

Abstract

Georgia is an ancient country with a rich cultural heritage rooted in the peculiarities of the natural environment of the Caucasus, epitomized by the colorful mosaic of landscapes, diversity of climatic conditions, and provision of food, water and mineral resources. These encouraged the formation of multiple habitable places for ancient man who migrated from East Africa as far back as the end of the Pliocene Era. Through tens of centuries, Georgia has witnessed close interaction between man and nature, culminating in rich culture and conflict. Before man inhabited the natural landscape, vegetation and beasts were regulated by natural processes, but human habitation changed all that and started to significantly impact the natural balance of the ecosystem. The interaction was evolutionary, depending on human exploitation. For example, when man became busy in husbandry, he fundamentally began changing the natural landscape. This chapter provides a glimpse of Georgia's ancient history and its evolution.

Everywhere, where nature forced people to do a step onward to survive, sooner or later they did it, but where the need did not arise, people went on living the way they did getting the good things of life. A. Anuchin

Georgia is an ancient country with a rich cultural heritage. This chapter provides a glimpse of Georgia's ancient history.

2.1 Seeds of Civilization

Studies in the field of historical ecology of civilization, paleogeography, and paleoecology of ancient communities have enabled us once again to understand the plain truth: there is no future without the past. It may seem unbelievable, but probing questions of ancient civilizations so distant from contemporaneity draws us nearer to the understanding of major problems of our epoch. It makes it possible to see not only the mistakes and errors of our ancestors, but also the unmeasured effort and resourcefulness exercised by them on the way to civilization—the experience of making efficient decisions to overcome enormous difficulties—ecological and moral. It may seem somewhat paradoxical, but aesthetics, perception of beauty, and ecology are so closely

interconnected in our genetic code, in the depths of our subconscious, that they emerge as a certain united symbol of the optimum equilibrium condition of vital activity of human communities.

2.2 Environmental Peculiarities

The peculiarities of the natural environment of the Caucasus, epitomized by the colorful mosaic of landscapes, diversity of climatic conditions, and provision of food, water and mineral resources, all encouraged the formation of multiple habitable places for ancient man who migrated here from East Africa as far back as the end of the Pliocene era (Fig. 2.1) (Abdushelishvili 1964). The discovery in 1991, of the Dmanisi (South Georgia) site of Mandible Homo Erectus and its study by scientists from different countries completely refute the belief that "...paleoanthropology of the Caucasus does not go beyond Eneolithic" (Lordkipanidze 2001; Lordkipanidze

Fig. 2.1 Penetration of ancient man in the territory of South Caucasus. (Lordkipanidze et al. 2007)



and Tvalchrelidze 2002), and made it possible to confirm with confidence that man began to master this region a minimum of 1.8–1.6 million years ago.

2.3 Cultivation

The antiquity of cultivation by men of the mountains and plains of the Caucasus and existence of conditions for speedy evolution of population; energy instability of the earth's crust, volcanism, sharp fluctuation of hypsometric (landscape) levels, and realignment of not only the structure of landscapes but also the balance of energy and information within them (Bondyrev 1990), as well as location in the center of multiple ways of migration and stands of ancient man, created the background against which the peculiar Caucasian civilization was subsequently formed.

2.4 Culture

The cultural dimension of the Caucasian civilization was noted by Chubinashvili (Bondyrev 2006) and Manuchaev (Chubinashvili 1971). They spoke about the imposition and interpenetration of primordial Caucasian cultures of antiquity—Kura-Araks and Maikop. However, the folk and tribes of the Caucasus were united by the spatial, cultural, and spiritual generality. A study of 44 local populations and 19 ethnosis of native populations of the Caucasus by Inasaridze (Manuchaev 1975) concluded low interpopulation variety and the presence of a large number of general genes exceeding the indices of other regions of the world, with the exception of Western Europe where active, frequent, and multiple merging of popula-

tions took place. Based on the united roots and the most antiquities of the socium, it may be concluded that the Caucasian civilization has not only cultural, social, ecological, and geographical generality but also genetic generality. To describe natural conditions and their origin and shaping, it is necessary to clarify the relationship of ancient man and the Caucasian region as far back as the epoch of the Upper Pliocene era and the Upper Pleistocene era as inclusive.

The Pleistocene period was accompanied by three glacial epochs (Mindel, Rissian, and Wurm) replacing one another during 1 million years and terminating in the early Holocene period (18,000–12,000 years ago). Practically all mountainous regions of the Caucasus experienced, to some extent, the influence of glaciation that caused the absence of constant habitable places in the Paleolithic period, with the exception of temporary camp sites of hunters (Kudaro, Tsona, Satani-dar, Arzni, Dzghurchula, etc.). Due to their geographical position and relief peculiarities, only the regions of the Western Caucasus (Colchida, the Black Sea coastal zone) presented extensive refugium, preserving the hearth of Pliocene flora and fauna. No wonder the main masses of paleolithological habitable places were concentrated, as seen in Fig. 2.2, reproducing the spatial arrangement of archaeological objects against the paleogeographical background of the Pliocene-Pleistocene epoch. It should be noted that open type sites gravitated around the rear part or lip of the river terrace and on the capes at the confluence of rivers (Inasaridze 1991). A more detailed analysis (Nesmejanov 1998) has shown that Mousterian dwellings were concentrated in the rocky sancta mainly with southern exposure, and in areas of regional (Colchida, Talish) or local (separate deep river valleys) refugiums. The locations of the majority of such sites allow us to use natural resources of different landscape areas and nearby zones of mineral resources.

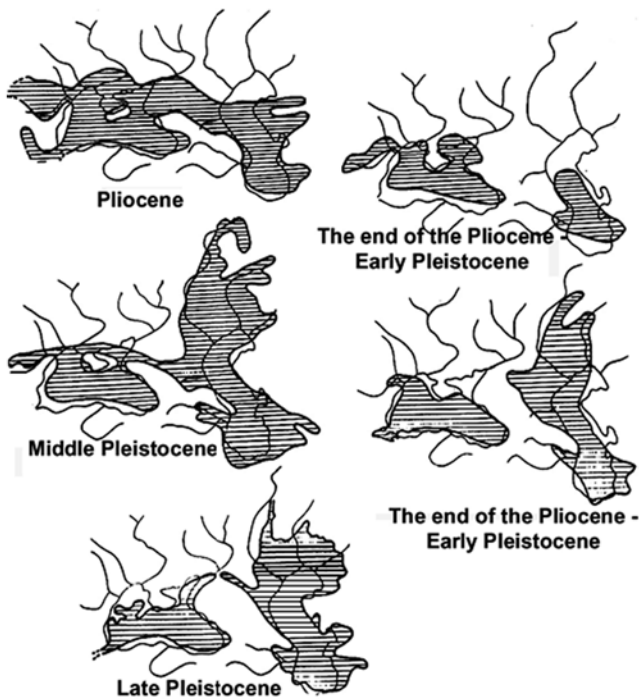


Fig. 2.2 Track record of the Black Sea and the Caspian Sea in Pliocene-Pleistocene

2.5 Functionality

Besides their archaeological age, sites are distinguished by their functionality (constant stands, hunter camps, workshops, objects of cult, etc.). At the same time, it becomes obvious that at one time these sites used to be the local dwellings of ancient man, i.e., certain recesses of former ecosystems. Independent of their time position, we distinguish constant, casual, and ephemeral. From a spatial viewpoint, dwelling recesses can be single (point), linear (timed to single-line forms of relief-river valleys, lake coasts, etc.), mosaic (chaotically scattered), grouped (close location), and concentric (thick concentration of dwelling groups). In the territory of Georgia, more than 280 sites have been found which date Acheulian 430,000–130,000 years ago and Mousterian 120,000–40,000 years ago, and over 150 sites dated by Upper Paleolithic (40,000–12,000 years ago) (Kalandadze and Tushabramishvili 1989). These sites can be possibly joined into three large concentrics—three main hearths of human dwellings: Javakheti, Central-Georgian, and Abkhazian, which are described below.

2.6 Basin Evolution

The Caucasus, being an enormous isthmus between the basins of the Black Sea and the Caspian Sea, sensitively responded to the rhythmic fluctuations of these basins. At the end of Pontian (early Pliocene) era, as the result of a general

Caucasian anticlinal dome a disintegration of the united Pontian basin began followed by separate stages of the evolution of the Black Sea and the Caspian Sea.

The maximum regression of the Black Sea occurred 1.7 million years ago, when the level was lowered by 90–110 m below the modern level. Under the conditions of the rapid rise of the level at the beginning of the Flandrian transgression (0.9 cm/year) the coastline intensively retreated inland. A short regression was followed by the advance of the sea—Surozhian transgression (23,000–22,000 years ago). During the New Euxine epoch the sea level lowered in separate periods to 65 m below the modern level. However, the relief of eastern (Caucasian) coasts of the Black Sea (steep declivities, extremely narrow shelf band) caused an insignificant change in the western Caucasus landscapes, with the exception of the narrow seaboard and the lowermost regions of the Colchida lowland.

On the other hand, the Akchaghlyian Sea basin (Paleo-Caspian) enlarged almost ten times at the end of the Pliocene era, and approached the eastern vicinity of the city of Tbilisi at the beginning of the Middle Pleistocene period. That caused the disappearance of a majority of overland landscapes in the lowlands of the eastern part of South Caucasus and peri-Caucasus (Terski trough) (see Fig. 2.3). This process was aggravated by the general cold snap of the climate during glacial periods. There exists an opinion that the sharpest increase in the sea basin level occurred as a result of glaciation in the mountains of the Caucasus and on the Russian plain.

The rhythms of fluctuations of the Black and Caspian Seas did not coincide in time because of the greater role of tectonic factors in shaping the basins and coasts of the Black Sea, (Bondyrev 2000), but the sea basins defined the nature of the changing natural environment of the Caucasus. Never-ending anticlinal domes played a significant role. These processes were accompanied by volcanic activity timed to the Trans-Caucasian transverse uplift connected with a negative gravitational anomaly. Two main phases of volcanism have been noted, complying with epochs of interglacial (Mindel-Rissian and Riss-Wurmian) periods. In their range we possibly judge per general lava volume of the Middle and Upper Pleistocene eras. Thus, this value formed 35,000 km³ on the Armenian upland, 15,000 km³ in Javakheti, and slightly more than 2000 km³ on the central Caucasus (Bondyrev 2000). The growth of mountainous erections themselves varied from 500 m for 1 million years on the Greater Caucasus to 200 m on the Minor Caucasus that caused intensive denudation and sedimentation with an intensity of 0.8–2.8 cm/year (Bondyrev 2000).

From the above discussion it becomes clear that many hundreds and even thousands of first dwellers of the Caucasus had to (under the influence of water intrusion, advance of glaciers, and volcanic eruptions) abandon their habitable places and escape from elemental processes. A majority died

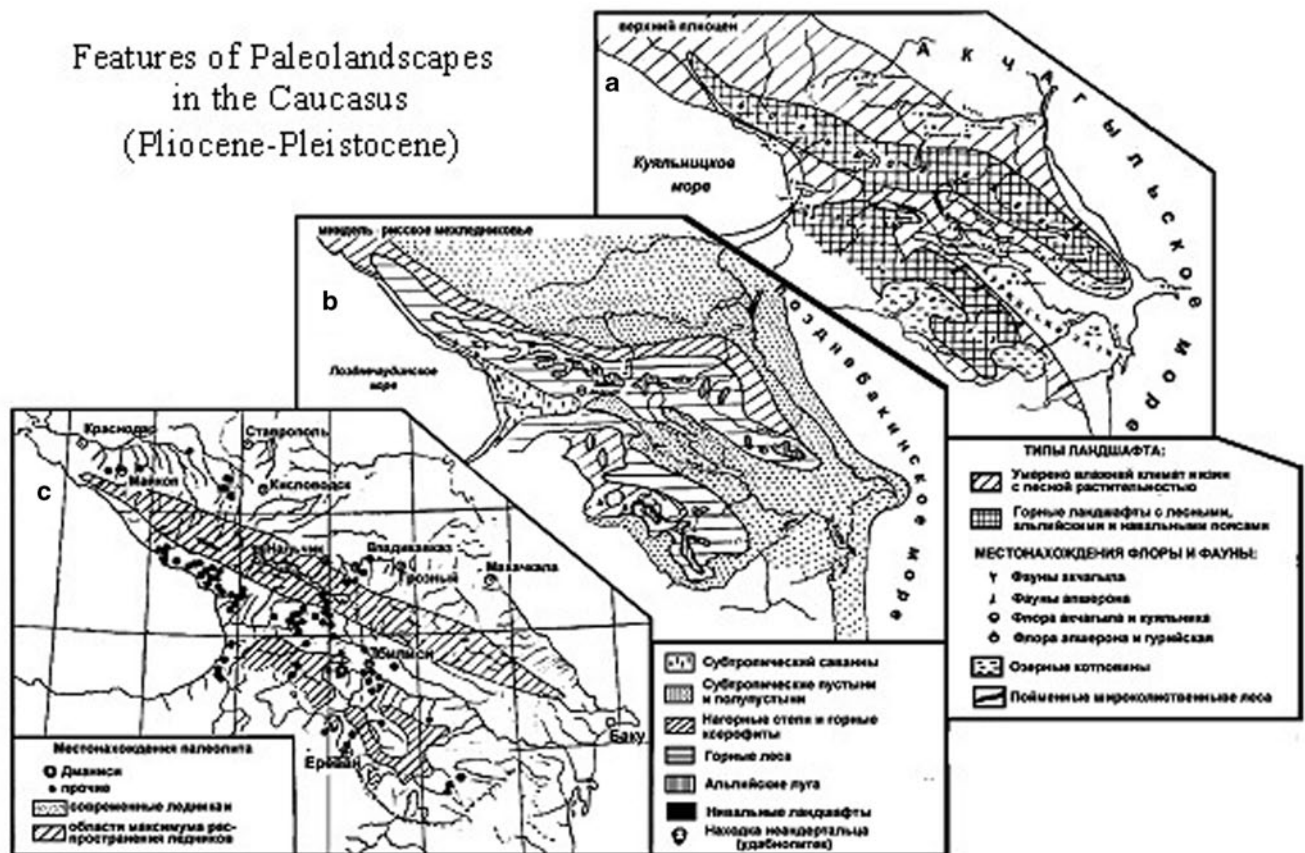


Fig. 2.3 Features of Paleolandscapes in the Caucasus (Pliocene-Pleistocene) and habitable places of ancient man in the Caucasus and nature of Paleolandscapes surrounding them (Maruashvili 1964, with addi-

tions and changes): *A* upper Pliocene, *B* Mindel-Rissian interglacial, *C* area of modern and ancient glaciation and site of Paleolithic

on the way and traces of their dwellings were destroyed by water flow or overheated lava. Cave sites, presenting natural sancta from the influence of natural cataclysms and time, were saved mostly in the South Caucasus. Only a small share was saved—a tiny cut of that enormous picture of the primitive world, which will never be completely known (see Fig. 2.3).

2.7 Interaction of Man and Nature

We attempt to single out certain general regularities in the interrelation of man of the Pleistocene epoch with the nature surrounding him. The clearest indicators of the condition of external environment are the vulnerable landscapes of the highland. Their existence in the Caucasus has been noted since the Neogene period (Bondyrev 2000). Significant changes in the climatic conditions (as well as the processes of tectonics and denudation) caused the basic realignment of landscape structures in the highland. As a result, many representatives of former fauna-floristic groups disappeared. This, in turn, caused a series of migrations of man to the piedmont area and plains.

Once in a while, partial conservation of relic groups of past years—refugiums—in the small insulated territories have been observed. This is explained not only by the ability of organisms to adapt, but also the presence of a definite “internal inertia of landscape” (Maruashvili 1964) as an ecosystem which is expressed in its longing for the conservation of structure in spite of a significant but not very long-lasting changing environment.

As a result of a sharp cold snap at the end of the Pliocene period, a lowering of landscape belts was noted around the world. Analysis of samples of early and middle Pleistocene vegetation from the vicinity of Zangezur pointing to moderate chilly and humid climatic conditions of this period indicated the lowering of landscape belts by 250–300 m (Bondyrev and Maisuradze 1980). Even sharper lowering of the Silvan belt was noted in Wurm, when, as a result of several stages of the cold snap (Maruashvili 1956), the border of the woods in Azerbaijan was lowered by 1000–1500 m (Tagieva 1998; Bondyrev and Tskhovrebashvili-Kvirkvelia 2001). Between 3.3 and 0.8 million years ago in the territory of Western Trans-Caucasus, 12 stages of development of vegetation were singled out. Consequently, the Kulnitski epoch stands out be-

cause of the extreme instability of paleogeographic conditions, whereas Gurie with its favorable climatic parameters stipulated premises for the fundamental realignment of landscapes and fallout of the main body of neogene vegetation (Tagieva 1998; Bondyrev and Tskhovrebashvili-Kvirkvelia 2001).

Thick mixed woods up to mineral waters covered the plains of North Caucasus in the Middle Pleistocene period. A sharp cold snap and activation of the process of glaciation in the upper belt of mountains that took place at the end of the Middle Pleistocene period, caused a general lowering of landscape areas in the whole territory of the Caucasus, with the exception of Colchida and Talish. This was followed by the penetration of many typical representatives of north and minor Asian types. At the same time, the idea about the sustainability of refugiums as presented is somehow simplified.

2.8 Landscape Evolution

On the basis of computer analysis of palynological material, selected in different landscape areas of Abkhazia and paleoclimatic modeling of natural situations, Kvavadze et al. (1992) found the following: At the end of the glacial epoch, repeated (but not long) alternation of warm and cool phases took place. As a result, climatic fluctuations had the most contrasting nature in the highlands. As to the plains and foothills, thick leafy and mixed woods grew during this time. Changes in the correlation of aspectual composition point to some fluctuation of climate. This is confirmed by the data from eastern Colchida. On the basis of a complex examination of the Tsutskhvati cave complex (vicinity of Kutaisi), it is stated that broad-leaved woods of Colchida type grew during the Middle and Upper Pleistocene period (with the exception of the period 37,000–210,000 years ago, i.e., Mindel-Riss interglacial). During the interglacial period, woods were temporarily changed by forest-steppes. About 40,000 years ago there appeared landscapes close to the modern ones (Bondyrev et al. 2000). A discovery of remnants of Palaeolithic culture near the town of Sukhumi, on the 5th terrace of the Black Sea (early Mousterian), and the nature of vegetation testifies to it (Fig. 2.4). The age of the terraces is dated 370,000–210,000 years (Maruashvili et al. 1978).

In the Lesser Caucasus in the early Pleistocene era there prevailed landscapes of broad-leafed woods and steppes, which, as a result of the Middle Pleistocene era, aridization, and cold snap of climate, changed to dry steppes. After the regression of Middle Khvalyn, a certain warmth and increase in moisture was noted that brought about the growth of arborescent woods in phytocenoses forming dry forest savanna on plains, woods, and forest steppes in the mountain regions and foothills. At this time, the instability of all ecosystems in the Caucasus was aggravated by multiple manifestations of tectonic movements and volcanism that

promoted the activation of mutation processes within the population and led to speedy evolution of their organizing-structured mechanisms.

2.9 Cultural Mosaic

If the belief about the role of energy information (Fox 1990; Karagodin 1991) and geomagnetic (Bondyrev et al. 1999) fields in the development and evolution of organisms had already been formed clearly enough, information on the influence of gravitational fields on the operation of main systems providing the viability of organisms has appeared only recently (Bondyrev 1991). It has been clarified that an increase in the level of intensity of gravitational field stipulates the inclusion of the control system of electrical conductivity of leather cover. Here, a reduction in the level of defensive characteristics of leather of this defensive filter is noted, as protection from the off-balance influence of the electromagnetic field of the environment. As a result, we have disregulated the system of control and adaptation of organisms. Under a prolonged rise of the gravitational level there occurs an increase in the aggressiveness of individuals, and as a result there arise conflicts and imbalances of structured relationships within populations as well as the ecosystem as a whole.

Studies (Abdushelishvili 1964; Beruchashvili et al. 2005) have shown that one of the reasons for the acceleration of evolution of cultural generalities of antiquity, expressed in drastic complication of hierarchy of regulating systems within sociums, is their spatial timeliness to powerful energy centers. Such centers (see Fig. 2.4) are the nodes of conjugation of areas of active tectonic fractures (particularly on the borders of lithospheric slabs), deeply embedded ring structures, gravitational and magnetic anomalies, and hearths of volcanism. All these factors are distinctive for the Caucasus, defining the regular nature of speedy shaping of subcivilized formations in a given region. Three groups of main hearths of Paleolithic habitable places and particularities of their spatial borders indicate that they were timed to the energetically least stable areas on the peripheries of arched uplifts (Bondyrev et al. 1999) (see Fig. 2.5), avoiding the imposition on local ring structures and located at a certain distance (1–3 km) from the contact line of regional tectonic blocks and large fractures of the earth's crust.

2.10 Habitable Places

Under the conditions of stable energy, ecosystems of surface biocoenosis must also possess a sustainable internal structure and therefore maintain a decelerated nature of development inside the processes of evolution defined by

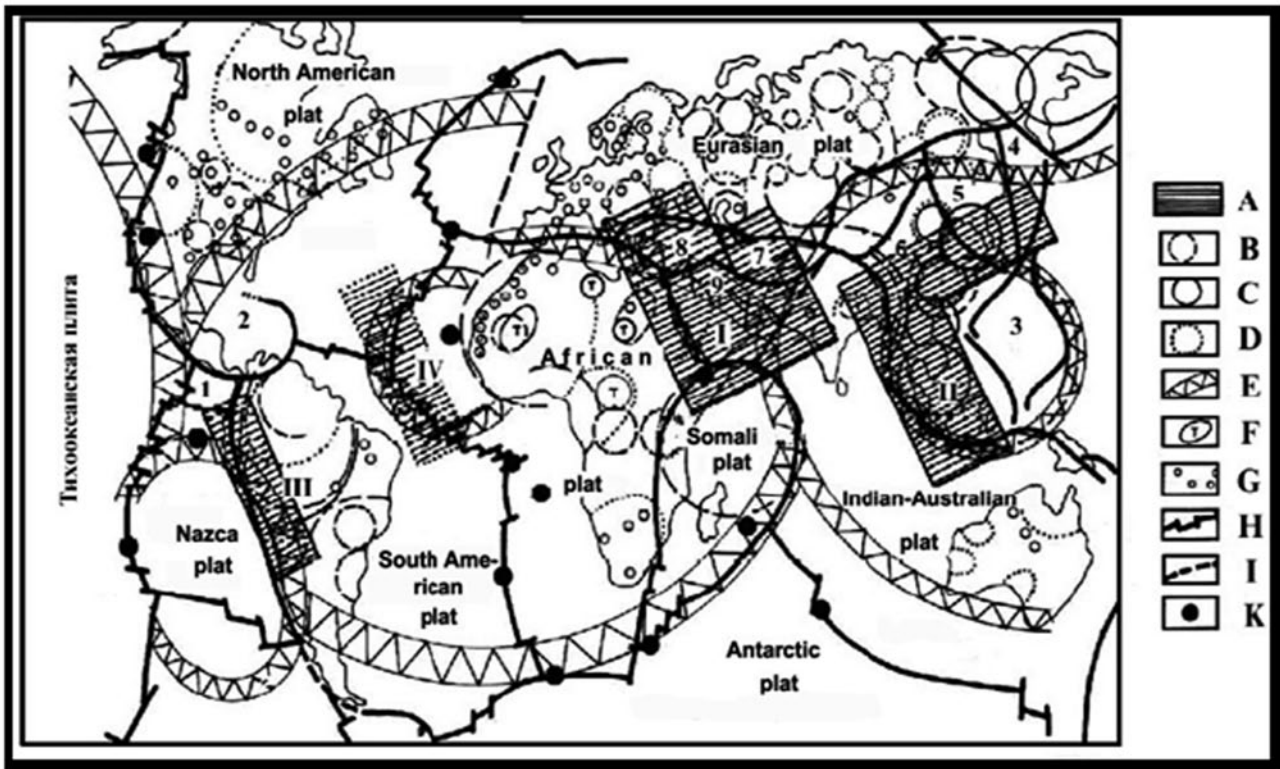


Fig. 2.4 Hearths of generation of ancient civilizations and biota defining them (Bondyrev 2003; Bondyrev et al. 1999): *A* origin areas of the ancient (primary) civilizations: *I* Central, *II* East and South-East, *III* Andes-Peru, *IV* Atlantic (hypothetical). *B* the ring structures established on the basis of the complicity to analysis of space pictures, the account magnetic anomaly and geology-geochemical data; *C* ring

morphostructures; *D* nuclears; *E* belts of earthquakes; *F* large tectogenic ring structures-depressions; *G* astrolems, *H* borders to lithospheric plates and their number (see more low); *I* global breaks; *K* mantle plumes (hot points); plates to lithosphere: *1* Coco, *2* Caribbean, *3* Fillipping, *4* mar Okhotsk, *5* Amur, *6* Chinese, *7* Iran-Afghan, *8* Balkan—Asia Minor, *9* Arabian

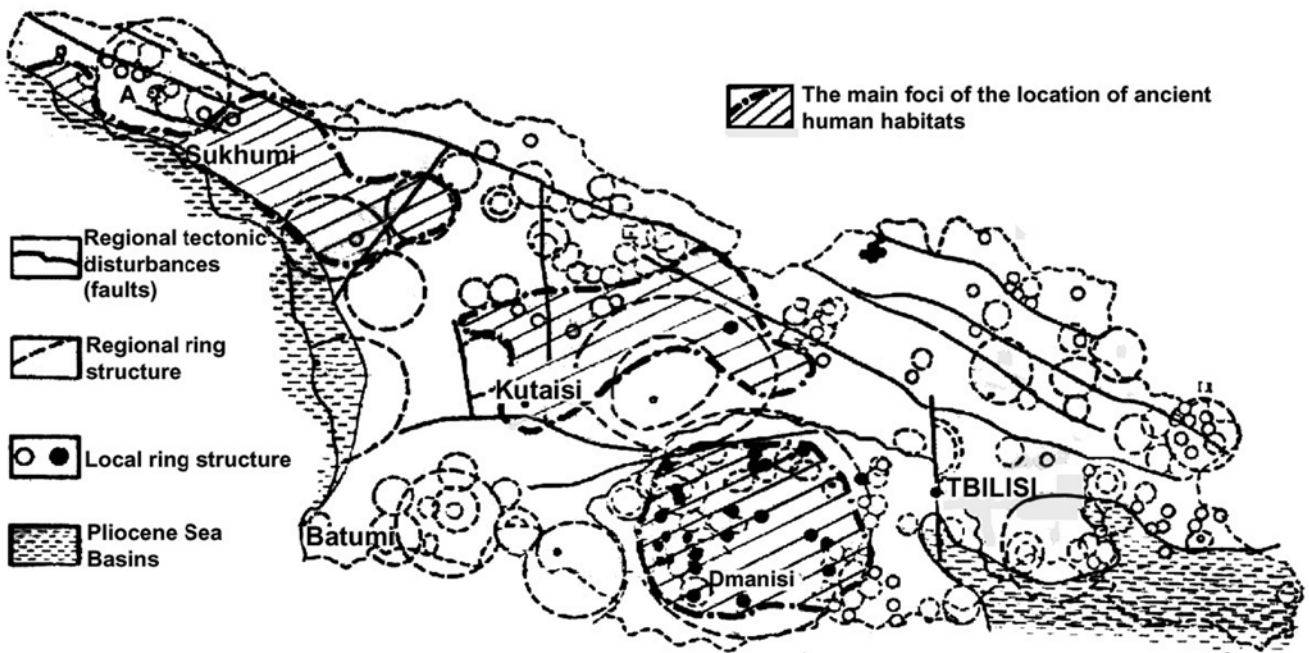


Fig. 2.5 Dependence of development of ancient man' hearths on energy hearths in the territory of Georgia. (Bondyrev 2003; Bondyrev et al. 1999)

homeostatic equilibrium in the “environment-population-organism system.” Consequently, a change in energy parameters (both endo-, and exogenic nature) could cause breaching of homeostasis, causing speedy evolution or degradation of local ecosystems and their communities.

Analyzing the paleoecological peculiarities of a number of sites of ancient man in the Caucasus, most interest arises in the Dmanisi site in Southern Georgia. In 1989, in the terrain of Mashaveri lava flow, situated at the confluence of the Moshevani and Mashavera Rivers, to the north-west of the foots of Loqie massif (in the territory of medieval complex of Dmanisi), a unique Dmanisi site was found—a habitable place and remnants of ancient man in Europe—Dmanisi *Homo ergaster*, whose age was dated as 1.8–2.0 million years ago. This discovery has brought global popularity to the region and drawn the attention of scientists from the whole world (Fox 1990).

However, detailed studies were seldom conducted outside the limits of the site area and its nearest vicinities. This promoted concentration of work in the most prospective areas. At the same time it was impossible to restore the natural environment of the concrete site without a detailed study of the whole region—the Moshevani River basin, which was conducted in 2000–2002. The basin was framed by three complex morphostructures: by horst anticlinal crystalline massif of Loqie, mostly constructed of Palaeozoic and Jurassic rocks; by monocline of Somkhiti ridge formed as a result of tectonic movements and volcanism and alkaline effusion and volcanogenic rocks of the Middle Eocene era; and by younger generations of lava and Dmanisi lava plato of the quaternary period.

Unlike the regions of the South Georgian uplands, where central type volcanism was vividly manifested, within the given region it bore a secondary nature; the primary role was played by the outpouring of lava along tectonic faults. All this left its imprint on the development of the morphology of the region and caused a high activity of processes of river erosion and denudation, and led to thick erosional dissection of morphostructures and the shaping of three main levels of peneplanation (in accordance with different phases of volcanic and tectonic activity) (Beruchashvili et al. 2005). According to data (Lordkipanidze and Tvalchrelidze 2002), the landscapes in the vicinity of Dmanisi Lower Pleistocene camp-site were presented by dry savanna and silvan arrays on the slopes situated not far from mountains, but the site itself was located by a small pool (Maisuradze 1990). In the vicinity of habitable places, typical representatives of savanna were found, such as elephants, rhinoceroses, horses, and gigantic ostriches. As far as one can see, there was gathered biota (variety of relief and landscapes, proximity of energy nodes, presence of opened pools, and rich sources of food), which promoted a more active evolution of the given population.

Here we should once again refer to the problem which became imminent long ago: What do we deal with within the Caucasus—with a certain manifestation of ecological crises in the Paleolithic epoch or with regularities of development of ecosystems? To answer this question is not simple. The Paleolithic period is the epoch of intensive cognition of the characteristics and peculiarities of construction of those ecosystems by man whose component he had always been. All his actions and decisions were associated with the natural environment of his dwelling. The principal component of his existence was the search for food resources that he was able to extract from those landscapes. These were, first of all, hunting products, gathering of wood offerings, and fishing. The so-called “kitchen refuse” reflected not only the spectral composition of fauna of these territories but gave the list of types actively used by man. This is a rather broad group—large herbivores, rodents, number of predators and birds, some types of lizards, and fish. However, this list does not correspond to real spectra of faunistic complex of former ecosystems, but only gives an idea about those types, which ancient man actively used in everyday life. It is more complicated to determine the aspectual composition of wood offerings. The fact itself of the given process was defined, basically, by discoveries of digging sticks amongst the artifacts (in later epoch grain grind-stones), but the discovery of the vegetable remnants was extremely rare.

2.11 Ecological Conditions

The role of Paleolithic man in changing the ecological conditions of separate types of fauna is ambiguous and has not been completely considered yet. The extinction of the cave hyena and red wolf in the Caucasus cannot be connected to intensive hunting or with the breaking of trophic relationships. In the opinion of Barishnikov (Bondyrev and Maisuradze 1980) this process was connected to the breaking of the quantitative composition of the population of large herbivores and its sharp degradation all over Southern Europe and the Caucasus. Probably, this was connected with the sharp cold snap at the beginning of Wurm.

Relations between man and the natural environment are long and multiple processes, when a man rising on a pedestal begins not only to use but actively change the natural environment. Primitive man broke the natural balance of biomass of fauna of the Caucasus of that epoch. Just then, for the first time man’s activity brought about a sharp breaking of homeostasis of primitive ecosystems. Thus, during the analysis of only the kitchen refuse of Akhshtiri cave 1230 bones of cave bears were found, whose native land is the Caucasus, as well as brown bear aurochs, goat, roe deer, and wild boar (Bondyrev 2008). In Tsutskhvati cave, ensembles of bones

of more than 3000 specimens of cave bear, rhinoceros, wild horse, wild boar, red deer, elk, Transcaucasian goat, aurochs, chamois, and badger were found (Tatashidze et al. 2009). All this brought about the general crisis of natural ecosystems of the whole Caucasus (including south). Earlier, this population of plants and beasts was regulated by the course of natural processes themselves, but man became actively involved in this process, breaking the natural balance of those ecosystems, of which he himself was an integral part. A bit later, at the beginning of the Bronze epoch, man became busy with husbandry, and this time began fundamentally changing natural landscapes.

2.12 Hunting

Hunting was the most advantageous handicraft industry; besides collecting meat, fat, skins, tendons, and bones, a hunter could get a safe home. Cave bears for their stand, chose dry karstic or lava caves away from high waters and protected from winds. Acquisition of such an “apartment” must have been considered good luck for the whole family (tribe). The area of spreading of cave bears is the area of the Caucasus from Azikh in the east up to Krasnodar in the northwest. In the area of steppes it penetrated up to Ilski stand in the north. Data on the quantitative analysis of bones of cave bears found during excavation of stands of ancient man indicate

a high intensity of hunting for this giant in all parts of the region.

Thus, 2979 bones of 32 people were found at Kudaro stand, Central Georgia (see Fig. 2.6), 3500 pieces of 49 people in Akhtishirsk cave, 12,300 bones in Akhiz, about 4000 in Tskhrajvari, up to 9000 in Pskhu, and about the same amount in Tsutskhvati cave (Burchak-Abramovich and Tcereteli 1977). The most approximate calculations show that on the whole, bones of about 900 people were found. This amount represented quite a significant part of the population, and hunting itself could have brought about an appreciable reduction in the quantity of this type. Here we should take into account that cave bears, unlike brown ones, were almost completely vegetarian. As a result of a sharp cold snap at the beginning of Wurm and significant (by 500–900 m) lowering of landscape belts, this population lost their main, distinctive, feeding sources. The inability to adapt under the changed conditions of the natural environment and pressure on the part of man, brought about the disappearance of this type everywhere, except southwest Abkhazia and south of the Krasnodar region. Here, the cave bear was preserved up to the Holocene era. The discovery of cave bear bones in Vorontsov cave dated them as 12,000–9000 years ago (Burchak-Abramovich and Tcereteli 1977).

Besides, the image of the cave bear as a creature vested with enormous power, spares of food rich in calories, and owner of a shelter deeply penetrated into the consciousness

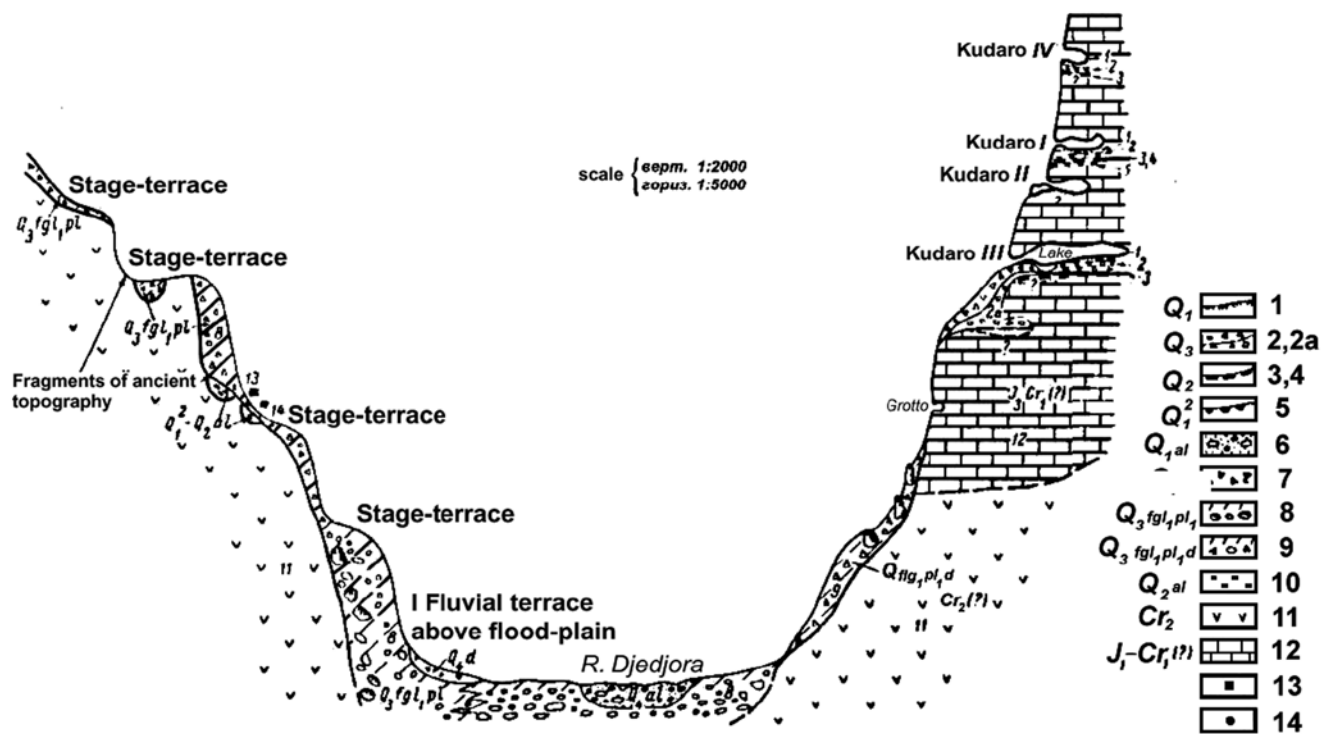


Fig. 2.6 Schematic of transverse profile of Jojora River gorge and caves of Kudaro. (Kolbutov 1960)

of ancient inhabitants of the Caucasus. This brought about the formation of the first known cult in the Caucasus—a cult of the bear at the end of early Paleolithic. Apart from the plane remainders of bones (“kitchen refuse”) a great variety of ritual burying of bear skulls—Azikh, Erevan Tsutskhvti, Sakajia, Kudaro, Kvachara, and many others was noted.

Elephants belong to the number of hunted beasts of the Paleolithic-Mesolithic period, as well as fossilized horses and donkeys, aurochs, bison, wild oxen and ram, red deer, Caucasian goat, wild boar, hare, marmot, hamster, beaver, wild hen, duck, partridge, and dove. Moreover, as a result of the excess hunting, the hamster and beaver disappeared in the Caucasus at the end of the Pleistocene. It is notable that in different regions of the Caucasus, different groups of beasts were main objects of hunting defined by the diversity of natural landscapes. Only the horse was an exception, which was broadly spread on the plains and foothills of the South and North Caucasus. Thus, the main objects of hunting were the Caucasian and Capra goat, horse and wild hen in Central Georgia; horse and wild ram in Javakheti; and camel, fossilized ass, horse, and pika on the plains of eastern part of the South Caucasus.

About 50,000–35,000 years ago, as a result of comparative impoverishment of food resources (objects of hunting and gathering), caused by a variety of natural and anthropogenic factors, there arose the necessity of searching for new ways to gain food. Simultaneously, with hunting and gathering, man gradually began to form a tendency to make live reserves of food by domesticating beasts and cultivating plants. The more complex the organization of any ecosystem, the more unstable it becomes. However, inside similar ecosystems, separate populations stand out, possessing increased reserves of toughness and elasticity (adaptable-organising abilities); moreover, the larger is this reserve, the higher is the hierarchical complexity of these populations and shorter their trophic relationship lines. The Homo community pertains to the number of such populations.

2.13 Other Food Sources

Longing towards the shortening of trophic ways compelled ancient man to search for new and shorter ways of providing himself with food resources and making food reserves for a disadvantageous period. One such way was the domestication and cultivation of plants. The Caucasian region is one of the world’s centers of these processes, which means that it is one of the world’s centers of ecological revolutions, occurring from the end of the Middle Pleistocene up to the Holocene. However, domestication and cultivation are complex processes, requiring not only hard work and time, but practical

skills and experience accumulated during many generations. Probably 20,000–15,000 years ago, man began to change the landscape surrounding him by using natural elements for his own practical goals. Table 2.1 shows the role which Caucasus played in the general-planetary process of domestication of major types of beasts and cultivation of plants.

2.14 Concentration of Population

In the territory of the Caucasus, husbandry started first of all on the volcanic uplands and in intermontane troughs of the South, as well as at the foothills of the North Caucasus. The vicinity of snow peaks and abundance of rivers did not necessitate the creation of such grandiose irrigation systems as in Egypt, India, Mesopotamia, or Ancient China. However, attempts to erect local irrigation systems began as far back as the Mesolithic era, which made it possible to collect two harvests yearly even then (Arukhlo, Eastern Georgia) (Gabunia et al. 2000). Frequent temperature and moisture fluctuations, and activity of glaciers were accompanied by the displacing of landscape belts per vertical line and compelled primitive tillers to move over to new regions, more suitable for life. This process did not promote the concentration of population in some centers and joining the tribes of the Upper Paleolithic-Mesolithic period in association. At the same time, A.J. Toynbee noted the following: “...*Man reaches civilization not in consequence of biological development or suitable conditions of existence, but in response to existence in particularly complicated situations encouraging him on unprecedented hitherto efforts*” (Toynbee 1948).

We reckon that tribes leading to the settled way of life were distinguished by a higher level of ecological thinking than that of nomadic tribes or migrating groups who did not have an organic relationship with the ecosystems surrounding them. Such “transit” groups always inflicted damage to nature, since they were not connected with its genetic information, being strangers in the natural unity of these ecosystems. In a number of cases, strangers settled in new regions and with the passage of a certain period of time, they either integrated into the given ecosystem (in case of their aggressive politics) or were rejected by it, whereas nature itself and its structure in those places turned out to be violated. All allochthonous populations are parasitic until they develop deep roots in the landscape abided by them (Djanelidze 1984). A community of people becomes a component part of the ecosystem only when it begins to perceive this ecosystem as its Native Land! Thereby the given symbol of patriotism simultaneously becomes the symbol of ecological compatibility and unity with the natural environment.

Table 2.1 Initial stages (tentatively) of cultivation of plants and domestication (per 1991 year data). (Bondyrev 2003, 2008)

Cultivation period (thousand years ago)	Plants	Beasts		Country or region
		Domestic	Wild ancestor	
25–20		Dog	Wolf	Around the world (including the Caucasus)
18–12	Flax			North Africa
16–10	Pea, barley			South Caucasus, Iran, Africa
14–10	Millet			East and Central Africa, China, Mesopotamia, Caucasus
10–9	Beans	Cow	Aurochs goat	India, Frontal Asia, North and East Africa, Caucasus
		Pig	Pig peccary	North Africa, Caucasus
9	Olive tree	Cat	Wild Libyan cat	North Africa, Mediterranean
9–8		Nanny goat	Beozarus and spiralthorned goats	Frontal Asia and Caucasus
9–8	Peanuts			Brasilia
9–6	Sunflower			North America
8.1	Yams and sorghum			East Africa
8		Goose	Wild goose	Around the world
8–7		Elephant	Elephant Southeast	North-East Africa, India
8–7		Wild guinea	Guinea fowl	Africa
8–7		North reindeer	Wild reindeer	North Europe, Siberia
8–7		Dove	Rock pigeon	Everywhere in Eurasia (including Caucasus)
8–6	Date palm			North Africa
8.0		Hen	bankoog cock	South-East Asia, Africa
7–6	Watermelon			South Africa
7–6		Trapanh	Horse	Egypt, Frontal Asia
7–6	Wheat, cherry			Mediterranean, Frontal Asia
7–5		Bombyx	Butterfly Bambaks mary	China
7–5		Bee	Melliferous bee	Egypt, Caucasus
6	Apple tree	Buffalo	Wild buffalo	South Caucasus, South East Asia, Middle and Frontal Asia
6–5	Grapes			South Caucasus, Middle and Frontal Asia
5–2	Plum			Caucasus

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