon, among ungulates.

RESULTS AND DISCUSSION

In the Varese province wild boar populations occur mainly in the Veddasca and Dumentina valleys (300-350 estimated individuals) and in the Valcuvia and Valtravaglia valleys (450-500 estimated individuals). In the Corno province shootings occurred in Penisola Lariana only, despite the fact boars are present in two other zones (the Valsolda valley, where increasing immigration from neighbouring Switzerland is noticeable, and the Senagra Valley. where a small herd of

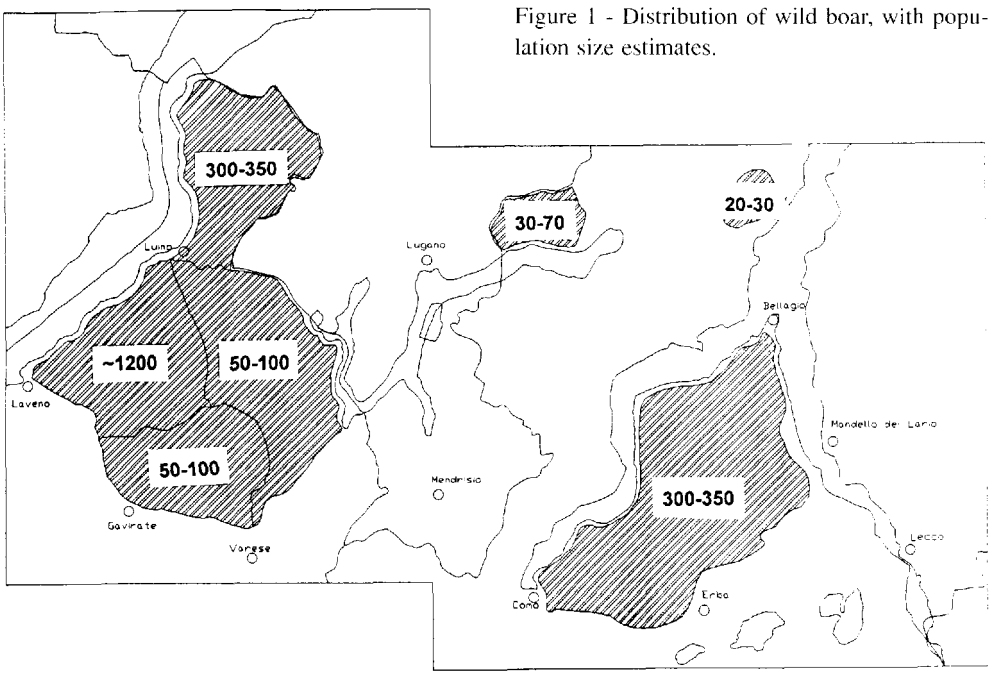

Figure 1 - Distribution of wild boar, with population size estimates.

about 20-30 individuals was illegally introduced in the early 90s (Fig. 1). A total of 376 individuals were shot: 46 from the Como province and 326 from Varese.

Correlation analysis (Pearson's "r") shows a significant link between measurements and age classes. Only a few parameters (ACm, LaMc. AROma, LL, LaFS) do not correlate properly. Chin symphysis (LSM: r=0.676, p<0.001, N=112), mandible height at the condylus (AMc: r=0.629, p<0.001, N=117) and mandible height between the coronoideous apophysis and mandibular condylus (AMs: r=0.622, p<0.001, N=116) are closely correlated to age. A non-linear regression analysis of these three parameters shows a

Table 1 - Biornetrical measurements.

LCpb: Total length on basal plane; ACm: **Skull** height (with mandible); LMpb: Mandible length on basal plane; LaMc: Mandible width between condyla; LSM: Mental synphysis length; LPm2M3: Dental lower row length Pm2-M3; LPm1M3: Dental lower row length Pm1-M3; LC1M3: Dental lower row length. except canine C1-M3; AMc: Mandible height at the condylus; AMs: Mandible height between coronoideal apophysis and mandibular condylus: AMac: Mandible height at coronoideal apophysis; LMN: Nasal minimal langth: LN: Nasal length: AROmi: Occipital region minimal height; AROma: Occipital region maximal height; LaOma: Occipital region maximal width; LOmi: Occipital region minimal width; LDPm1M3: Dental upper row length Pm1-M3: LDC1M3: Denial upper row length. except canine C1-M3; LL: Lacrimal length; LPm: Pre-maxillar length; LPaM: Median palatal length; LaDS: Maximum width of upper dental **row;** LaPS: Width of supra-orbital processa; PNN: Nucha-nasal profile: LaZ: Zygomatic width; LaFS: Distance between supra-orhital foramina: LCB: Condylo-basal length.

	Male					Feniale				
Measure	Avg	SE	N	Min	Max	Avg	SE	N	Min	Max
LCpb	254.9	8.7	32	167	743	281 7	6.5	37	179	334
ACm	153.5	4.7	33	88	I96	161,2	3.7	39	110	200
LMpb	200.5	5,3	39	138	291	213,7	4.2	45	I60	263
LaMc	105,3	1,7	38	84	127	107.6	1,4	42	88	121
LSM	56.7	1,7	42	37	87	60 0	1,3	46	41	77
LPm2M3	67.9	2,2	34	52	115	75.8	2.6	51	48	I10
LPm1M3	83,1	2,7	44	62	139	91.0	2.9	48	65	131
LC1M3	89.7	2,9	44	66	150	95.9	*2.8*	51	66	136
AMc	89.6	2,4	34	57	139	91 7	*2.0*	51	61	123
AMs	85,7	*2,2*	44	54	129	88.7	1.9	51	58	I17
AMac	97,8	2,2	44	68	140	100,3	2.2	51	64	I44
LMN	115.1	4,1	30	69	I63	121,9	3,4	37	83	169
LN	139,4	5,1	23	95	20I	143,0	4.5	31	98	186
AROmi	95,3	2.6	18	70	118	97,2	1,5	*25*	87	109
AROma	99,9	2,7	IS	73	122	102,8	1,5	23	90	118
LaOma	56,8	1,4	32	40	79	57,8	1,0	40	16	68
LOmi	50,6	1,2	32	17	71	51,4	0,9	41	40	60
LDPm1M3	74.9	2,5	41	58	126	82,5	*2,6*	48	*52*	I I9
LDC1M3	82,6	2.6	40	67	132	91,6	*2,7*	48	64	130
LL	49.1	2.1	27	30	76	48,4	1,4	*32*	30	77
LPm	106.4	3.8	22	75	140	112,5	4,1	*30*	79	211
LPaM	172.8	5.4	32	I10	240	181,1	4,2	*38*	I23	220
LaDS	51.6	1.0	39	38	62	54,2	0,9	48	43	67
LaPS	85.3	1.6	39	68	I12	87.0	1,3	44	69	I01
PNN	289.8	8,7	19	225	375	291.6	6,7	29	208	345
LaZ	121,2	2.3	31	90	144	120,3	1,9	36	100	140
LaFS	25.4	0.6	37	18	36	25.9	0.5	45	20	*35*
LCB	269.5	7.4	16	207	112	277.1	5.9	*22*	198	338

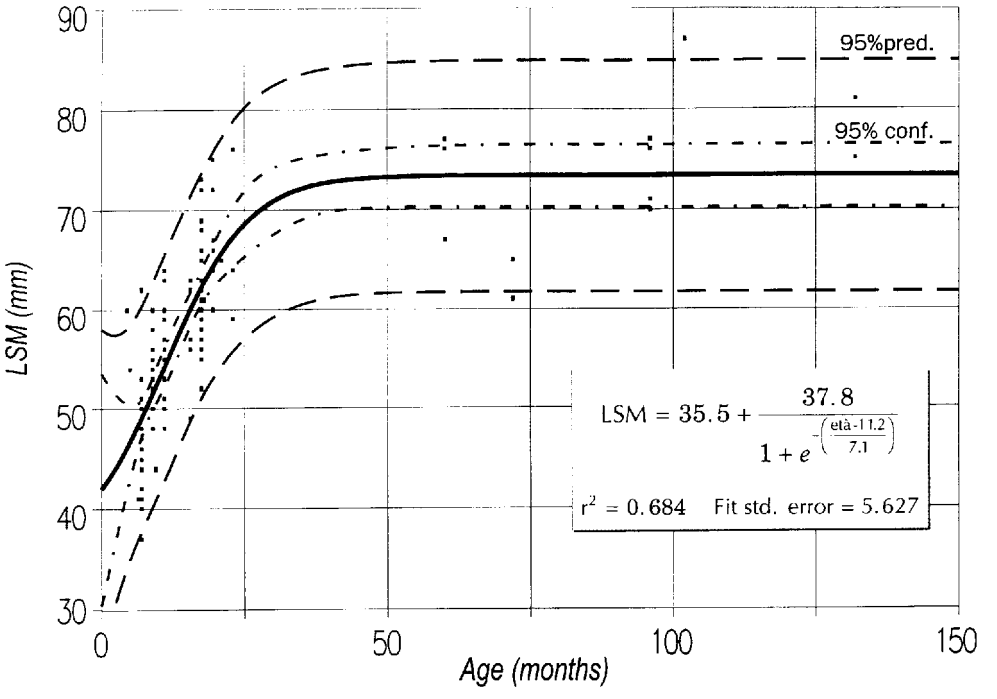

Figure 2 - Growth curve model, based on non-linear regression of mental synphysis on ape (expressed in months).

sigmoidal trend, which is typical for growth curves. It fits well especially for the first two age classes. In fact 95% confidence intervals are particularly narrow for age classes from 1 to 25 months. Fig. 2 shows one of the previsional models. If these models prove reliable, it will be possible to assign an age class to even highly damaged specimens which will enable a quick collection of enough data to create cynegetical indexes.

Table 2 reports mean biometrical values, for both sexes.

It can be seen that the boars' diet during the period between October 1993 and January 1994 consisted pi-incipally of chestnuts (*Castanea sativa*). Indeed under certain conditions it seemed to be their only food. Nevertheless. it should to be stressed that the shortness of the examined period don't permit detailed information throughout the whole year. Veterinary inspections on shot individuals have shown the presence of tuberculosis, although it has not yet been possible to identify the mycobacterium. 14 out of46 individuals were found to be suffering from tuberculosis in the Como province and about 20 cases have been reported from the Varese province.

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