Hystrix, (n.s.) 11 (2) (2000): 131-132

PRELIMINARY DATA ON THE DENSITY AND STRUCTURE OF A FALLOW DEER (*CERVUS DAMA*) POPULATION IN THE FORESTE CASENTINESI M. FALTERONA AND CAMPIGNA NATIONAL **PARK**

LUCIANO CICOGNANI*, PATRICIO MATEOS QUESADA**, FRANCA MONTI*, STEFANO GELLINI* AND FILIPPO BALDASSARRI°

* *ST.E.R.N.A. Via Pedriuli 12, 47100 Forli, Italy*
** *Universidad de Extremadura, Caceres, Spagna*
° *Corpo Forestale dello Stato - Coordinamento Territoriale per l'Ambiente*

ABSTRACT - In a sample area covering 1200 ha located in the northern part of the Foreste Casentinesi National Park a survey was conducted in 1996 and 1997 on the Fallow deer *(Cervus dama)* population. The survey was conducted during the rutting period. The censusing method is **an** adaptation of the Lincoln Index estimation where the capture, marking and recapture process was replaced by individual observations in "lekking areas". Since the stay of the bucks in a territory is not uniform, due to the high level of variability of the reproductive strategies, the mixing of the bucks improves the reliability of the method. The estimate of the total population was 189, the sex ratio was 1:1 and the yearlings/adults ratio was 1:2.2.

Key words: Lincoln index, identification, breeding buck, *Cervus dama*, Italy.

During 1997 a survey was conducted on the Fallow deer *(Cewus duma)* population in a 1200 ha sample area, located in the northern part of the Foreste Casentinesi M. Falterona and Campigna National Park.

The study area was selected on the basis of habitat types (as representative as possible of all habitat types present in the upper part of the Apennines in the province of Forlì-Cesena) and of the different observable groupings in this species during the rut. The resulting area was slightly over 1200 ha. Inside this area six transects were selected and walked in two successive phases. **As** the individuals were easily identifiable, we adopted a method directly derived from the Lincoln index (catch, release and recatch) (Meriggi, 1990). The capture and marking were replaced by observations and drawing on recording cards of characters and features of antler and coat of adult males immediately before the rut (phase 1).

In phase 2, conducted during the acme of the rut, a group of observers walked the selected transects daily. Adult males were recorded as unknown (then a description of coat and antlers was taken) or as known and recorded with their name.

The collected data were processed using the following formula: C2 : C1 = T2 : Tx, where C2 was the number of known specimens counted during each transect of phase 2; C1 was the total number of males classified during phase 1; T2 was the total number of specimens counted during each transect of phase 2; Tx was the total population.

Ten censusing sessions were made in the preliminary phase and four in the phase ***2***. A total number of 28 males was recorded. The elaboration of the four sessions of phase ***2*** led to the following figures:

C2 : C1 = T2 : Tx = 13,5 : 28 = 91 : T

hence

$$TX = \frac{28 \cdot 91}{13,5} = 189$$

As far as the population structure is concerned, data were collected during transects made by personnel from the State Forest Corp - Territorial Coordination for the Environment - during the two months after the rut; they are shown in Table 1. The sex ratio is 1:1, and the yearlings/adults ratio is 1:2.2 with the yearlings representing 28.6% of the population. The difficulty in the identification of yearling does during censuses was bypassed by pooling the does in a single age class. The number of yearling does was then estimated on the basis of the number of counted yearling males and of the observed sex ratio.

Table 1 – Data collected during transects on the population of Fallow deer.

CLASS	N	%
Yearling males	19	6,9
Young stags	22	8,0
Adult bucks	16	27,5
Yearling does	19	6,9
Adult does	99	35,9
Fawns	41	14,9
Total	276	

The rut season provides good conditions for the implementation of this method, since the previously identified individuals spread over the territory due to the great variability in mating systems that occur in this species. In fact we observed at least three different mating systems during the study. The variable that mainly affects the choice of a mating system seems to be the density of breeding bucks. As a matter of fact, with high density of breeding bucks we observed a multiple temtory system, i.e. very close territories defended also simultaneously by several bucks, that very closely resemble the "lek" system described in the presidential estate of S. Rossore (Apollonio, 1989). When the density of bucks decreases they show the territory system and in some cases the harem system. In all cases however the stay of the bucks in a territory is not uniform all along the rut, favouring a better "mixing" of "identified" bucks and therefore improving the precision of the census method.

ACKNOWLEDGEMENTS

We would like to thank Dr. Vittorio Ducoli, Director of the Foreste Casentinesi, M. Falterona and Campigna National Park for their support; the State Forest Corp (Environment Territorial Coordination) for their invaluable co-operation; the forest guards Alessandro Biandronni, Michele Camporesi, Mauro Fabbri, Simona Manni, Claudio Monti, Carlo Spignoli for their competence and care, the "Gruppo Naturalistico Montano Seghettina di Sotto" for their indispensable logistic aid.

REFERENCES

Apollonio, M., 1989. Lekking in fallow deer: just a matter of density? Ethology Ecology & Evolution, 1: 291-294.

Apollonio, M. and Toso, S., 1988. Analisi della gestione di una popolazione di Daini e delle sue conseguenze sui parametri demografici e biometrici. In: Atti del I convegno nazionale dei Biologi della Selvaggina. Ist. Naz. Biol. Selv.

Meriggi, A., 1990. Analisi critica di alcuni metodi di censimento della fauna selvatica (Aves, Mammalia). Aspetti teorici ed applicativi. Ricerche di biologia della Selvaggina, 83: 1-59.