

# QUANTITATIVE DATA ON THE RED DEER (*CERVUS ELAPHUS*) POPULATION IN THE PROVINCE OF FORLI'-CESENA

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**ABSTRACT** - The census of Red deer bucks during the rutting season was used in order to acquire quantitative data on the Red deer population inhabiting the northern part of the Foreste Casentinesi National Park. The census was conducted in September-October 1997 during the hours of highest rutting activity from a set of hearing points by recording the number and direction of ruts. The rutting range, extending over an area of about 11800 ha, was divided into two sectors covered by 31 and 30 hearing points respectively. A total of 77 bucks in sector 1 and 83 in sector 2 was recorded. From these figures we estimated a total population of 870 individuals and a density of 7.3 deers/kmq, comparable to the one recorded in the southern (Tuscan) part of the Park.

**Key words:** rut, goniometer, structure, bucks, *Cervus elaphus*, Italy.

This work represents the first attempt to evaluate the consistency of the Red deer population in Romagna. If the population structure is known, the estimation of the size of Red deer (*Cervus elaphus*) populations in densely wooded habitats can be achieved by counting bucks during the rutting season. This method, already largely used in the southern tuscan part of the Foreste Casentinesi National Park (Mazzarone *et al.*, 1989), offers an optimal cost/benefit ratio. Furthermore it is considered to be reliable because it is based on a minimum datum (the number of rutting males) that is likely to be real, since during the breeding season almost all the sexually mature males take part in the rutt (Clutton-Brock, 1982). In this study we used data on the population structure from previous studies conducted in the Tuscan part of the Park by D.R.E.A.M. Italy (Lovari and Siemoni in Apollonio *et al.*, 1995), which reported a percentage of 18.4 breeding bucks among the whole population. We argued it was reasona-

ble to assume that the same structure exists to the northern **part**, since the two parts share similar habitat conditions and, moreover, there is no real separation of the two areas. The study area comprises the breeding range of the Red deer in the northern part of the Foreste Casentinesi National Park. It covers an area of 11800 ha and is found in the province of Forli-Cesena. The climate is characterised by abundant precipitations which are regularly distributed year-round. The vegetation is almost all typical local mountain forest association, i.e. beech (*Fagus sylvatica*), maples (*Acer spp.*) and white fir (*Abies alba*) being the dominant species. The rutting range was divided into two sectors, separated by natural features (the artificial lake of Ridracoli and a watershed). They were covered respectively by 31 and 30 hearing points. Two sessions were conducted in the period and hours of highest rutting activity (27-28 September 1997, between 20.30 and 23.30 p.m.). To avoid double-counting the

hearing points falling on the borderline of the two sectors were investigated in both censusing sessions. Two operators in each hearing point, provided with a compass and a goniometric dial, recorded the number, the direction and the time of ruts. The recorded data were reported on 1:10000 scale maps. All recordings from every hearing point were adjusted to allow for magnetic declination. The intersection of hearing lines recorded at the same time was assumed to be the buck position. The estimate of the entire population was obtained by means of the formula:

$$Ns/Nr \times 100 = Cp$$

where Ns = Number of heard bucks; Nr = % of

bucks among the population; Cp = population. The number of heard bucks was 77 in sector I and 83 in sector II: a total of 160. Our estimate of the total population is therefore  $Cp = 160/18 \times 100 = 870$ .

A further elaboration of the data produced an estimate of the number of the other population classes: 160 adult males, 409 females, 54 immature males, 37 yearlings, 210 fawns, giving a total of 870. The density value during the breeding period is therefore 7.3 deers/kmq, comparable to the data recorded in the Tuscan part of the Park as well as in a separate northernmost population in the province of Pistoia (Table 1) (Apollonio *et al.*, 1995).

Table 1 - Comparison with other study areas.

Study area	Year	Density in the reproductive period
Casentino (Apollonio <i>et al.</i> , 1995)	1995	8.5
Appennino Pistoiese (Apollonio <i>et al.</i> , 1995)	1995	8.47
Appennino Romagnolo (this work)	1997	7.3

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