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*(Ovis orientalis gmelini)*

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(*Ovis orientalis gmelini*)

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(...)

(Metapopulation)

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( )

$$Y = a + bX$$

( )  
 ( )

:Y  
 :X

//

$$\ln N = a + bt$$

b t=0 lnN a

$$\ln N = \ln N_0 + rt$$

$$r = (\ln N - \ln N_0) / t$$

b b b b b b

( )

growth rate

Sampling with Probability proportional to block size

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$$e^r = \lambda$$

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( )

( )

$$r_m = W'$$

:W

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( )

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Murie  
Ovis dalli  
Cohort

Finite rate of increase

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%

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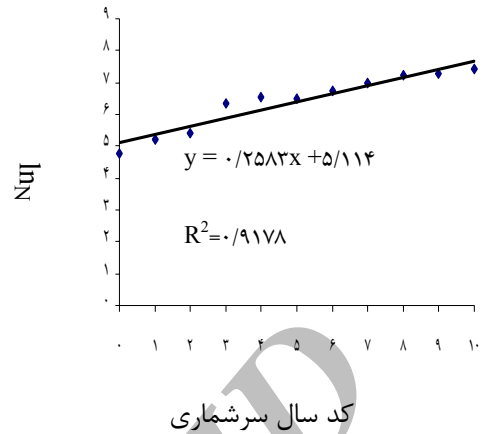
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Vortex  
Dispersal  
Harvest  
Supplementation  
Population viability



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Trichuridae  
 Trichuris  
 Marshallagia

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*(Ammotragus lervia)*

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*(Ovis musimon)*

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Wild dall sheep

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"Time-specific" life table

"Dynamic" life table

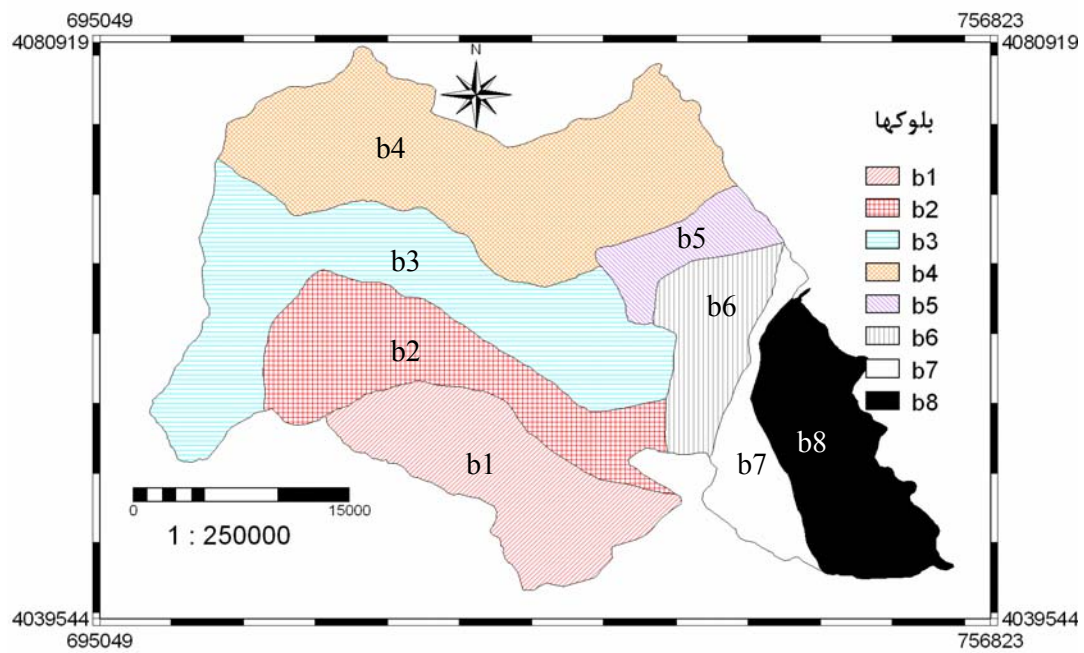
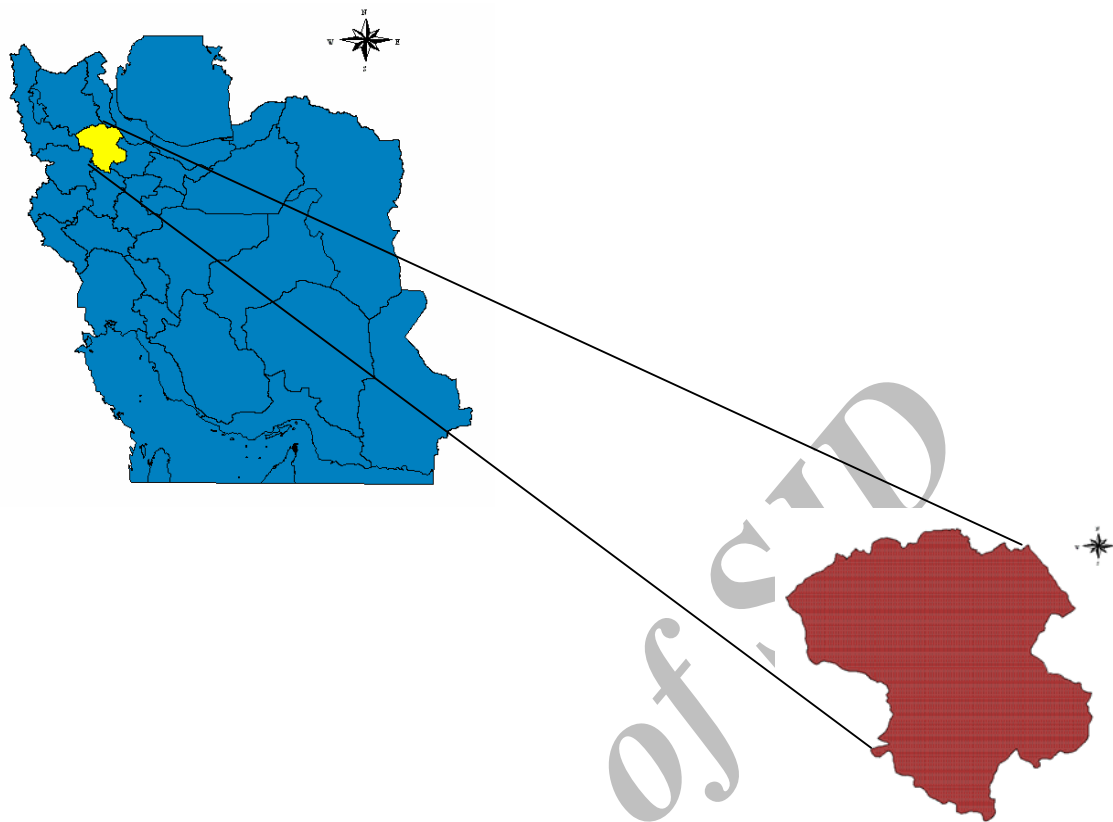
Comfort(1957)

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		(N)	<b>Ln<sub>N</sub></b>
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( )	(z)( )	(X)	(d=X/z)
b	/		/
b	/		/
b	/		/
b	/		/





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(Vortex)

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## Population Dynamics of Armenian Wild Sheep (*Ovis orientalis gmelini*) in the Angouran Protected Area of Zanjan Province

M. Karami<sup>1</sup> N. Habibzadeh<sup>2</sup>

### Abstract:

There is great need for studies of wildlife populations in the current network of Iranian protected areas. Lack of information on many wildlife species hampers devising management plans for protected areas. Angouran Protected Area (APA), situated in southwest of Zanjan Province, is a case in point. The area, 125000 ha in size, encompasses important remaining habitats for Armenian wild sheep. The objective of this research, conducted from October 2003 to September 2004, was to study the size and demographic parameters of wild sheep population inhabiting APA. Zanjan provincial Office of Environment (ZOE) provided figures of total wild sheep counts for period of 1993-2003. The results of total count in the area by field personnel of ZOE showed that 1658 wild sheep were present in APA in 2004. We checked this figure by dividing the area into 8 blocks, demarcated by physical features, and randomly chose 6 blocks to count sheep in each. Total number of sheep thus obtained was 1588 heads and 95% C. I. ranged from 531 to 2647 heads. Mean and variance of density were 0.0125 and 0.00018275 sheep/ha respectively. Population growth rate from 1993 to 2003 was estimated by linear regression function ( $\ln N$  against time). The slope of the line was 0.2583 and its 95% C. I. ranged from 0.3337 to 0.1729. The intrinsic growth rate for such sheep with mean adult weight of 24.106 kg is estimated to be 0.47. Mortality rate for adult male sheep was assessed by life table established based on collected skulls during the study. Also, extinction probabilities for wild sheep population of the study area were estimated by use of Vortex software. Six different scenarios were modeled and input variables changed so that the results of simulations would mimic the observed population trend over the initial (1993-2003) period. Simulations were carried out for 100 years. First extinction usually happened after 30 years (range 30.18 to 57.7) with standard errors of 5.09 to 6.85 years. Fecal parasites of the sheep were also studied, the following genera were found: *Trichoris* and *Marshallagia*. Common nematodes and oocytes of unknown parasites were also detected.

**Keywords:** Population dynamics, Angouran protected area, Armenian wild sheep, Vortex.

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