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Reproduction of caucasian red deer in Azerbaijan

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ABSTRACT

The paper contains information about reproductive features of Caucasian noble deer in Azerbaijan. Results of observations conducted in Greater and Lesser Caucasus natural regions in 1986-2012 are analyzed in comparative aspect. The differences in stages of reproductive processes depending on habitats were revealed.

Key words: Caucasian noble deer, reproduction, rut, mating, gestation

INTRODUCTION

The main purpose of the article is to reveal the differences in reproduction speed, in the duration of the gestation, the start and end of pregnancy of the noble deer in different regions of Azerbaijan.

The most reproductive populations of the noble deer of Azerbaijan inhabits in the Greater Caucasus. The lowest productivity showed the populations in the Lesser Caucasus. Reasons of the differences in the reproductive performance of noble deer were analyzed in the article.

The analyses of the obtained results showed that measures to protect the deer organized more seriously in the Greater Caucasus than in the Lesser Caucasus.

As a result of study of the reproductive characteristics of deer the percentage of birth in the populations, infertility, mortality of 1-2 yearly calves, the number of deer in some regions were revealed. Forecast of population growth of deer was given.

MATERIALS AND METHODS

Materials for researches were collected during 1986-2012. Field observations and census were conducted in the protected areas of the Greater and Lesser Caucasus below: Zagatala State Reserve, Ilisu State Reserve (including Zagatala and Ilisu Sanctuaries), Shahdag NP and Goygol NP. Census were conducted three times a year – spring, summer and autumn (calving period, post calving period and mating period) [6, 3, 10].

In the above mentioned protected areas there were registered 4638 heads (averagely $1159 \pm 29,6$) of does (females) and 1906 heads (averagely $476,5 \pm 21,8$) of newborn calves.

From registered does 288,4 heads were barren, $879,1 \pm 29,6$ heads were fawns. According to these data the calving index was calculated [4].

RESULTS AND DISCUSSION

Unlike other cloven-hoofed animals living in Azerbaijan behavior and activity of red deer during rut and mating period is more expressive. This period in the life of the red deer characterizes high sexual activity of them. Bucks reach their sexual activity in 4-5 years. To express their maturity and to attract does the bucks emit a powerful roar. The rut for noble deer begins in the edges and woodlands 8-10 m² in the square. They usually come back to this traditional rutting ground every year during rutting season.

The behavior of the bucks is different in the rutting period. They become more aggressive, demonstrate their "strength," threaten other bucks, make false attack. They form small groups. Sometimes they attack each other and take the "threatening" pose (before mating), show their power. During mating process the weak bucks try not to meet with strong ones. Physically and physiologically dominant bucks are very active and are fed less. Because they have no time to rest or eat, breeder bucks can lose up to 20 percent of their weight during the rut's seeking, chasing and breeding phases [1, 10]. In the daytime bucks involved in mating stop roaring and rest up. We observed it in the upper forest belt of the Katekhchay valley of the Zagatala State Reserve in 28.IX.1986 and in the subalpine belt of the southern side of the mountain Guton in 05.X.1987.

Animals have trample down the mating territory roaring and destroy the plant cover over there. The strong smell of urine is felt in the rutting territory. There is often dangerous fights occur between bucks for the possession of a harem.

Bucks face antlers, trying to push and knock down each other. Sounds of facing antlers can be heard very far, for 1-2 km kilometers. Roaring contests and parallel walking allow males to size each other up without violence. Weaker males quickly leave a battlefield. Sometimes fights come to an end tragically. There were cases when males broke antlers. Aleksandrov notes that during dangerous fight not only antlers, but also part of a frontal bone can be broken. Such broken antler together with part of a frontal bone was found in the territory "Duzlag" of a subalpine zone of the Ismailly reserve on June 16, 1997. The author [1] notes that, the bucks' death as a result of fights make 3% of total dead specimens in the Caucasus Reserve. However there is not uniform figure.

We have to note that bucks roaring gather around himself the does. Despite the fact that the does do not express any reaction to males they don't leave males. Such a mating behavior was observed by us in the Mulk summer pasture, Elyolu, Duzlag territories in (September – October of 1989,1993 and 2000) of the Ismayilli sanctuary and in the Akhkamal, Moyrop, Garamacid, Rochigol mountain of Katekh and high forest and subalpine belts of the south slopes of the Magamagol mountain (second ten days of October of 1987, 1995).

Roaring was not noted in all young bucks. The number of roaring bucks was different depending of years. Some authors give information about active mating of not roaring or weakly roaring bucks [3, 6, own observations]. Sometimes the roaring intensity is decreased during mating period or pre mating period because of bad weather. During the researches we registered the fact (5-7 October 1988 in Dzhar territory, Rydzhug mountain, north slopes of the Gala mountain, Zagatala Reserve) of a roaring the buck with one female nearby whereas the buck with 5-7 females around didn't roar.

As distinct from other regions of Caucasus the Eastern Caucasus (Zagatala, Ilisu and Ismayilli reserves, Goygol NP including the Lagodekhi Reserve of Georgia) is characterized by temperate climate. So rutting and mating period of noble deer begins from early September and goes on till the late October in Azerbaijan [1]. The most intensity period of mating occur in late September and early October. Sometimes (during unfavorable weather) this period can be late or early (from second ten days of September till early November). We observed [10] the intensive roaring period of noble deer in Zagatala Reserve in 25-30 September. The duration of the most active phase of roaring makes 7-10 days. Bucks roar almost all the day in this period. During this period males don't eat and have a rest only at noon. At the beginning of the mating period bucks roar very loudly early in the morning and in the evening. We should note that bucks not reached a sexual maturity (1,5-2 years aged) don't participate in pairing and don't roar.

According to literary data [1, 2, 3] and own results some factors influence on mating activity of noble deer. These are meteorological factors (heavy snow and rain), physiological state of animals, population density in the habitats and sex and age ratio of animals in the rutting places. The roaring of bucks is intensive in clear and frosty air, but the cold rain and early snow can strongly weaken their roar. At such strongly changeable weather the noble deer goes down on wood midlands for short time.

Another factor affecting the mating process is high population density of animals in the habitats. The information on number and density of deer is given in the table 1. High density of population results in dangerous fights between bucks which sometimes ends with death. This is observed often in Zagatala (26.3 heads per 1000 ha) and Ilisu reserves (24,7 heads per 1000 ha) where density of deer is high. The harem formed by strong bucks is often accompanied by young and weak bucks. When the leader of a harem is engaged in fight with other buck they seize the moment and couple with does from a harem. V.N.Aleksandrov observed the analogical fact in Manchurian deer [1].

Not all rutting bucks in the local populations roar. We registered such bucks in Elyolu and Duzlag territories of the Ismayilli reserve in 10-12 September, 1987.

Another factor influencing on mating process is sex ratio in the rutting areas. The mating period of noble deer lasts about 2-2,5 months in Azerbaijan [10]

Table 1 Some factors (density, sex ratio) affecting the mating period of noble deer in Azerbaijan

Study areas	No of animals		Sex ratio		♂:♀
	Old individuals (head)	Density (1000 head per hectare)	bucks, %	does, %	%
Zagata State Reserve or Sanctuary	4916	56,9	45,0 (2211 head)	51,0 (2509 head)	1:1,3
Ilisu Reserve and Gakh Sanctuary	1632	33,8	41,5 (678 head)	56,2 (917 head)	1:1,4
Shahdag NP (Former Ismayilli Reserve and Sanctuary)	1909	17,1	46,5 (888 head)	50,5 (965 head)	1:1,1
Goygol NP	610	10,2	41,0 (250 head)	57,0 (348 head)	1:1,4
Mean	2114,3±46,1	29,5±5,4	43,5±6,6	53,7±7,3	1:1,3

Negative influence of a sexual ratio on activity of bucks is that if the quantity of mating bucks prevails, the probability of fights because of a female increases. Some of bucks are injured during fights. They are weakened and can not mate enough number of does. It results in decrease doe productivity.

Negative influence of a sexual ratio on activity of bucks is that if the quantity of mating bucks prevails, the probability of fights because of females is increased. Some of bucks are injured during fights. They are weakened and can not impregnate enough number of does. It results in decrease of doe productivity.

The main stage of reproduction of big mammals is gestation length. The average gestation length of Caucasian noble deer in Azerbaijan is 260-270 (+/- 20-25 days). This data is varied in the different areas. According to A.A.Nasimovich [5] it is 240-250 days, to V.I.Tsalkin [9] – 238 days.

In the southern part of the Caucasus the rutting and mating periods can last in comparison with northern and the western parts. Therefore the calving period is also late.

The table 2 contains calving dates and occurrence of newborn calves of Caucasian noble deer in the south and south-east slopes of Azerbaijan territory of the Greater Caucasus.

Table 2. Time of occurrence of newborn calves of Caucasian noble deer in Azerbaijan

Years	Zagatala State Reserve	Shahdag NP	Ilisu Reserve and sanctuary	Goygol NP
1986	15/04	20/04	26/04	10/05
1987	12/04	26/04	19/04	07/05
1988	20/04	30/04	26/05	15/05
1989	29/04	15/04	11/05	26/04
1990	10/05	18/05	16/04	29/04
1992	03/05	12/05	30/04	24/05
1993	13/04	26/04	10/05	18/05
1994	17/05	23/04	26/05	09/05
1995	29/04	11/05	19/05	18/04
1996	18/05	28/05	27/04	21/05

As it shown from the table we carried out our observations in the Reserves. The first newborn calve was registered in the Balakan territory of the Zagatala State Reserve in 12 April, 1987. The last newborn calve was registered in the Ismayilli territory of the Shahdag NP in 28 May, 1996. Analyses of the calving intensity of noble deer in the separate protected areas shows that the percent of calving in May was higher (60%) than in April (40%) (Table 2,

figure). The table 2 and diagramm show that during 10 years calvin intensity of noble deer beginning from the second ten days of April was 40% in the Zagatala Reserve, 60% in Shahdag NP, 50% in Ilisu Reserve and 30% in Goygol NP. Thus, the latest beginning of rutting and mating period was registered in Goygol NP, on the second place goes the Zagatala Reserve, on the third Ilisu Reserve and on the fourth place Shakhdag NP.

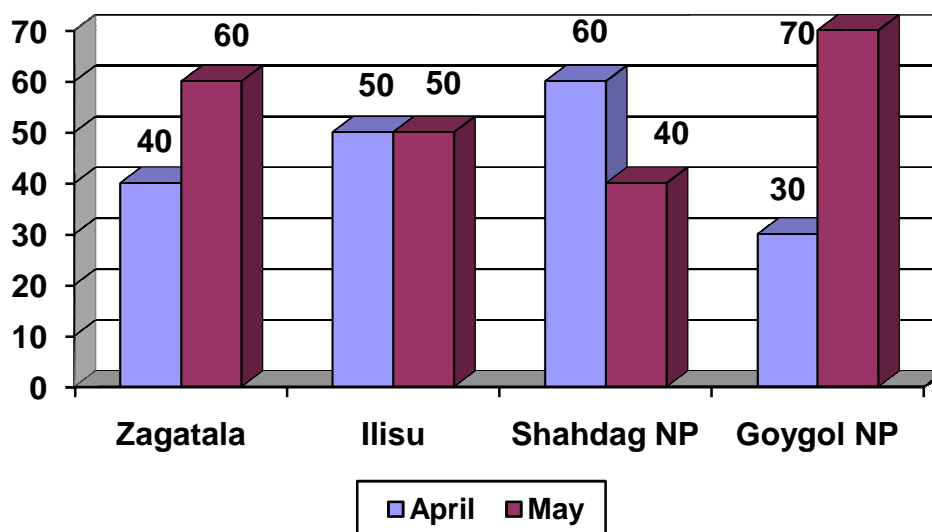


Figure. Calving intensity of Caucasian noble deer in Azerbaijan. Time of occurrence of newborn calves

Thus, it is possible to make such conclusion that Shahdag NP locating in the south-east slopes of the Greater Caucasus is characterised by temperate climate. Such conditions of environment promote fast and free rutting and mating of deer. Therefore the calving period falls mainly (60%) on April. The geographical territory of the Zagatala Reserve cover north-west ridges of the Greater Caucasus, so the rutting and mating periods are accompanied by low temperature, heavy rain and snow, as a result of which mating period lengthens and respectively the intensive calving period occurs (60% - May) at the end of spring.

September and October in the Goygol NP which is located in the Lesser Caucasus natural region are accompanied by heavy rain and snow. Rutting and mating period of noble deer lengthen in this region and the intensive calving period (70%) occurs in May.

Analyzing the obtained results (1986-1996 and 2001-2012) we can resume that 45 per cent of the intensive calving occurs in April and 55 per cent in May.

The annual increase of in number of deer (productivity) is presented in table 3.

Table 3 Productivity of the Caucasian noble deer (1986-2012)

Study areas	Total number of does, including			No of newborn calves (head)	Number of fawn per calver per calver (head)	No of fawn per each 100 calver (head)
	Head	Pregnant ind. (%)	Barren ind. (%)			
Zagatala State Reserve	2461 (♂-45,0%) (♀-51,0%)	76	24	1095	0,57	44,5
Ilisu State Reserve	898 (♂-41,5%) (♀-56,2%)	74	26	335	0,50	37,3
Shahdag NP	937 (♂-46,5%) (♀-50,5%)	75	25	356	0,51	37,9
Goygol NP	342 (♂-41,0%) (♀-57,0%)	72	28	120	0,49	35,1
Mean (M±M)	1159±34,0	879,1±29,6	288,4±17,1	476,5±21,8	0,54	41,1

As it shown from the table 3 the share of barren individuals makes 24 per cent of the total number of adult does in the Zagatala Reserve, It is 26 per cent in the Ilisu State Reserve and Gakh sanctuary 25 per cent in the Shahdag NP and 28 per cent in the Goygol NP. The reason of this situation is the little number of bucks in the population. In other

hand The little number of bucks (Gakh sanctuary, Shahdag NP and Goygol NP) leads to the decrease of number of fawns per calver.

CONCLUSION

Biological and ecological features of Caucasian noble deer were studied in Azerbaijan by us during 1986-1996. As a result of study of the reproductive characteristics of deer the percentage of birth in the populations, infertility, mortality of 1-2 yearly calves, the number of deer in some regions were revealed. Forecast of population growth of deer was given.

REFERENCES

- [1] V.N. Aleksandrov Materials on the ecology of the Caucasian deer // Proc. Caucasian state. Reserve. Krasnodar, **1965**, issue 8, p. 48-69.
- [2] Sh.O. Hasanov Mustafayeva R.T. Deer in the Zagatala reserve. Baku, **2007**, 28 p.
- [3] Zharkov I.V. Results of census of the animals in the Caucasus Reserve in 1939 // *Nauchn. method. Rec. Committee reserves*. **1940**. Vol.7, p. 138-150.
- [4] Guliyev S.M. Bezoar goat and Dagestan goat of Azerbaijan (biology, conservation and economic importance): Author. dis. candidate. biol. Science. M., **1981**, 19p.
- [5] Nasimovich A.A. Reserve dynamics of the red deer in the Caucasian Reserve // *Proc. model Caucasus state. Reserve.* , **1936**, Rostov-on-Don, Vol.1, p. 3-33.
- [6] Nasimovitch A.A. To method for quantifying the noble deer in the Caucasian Reserve. Sc.method.rec.of main res.manag. M., **1944**, v.8, 173-177.
- [7] Sokolov I.I. Fauna of the USSR. Mammals. Hoofed animals (orders Perissodactula, Artiodactula). M.-L.: AN SSSR, **1959**, Vol.1, No.3, 640p.
- [8] Flerov K.K. Fauna of the USSR. Mammals. *Musk deer and deer*. M-L: **1952**, Vol.1, no. 2, 255p.
- [9] Tsalkin V.I. On the biology of reproduction of deer // *Zool. J.* , **1944**, Vol. 6, p. 369-376.
- [10] Guliyev S.M. Fauna of Artiodactyla of Azerbaijan (in azery). Baku: "Elm ve Tehsil, **2008**, 24.