

# Population of Mountain Crimea during the Allerød: Human adaptation to global climate change

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## Introduction

During recent years, the Altered, or climatic optimum of the Late Glacial, has remained at the center of attention within the framework of discussions about the strategies of human adaptation in the Black Sea basin and the coastal zone development at the Pleistocene-Holocene boundary. Adherents of the so-called Black Sea deluge hypothesis, following W. Ryan and W. Pitman, suggest that the Allerød was a crucial time when the famous 'Flood' took place. Proponents of non-catastrophic changes in the level of the Black Sea after the Last Glacial maximum view the Allerød as the starting point of the gradual sea-level rise. From an archaeological point of view, this discussion is traditionally illustrated by sites of the northwestern and western Pontic region, while cultural remains from the Crimean peninsula seem to be undeservedly ignored. This situation is caused, probably, by geological peculiarities of the coastal zone of Mountain Crimea, which is poorly illustrative for sea-level reconstruction. Nevertheless, its archaeological sites reveal traces of past human migrations, studies of which can highlight important aspects of human adaptation to global climate changes at the Pleistocene-Holocene boundary.

## Paleogeography

The relief of Mountain Crimea during the Allerød, traditionally characterized as 'Tow mountains', and its altitudinal zonality at that time were close to the contemporary ones. The only principal difference is connected with the greater activity of numerous rivers, which during the Allerød were sufficiently free-flowing for big freshwater fish like chub, pikeperch, and roach, while now they can be observed only as temporary water flows and springs. Some researchers stress that the fish skeletons found within Allerød cultural layers are larger and heavier in comparison with modern fish of the same species, confirming in this way the hypothesis that Crimean rivers were much deeper and wider than now (Gromov, 1953: 459-163; Lebedev, 1952: 46-51).

Analysis of microsections of charcoals from a series of archaeological sites indicates the presence of arboreal vegetation (represented mostly by mountain ash and buckthorn) which would have provided habitats of semi-closed biotopes for red deer, brown bear, wild boar, and wild cat (Table 1) (Gammerman, 1934: 70; Bibikova, 1959: 122-124).

The presence of typical steppe inhabitants (horse, saiga, etc.) indicates that open areas (yailla, or mountain pasture), typical for the Mountain Crimea landscape, were still preserved during the Allerød.

The peculiar combination of semi-closed landscapes of mixed forest type (on the lower part of the mountain slopes) originating through a general humidification and warming of the climate with open steppe reflects a general tendency toward diversification of species composition in vegetation and fauna, as well as overall growth of biomass density per unit of area. For studies of human adaptation, this means growth of demographic capacities in the region, making it highly attractive for populations from adjacent territories.

Table 1. Faunal remains from archaeological sites of Mountain Crimea (Allerød).

	Shan-Koba, layer 6	Grotto Skalystyi, layer 3	Buran-Kaya shelter,	Zamil-Koba I, lower layer
Red deer ( <i>Cervus elaphus</i> )	+	+	+	+
Wild boar ( <i>Sus scrofa</i> )	+			+
Cattle and bison ( <i>Bos et bison</i> )			+	
Saiga ( <i>Saiga tatarica</i> )		+	115/7	+
Horse ( <i>Equus caballus</i> )			+	
Ass ( <i>Equus asinus</i> )		+		
Sheep ( <i>Ovis sf. argoloides</i> )				
Brown bear ( <i>Ursus arctos</i> )	5/1			
Brown hare ( <i>Lepus europaeus</i> )	+			
Mountain hare ( <i>Lepus timidus</i> )			+	2/1
Wolf ( <i>Canis lupus</i> )	+			+
Wild cat ( <i>Felis sylvestris</i> )			+	
Roach ( <i>Rutilus rutilus</i> )	+			
Chub ( <i>Leuciscus cephalus</i> )	+			
Pikeperch ( <i>Lucioperca lucioperca</i> )	+			
Mollusks ( <i>Helix</i> )	+			

Numerator = minimal number of bones (MNB), denominator = minimal number of individuals,  
+ = presence of bones

### Human adaptation

Analysis of archaeological site distribution indicates that population density in Mountain Crimea in the Allerød was much higher than it was during the previous period (Fig. 1).

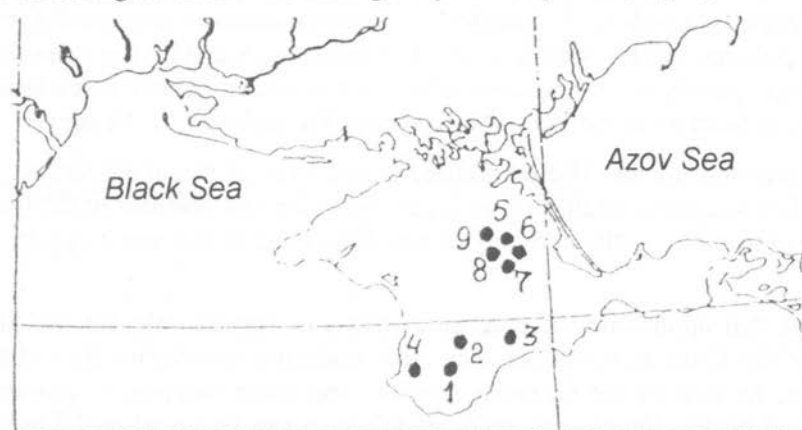


Figure 1. Archaeological sites of the Crimean peninsula during the Allerød: 1 – Shan-Koba, layer 6; 2 – Grotto Skalystyi, layers 3, 3a; 3 – shelter Buran-Kaya; 4 – Zamil-Koba, lower layer; 5 – Vyshenne II; 6 – Biuk-Karasy I; 7 – Biuk-Karasy II; 8 – Biuk-Karasy III; 9 – Biuk-Karasy IV.

Overall growth of population density, nevertheless, was not accompanied by a rise in human group mobility. Most sites of Mountain Crimea are represented by long-term settlements in rock shelters; usually, they consist of dwelling (or living floors), often protected from the wind with the addition of screens, complex fireplaces, storage pits, and other household objects. Analysis of cultural layers from Shan-Koba, Zamil-Koba, Buran-Kaya, and Skalystyi, referred to the Allerød, indicates that their dwelling structures differ by intensity and duration of their occupation, which most probably took place in different seasons of year; nevertheless, all these sites were used repeatedly—groups came back to the site after a certain time, which could be detected in the vertical structure of the cultural

deposits (Kraynov, 1938: 12-13; Bader, 1940: 85-88; Kohen, 1994: 143-146; Bibikov et al., 1994: 16-17).

Such a strategy of living space exploitation implied a durable connection with a certain territory maintained by complex household structures that was ensured by the diversification of subsistence strategy, which was based on hunting, fishing, and mollusk utilization.

Faunal assemblages from Crimean archaeological sites contain bones of species adapted to different types of landscape and characterized by different social behavior; it suggests that inhabitants of the Crimean peninsula successfully applied different systems of individual and collective hunting. Most widespread was procurement of non-gregarious game with the help of quick-firing equipment with sighting properties that could be applied for a distance over one hundred meters - a bow with arrows. Most probably, such hunting was realized by small groups consisting of 2-3 hunters. Fish species composition and their skeletal dimensions suggest that fish were acquired through simple individual hunting with the help of javelins or bone harpoons.

Principally new requirements for the tool kit of Crimean populations formed the basis for a transition to a new technique of production based on geometric microlithic inserts. Application of this technique implied the utilization of standardized multifunctional blanks with minimal secondary processing, which opened the possibility of interchangeable inserts when necessary. This meant people could create a new tool immediately on the spot. This technique was used for production of not only hunting weapon inserts, but also for knives, scrapers, burins, and other categories of the flint inventory. It substantially reduced the time needed for tool kit production, and the overall process of food procurement was intensified.

### **Discussion**

Transition to the inserts technique of flint tool production is today interpreted as one of the basic parameters of the Shan-Koba flint knapping tradition; its origin has been a subject of sharp discussions since the end of 1920s. It was connected with the Western and Central European Paleolithic (G. Bonch-Osmolovskiy, P. Efimenko) as well as with traditions of the Caspian and Mediterranean region (O. Bader, S. Zamyatnin, E. Vekilova, V. Danilenko). Some researchers suggested direct migration of population from the Balkans and the Middle East (D. Telegin, A. Yanevich) or from the Caucasus (S. Bibikov) to the Crimean peninsula. At the same time, other scientists believe it is a local phenomenon based on the industry of Suiren I of the LGM (D. Kraynov, Yu. Kolosov, D. Nuzhnyi).

Environmental interpretation of the Allerød archaeological sites of Mountain Crimea let us suggest that the Shan-Koba flint knapping tradition is of local origin; the new features of the tool kits could be interpreted as a human response to the necessity to transform their procurement system within the new environment.

It should be stressed that application of geometric inserts is typical only for the Shan-Koba flint knapping tradition of the Crimean peninsula. The other tradition, represented by archaeological sites of Vyshenne II type, located in the Crimean foothills and outer steppes, is characterized by the technique of retouched blades, the closest analogies to which can be found in the previous stages of the Late Paleolithic in the Middle Dniester region with the Molodove industry (Stanko, 1997: 128).

### **Conclusions**

The Allerød in Mountain Crimea is marked by the transformation of the environment, human subsistence strategy, and tool production techniques of the local Late Paleolithic population that resulted in the origin of the peculiar Shan-Koba flint knapping tradition. Its model of adaptation is characterized by stable long-lasting connections with the first and second mountain ridge living space, which is traced archaeologically by the presence of long-term cave dwellings and diversified household structures. The high demographic capacity of the region and the exploration of geometric inserts as a technique of tool kit production were the crucial basics of such a mode of life and subsistence strategy.

At the same time, further development of the non-geometric Vyshenne II industry resulted from direct migration of the Middle Dniester population to the Crimean steppe and foothills. This not only reflects

the fact that such direct contacts and movements across the Black Sea shelf were still possible during the Allerød, but it also indicates that the migrants could survive in their new territory without principal transformation of their tool production strategy and other components of their subsistence strategy.

Taken together, both aspects of cultural exploitation of the Crimean peninsula during the Allerød raise serious doubt about the hypothesis of catastrophic consequences for the human population due to the Black Sea rise at that time.

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