

Study of Distribution of Settlements and Dynamics of Their Population Number by Landscape Belts at the Greater Caucasus' North-Eastern Slope

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Abstract

The paper is devoted to study of location of settlements and distribution of their population by altitude landscape zones of the Greater Caucasus' north-eastern slope in the territory of Azerbaijan, namely by the following landscapes: semi-desert, plain forest, marsh-hole-meadow; plain-meadow-field, semi-desert, shrubbery-meadow; shrubbery fields of plain, forest shrubberies of low mountains; low mountain forests, forest shrubberies, semi-desert, steppes; beech and hornbeam forests of middle mountains; forest shrub areas and fields in mountain valleys; forests and mountain-based meadows of middle mountainous areas; and high mountainous meadows. It is revealed that the higher number of population is observed mainly in the landscapes of plain-meadow-field, semi-desert and shrubbery-meadow, and also in the landscapes of low mountain forests, forest shrubberies, semi-desert and steppes. In mountainous areas, the population is settled in depressive areas or inclined terraced slopes of river valleys with more favorable relief and environmental condition in terms of settlement. The carried research allows define elevations where settlements of larger or lesser size are concentrated more, and where the population prefers to live.

Keywords: semi-desert, relief, favorable, village, less-populated

1. Introduction

The Greater Caucasus' north-eastern slope in the territory of Azerbaijan is very diverse in terms of natural condition and spread of landscape zones. In the coastal areas of the research territory, including the northern part of Samur-Devechi plain, the relief, as well as the lithological and hydrogeological condition is favorable in terms of distribution of population and territorial organization of industrial facilities and farming. The shown territory is characterized with relatively high density of existing settlements and the wide spread of agricultural landscapes. In this connection, settlements and economic facilities are densely situated in the Shollar plain where natural landscapes are intensively used or hardly transformed by the population. To the south-east, in the Samur-Devechi lowland, the existence of hard dry condition, the change of lithological foundation, and the high mineralization of subsoil waters are responsible for the worsening of landscape and ecological condition which entails sparse distribution of settlements and poor economic activity in that territory. The number of settlements is less here. These settlements are located mainly along the river valleys (such as Valvalachay, Gilgilchay, Devechichay, Atachay) and channels, as

well as the coastal areas of the Pre-Caspian territory. Covered anticlinal structures have been defined in Samur-Devechi with applying geophysical and landscape-geomorphological methods. The determined structures favorably affected the location of urban and rural settlements. The anticlinal structures are responsible for the emerging of slowly impudent areas on the background of plain, altitude and configuration of which enabled the arising and developing of villages on them. These territories have affordable drainage properties, and typically experiences weak bogging as well. This creates favorable conditions for the establishment of settlements during humid season of a year. This factor also facilitates the distribution of settlements. These structures serve as a natural directive factor in the management of irrigation canals and ditches. In the Pre-Caspian coastal plains, the irrigation canals and ditches are stretched from north-west to south-east. The condition of irrigation is efficient because of configuration of location of the anticlinal structures which naturally allow canal waters to be flowed into the depressive areas. The settlements are distributed unevenly depending on ecological and geomorphological condition. According to the last population census managed in 2009 in Azerbaijan, there are 31 cities and settlements of urban type, and 498 villages in the north-eastern part of the Greater Caucasus.

2. Study of peculiarities of distribution of population

The distribution of population in the territory of the north-eastern part of the Greater Caucasus are investigated on basis of data of population data conducted in 1989, 1999 and 2009 years, whereas the special emphasis is laid on the data of the last census which reflects current distribution of population. The relevant data by 1999 are given on Tables 1 and 2.

Table 1: Distribution of population and settlements by landscape types on the north-eastern slope of the Greater Caucasus in 1999

Landscape types	Territory of altitude landscape belts		Settlements		Population number		Population density, person/sq.km
	sq.km	%	Number	%	Person	%	
Semi-desert, plain forest, marsh-hole-meadow	630,0	9,0	47	9,0	16,708	3,7	27
Plain-meadow-field, semi-desert, shrubby-meadow	1264,5	18,1	172	33,0	209,231	46,0	166
Shrubbery fields of plain, forest shrubberies of low mountains	1121,03	16,1	97	18,6	70,930	15,6	63
Low mountain forests, forest shrubberies, semi-desert, steppes	1267,35	18,2	114	21,9	126,050	27,7	100
Beech and hornbeam forests of middle mountains; forest shrub areas and fields in mountain valleys	1117,55	14,5	67	12,9	23,433	5,2	23
Forests and mountain-based meadows of middle mountainous areas	583,4	8,4	19	3,6	5,649	1,3	10
High mountainous meadows	1097,9	15,7	5	1,0	2,533	0,5	2
Total	6981,73	100	521	100	454,534	100	65

The data on this table are calculated based on the data of population census conducted in 1999.

Table 2: Distribution of urban-type and rural settlements and their population by landscape types on the north-eastern slope of the Greater Caucasus in 1999

Landscape types	Territory of altitude landscape belts		Number of urban-type settlements	Population number of cities		Number of rural settlements		Population number of rural settlements		Population density in rural settlement, person / sq.km
	km ²	%		Person	%	Person	%	Person	%	
Semi-desert, plan forest, marsh-hole-meadow	630	9,0	1	2,393	1,6	46	9,1	14,315	4,6	23
Plain-meadow-field, semi-desert, shrubby-meadow	1265	18,1	8	95,600	66,3	164	32,5	113,631	36,6	90
Shrubby fields of plain, forest shrubberies of low mountains	1121	16,1	1	1,887	1,3	96	19,0	69,043	22,2	62
Low mountain forests, forest shrubberies, semi-desert, steppes	1267	18,2	4	41,677	29,0	110	21,8	84,373	27,2	67
Beech and hornbeam forests of middle mountains; forest shrub areas and fields in mountain valleys	1118	14,5	2	2,525	1,8	65	12,9	20,908	6,8	21
Forests and mountain-based meadows of middle mountainous areas	583	8,4	–			19	3,7	5,649	1,8	10
High mountainous meadows	1098	15,7	–			5	1,0	2,533	0,8	2
Total	6982	100	16	462452	100	505	100	310,452	100	45

The data on this table are calculated based on the data of population census conducted in 1999.

As the comparison of data of the population census shows, in the Greater Caucasus' north-eastern slope, the population growth made 138,8 thousand persons, including 51,7 thousand persons as urban residents and 86,9 thousand rural dwellers between 1989-2009 years. The growth was accompanied by the extension of populated territories and residential areas, as well as the rise of impact of landscape complexes on economic activity and the transformation of new natural complexes. Dynamics of settlements' number and their

population by different landscape types on the north-eastern slope of the Greater Caucasus in 1989-2009 are obviously reflected on Table 3.

Table 3: Change of distribution of population and settlements by landscape types on the north-eastern slope of the Greater Caucasus in 1989-2009

Landscape types	The number of settlements by years			Population by years, thousand person			Growth/ decrease of settlements	Growth/ decrease of population (person)
	1989	1999	2009	1989	1999	2009	1989-2009	1989-2009
Semidesert, plan forest, marsh-hole-meadow	46	47	40	14,20	16,7	20,9	-5	+6,7
Plain-meadow-field, semidesert, shrubbery-meadow	170	172	179	161,8	209,2	228,2	+9	+66,3
Shrubbery fields of plain, forest shrubberies of low mountains	98	97	102	55,00	70,9	87,2	+4	+32,2
Low mountain forests, forest shrubberies, semidesert, steppes	99	114	118	106,91	126,1	131,3	+18	+24,4
Beech and hornbeam forests of middle mountains; forest shrub areas and fields in mountain valleys	56	67	65	18,72	23,4	27,2	+9	+8,4
Forests and mountain-based meadows of middle mountainous areas	17	19	20	5,39	5,7	6,0	+3	+ 627
High mountainous meadows	5	5	5	2,86	2,5	2,8	-	+ 70
Total	491	521	529	364,86	454,5	503,5	38	138,8

The data on this table are calculated based on the data of population censuses conducted in 1989, 1999 and 2009 years.

The study and analysis of current situation in distribution of population (by 2009) reveals the relevant proportions by altitude landscapes in the research area. In accordance with the data of population census of 2009, the territory area of plains, altitude of which is lower than the sea level, makes 630 sq. km.

As is seen on the tables 4 and 5, the areas, elevation of which is less than zero, include 41 settlements while the population number is 20913 persons. The second altitude belt encompasses 0-200 m of elevation. Within this zone, the population number is 229,9 thousand persons. The urban population makes 113,9 persons while the number of rural population is 114,3 persons. The total area of the territories of 200-500 m of altitude makes 1121,03 sq. km which includes 102 settlements as well. The total number of population living here is 87,2 thousand persons. The number of villages is 96 where 77,0 thousand persons live. In the north-eastern slopes of the Greater Caucasus, 500-1000 m of elevation encompasses 1267 sq. km where 117 urban and rural settlements are situated. These settlements include 4 urban-type ones with 44,6 thousand persons, as well as 113 villages with 86,6 thousand persons.. The territories of 1000-1500 m of elevation are 1018 sq.km, where 2 cities, 63 villages and 65 are located. The number of population is 27,2 thousand persons. The belt with 1500-2000 m of altitude makes up 583 sq.km. The population number is 6000 persons which are dwellers of 20 rural settlements. As for the belt with above 2000 m of elevation, it includes areas with total territory area of 1098 sq.km. The population number makes up 2790 persons that are residents of 5 small villages. As is seen, the settlements and their population are unevenly distributed by altitude belts of relief. The carried study and analysis shows that the distribution of rural and urban-type settlements as well as their size, i.e. the population number depends on favorability of environmental and geographical conditions.

The density of settlements by lowland plains and mountainous areas is different in the north-eastern part of the Greater Caucasus. From the Caspian coast (-27,5 m) to areas of 200 m of elevation, the density of population in average is 212 persons per sq.km. Between -26 m and 0 m, the corresponding indicator makes up 30 persons per 1 sq.km while between 0-200 m it equates 182 persons per 1 sq.km, and between 200-500 m the medium population density is 78 persons. It is remarkable that behind 500 m of elevation, the density sharply increases. Thus, in contrast to 200-500 m, the territories of 500-1000 m of elevation are populated much more. This is considered as abnormal on the overall background of distribution. Here the population density is 104 persons per 1 sq.km which is related to favorability of ecological and geographical condition. The remarked growth in this altitude belt is connected also with the existence of Guba and Gusar cities which are affecting demographic development in nearby territories. Beginning from 1000 m, the higher areas are characterized with keen decrease of population density. The medium density of population is 24 persons per 1 sq.km between 1000-1500 m; 10 persons per 1 sq.km between 1500-2000 m; and 3 persons per 1 sq.km higher than 2000 m of elevation. Khizi region, located to south-east, considerably differs from other areas for its arid climate. This region is sharply different in terms of population density as well. Thus, at 0-200 m of elevation population density is 55 persons per sq.km, whereas this indicator makes up 21 persons for 200-500 m, 15 persons for 500-1000 m, and 9 persons for 1000-1500 m of elevation.

The settlements in south-eastern slope of the Greater Caucasus are situated mainly in depressive areas and terraced river valleys. This is so because inclination of the relief is much more at slopes higher than 600-1000 m of elevation, and on the other side, water provision is less. Meanwhile, at this elevation, the absence of favorable lands in terms of development of agriculture may create challenges for the dwellers. Therefore, the population prefers to be settled in terraced plains, valleys and nearby of river banks.

The settlements in the north-eastern part of the Greater Caucasus are considerably different for their size. The number of villages with population lesser than 200 persons is 127. 4,5% of the total population falls to the share of them. The number of rural settlements of 200-500 residents is 140; of 500-1000 residents is 116; 1000-2000 residents is 74; 2000-5000 persons is 30; and over 5000 persons is 4 (including the largest 1st Nugadi and 2nd Nugadi villages). This indicators show that settlements of 200-500 dwellers

(140 villages) and also 500-1000 dwellers (116 villages) are the majority in the research territory. As usual, the number of larger villages is less whereas in the less-populated areas, this number is much more.

In the territory, both urban-type and rural settlements are distributed unevenly by altitude landscape belts. The existing cities (Guba, Gusar, Khachmaz, Davachi, Siyazan) and villages (the 1st and 2nd Nugadi settlements) are situated in accumulative plains or in those areas where plains penetrate into mountains. The cities of Gusar and Guba are situated in upper edges of accumulative cones of the rivers of Gusarchay and Gudyalchay or nearby of them. Quba city is located at 560 m of elevation (bank of Gudyalchay River) while Gusar city is located at 680 m (bank of Gusarchay River). Both cities are occupying 25-30 km long surfaces of accumulative terraces where valleys penetrate lower mountains to the south-west. Khachmaz city is located at 50 m of altitude in the terraced parts of emerged cones of Gudyalchay and Gusarchay, the center of the Shollar plain.

Table 4: Distribution of population and settlements by elevations on the north-eastern slope of the Greater Caucasus in 2009

Elevations (m)	The area of attitude zones		The number of settlements		Population		Population density person/ km ²
	km ²	%	number	%	person	%	total
-27,5-0	630.0	9.0	40	7.5	18.834	3.7	30
0-200	1264.5	18.1	179	33.8	229.884	45.7	182
200-500	1121.03	16.1	102	19.3	87.158	17.3	78
500-1000	1267.35	18.2	118	22.3	131.631	26.1	104
1000-1500	1117.55	14.5	65	12.3	27.161	5.4	24
1500-2000	583.4	8.4	20	3.8	6.014	1.2	10
More than 2000	1097.9	15.7	5	1.0	2.790	0.6	3
Total	6981.73	100	529	100	503.472	100	72

The data on this table are calculated based on the data of population censuses conducted in 2009.

Table 5: Distribution of urban-type and rural settlements and their population by elevations on the north-eastern slope of the Greater Caucasus in 2009

Elevations (m)	The number of city the settlements		The population of the cities		The number of the villages		The population of the villages		The total population of the villages, person	The population density person/ km ²		The number of villages in 100 km ²
	number	%	person	%	number	%	person	%		total	village	
-27,5-0	1	3.2	2.079	1.2	40	8.0	18.834	5.7	471	30	30	6
0-200	18	58.1	113.870	65.6	161	32.4	114.304	34.6	712	182	90	13
200-500	6	19.4	10.183	5.9	96	19.2	76.975	23.3	802	78	67	9
500-1000	4	12.8	44.627	25.7	113	22.7	86.635	26.3	763	104	69	9
1000-1500	2	6,5	2.817	1.6	63	12.7	24.344	7.5	386	24	22	6
1500-2000					20	4.0	6.014	1,8	301	10	10	3
More than 2000					5	1.0	2.790	0,8	558	3	2	1
Total	31	100	173.576	100	498	100	329.896	100	662	72	47	7

Conclusion

Analysis of peculiarities of location of the settlements and the relevant dependency on relief show that large settlements are located chiefly in favorable ecological and geomorphological condition, or intermountain depressions and terraced valleys, as well as benefiting water supply of higher level. In the territory, both urban-type and rural settlements are distributed unevenly by altitude landscape belts. The settlements in the north-eastern part of the Greater Caucasus are considerably different for their size. The growth was accompanied by the extension of populated territories and residential areas, as well as the rise of impact of landscape complexes on economic activity and the transformation of new natural complexes. The relevant tendencies observed by the distribution of settlements and growth of their population in the last decades must be taken into consideration in order to efficiently regulate the distribution of population and prevent mass migration of the population from mountainous areas in the Greater Caucasus.

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